Shoemaker Bridge Replacement Project



Biological Assessment

07-LA-710 PM6.0/6.4
EA: 27300
SCH No. 2016041007

September 2019

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Shoemaker Bridge Replacement Project BA



Biological Assessment

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CALIFORNIA DEPARTMENT OF TRANSPORTATION

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Biological Assessment

Shoemaker Bridge Replacement Project

City of Long Beach, County of Los Angeles

07-LA-710-PM 6.0/6.4

EA 273000

September 2019

STATE OF CALIFORNIA

Department of Transportation

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Summary of Findings, Conclusions, and Determinations

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 of Long Beach (City), in cooperation with the California Department of Transportation (Caltrans), is proposing to replace the Shoemaker Bridge (West Shoreline Drive) in the City of Long Beach, Los Angeles County, 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 and is bisected by the Los Angeles River (LA River).

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

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 Alternatives 2 and 3, the Shoemaker Bridge would accommodate bicycle and pedestrian use and would 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 repurposing a portion of the existing bridge for non motorized transportation and recreational use, and Alternative 3 includes the removal of the existing bridge.

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 Bridge over Shoreline Drive and modifications to Golden

Shore to create a new controlled intersection at Golden Shore and Shoreline Drive. Additionally, the Project would also evaluate 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 Street and 10th Street ramp connections into downtown Long Beach.

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.

Although most of the modifications and construction would occur within the existing Caltrans or City ROW, a partial property acquisition and aerial easement from the Los Angeles County Flood Control District (LACFCD) would be required. In addition, a small amount of additional ROW and temporary construction easements (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.

A small amount of ROW would be required from LACFCD property and an existing parking lot along West Broadway; however, acquisition would not prevent the operation of the existing land use. An aerial easement over the LA River and ROW on the west side of the LA River, to allow for a bridge footing, would be required from LACFCD. No business or residential displacements would occur.

Additionally, Alternatives 2 and 3 would require use of land from Cesar E. Chavez Park; however, there would be a net gain in park acres because the existing NB West Shoreline Drive pavement would be removed and the underlying land would be restored and added to Cesar E. Chavez Park.

Several TCEs would be required from commercial properties along Golden Shore for the removal of the bridge over Shoreline Drive. Lastly, because most of the parcels impacted during construction are within Cesar E. Chavez Park, which is owned by the City, TCEs within the park would not be required, as these are only obtained from private property owners.

The proposed Project is included in the Final *2017 Adopted 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 this Biological Assessment (BA) is to provide technical information and to review the proposed Project Build Alternatives in sufficient detail to determine to what extent the proposed Project may affect threatened, endangered, or proposed species. The California Department of Transportation (Department), as assigned by the Federal Highway Administration (FHWA), as prepared this biological assessment under its assumption of responsibility at 23 United States Code (USC) 326 or 23 USC 327. The BA is also prepared in accordance with 50 CFR 402, legal requirements found in Section 7 (a)(2) of the Endangered Species Act (16 U.S.C. 1536(c)) and with Federal Highway Administration and California Department of Transportation regulation, policy and guidance. The document presents technical information upon which later decisions regarding Project effects are developed. This updated BA is based on recent literature searches and biological resource surveys conducted in 2009, 2011, 2013, and 2016-2019.

Informal Section 7 consultation efforts are ongoing during the Preliminary Engineering/Environmental Document (PA/ED) phase. Currently, three alternatives are being evaluated as part of the Project during PA/ED. These alternatives include Alternative 1, No Build, Alternative 2 (re-proposing the existing bridge for non-motorized transportation use) and Alternative 3 (demolition of the existing bridge). Two design options are also being evaluated under both Build Alternatives. These design options include Design Option A (roundabout) and Design Option B (“Y” Intersection).

At this time, bridge types proposed are purely conceptual and the bridge type selection will not occur until the following phase, the Plans, Specifications, and Estimates (PS&E) phase (or during final design phase). At this time a cable stay and a segmental bridge type have been utilized to illustrate types of bridges that may be constructed for the purposes of sharing such bridge concepts with the general public. This BA will be submitted to USFWS to obtain concurrence for the preferred alternative, once selected, after public review of the Draft Environmental Document. USFWS may assume that the concurrence would only apply to the segmental bridge type.

The City and Caltrans understand that the selection of the cable stay bridge design would pose a significant threat of bird mortality and injury from collision with the tall central mast and guy wires extending across the LA River. In the event that the City selects a cable stay bridge type during PS&E or if the City selects another type of bridge that may affect listed species in a manner not addressed in this consultation, it is understood that Section 7 Consultation would need to be reinitiated at that time.

No federally listed endangered or threatened plant and/or wildlife species were observed within the Shoemaker Project area during surveys. However, it is possible for federally listed or other special-status wildlife species to move onto the site prior to construction. The western snowy plover (*Charadrius alexandrinus nivosus*) and California least tern (*Sterna antillarum browni*) may forage along the LA River within the Project vicinity. In order to avoid potential effects to these species, the following measures will be incorporated:

BA-1: During construction, the City of Long Beach (City) will ensure that a biologist approved by the Carlsbad Fish and Wildlife Office (CFWO) and National Marine Fisheries Service (NMFS) (Project Biologist) will be on site weekly during Project construction within 200 feet of western snowy plover and California least tern habitat in order to ensure compliance with all conservation measures. The Project Biologist will be familiar with the habitats, plants, and wildlife in the Project area and will maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The biologist's name and contact information will be submitted to the CFWO and NMFS prior to initiating project construction. The contract of the biologist will allow direct communication with the CFWO and NMFS at any time regarding the proposed project. The Project biologist will meet the qualifications defined under SSP 14 6.03D(1) Contractor Supplied Biologist.

BA-2: After the completion of construction, the City of Long Beach (City) will ensure that the Project Biologist will submit a final report to the CFWO within 120 days of project completion, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers and locations of listed species (if observed); observed listed species behavior (especially in relation to project activities); and remedial measures employed to avoid and minimize impacts to listed species. Raw field notes will be provided upon request by the CFWO.

BA-3: Prior to construction, the City of Long Beach (City) will ensure that an employee education program be developed and implemented by the Project Biologist. Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed Project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the program will 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 will not be allowed access to adjacent sensitive habitats); (4) occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, (5) penalties for violations of Federal and State laws, reporting requirements, (6) on-site pet prohibitions; (7) use of trash containers for disposal and removal of trash; and (8) Shoemaker Bridge Replacement Project (Project) features designed to reduce the impacts on listed species and habitat and promote continued successful occupation of adjacent habitat areas.

BA-4: During final Design, the City of Long Beach (City) will consider the incorporation of bridge poles or fencing into the design of the new bridge, as feasible, to avoid and minimize vehicle caused bird mortality, as well as in the context of other permitting considerations, such as visual impacts. Bridge poles or fencing that may be incorporated will be designed to be visible to birds, and to prevent perching by raptors, and will be of sufficient height to guide birds over vehicle traffic.

BA-5: During Final Design, the City of Long Beach (City) will ensure that the Project landscape design plan will not include the planting of tall trees adjacent to the Los Angeles River, as raptors may use tall trees for perching and nesting. Such action will discourage raptor species from preying upon foraging western snowy plovers and California least terns.

BA-6: If nighttime construction is necessary, the City of Long Beach (City) will ensure that all Project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from western snowy plover and California least tern habitat. Lighting will be of the lowest illumination necessary for safety, and light glare shields will be used to reduce the extent of illumination into western snowy plover and California least tern habitat.

BA-7: During construction, the City of Long Beach (City) will ensure that permanent project lighting will be of the lowest illumination necessary for safety, and such lighting will be directed toward the bridge and paved roadway and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. Caltrans will review the permanent lighting plans for the project and then submit them to the Carlsbad Fish and Wildlife Office.

BA-8: During construction, the City of Long Beach (City) will ensure that all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated areas located outside of jurisdictional wetlands or waters. The equipment will be located such that runoff from the designated areas will not enter western snowy plover and California least tern habitat, and will be shown on construction plans.

BA-9: During construction, the City of Long Beach (City) will ensure that the Project site will be kept as clear of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site. All spoils and material disposal will be disposed of properly. Disposal or temporary placement of excess fill, brush, or other debris will not be allowed in waters of the United States or their banks. All areas of temporary impact will be returned to original grade, and temporary construction fill will be removed from the waterway following project construction.

Implementation of these measures will avoid direct Project effects to western snowy plover and California least tern. Since the proposed Project is not expected to directly affect any federally

listed species or designated critical habitat, formal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) is not expected to be necessary.

Southern California steelhead do not currently occupy the LA River, however, the LA River is located within the Mojave Rim Biogeographic Population Group as identified in the NMFS' 2012 Southern California Steelhead Recovery Plan (NMFS 2012). The proposed Project will not result in any direct impacts on Southern California steelhead or impacts on the potential future reintroduction of Southern California steelhead into the Los Angeles River.

The LA River in the Shoemaker Biological Study Area (BSA) has been designated as Essential Fish Habitat (EFH) and provides suitable habitat for the northern anchovy (*Engraulis mordax*). Because of this, consultation with the NMFS will be required. While some northern anchovy are expected in the Shoemaker BSA, the majority of their populations are expected to occur in Queensway and San Pedro Bays. The LA River flows into Queensway Bay approximately one mile downstream. Queensway and San Pedro Bays provide EFH for a number of species listed as Coastal Pelagic Species and Pacific Coast Groundfish Species. Consultation with the NMFS regarding impacts to EFH would be necessary for potential impacts to species that may be present in the Project BSA and downstream. In order to minimize potential Project effects on these EFH species, the following measures will be incorporated into the Project:

BA-10: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around sensitive habitats adjacent to the Project footprint to designate Environmentally Sensitive Areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. The requirement to install highly visible barriers to designate ESAs will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-11: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that heavy equipment, including motor vehicles, will not be allowed to operate within the Environmentally Sensitive Areas (ESAs). All construction equipment will 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 will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent the runoff from any spills from entering waters of the United States (U.S.) Provisions to protect ESAs from heavy equipment, including motor vehicle access, will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-12: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that preconstruction surveys for the invasive seaweed (*Caulerpa taxifolia*) will be conducted by the National Marine Fisheries Service/California Department of Fish and Wildlife (NMFS/CDFW) Certified Field Surveyors prior to bottom-disturbing activities

taking place in the Los Angeles River (LA River) to ensure that the Biological Study Area (BSA) is not infested with this nonnative invasive seaweed (*Caulerpa taxifolia*).

BA-13: If invasive seaweed (*Caulerpa taxifolia*) is found within the Biological Study Area (BSA), the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that a management plan will be prepared according to guidelines in the National Marine Fisheries Service (NMFS) Caulerpa Control Protocol, or other approved protocol, and submitted to U.S. Fish and Wildlife Service (USFWS) for approval prior to the start of construction. Construction activities will not begin prior to approval of this plan, if needed.

BA-14: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that project construction will be carried out under standard best management practices (BMPs) (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, and fuel spill cleanup). The City Resident Engineer or designated contractor will ensure that during project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, lead paint, and other toxic substances will be enforced and that construction materials, equipment, debris, or waste will be placed or stored where it may accidentally deposit fill material or be subject to tidal erosion and dispersion. Construction materials will not be stored in contact with the soil.

BA-15: During construction, the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that all soils and material, including contaminated topsoil and lead-based paint from demolished bridges, will be removed from the Biological Study Area (BSA) and disposed of properly. Floating booms will be used to contain debris discharged, and any debris discharged will be removed no later than the end of each day.

BA-16: The City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that the use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species will be prohibited in and around the Los Angeles River (LA River).

BA-17: During construction, the City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that any deliberate feeding of wildlife will be prohibited.

BA-18: During construction, the City's Resident Engineer or designated contractor will ensure that turbidity curtains be used in lieu of silt curtains, which are less effective at trapping sediment in tidal channels.

BA-19: During construction, the City's Resident Engineer or designated contractor will 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, SWPPP, annual fee, and signed certification statement to the State Water Resources Control Board (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).
- The SWPP 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 QSD 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.

Based on the anticipated impacts of the proposed Project to these resources, the Project would have no effect on Southern California steelhead and would not have a substantial adverse effect on EFH for northern anchovy. Concurrence on this determination would be confirmed through an abbreviated EFH consultation with NMFS.

Marine mammals, although present in the Long Beach/Los Angeles Harbor complex, are not expected to be found in the LA River. However, incidental occurrences of California sea lions have been known to occur within the Project BSA. Potential impacts of the Project on marine mammals would be addressed during consultation with the NMFS for impacts to EFH, although the proposed Project is not expected to require an Incidental Harassment Authorization (IHA) pursuant to the Marine Mammal Protection Act (MMPA) (DeAngelis, personal communication, December 15, 2009).

Since the proposed Project is not expected to affect any State listed species directly, authorization from the California Department of Fish and Wildlife (CDFW); under Sections 2081 or 2080.1 of the California Fish and Game Code) for take of any endangered, threatened, or candidate species is not expected to be necessary. In addition, because the proposed Project

contains no areas with a Marine Protected Area (MPA) designation, consultation with the CDFW is not expected to be required.

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List of Abbreviated Terms

AMSL	Above Mean Sea Level
BA	Biological Assessment
BMP	Best Management Practice
BSA	Biological Study Area
BUOW	Burrowing Owl
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
City	City of Long Beach
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory
Corps	United States Army Corps of Engineers
CSS	Coastal Sage Scrub
e.g.	exempli gratia, for example
EB	Eastbound
EFH	Essential Fish Habitat
ESA	Environmentally Sensitive Area
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FTIP	Federal Transportation Improvement Program
GIS	Geographic Information System
i.e.	*id est*, that is
I-710	Interstate 710

IHA	Incidental Harassment Authorization
JD	Jurisdictional Delineation
LACDPW	Los Angeles County Department of Public Works
LOS	Level of Service
MHWL	Mean High Water Level
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MSA	Magnuson-Stevens Fishery Conservation Act
NB	Northbound
NES	Natural Environment Study
NMFS	National Marine Fisheries Service
ROW	Right-of-Way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Southbound
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SR-710	State Route 710
SWPPP	Storm Water Pollution Prevention Plan
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WB	Westbound

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Chapter 1. Introduction

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

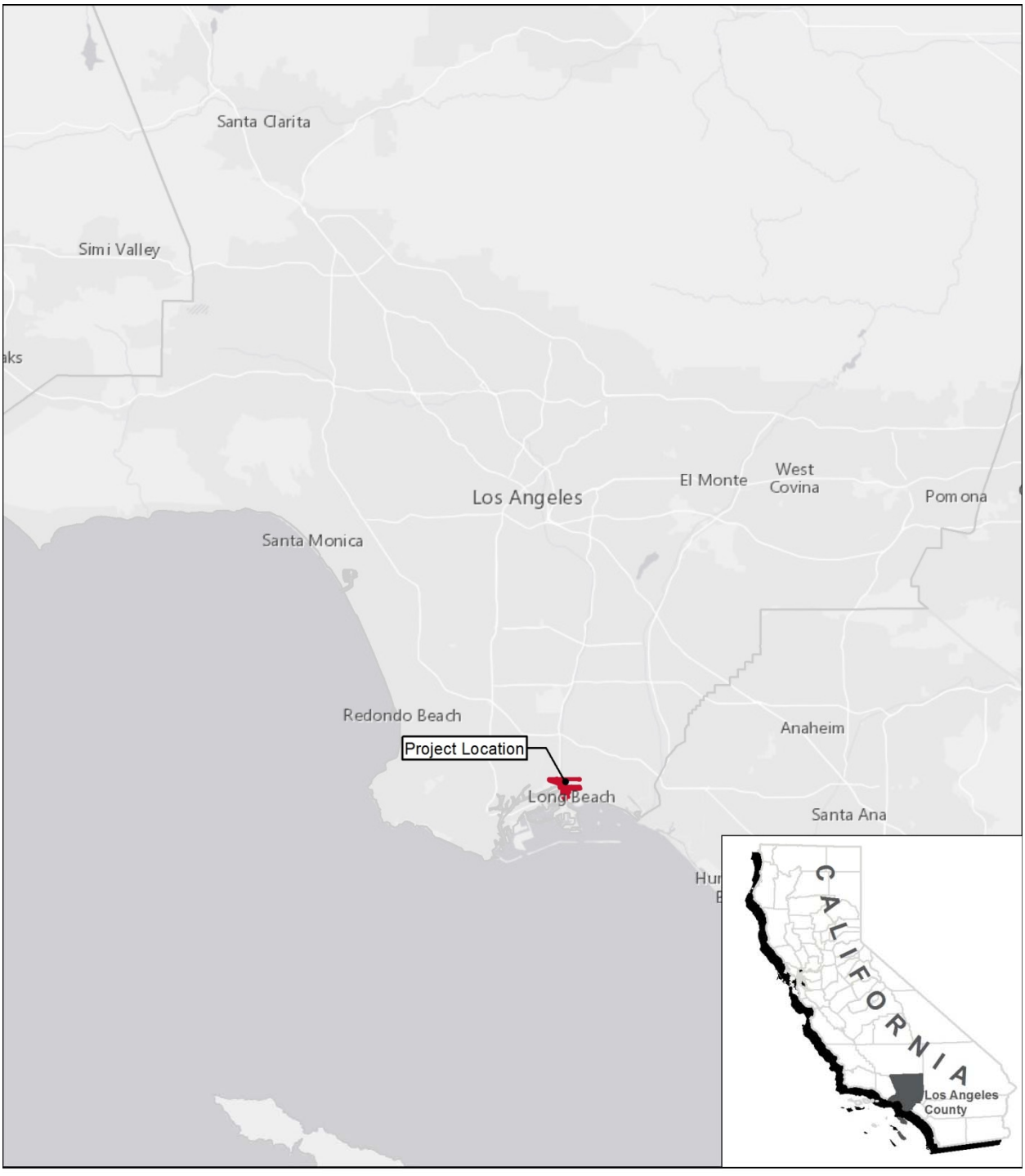
The purpose of this Biological Assessment (BA) is to provide technical information and to review the Project in sufficient detail to determine to what extent the Project may affect federally threatened, endangered, or proposed species. This BA has been prepared in accordance with legal requirements found in Section 7 (a)(2) of the federal Endangered Species Act (16 U.S. C 1536(c); FESA) and with the Federal Highway Administration (FHWA) and Caltrans regulations, policy, and guidance. This BA presents technical information upon which later decisions regarding Project impacts have been developed.

The existing Shoemaker Bridge has structural deficiencies and a high accident rate because of nonstandard 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. It is also needed to accommodate planned improvements in the area, such as the City's planned improvements to Cesar E. Chavez and Drake Parks.

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. The implementation of the proposed Project would provide consistency with the improvements proposed as part of the I-710 Corridor Project. The I-710 Corridor Improvement Project proposes improvements to I-710 in City of Long Beach between Ocean Boulevard and SR 60. The Project would include widening the freeway by adding up to two lanes in each direction, improving interchange connections, and upgrading nonstandard features (lane widths, merging distance, etc.) to current Highway Capacity Manual standards. The Project also includes alternatives to add a four-lane separated freight movement corridor.

In addition, the proposed improvements would provide consistency with the Mobility Element of the City of Long Beach General Plan (City of Long Beach 2013) and meet the needs for traffic safety and accommodating the projected increase in demand for non-motorized transportation facilities within the City.

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Shoemaker Bridge Replacement Project

Figure 1-1. Regional Location and Project Vicinity

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Upon the completion of building a new replacement structure, the City intends to relinquish operational control and ownership of the bridge to Caltrans. In accordance with a Right of Way (ROW) Contract between the City and Caltrans, dated July 25, 2000, the Shoemaker Bridge must be provided by the City in an acceptable and safe condition prior to relinquishment.

1.1 Purpose and Need of the Proposed Action

1.1.1 Purpose

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

The Project limits are generally bounded by 9th Street 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 and 6th and 7th Streets to Atlantic Boulevard.

The proposed Project would reconstruct Shoemaker Bridge and realign local street connections to the bridge. The proposed Project limits serve as logical termini, or rational end points for transportation improvements and is sufficient to evaluate the environmental impacts of the connections that originate in downtown Long Beach at the south end and terminate at the bridge's connection to SR-710 at the north end because the Project purpose is to modernize the structure and geometrics of the bridge and to facilitate planned projects adjacent to the bridge. If the other planned projects, such as the I-710 Corridor Project, or other foreseeable transportation improvements are not constructed, the proposed Project would still address the need to bring the bridge structure and roadway up to current design standards. The Shoemaker Bridge replacement and connection modifications are not dependent on other planned projects because local street connections would be made to existing facilities. As such, the proposed Project is considered to have independent utility.

1.1.2 Need

The existing Shoemaker Bridge has structural deficiencies and a high accident rate because of nonstandard 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. It is also needed to accommodate planned improvements in the area, such as the City's planned improvements to Cesar E. Chavez and Drake Parks.

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. The implementation of the proposed Project would provide consistency with the improvements proposed as part of the I 710 Corridor Project. The I 710 Corridor Improvement Project proposes improvements to I 710 in City of Long Beach between Ocean Boulevard and SR 60. The Project would include widening the freeway by adding up to two lanes in each direction, improving interchange connections, and upgrading nonstandard features (lane widths, merging distance, etc.) to current Highway Capacity Manual standards. The Project also includes alternatives to add a four-lane separated freight movement corridor.

In addition, the proposed improvements would provide consistency with the Mobility Element of the City of Long Beach General Plan (City of Long Beach 2013) and meet the needs for traffic safety and accommodating the projected increase in demand for non motorized transportation facilities within the City.

1.2 Threatened, Endangered, Proposed Threatened, or Proposed Endangered Species, Critical Habitat

An official USFWS Species List was generated using the online IPaC System on March 26, 2018, and updated on August 9, 2019. There were no changes in the updated list. An official Endangered Species Act list was obtained on September 10, 2019, using National Marine Fisheries' California Species List Tool. Both lists are included in Appendix A.

The BSA does not support any federally designated critical habitat. Federally listed species with the potential to occur in the vicinity of the BSA, and the suitability of habitat within the BSA to support these species are listed in Table 1-1.

1.3 National Oceanic Atmospheric Association Species and Essential Fish Habitat

The National Oceanic Atmospheric Association's (NOAA) online Essential Fish Habitat Mapper was also used to determine federally protected Essential Fish Habitat (EFH) areas within the BSA. Coastal Pelagic Management Plan and Pacific Groundfish Management Plan Species known to occur in Southern California were determined using the Army Corps of Engineers' (Corps) Los Angeles District Programmatic Consultation for EFH (Corps 2005). Fish species with EFH designated within the BSA are listed in Table 1-2.

1.4 Consultation History

Informal Section 7 consultation with USFWS is ongoing during the Preliminary Engineering/Environmental Document (PA/ED) phase. At this time, bridge types proposed are purely conceptual and the bridge type selection will not occur until the following phase, the PS&E phase (or final design phase). In addition, at this time a cable stay and a segmental bridge type have been utilized to illustrate types of bridges that may be constructed for the purposes of sharing such bridge concepts with the general public. This BA will be submitted to USFWS to obtain concurrence for the preferred alternative, once selected, after public review of the Draft Environmental Document. USFWS may assume that the concurrence would only apply to the segmental bridge type.

The City and Caltrans understand that the selection of the cable stay bridge design would pose a significant threat of bird mortality and injury from collision with the tall central mast and guy wires extending across the LA River. In the event that the City selects a cable stay bridge type during PS&E or if the City selects another type of bridge that may affect listed species in a manner not addressed in this consultation, it is understood that Section 7 Consultation would need to be reinitiated at that time.

Aside from obtaining an official species list from NOAA Fisheries (NMFS) and from an informal phone discussion with Monica DeAngeles of NMFS on December 15, 2009 regarding potential impacts to marine mammals, no formal consultation with NMFS has been conducted for the proposed project at this time. No other agency coordination has been conducted for the proposed project at this time. However, this BA has been prepared and will be submitted to the USFWS and NMFS for consultation, once it is finalized.

1.4.1 Document Preparation History

This BA was prepared by Caltrans and consultant biologists based on the findings of technical studies conducted in 2009 through 2016 in support of the I-710 Corridor Project and the proposed Project. The primary consultant preparers of this BA are:

- Ingrid Eich, HDR (Lead Biologist)
- Sarah Barrera, HDR (Senior Biologist)

Section 2.2 identifies additional personnel who participated in the biological surveys.

1.4.2 Studies Referenced

Several reports previously prepared for the I-710 Corridor Improvement Project and the proposed Project were used as technical references in preparation of this BA. These reports include:

- Draft Natural Environment Study: Shoemaker Bridge Replacement Project. HDR. Unpublished. Prepared October 2018.

- Draft Natural Environment Study: Shoemaker Bridge Reconstruction Project. LSA Associates. Unpublished. Prepared August 2013.
- Draft Biological Assessment: Shoemaker Bridge Reconstruction Project. LSA Associates. Unpublished. Prepared November 2011.
- Draft Natural Environment Study (NES) Interstate 710 Corridor Project. LSA Associates. 2012.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
United States Fish and Wildlife Service Species				
PLANTS				
Ventura marsh milk vetch *Astragalus pycnostachyus* var. *lanosissimus*	FE	Coastal dunes, coastal scrub, and marshes and swamps (along edges, in coastal salt or brackish waters). Ranges in elevation from 1 to 115 feet elevation. Blooms June-October.	A	No coastal dunes, coastal scrub or marshes and swamps in the Biological Study Area (BSA).
Coastal dunes milk-vetch *Astragalus tener* var*. titi*	FE	Moist, sandy depressions of coastal dunes and bluffs, or clay terrace, below 160 feet elevation. Believed extirpated from Los Angeles County. Blooms March–May.	A	No coastal dunes, bluffs, or clay terraces occur within the Shoemaker BSA. Believed extirpated in Los Angeles County.
Salt marsh bird's-beak *Chloropyron maritimum* ssp*. maritimum*	FE	Coastal dunes and salt marshes below 100 feet elevation. This species has been documented from approximately 2 miles west and east of the right-of-way north of the Long Beach Harbor. Blooms May–October.	A	No dunes or salt marshes occur within the Shoemaker BSA.
San Diego button-celery *Eryngium aristulatum* var. *parishii*	FE	Mesic soils in coastal scrub, valley and foothill grassland, and vernal pool communities from 65 to 2, 34 feet elevation. Blooms April-June.	A	No coastal scrub, valley and foothill grassland, or vernal pool habitat in BSA.
Gambel's water cress *Nasturtium gambelii*	FE	Marshes and swamps from 20 to 1,100 feet elevation. No recent records from Los Angeles County. Blooms April–October.	A	Believed extirpated from Los Angeles County. Not observed in wet areas within the Shoemaker BSA or the I-710 Corridor Study Area during special-status plant surveys.
Spreading navarretia *Navarretia fossalis*	FT	In vernal pools, playas, shallow freshwater marshes and similar sites at 100 to 4,300 feet elevation. Blooms April–June.	A	No vernal pools or other suitable habitat occurs within the Shoemaker BSA.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
California Orcutt grass *Orcuttia californica*	FE	Vernal pools from 50 to 2,200 feet elevation. This species has been documented from approximately one to two miles east of the proposed right-of-way in Downey. Blooms April–August.	A	No vernal pools occur within the Shoemaker BSA. Not observed in wet areas within Shoemaker BSA or the I-710 Corridor Study Area during special-status plant surveys.
Lyon's pentachaeta *Pentachaeta lyonii*	FE	Clay soils in edges of openings in fire-adapted coastal sage scrub and chaparral on saddles between hills, on the tops of small knolls, or in flat areas at the base of slopes, particularly where soil crust results in less competition from annual grasses, from 100 to 2,100 feet elevation. This species has been documented from approximately 2 miles west of the right-of-way north of the U.S. Naval Station Long Beach. Blooms March- August.	A	No clay habitats occur within the Shoemaker BSA. Believed to be extirpated from the area.
Brand's star phacelia *Phacelia stellaris*	FC	Sandy openings, sandy benches, dunes, sandy washes, or river floodplains in coastal sage scrub at 20 to 1,300 feet elevation. In western Riverside County, this species appears to be restricted to sandy washes and benches in alluvial floodplains. Believed extirpated from LA County. Blooms March-June.	A	No sandy soils or other suitable habitat occurs within the Shoemaker BSA.
INVERTEBRATES				
Palos Verdes blue butterfly *Glaucopsyche lygdamus palosverdesensis*	FE	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Dependent upon host plant *Astragalus trichopodus* var. *lonchus*.	A	The BSA is outside the known range of the subspecies.
Riverside fairy shrimp *Streptocephalus woottoni*	FE	Occurs in vernal pools, ponds, and other ephemeral pool-like bodies of water in coastal	A	No vernal pools or other ephemeral pools in BSA.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
		scrub, valley and foothill grassland, and wetland habitats.		
FISH				
Mohave Tui chub *Gila bicolor* ssp. *mohavensis*	FE	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning. Now extirpated from the botanic garden in Palos Verdes, where it was transplanted in 1970.	A	The BSA is outside the known range of the species.
AMPHIBIANS AND REPTILES				
Green sea turtle *Chelonia mydas*	FT	Worldwide in warm marine waters near shorelines such as lagoons and bays with beds of eelgrass, seaweeds, or mangroves; open ocean during dispersal and/or migration. Nests on sandy beaches along tropical coasts. In Southern California aggregations occur in areas with artificially warm water from power plant outfalls in south San Diego Bay and at the mouth of the San Gabriel River.	A	Not expected to occur due to lack of suitable foraging habitat (e.g., eelgrass beds) and source of warm water. May occasionally occur over one mile downstream from the BSA, in the vicinity of the mouth of the LA River. Based on distance from site, no impacts to the species are anticipated and therefore it is not further discussed in this report.
BIRDS				
Western snowy plover (coastal population) *Charadrius alexandrinus nivosus*	FT	Sandy beaches and dry mud or salt flats, Washington to western Mexico. Does not currently nest in coastal Los Angeles County.	P	No nesting habitat remains within the BSA, but foraging habitat is present. Occasional visitors are seen foraging along the lower LA River.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	Breeds and nests in extensive stands of dense cottonwood and willow riparian forest along broad, lower flood bottoms of larger river systems. Widespread, but local, in western North America; very rare and local in California. Winters in South America.	A	No suitable nesting habitat in BSA.
Southwestern willow flycatcher	FE	Breeds primarily in moist brushy thickets and riparian woodland, especially with willow, across much of temperate North America;	A	No suitable nesting habitat in the BSA.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Empidonax traillii extimus		winters in Central and South America. The southwestern willow flycatcher (*E. t. extimus*) is a rare and local breeder in the southwestern United States and northwestern Mexico. Once a common nesting species along the lower LA River, but the current population is much reduced.		
Coastal California gnatcatcher *Polioptila californica californica*	FT	Inhabits CSS in low-lying foothills and valleys in cismontane southwestern California and northwestern Baja California. Recorded multiple times in recent years along the lower LA River.	A	No suitable habitat in BSA.
Ridgway's rail *Rallus obsoletus levipes*	FE	Coastal salt marshes from Santa Barbara County to northern Baja California. Former resident in the mouth of the LAs River, but now extirpated from Los Angeles County.	A	No suitable habitat in BSA.
California least tern *Sternula antillarum browni*	FE	Nests along the coast from San Francisco Bay to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates. Winters primarily off the Pacific coast of northern South America. Nests at Terminal Island in Los Angeles Harbor and forages regularly in estuarine portions of the LA River. Sightings noted of foraging terns upstream at Willow Street, I-405, and Dominguez Gap wetland restoration area.	P	No suitable nesting habitat in BSA, but foraging habitat is present. Known to use LA River for foraging as has been observed upstream.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Least Bell's vireo *Vireo bellii pusillus*	FE	Formerly occurred in well-developed riparian areas from north-central California to Baja California. Now absent from northern portions of its range, but populations in Southern California are growing in response to intense management efforts. Winters primarily in western Mexico. Formerly common along the lower LA River, but only marginally suitable habitat for nesting remains.	A	No suitable habitat in BSA.
MAMMALS				
Pacific pocket mouse *Perognathus longimembris pacificus*	FE	Historically occupied open habitats on sandy soils along the coast from Los Angeles to the Mexican border. Now known from only four sites in Orange and San Diego Counties. Collected from Wilmington in 1865 and probably occurred in the vicinity of the BSA at that time.	A	No suitable habitat in BSA.
National Marine Fisheries Service Species				
ANADROMOUS FISH				
Green sturgeon *Acipenser medirostris*	FT	Anadromous, long-lived, late maturing species. Southern Distinct Population Segment spawns in the Sacramento River Basin, located in the Central Valley of California. Spends most of its life in the nearshore marine environment and coastal bays and estuaries along the west coast of North America.	A	No suitable habitat in BSA. Only occurs in coastal waters in Southern California.
Southern California steelhead *Oncoryhnchus mykiss*	FE	One of six Pacific salmon species that are native to the west coast of North America, and are currently the only species of this group that naturally reproduces within the coastal watersheds of Southern California. Juveniles	P	Currently absent from Los Angeles River, but Los Angeles River historically supported this species and BSA is in area identified as essential habitat for species recovery.

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
		are born and reared in freshwater, migrate to and mature in saltwater, then return to their natal rivers or streams to reproduce and complete their life cycle. After maturing in the marine environment for two to four years, returning adults may migrate from several to hundreds of miles upstream to reach their spawning grounds.		
MARINE INVERTEBRATES				
Range Black Abalone *Haliotis cracherodii*	FE	Live in rocky intertidal and subtidal reefs along the California and Baja California coast. Typically occur in habitats with complex surfaces and deep crevices that provide shelter for juveniles and adults.	A	No suitable habitat in BSA
Range White Abalone *Haliotis sorenseni*	FE	Live in the coastal waters of Southern California and Mexico. Live on rocky substrates alongside sand channels, which tend to accumulate the algae they eat. Usually found at depths of 50 feet to 180 feet,	A	No suitable habitat in BSA
SEA TURTLES				
East Pacific Green Sea Turtle *Chelonia mydas*	FT	Adult and juvenile green turtles live are generally found nearshore as well as in bays and lagoons, on reefs, and especially in areas with seagrass beds. Adults migrate from foraging areas to nesting beaches and may travel hundreds or thousands of kilometers each way. After emerging from the nest, hatchlings swim to offshore areas, where they live for several years. Once the juveniles reach a certain age/size range, they leave the open ocean	A	No suitable habitat in BSA

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
		habitat and travel to nearshore foraging grounds.		
Olive Ridley Sea Turtle *Lepidochelys olivacea*	FT/FE	Occurs within the tropical regions of the Pacific, Atlantic, and Indian Oceans. Nests on beaches from Mexico south. Does not nest in the United States, but during feeding migrations, olive ridley turtles nesting in the East Pacific may disperse into waters off the U.S. Pacific coast as far north as Oregon.	A	No suitable habitat in BSA
Leatherback Sea Turtle *Dermochelys coriacea*	FE	Western Pacific leatherbacks feed off the Pacific Coast of North America, and migrate across the Pacific to nest. Eastern leatherbacks nest in Mexico and Costa Rica, with some isolated nesting in Panama and Nicaragua.	A	No suitable habitat in BSA
North Pacific Loggerhead Sea Turtle *Caretta caretta*	FE	Occur throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans.Most abundant species of sea turtle found in U.S. coastal waters.	A	No suitable habitat in BSA
WHALES				
Blue Whale *Balaenoptera musculus*	FE	Marine mammal restricted to oceans. Nearby populations live off the California coast and migrate to Mexico and Costa Rica	A	No suitable habitat in BSA
Fin Whale *Balaenoptera physalus*	FE	Found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes.	A	No suitable habitat in BSA
Humpback Whale *Megaptera novaeangliae*	FE	Live throughout the world's major oceans. While calving, they prefer shallow, warm waters commonly near offshore reef systems or shores. Feeding grounds are generally in cold, productive waters.	A	No suitable habitat in BSA

Table 1-1. Federally Listed Species Potentially Occurring in the Shoemaker Biological Study Area

Common Name	Federal Status	General Habitat Description	Habitat Present or Absent/ Species Observed	Rationale
Southern Resident Killer Whale *Orcinus orca*	FE	Found in all oceans. They can adapt to almost any conditions, and are found in open seas and coastal waters.	A	No suitable habitat in BSA
North Pacific Right Whale *Eubalaena japonica*	FE	Restricted to oceans. Sightings have been reported as far south as central Baja California in the eastern North Pacific, as far south as Hawaii in the central North Pacific, and as far north as the sub-Arctic waters of the Bering Sea and sea of Okhotsk in the summer.	A	No suitable habitat in BSA
Sei Whale *Balaenoptera borealis*	FE	Restricted to oceans. Sei whales have a wide distribution and live in subtropical, temperate, and subpolar waters around the world.	A	No suitable habitat in BSA
Sperm Whale *Physeter macrocephalus*	FE	Inhabit all of the world's oceans. Their distribution is dependent on their food source and suitable conditions for breeding, and varies with the sex and age composition of the group.	A	No suitable habitat in BSA
PINNIPEDS				
Guadalupe fur seal *Arctocephalus townsendi*	FT	Breeding grounds are almost entirely on Guadalupe Island, off the Pacific coast of Mexico. A small number have been reported on the northern Channel Islands off California.	A	No suitable habitat in BSA

Notes: Habitat Present/Absent: Absent (A) - no habitat present and no further work needed. Habitat Present (P) – habitat is, or may be present. Species observed during surveys (O) – Based on the literature review the species has been observed within the area of the BSA.
Federal Status: Federal Endangered (FE); Federal Threatened (FT); Federal Candidate (FC);

Table 1-2. NOAA-Managed Species Potentially Occurring within the Project Area

Common Name *Scientific Name*	NOAA Designation	General Habitat Description	Habitat Present or Absent/Species Observed	Rationale
Northern anchovy *Engraulis mordax*	CPS	Small, short-lived fish typically found in schools near the surface. Central subpopulation ranges from San Francisco to Point Descanso, Mexico. Found in BSA	P/O	Abundant in Queensway Bay and lower LA River (LSA 2010). Likely to occur infrequently in small numbers in BSA. Observed in LA River in 2015 (FOLAR 2016).
Pacific sardine *Sardinops sagax*	CPS	Inhabit coastal subtropical and temperate waters. Occur in estuaries, but are most common in the near shore and offshore domains along the coast. Pacific sardine have at times been the most abundant fish species in the California current. The primary spawning area was off the U.S. coast between Point Conception and San Diego out to about 100 miles offshore. Juveniles occur in nearshore waters off of northern Baja California and Southern California.	A	Abundant in Queensway Bay. Not expected in BSA due to distance inland and shallow depths. Previous surveys have not documented this species in the LA River.
Jack mackerel *Trachurus symmetricus*	CPS	Long-lived fish most commonly found occurring off-shore. Along the Southern California coast, schools are often found over rocky banks, artificial reefs and shallow rocky coastal waters.	A	Uncommon in Queensway Bay, incidental catch at depths less than 30m. Not expected within BSA due to extremely shallow depths and lack of significant rocky habitat.
Pacific mackerel *Scomber japonicas*	CPS	Adults commonly found near shallow banks, Juveniles are found off sandy beaches, around kelp beds, and in open bays.	A	Uncommon in Queensway Bay, incidental catch at depths less than 30m. Not expected within BSA due to extremely shallow depths and lack of suitable habitat.

Table 1-2. NOAA-Managed Species Potentially Occurring within the Project Area

Common Name *Scientific Name*	NOAA Designation	General Habitat Description	Habitat Present or Absent/Species Observed	Rationale
Leopard shark *Triakus semifasicata*	PCGS	Most abundant in California bays and estuaries along Southern California beaches. Common in enclosed muddy bays, other habitats include flat, sandy areas, mud flats, and bottoms strewn with rocks near rocky reefs or kelp beds and around jetties and piers. Also known to congregate around warmwater outfalls of power plants. Most common on or near the bottom in waters less than 4m deep. Estuaries and shallow coastal waters appear to be used as pupping and feeding/rearing grounds. Neonate pups occur in and just beyond the surf zone in areas of Southern California. Often enter shallow bays and onto intertidal flats during high tides and retreat on ebb.	A	Uncommon in Queensway Bay. Not expected to occur in BSA due to distance inland.
Spiny dogfish shark *Squalis acanthias*	PCGS	Over continental shelves with soft sediments and rocky outcrops	A	Uncommon in Queensway Bay. Not expected to occur in BSA due to distance inland and shallow depths.
California skate *Raja inornata*	PCGS	Common off most of California coast, as well as inshore and in shallow bays. Prefers water from 60-2,200 ft. Typically inhabit inshore muddy bottoms. Egg cases are deposited on the bottom.	A	Uncommon in Queensway Bay. Not expected in BSA due to shallow water.
Kelp rockfish *Sebastes atrovirens*	PCGS	Inhabit shallow waters. As adults, kelp rockfish are primarily residential in kelp forests. Prefer rocky habitats and are predominantly associated with *Macrocystis* plants.	A	BSA does not have rocky substrates or kelp beds.
Brown rockfish *Sebastes auriculatus*	PCGS	Common in shallow water. Use estuaries as nursery grounds. Found in hard bottom substrates such as sand and rocky areas.	A	BSA does not have hard, rocky substrates.

Table 1-2. NOAA-Managed Species Potentially Occurring within the Project Area

Common Name *Scientific Name*	NOAA Designation	General Habitat Description	Habitat Present or Absent/Species Observed	Rationale
Olive rockfish *Sebates serranoides*	PCGS	Most commonly occur in waters less than 30m. Almost always live over hard, high-relief areas (reefs, wrecks, oil platforms, or pipes).	A	BSA exhibits minimal high-relief areas.
California scorpionfish *Scorpaena guttata*	PCGS	Commonly found in sandy or rocky areas in association with rocky reefs. Incidental catch in Queensway Bay. More commonly found in open coastal environs rather than bays and estuaries.	A	No suitable habitat in BSA.
Cabezon *Scorpaenichthys marmoratus*	PCGS	Found intertidally or in shallow, subtidal areas often in kelp beds, jetties, isolated rocky reefs or pinnacles, and in shallow tide pools. Rocky bottoms and cobble subtrates utilized most often, occasionally found in sandy areas.	A	Not expected in unvegetated subtidal areas such as the BSA.
English sole *Parophrys vetulus*	PCGS	Larvae and juveniles occur in estuarine areas, uncommon south of Pt. Conception. As they grow, move to deeper waters.	A	Not expected near BSA as uncommon south of Pt. Conception.
Starry flounder *Platichthys stellatus*	PCGS	Spawning occurs in esutaries or sheltered inshore bays. Juveniles are found in estuaries and prefer sandy to muddy substrates with eelgrass. Adults prefer sandy to coarse substrates.	A	Not expected in BSA due to lack of eelgrass.

Notes: Habitat Present/Absent: Absent (A) - no habitat present and no further work needed. Habitat Present (P) – habitat is, or may be present. Species observed during surveys (O) – Based on the literature review the species has been observed within the area of the BSA.
NOAA Designation: Endangered (E); Threatened (T); Coastal Pelagic Species (CPS);Pacific Coastal Groundfish Species (PCGS)

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Report(s) included as appendices to the 2012 NES that were also used in preparation of this BA include:

- Jurisdictional Delineation Report for the Interstate 710 Corridor Project. LSA Associates. May 2012.
- Estuarine Resources Environmental Assessment for the Interstate 710 Corridor Project. LSA Associates. January 2010.
- Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment for Proposed Geotechnical Coring Studies. Coastal Resources Management, Inc. 2017.

1.5 Description of Proposed Action

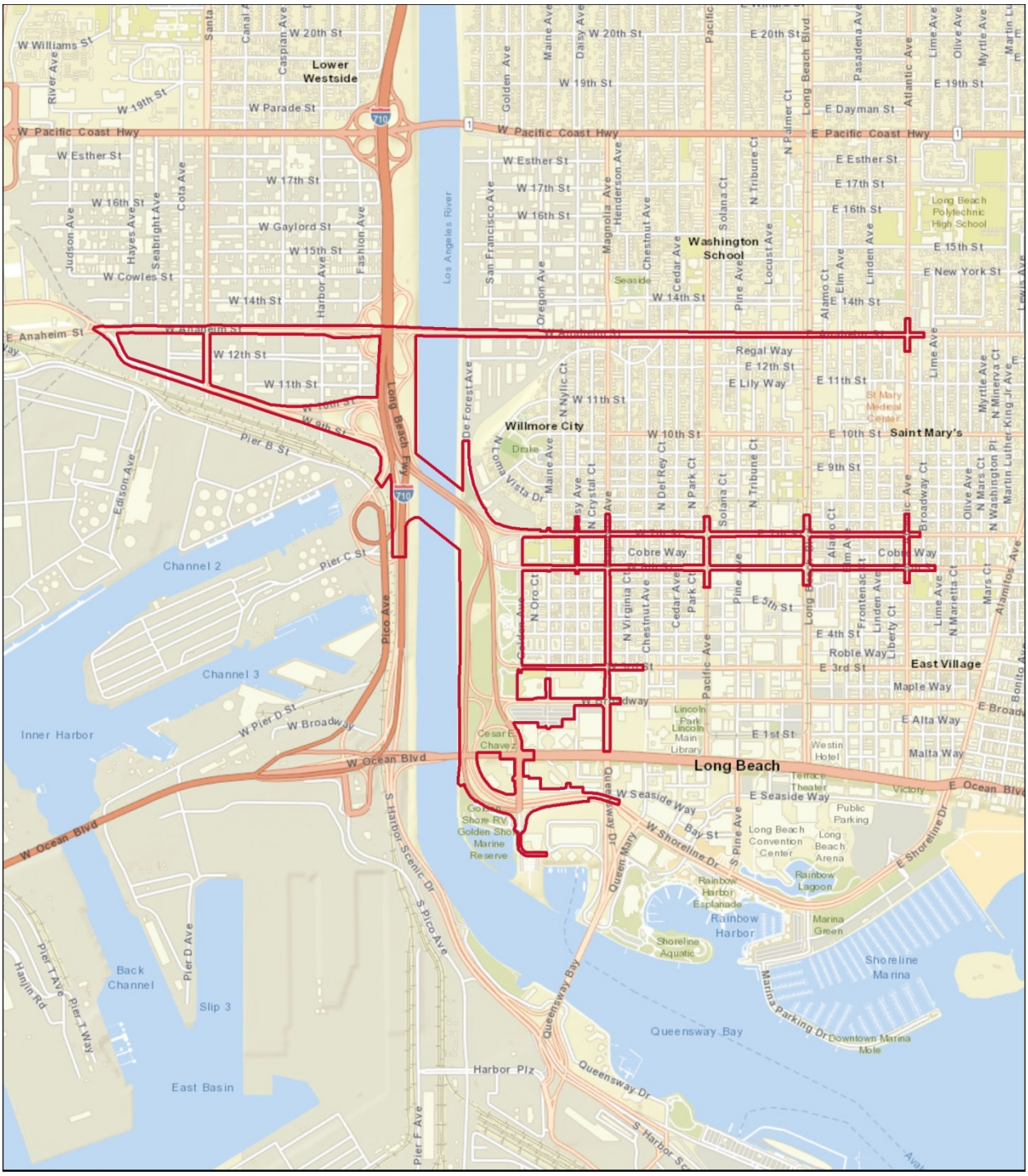
1.5.1 Project Summary

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 Alternatives 2 and 3, the Shoemaker Bridge would accommodate bicycle and pedestrian use and would 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 repurposing a portion of the existing bridge for non motorized transportation and recreational use, and Alternative 3 includes the removal of the existing bridge.

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 Bridge over Shoreline Drive and modifications to Golden Shore to create a new controlled intersection at Golden Shore and Shoreline Drive. Additionally, the Project would also evaluate 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 Street and 10th Street ramp connections into downtown Long Beach. The Project location and Project limits are shown on Figure 1-2 and Figure 1-3.

Although most of the modifications and construction would occur within the existing Caltrans or City ROW, a partial property acquisition and aerial easement from the Los Angeles County Flood Control District (LACFCD) would be required. In addition, a small amount of additional ROW and temporary construction easements (TCE) may be required from an existing parking lot to complete the downtown street modifications along West Broadway.

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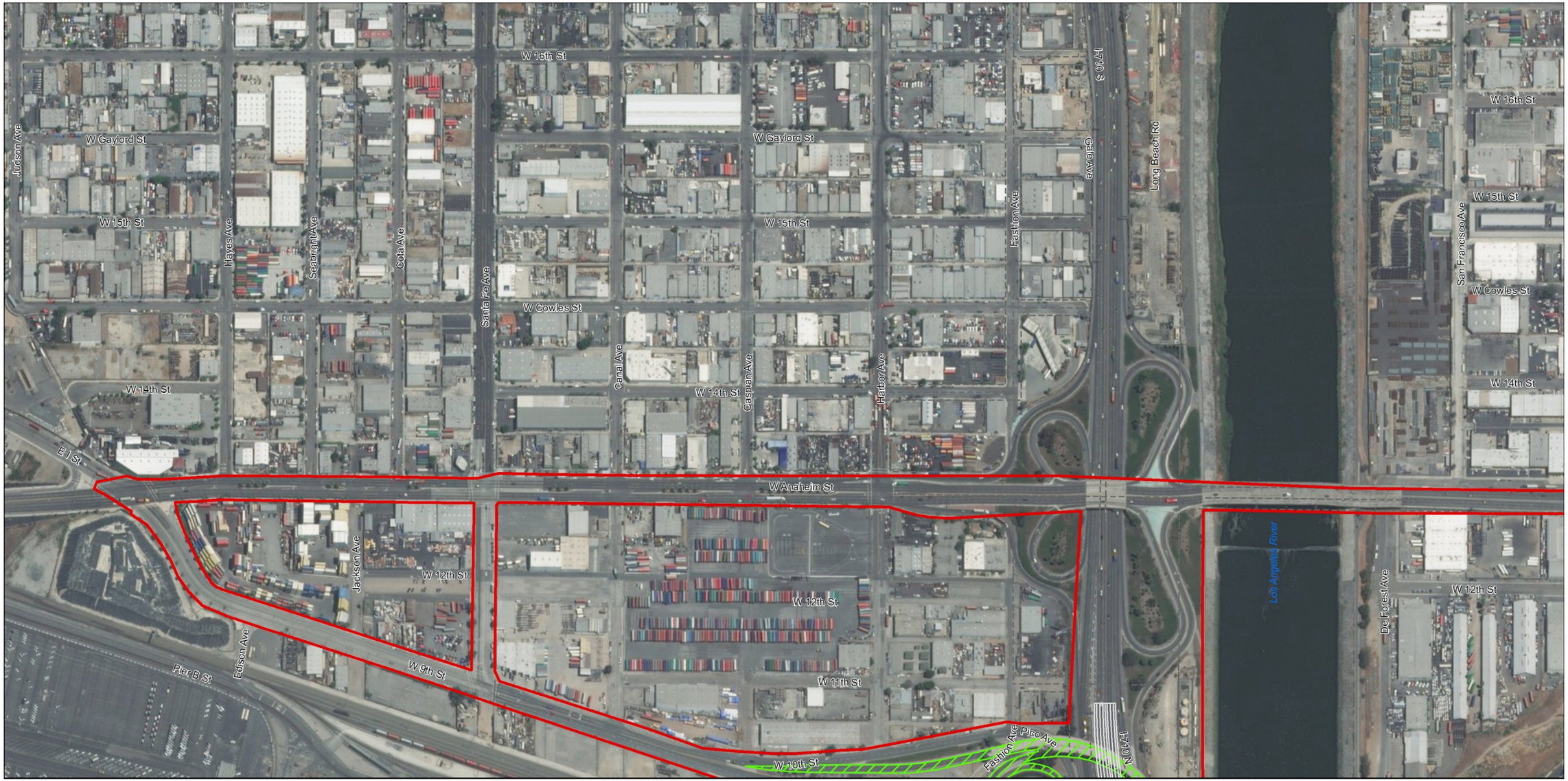


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Shoemaker Bridge Replacement Project

Figure 1-2. Project Location

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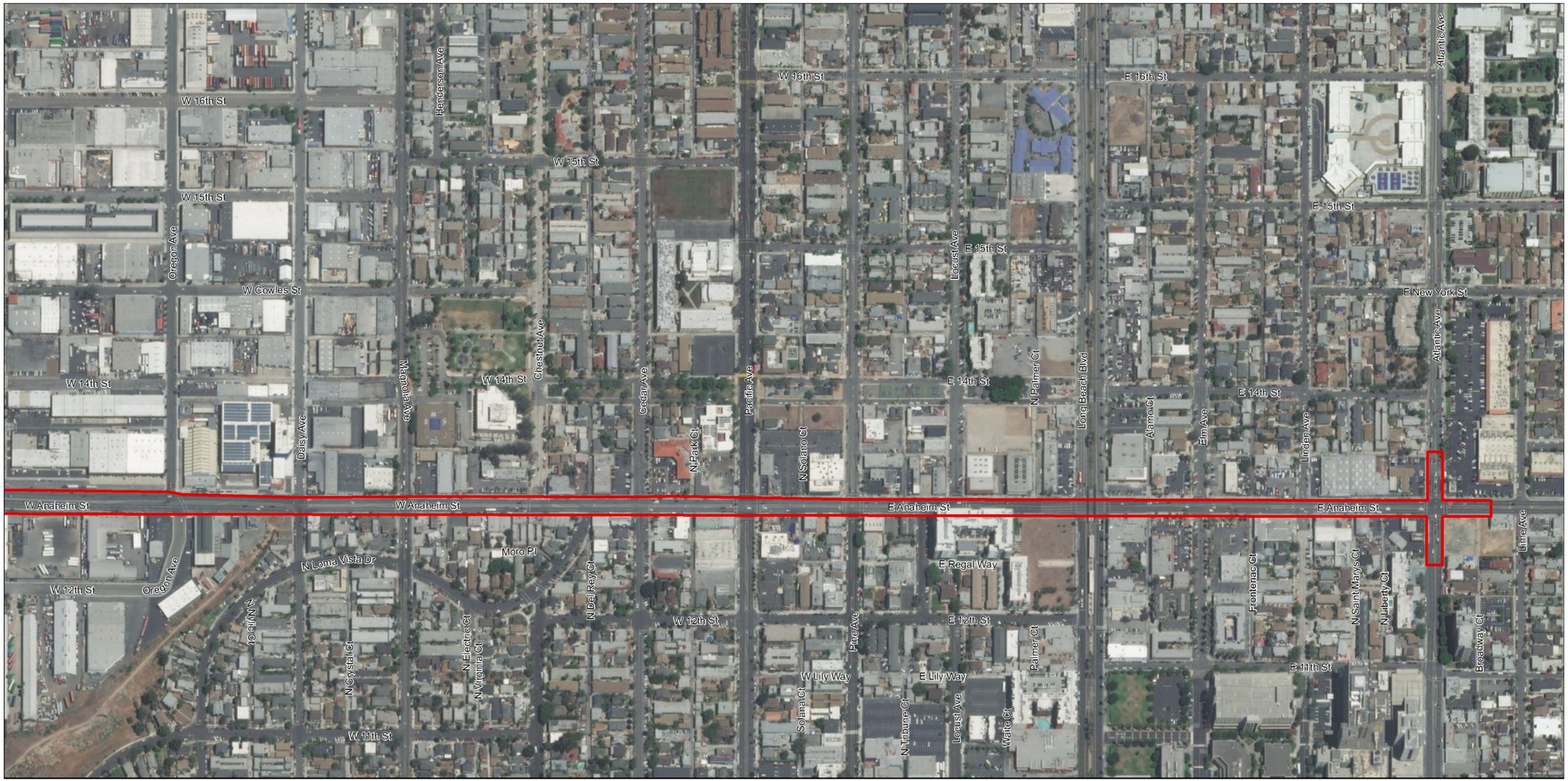


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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 1 of 5)

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EA No. 27300

Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 2 of 5)

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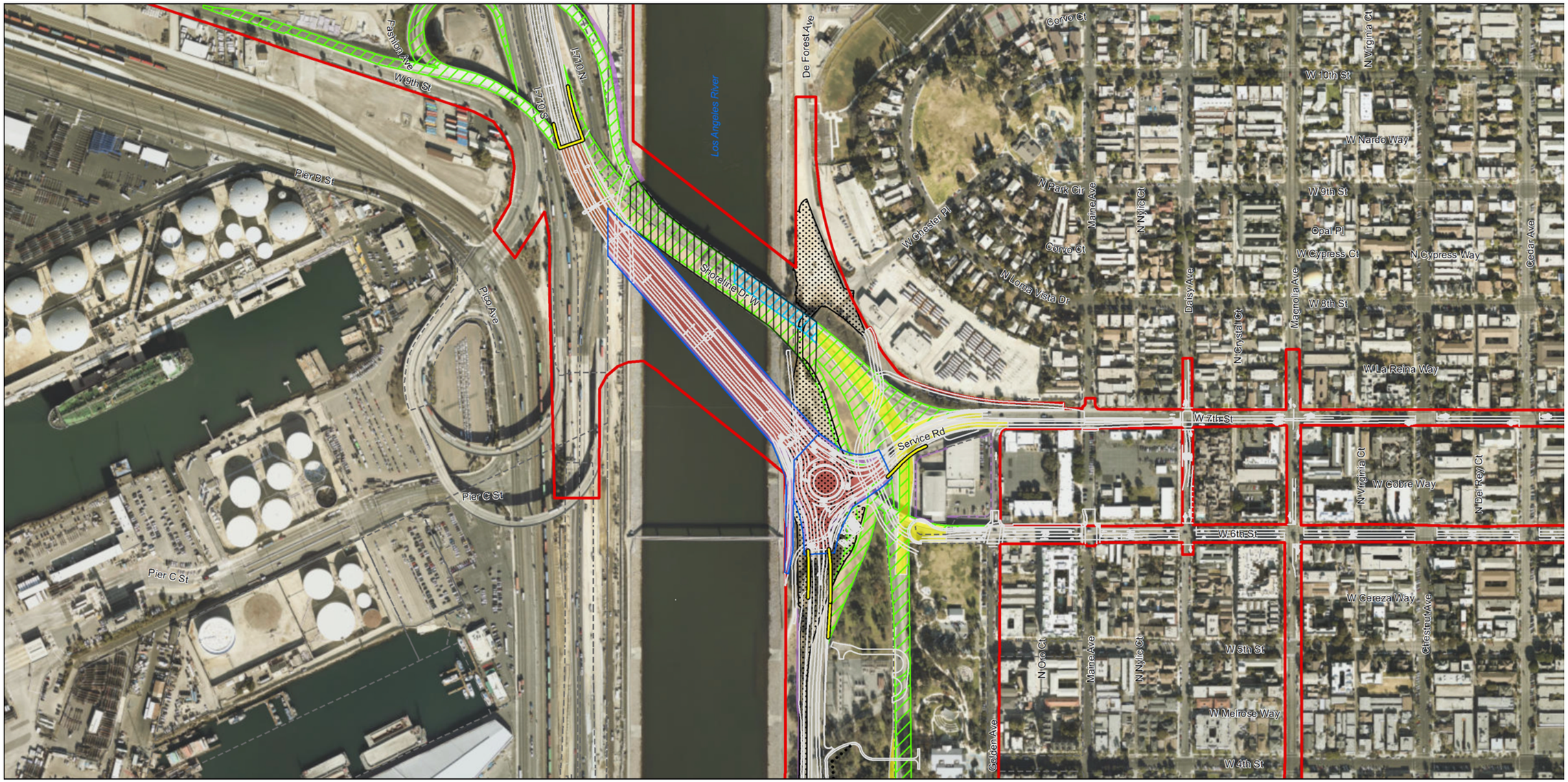


Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 3A of 5)

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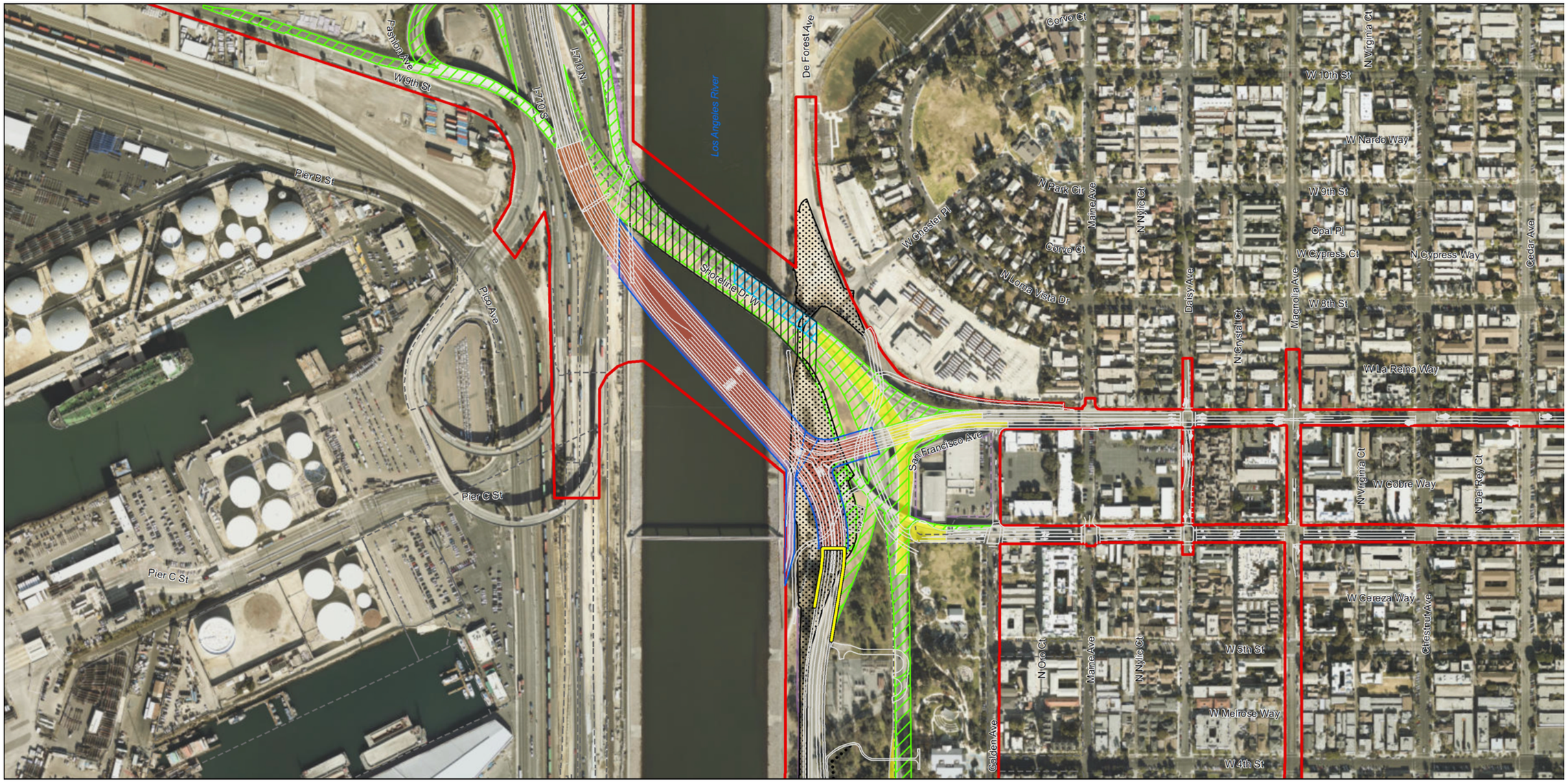
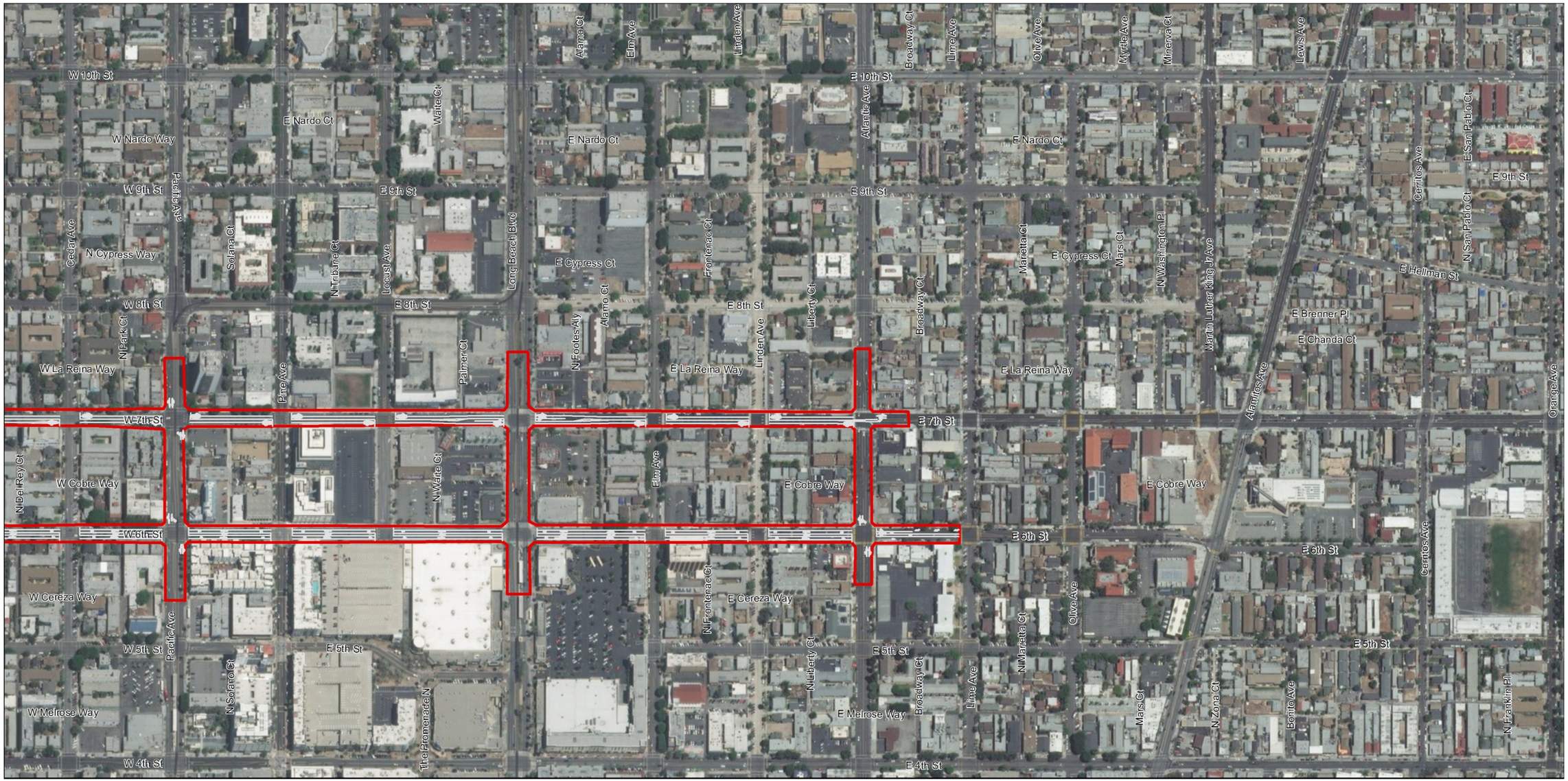


Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 3B of 5)

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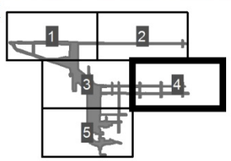


LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
- Permanent Slope Easement
- Roadway Improvements
- Repurpose of Existing Bridge Under Alt 2
- Removal of Existing Bridge Under Alt 3
- Project Limits
- Streets To Be Removed
- Existing Right-of-Way
- Temporary Road Construction and Staging
- Proposed Shoemaker Bridge
- Temporary Construction Easement
- Potential Staging Area

0 Feet 400

MAP INDEX

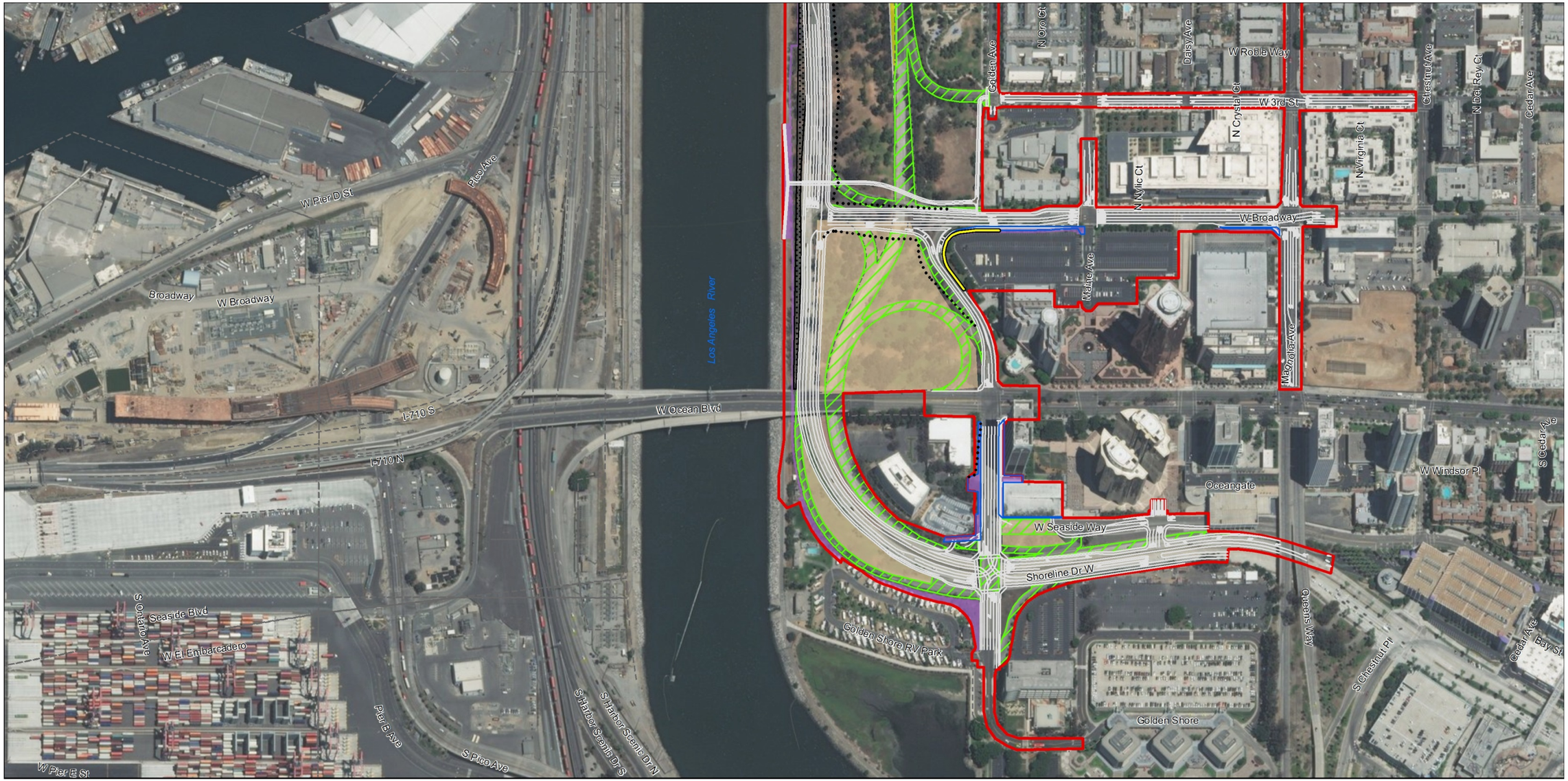


07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 4 of 5)

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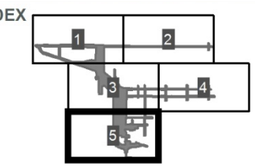


LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
- Permanent Slope Easement
- Roadway Improvements
- Repurpose of Existing Bridge Under Alt 2
- Removal of Existing Bridge Under Alt 3
- Project Limits
- Streets To Be Removed
- Existing Right-of-Way
- Temporary Road Construction and Staging
- Proposed Shoemaker Bridge
- Temporary Construction Easement
- Potential Staging Area
- Long Beach MUST Project

0 Feet 400

MAP INDEX



07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 5 of 5)

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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.

A small amount of ROW would be required from LACFCD property and an existing parking lot along West Broadway; however, acquisition would not prevent the operation of the existing land use. An aerial easement over the LA River and ROW on the west side of the LA River, to allow for a bridge footing, would be required from LACFCD. No business or residential displacements would occur.

Additionally, Alternatives 2 and 3 would require use of land from Cesar E. Chavez Park; however, there would be a net gain in park acres because the existing NB West Shoreline Drive pavement would be removed and the underlying land would be restored and added to Cesar E. Chavez Park.

Several TCEs would be required from commercial properties along Golden Shore for the removal of the bridge over Shoreline Drive. Lastly, because most of the parcels impacted during construction are within Cesar E. Chavez Park, which is owned by the City, TCEs within the park would not be required, as these are only obtained from private property owners.

The proposed Project is included in the Final *2017 Adopted 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 proposed Project is an Early Action Project (EAP) of the I-710 Corridor Project.

1.5.1.1 Project Alternatives

This section describes the proposed Project and the design alternatives that were developed by a multidisciplinary team to achieve the proposed Project purpose while avoiding or minimizing environmental impacts. The alternatives, as described in this section, consist of Alternative 1 (No Build), Alternative 2 (Non Transportation Reuse), and Alternative 3 (Bridge Replacement).

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.

Alternative 2

Alternative 2 (Design Options A and B) involve the replacement of the freeway ramp structures that connect to the downtown Long Beach roadway system. This new bridge consists of multiple structures, with multiple spans that cross the LA River, the NB lanes of SR-710, and the LARIO Trail. The new ramps would be located approximately 500 feet (measured from centerline) south of the existing Shoemaker Bridge. Four support structures would be removed below the invert of

the LA River Channel under Alternative 2 (Design Options A and B) due to the demolition of the existing Shoemaker Bridge. 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, turning lanes, shoulders, and barriers. With the “Y” interchange (Design Option B), the bridge would also include two turn lanes in the SB direction. On the west side of the LA River, the SR-710 entrance and exit ramps to and from the Shoemaker Bridge would connect to the center of the freeway (left lane) at approximately the same locations as the existing ramps. On the east side of the LA River, a roundabout (Design Option A) or controlled intersection is provided at the ramp termini. The ramp termini are located at/near the eastern abutment of the river-spanning section of the new Shoemaker Bridge.

1.5.1.2 Local Streets

As shown previously on Figure 1-3, Alternatives 2 and 3 include modifications to 12 local streets including West Shoreline Drive, Ocean Boulevard, Golden Shore/Golden Avenue, West Broadway, 3rd Street, 6th Street, 7th Street, 9th Street, 10th Street, Magnolia Avenue, 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 roadbeds of West Shoreline Drive are currently separated by Cesar E. Chavez Park and the SCE Seabright Substation. The NB roadbed would be removed, and the former alignment would be 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 between Ocean Boulevard and 7th Street. Access between the newly configured West Shoreline Drive and the substation would be provided. A new controlled intersection would be introduced on West 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 usable park space. The existing Golden Shore Bridge over 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. The section of 3rd Street that curves into the park would be removed and converted into usable 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 usable 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 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 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 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 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 and feature two lanes in each direction. Going 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 side of SB West Shoreline Drive on the Shoemaker Bridge. The segment 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 but would not provide connectivity to West Shoreline Drive. The existing grade separation structure would be removed. 6th Street would be converted

from one-way WB 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 LA River 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-hand-side of NB West Shoreline Drive on the Shoemaker Bridge. The segment 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-hand-side of southbound 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-hand- 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. Traffic calming and traffic signal improvements proposed along Anaheim Street would include, but not be limited to, protected left turns added to signalized intersections, controlled-access medians that would prohibit left-turns and only allow right-in, right-out access to minor streets, and pedestrian/bike refuge medians.

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.

Alternative 3

Similar to Alternative 2, Alternative 3 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. It 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 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. Five support structures would be removed below the invert of the LA River Channel under Alternative 3 (Design Options A and B) due to the demolition of the existing Shoemaker Bridge. The difference between Alternatives 2 and 3 is the removal of the existing Shoemaker Bridge. The same ramp/connectors proposed under Alternative 2 would apply under Alternative 3.

1.5.2 Project Location

The project is located in the City of Long Beach, projected Sections 2, 3, and 4 T4S, R13W and projected Sections 34, 35, and 36 of T5S, R13W on the USGS Long Beach, California 7.5-minute series topographical quadrangle, as shown in Figure 1-2.

1.5.3 Define Action Area

The Action Area for this project is the same as the Biological Study Area (BSA). Studies conducted during 2009 for the I-710 Corridor Project and follow-up surveys in 2011 and 2013 for the same Project were conducted using portions of the potential proposed Project limits included in the study limit boundaries in the I-710 Corridor Project. The BSA used for the 2016 follow-up survey was based on the most recent project footprint and assumes the maximum anticipated potential direct and indirect impact area for all build alternatives. Electronic data provided by the design engineer was incorporated into a geographic information system (GIS) layout, which included areas of potential direct impact. The limits of the BSA were extended beyond the maximum extent of potential direct impact where necessary to identify sensitive biological resources within and immediately adjacent to the Project area, but were limited due to lack of access permission or safety. This provided for a survey area that was larger than the area of potential direct impact in some areas. Figure 2-1 shows the BSA.

1.5.4 Conservation Measures

No federally listed endangered or threatened plant and/or wildlife species were observed within the BSA during surveys. However, it is possible for federally listed or other special-status wildlife species to move onto the site prior to construction. Essential Fish Habitat is located within the BSA. The measures discussed below will be incorporated into the project in order to avoid and minimize any impacts to federally listed or other special-status wildlife species and EFH within the BSA.

1.5.4.1 Avoidance and Minimization Measures

Western snowy plover (*Charadrius alexandrinus nivosus*) and California least tern (*Sterna antillarum browni*) may forage along the LA River within the project vicinity. In order to avoid potential effects to these species, the following measures will be incorporated:

BA-1: During construction, the City of Long Beach (City) will ensure that a biologist approved by the Carlsbad Fish and Wildlife Office (CFWO) and National Marine Fisheries Service (NMFS) (Project Biologist) will be on site weekly during Project construction within 200 feet of western snowy plover and California least tern habitat in order to ensure compliance with all conservation measures. The Project Biologist will be familiar with the habitats, plants, and wildlife in the Project area to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will also maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The biologist's name and contact information will be submitted to the CFWO and NMFS prior to initiating project construction. The contract of the biologist will allow direct communication with the CFWO and NMFS at any time regarding the proposed project. The Project biologist will meet the qualifications defined under SSP 14 6.03D(1) Contractor Supplied Biologist.

BA-2: After the completion of construction, the City of Long Beach (City) will ensure that the Project Biologist will submit a final report to the CFWO within 120 days of project completion, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers and locations of listed species (if observed); observed listed species behavior (especially in relation to project activities); and remedial measures employed to avoid and minimize impacts to listed species. Raw field notes will be provided upon request by the CFWO.

BA-3: Prior to construction, the City of Long Beach (City) will ensure that an employee education program be developed and implemented by the Project Biologist. Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed Project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the program will 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 will not be allowed access to adjacent sensitive habitats); (4) occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, (5) penalties for violations of Federal

and State laws, reporting requirements, (6) on-site pet prohibitions; (7) use of trash containers for disposal and removal of trash; and (8) Shoemaker Bridge Replacement Project (Project) features designed to reduce the impacts on listed species and habitat and promote continued successful occupation of adjacent habitat areas.

BA-4: During final Design, the City of Long Beach (City) will consider the incorporation of bridge poles or fencing into the design of the new bridge, as feasible, to avoid and minimize vehicle caused bird mortality, as well as in the context of other permitting considerations, such as visual impacts. Bridge poles or fencing that may be incorporated will be designed to be visible to birds, and to prevent perching by raptors, and will be of sufficient height to guide birds over vehicle traffic.

BA-5: During Final Design, the City of Long Beach (City) will ensure that the Project landscape design plan will not include the planting of tall trees adjacent to the Los Angeles River, as raptors may use tall trees for perching and nesting. Such action will discourage raptor species from preying upon foraging western snowy plovers and California least terns.

BA-6: If nighttime construction is necessary, the City of Long Beach (City) will ensure that all Project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from western snowy plover and California least tern habitat. Lighting will be of the lowest illumination necessary for safety, and light glare shields will be used to reduce the extent of illumination into western snowy plover and California least tern habitat.

BA-7: During construction, the City of Long Beach (City) will ensure that permanent project lighting will be of the lowest illumination necessary for safety, and such lighting will be directed toward the bridge and paved roadway and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. Caltrans will review the permanent lighting plans for the project and then submit them to the Carlsbad Fish and Wildlife Office.

BA-8: During construction, the City of Long Beach (City) will ensure that all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated areas located outside of jurisdictional wetlands or waters. The equipment will be located such that runoff from the designated areas will not enter western snowy plover and California least tern habitat, and will be shown on construction plans.

BA-9: During construction, the City of Long Beach (City) will ensure that the Project site will be kept as clear of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site. All spoils and material disposal will be disposed of properly. Disposal or temporary placement of excess fill, brush, or other debris will not be allowed in waters of the United States or their banks. All areas

of temporary impact will be returned to original grade, and temporary construction fill will be removed from the waterway following project construction.

Implementation of these measures will avoid direct project effects to western snowy plover and California least tern. Since the proposed Project is not expected to directly affect any federally listed species or designated critical habitat, formal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) is not expected to be necessary.

The LA River in the Shoemaker Biological Study Area (BSA) has been designated as Essential Fish Habitat (EFH) and provides suitable habitat for the northern anchovy (*Engraulis mordax*). Because of this, consultation with the NMFS will be required. While some northern anchovy are expected in the Shoemaker BSA, the majority of their populations are expected to occur in Queensway and San Pedro Bays. The LA River flows into Queensway Bay approximately one mile downstream. Queensway and San Pedro Bays provide EFH for a number of species listed as Coastal Pelagic Species and Pacific Coast Groundfish Species. Consultation with the NMFS regarding impacts to EFH would be necessary for potential impacts to species that may be present in the Project BSA and downstream. In order to minimize potential project effects on these species, the following measures will be incorporated into the Project:

BA-10: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around sensitive habitats adjacent to the Project footprint to designate Environmentally Sensitive Areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. The requirement to install highly visible barriers to designate ESAs will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan

BA-11: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that heavy equipment, including motor vehicles, will not be allowed to operate within the Environmentally Sensitive Areas (ESAs). All construction equipment will 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 will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent the runoff from any spills from entering waters of the United States (U.S.) Provisions to protect ESAs from heavy equipment, including motor vehicle access, will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-12: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that preconstruction surveys for the invasive seaweed (*Caulerpa taxifolia*) will be conducted by the National Marine Fisheries Service/California Department of Fish and Wildlife (NMFS/CDFW) Certified Field Surveyors prior to bottom-disturbing activities

taking place in the Los Angeles River (LA River) to ensure that the Biological Study Area (BSA) is not infested with this nonnative invasive seaweed (*Caulerpa taxifolia*).

BA-13: If invasive seaweed (*Caulerpa taxifolia*) is found within the Biological Study Area (BSA), the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that a management plan will be prepared according to guidelines in the National Marine Fisheries Service (NMFS) Caulerpa Control Protocol, or other approved protocol, and submitted to U.S. Fish and Wildlife Service (USFWS) for approval prior to the start of construction. Construction activities will not begin prior to approval of this plan, if needed.

BA-14: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that project construction will be carried out under standard best management practices (BMPs) (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, and fuel spill cleanup). The City Resident Engineer or designated contractor will ensure that during project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, lead paint, and other toxic substances will be enforced and that construction materials, equipment, debris, or waste will be placed or stored where it may accidentally deposit fill material or be subject to tidal erosion and dispersion. Construction materials will not be stored in contact with the soil.

BA-15: During construction, the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that all soils and material, including contaminated topsoil and lead-based paint from demolished bridges, will be removed from the Biological Study Area (BSA) and disposed of properly. Floating booms will be used to contain debris discharged, and any debris discharged will be removed no later than the end of each day.

BA-16: The City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that the use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species will be prohibited in and around the Los Angeles River (LA River).

BA-17: During construction, the City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that any deliberate feeding of wildlife will be prohibited.

BA-18: During construction, the City's Resident Engineer or designated contractor will ensure that turbidity curtains be used in lieu of silt curtains, which are less effective at trapping sediment in tidal channels.

BA-19: During construction, the City's Resident Engineer or designated contractor will 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, SWPPP, annual fee, and signed certification statement to the State Water Resources Control Board (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).
- The SWPP 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 QSD 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.

Based on the anticipated impacts of the proposed Project to these resources, the project would not have a substantial adverse effect on EFH for northern anchovy. Concurrence on this determination would be confirmed through an abbreviated EFH consultation with NMFS.

Marine mammals, although present in the Long Beach/Los Angeles Harbor complex, are not expected to be found in the LA River. However, incidental occurrences of California sea lions have been known to occur within the Project BSA. Potential impacts of the project on marine mammals would be addressed during consultation with the NMFS for impacts to EFH, although the proposed Project is not expected to require an Incidental Harassment Authorization (IHA) pursuant to the Marine Mammal Protection Act (MMPA) (DeAngelis, personal communication, December 15, 2009).

Since the proposed Project is not expected to affect any State listed species directly, authorization from the California Department of Fish and Wildlife (CDFW); under Sections 2081 or 2080.1 of the California Fish and Game Code) for take of any endangered, threatened, or candidate species is not expected to be necessary. In addition, because the proposed Project

contains no areas with a Marine Protected Area (MPA) designation, consultation with the CDFW is not expected to be required.

1.5.5 Interrelated and Interdependent Actions

Actions that are proposed to occur in the same area have not been identified at this time. Due to the small area of proposed impacts to habitat for any threatened, endangered, or candidate species as a result of this project, this project is not anticipated to contribute substantially to cumulative impacts to any of these species as a result of any interrelated actions. There are no interdependent actions for this project.

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Chapter 2. Study Methods

2.1 Summary

The following database records were searched in December 2016, and again in 2018 and 2019, to identify federally listed species with the potential to occur in the vicinity of the BSA and federally designated critical habitat in or adjacent to the BSA:

- California Natural Diversity Data Base (CNDDB) information (Version 5.2.14), which is administered by the CDFW (this database covers sensitive plant and animal species as well as sensitive natural communities that occur within California) (CDFW 2018).
- California Native Plant Society [CNPS] Online Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2018).
- CalFlora website (CalFlora 2018).
- USFWS IPaC Official Species List (USFWS 2019) (Appendix A).

Searches of these databases were conducted for the quadrangles containing and surrounding the BSA (i.e., the *Seal Beach, Los Alamitos, Torrance, San Pedro, Inglewood, South Gate, Whittier,* and *Long Beach, California* USGS 7.5-minute quadrangles).

An official NMFS Endangered Species Act list was obtained on October 5, 2018 using NMFS' California Species List Tool and updated on September 10, 2019 (Appendix A). The National Oceanic Atmospheric Association's (NOAA's) online Essential Fish Habitat Mapper was also used to determine federally protected Essential Fish Habitat (EFH) areas within the BSA. Coastal Pelagic Management Plan and Pacific Groundfish Management Plan Species known to occur in Southern California were determined using the Army Corps of Engineers' (Corps') Los Angeles District Programmatic Consultation for EFH (Corps 2005).

Documents sourced during the literature review also included scientific papers, regulatory agency publications, CDFW's Fish Passage Assessment Database, iNaturalist.org online species observations search tool, and websites of local fishery organizations including Friends of the Los Angeles River (FOLAR) and Caltrout. Phone calls were placed to the Aquarium of the Pacific, Cabrillo Marine Aquarium, and FOLAR to acquire information regarding sightings of Southern California steelhead (*Oncoryyhnchus mykiss*) or marine mammals near the BSA.

Information regarding estuarine habitat within the BSA was obtained from the Shoemaker Bridge Replacement Project Natural Environment Study (HDR 2018). The *Estuarine Resources Environmental Assessment for the Interstate 710 Corridor Project, County of Los Angeles*, California (LSA 2012) and the *Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment for Proposed Geotechnical Coring Studies* [Coastal Resources

Management, Inc (CRM) 2017] reports, both included as appendices to the 2018 Draft Natural Environment Study, were also reviewed.

The BSA does not support any federally designated critical habitat. Federally listed species with the potential to occur in the vicinity of the BSA, and the suitability of habitat within the BSA to support these species are listed in Table 1-1. Fish species with EFH designated within the BSA are listed in Table 1-2.

2.1.1 General Surveys and Habitat Assessments

The results discussed in this report are a combination of field work conducted in 2009 for the I-710 Corridor Project, and in 2011, 2016, and 2017 for the proposed Project. Field studies were initially conducted for the I-710 Corridor Project, which included the previous Project footprint. A reconnaissance-level survey was conducted in 2011 when the proposed Project was first identified as an EAP, by consulting biologists Elizabeth Hohertz and Stan Spencer, to determine if the conditions found during the May 7, 2009 survey, conducted by consulting biologists Kristen Yee, Wendy Fisher, and Crystahl Taylor, were consistent with 2011 conditions. Due to the length of time that commenced between the 2011 survey and the current project planning phase and the inclusion of additional project areas within the current BSA, another reconnaissance-level survey was conducted in the expanded footprint on July 19, 2016 by consulting biologists Sarah Barrera and Florence Chan. A marine biological survey was conducted on October 26 and 27, 2017 by Coastal Resource Management, Inc. (CRM) biologists Rick Ware and Tom Gerlinger (CRM 2017).

Vegetation mapping was conducted during all of the above surveys. Plant species for all areas were identified and plant communities and sub-communities were determined in general accordance with categories set forth in Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) and Classification of Wetlands and Deepwater Habitats of the United States (USFWS 1992). Vegetation communities were mapped in the field on current aerial photographs. Habitat areas that were considered too small to map separately were included in nearby habitat types determined to be the most appropriate based on species composition. All animal species observed during the general and focused surveys conducted in 2011, 2013 and 2016 for the BSA are listed in Appendix C.



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Shoemaker Bridge Replacement Project

Figure 2-1. Biological Study Area

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During field surveys, where access was available, the BSA was surveyed on foot. Where access was not available, areas were analyzed from nearby accessible property boundaries with the aid of binoculars. Survey methods included accessing the public rights-of-way, as well as accessing frontage roads leading to access points. At the access points, the consultant biologists investigated the roadside areas on foot or with the aid of binoculars if access permission was not granted or foot access was not possible.

2.1.2 Wildlife Surveys

Wildlife species detected during the general biological and focused surveys were recorded. Species were detected by sight, specific calls, tracks, or scat. Binoculars were used to aid in the identification of species, nest locations, foraging areas, etc. Locations of federally listed species were mapped, and numbers of individuals were either counted or estimated.

All animal species observed during the general and focused surveys conducted in 2011, 2013 and 2016 for the BSA are listed in Appendix C.

2.1.3 Estuarine Resources Assessment

Information for estuarine resources within the BSA was acquired from the *Estuarine Resources Environmental Assessment for the Interstate 710 Corridor Project, County of Los Angeles, California* (LSA 2012) and the *Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment for Proposed Geotechnical Coring Studies*. (CRM 2017).

Fieldwork for these evaluations was conducted by biologists Richard Erickson and Rick Ware on October 1, 2009 and by Rick Ware, Rick Hollar, Tom Gerlinger, and Dave Ball on October 26 and 27, 2017. The 2012 analysis was conducted for the I-710 Corridor Project and focused on the estuarine communities of the LA River between Willow Street and Queensway Bay. Potential impacts from the structural modification, relocation, and/or replacement of bridges that span the LA River were also taken into account, including Shoemaker Bridge. A copy of the *Estuarine Resources Environmental Assessment for the I-710 Corridor Project* is included in Appendix D. The 2017 analysis was conducted in support of geotechnical exploration work and focused on the Los Angeles River around Shoemaker Bridge. The *Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment* is included as Appendix E.

2.2 Personnel and Survey Dates

Table 2-1 lists the surveys completed and the personnel utilized for surveys to identify biological resources protected under FESA and Magnuson-Stevens Fishery Conservation Act (MSA).

Table 2-1. Surveys Conducted and Personnel Utilized

Survey Type	Dates	Caltrans and Consultant Biologist(s)
Biological Reconaissance Survey	May 7, 2009 January 21, 2011 July 9, 2013 July 16, 2016	Wendy Fisher, Crystahl Taylor, Kristen Yee, Stan Spencer, and Elizabeth Hohertz Sarah Barrera and Florence Chan
Vegetation Mapping	January 21, 2011 July 16, 2016	Stan Spencer and Elizabeth Hohertz Sarah Barrera and Florence Chan
Estuary Analysis	October 1, 2009	Rick Ware and Richard Erickson
Marine Biological Survey	October 26 and 27, 2017	Rick Ware, Rick Hollar, Tom Gerlinger, and Dave Ball

2.3 Agency Coordination and Professional Contacts

An official USFWS Species List was generated using the online IPaC System on March 26, 2018 and updated on August 9, 2019. Additionally, consulting biologists had an informal phone discussion with Sally Brown of the USFWS Carlsbad office on August 29, 2019, regarding bird safe bridge design, inclusion of western snowy plover in the Project documents, and appropriate mitigation measures for listed bird species with the potential to occur in the Project area.

An official Endangered Species Act list was obtained on October 5, 2018 and updated on September 10, 2019, using National Marine Fisheries' California Species List Tool. Additionally, consulting biologists had an informal phone discussion with Monica DeAngeles of NMFS on December 15, 2009, regarding potential impacts to marine mammals.

Both USFWS and NMFS official species lists are included in Appendix A. NMFS requested additional information regarding Southern California steelhead and marine mammals. A memorandum addressing these species was prepared and submitted to USFWS and NMFS in October 2018 (Appendix F). This report includes the latest project information and information from the October 2018 memorandum.

2.4 Limitations That May Influence Results

Land use, plant and wildlife communities regularly change in response to human and environmental factors that are beyond the project proponent's control. As a result, the biological data collected for this study is subject to future changes. However, since the BSA is located in a highly developed area, environmental factors are not expected to have a substantial impact on field data and interpretations.

Direct access to some areas of the BSA was not available or safe. Binoculars were used to identify biological resources where access was unavailable. These areas were adequately visible using this method and lack of direct access is not expected to have a substantial impact on field data and interpretations.

Project plans are subject to change. Please note that any change in the project plans could affect the conclusions discussed in this BA.

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Chapter 3. Results: Environmental Setting

3.1 Description of the Existing Biological and Physical Conditions

The BSA is located within the South Coast subregion of the Southwestern California region of the California Floristic Province, as discussed in the Jepson Manual (Jepson 2009). The South Coast subregion is characterized by valleys and small hills extending from the coast inland to the foothills of the Transverse and Peninsular Mountain Ranges. The BSA is located within the City and no longer supports native habitats. The majority of the BSA consists of residential, commercial and industrial buildings and associated infrastructure.

3.1.1 Biological Study Area

Studies conducted during 2009 for the I-710 Corridor Project and follow-up surveys in 2011 and 2013 were conducted using portions of the potential Shoemaker project limits included in the study limit boundaries determined for the I-710 Corridor Project. The BSA used for the 2016 follow-up survey was based on the current project footprint, which assumes the maximum anticipated potential impact area for all build alternatives. Electronic data provided by the design engineer was incorporated into a geographic information system (GIS) layout, which included areas of potential direct impact. The limits of the BSA were extended beyond the maximum extent of potential direct impact where necessary to identify sensitive biological resources within and immediately adjacent to the project area, but were limited due to lack of access permission or safety. This provided for a survey area that was larger than the area of potential direct impact in some areas.

The BSA is located in projected Sections 2, 3, and 4 T4S, R13W and projected Sections 34, 35, and 36 of T5S, R13W on the USGS *Long Beach*, *California* 7.5-minute series topographical quadrangle. Land uses within and adjacent to the BSA include transportation, residential, commercial, industrial, infrastructure, recreational, undeveloped, and water-related uses.

3.1.2 Physical Conditions

The BSA is relatively flat and near sea level. Elevations within the BSA range from sea level near the LA River to 30 feet (ft) elevation above mean sea level (amsl) in the northeastern corner of the BSA (USGS 1981).

Soils identified within the BSA include Hanford fine sandy loam and Ramona sandy loam (Los Angeles County Department of Public Works [LACDPW] 2009).

3.1.3 Biological Conditions in the Biological Study Area

Vegetation mapping conducted in 2009 and 2011 included five vegetation communities consisting of Deepwater Aquatic, Disturbed/Ruderal, Ornamental, Bare Ground, and Developed (LSA 2013).

Since the majority of land within the BSA is developed or disturbed with little or no vegetation many of these communities have been combined into a single classification for discussion in this report, Developed/Disturbed/Ruderal, as these areas provide little or no benefit for plants and wildlife. Two other land uses which provide some benefit to plants and wildlife were identified. These were classified as Estuarine Subtidal Waters (Deepwater Aquatic) and Park (Ornamental) for discussion in this report. Land uses within the BSA are shown on Figure 3-1. Table 3-1 lists the acreage of each of the vegetation communities present within the BSA.

Table 3-1. Vegetation Communities Occurring within the BSA

Vegetation Community	Total Acres
Estuarine Subtidal Waters (Deepwater Aquatic)	10.29
Freshwater Emergent Marsh	<0.01
Developed/Disturbed/Ruderal	152.48
Park (Ornamental)	28.09
Total	190.86

3.1.3.1 Estuarine Subtidal Waters (Deepwater Aquatic)

Estuarine Subtidal waters occur within the LA River. Estuarine subtidal waters consist of deepwater tidal habitats that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. They are permanently inundated and typically do not support rooted-emergent (above water) or woody plant species, but may support submergent (below water) plant species.

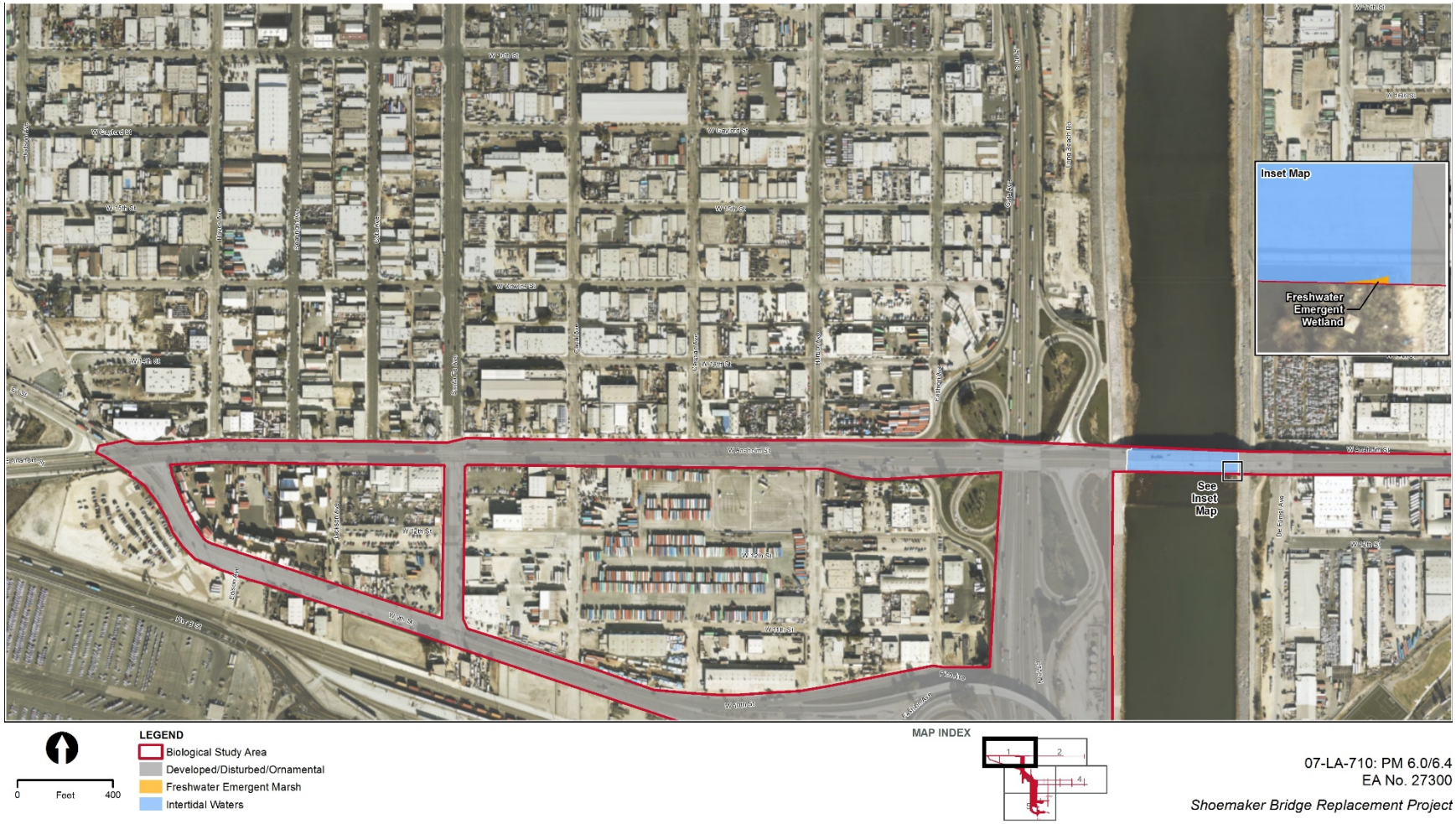


Figure 3-1. Plant Communities within the BSA
(Sheet 1 of 5)

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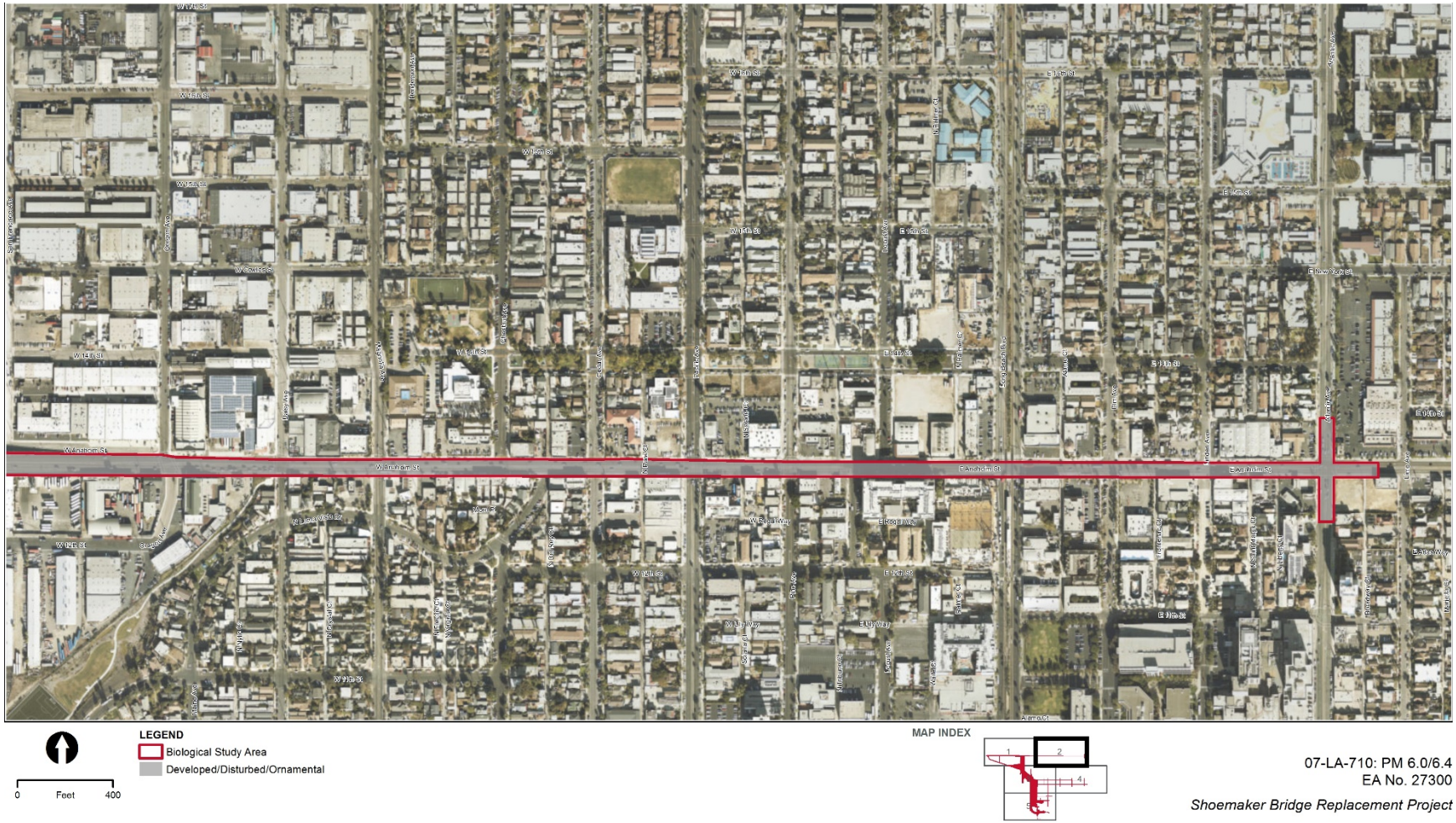


Figure 3-1. Plant Communities within the BSA
(Sheet 2 of 5)

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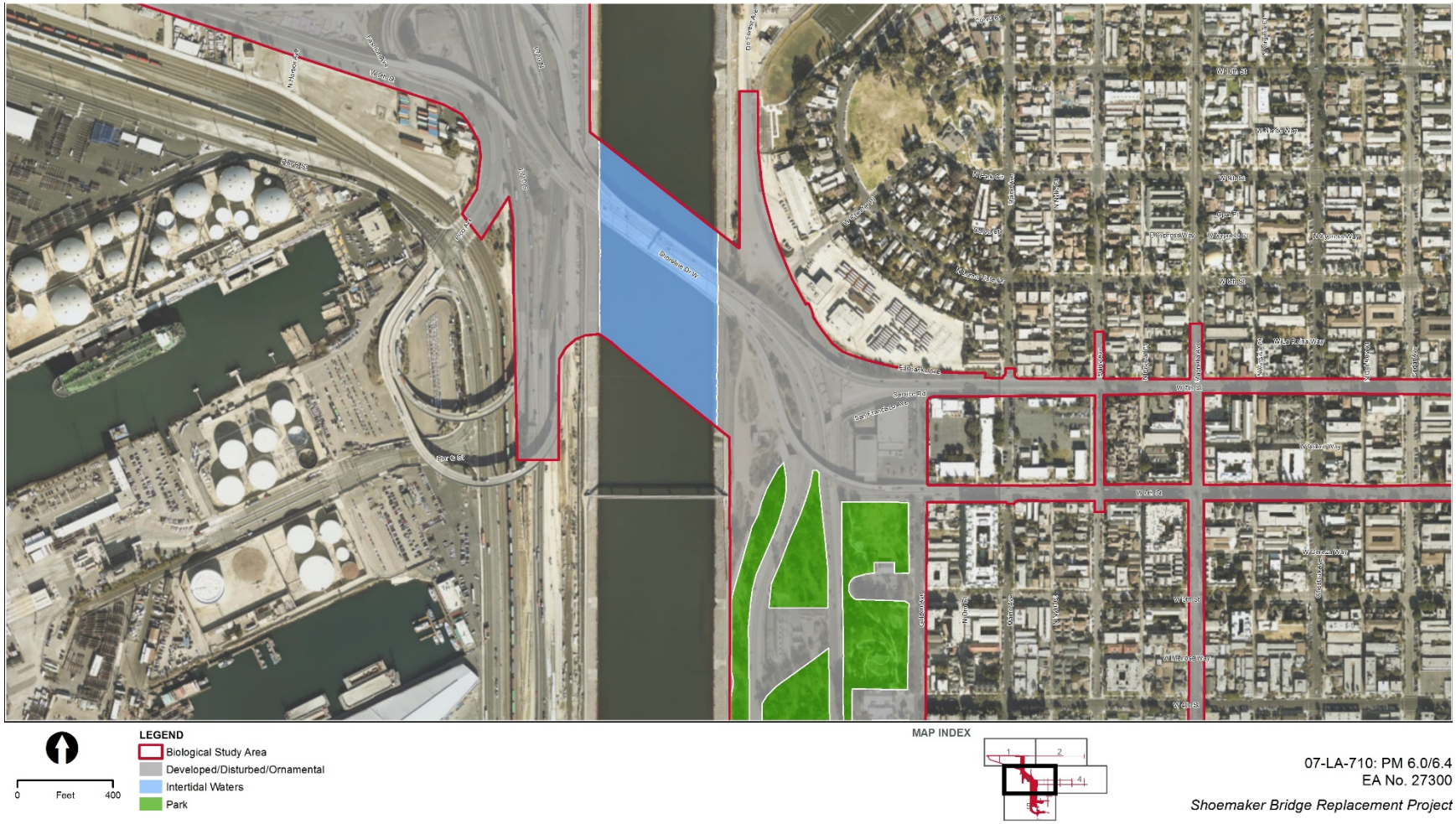


Figure 3-1. Plant Communities within the BSA
(Sheet 3 of 5)

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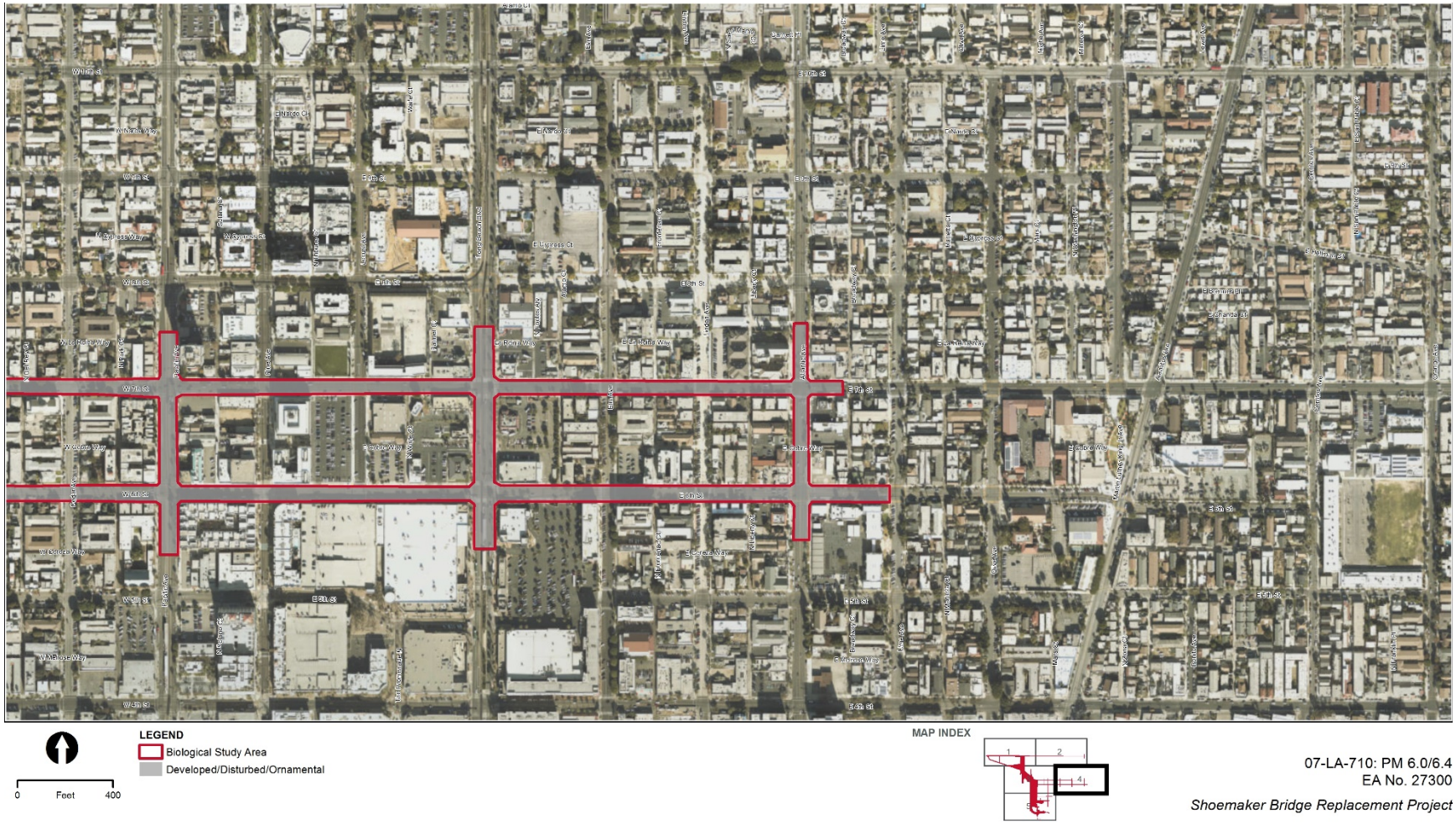


Figure 3-1. Plant Communities within the BSA
(Sheet 4 of 5)

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Figure 3-1. Plant Communities within the BSA
(Sheet 5 of 5)

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The estuarine system is more strongly influenced by its association with land than is the Marine System. Deepwater aquatic habitats are recognized as having a high habitat value due to their use as a fish and wildlife resources and limited distribution in the arid west.

3.1.3.2 Developed/Disturbed/Ruderal

This land used consists predominantly of developed land (existing buildings, paved roads, ornamental landscaping, and commercial and residential properties) and associated bare ground or disturbed areas with small amounts of ruderal and unmaintained or escaped ornamental vegetation. Very few plants occur within this habitat type. Plants observed include single or small clusters of ornamental trees [Palms (*Washingtonia* sp. and *Phoenix dactylifera),* telegraph weed (*Heterotheca grandiflora*), bristly ox-tongue (*Pricris echioide*s), Mediterranean rocket (*Sisymbrium erysimoides*), Mexican fan palm (*Washingtonia robusta*), common wild oat (*Avena fatua*), and Bermuda grass (*Cynodon dactylon*). Other ornamental species associated with landscaped yards that did not contribute substantially to habitat value were mapped within this category but not identified in the field.

3.1.4 Common Animal Species

The BSA supports wildlife that are adapted to highly urbanized areas as well as animals that use the LA River for foraging or as a movement corridor between the Pacific Ocean and upstream wetlands or other habitats. Common urban-adapted species within the Shoemaker BSA include the rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), northern mockingbird (*Mimulus polyglottos*) and house finch (*Carpodacus mexicanus*). A red-tailed hawk (*Buteo jamaicensis*) nest was observed in a stand of eucalyptus trees (*Eucalyptus* sp.) in Cesar E. Chavez Park. Along the LA River, the most common species observed include species of ducks, herons, shorebirds, and gulls, and the American coot (*Fulica americana*). The only terrestrial species observed was California ground squirrel (*Spermophilus beecheyi*), although burrows of other species, including Botta's pocket gopher (*Thomomys bottae*).

3.1.5 Migration and Travel Corridors

Wildlife movement and habitat fragmentation are important issues in assessing effects to wildlife. Wildlife movement includes seasonal migration as well as daily movements for foraging. Migration corridors may include corridors for unobstructed movement of deer and other large mammals, riparian corridors providing cover for migrating birds, routes between breeding waters and upland habitat for amphibians, and roosting and feeding sites for raptors and shorebirds. Habitat fragmentation occurs when a proposed action results in a single, unified habitat area being divided into two or more areas in such a way that wildlife cannot move freely from one portion of the habitat to another.

Since it is highly developed, the BSA lacks connected tracts of habitat other than the LA River. Movement for medium and large-sized terrestrial mammals such as coyotes (*Canis latrans*) is limited within the rest of the BSA due to the lack of large areas of open space. Many fish, bird,

and marine mammal species use the LA River for foraging and movement from the Pacific Ocean to upstream habitats. However, man-made levees, the change from estuarine to freshwater upstream, and degraded water quality limits the use of the LA River as a viable movement corridor.

3.1.6 Aquatic Resources

Earthen-bottom tidal portions of the LA River exist throughout the Shoemaker BSA. Due to the substantial amount of human disturbance associated with the aquatic resources of the Shoemaker BSA, these resources are considered generally poor in quality. However, the Estuarine Study that was prepared for the I-710 Corridor Project described the section of the LA River between Willow Street and the Shoemaker Bridge to have the highest-quality aquatic habitat within the I-710 Corridor BSA. This area provides habitat for rocky intertidal plants and invertebrates, as well as foraging and roosting habitat for birds. These birds, including shorebirds, pelicans, terns and gulls, use concrete- and earthen-bottom portions of the LA River channel throughout most of the year. Surveys in 2017 did not detect *Caulerpa* or eelgrass in the LA River at the Shoemaker Bridge.

3.1.6.1 Essential fish habitat

The MSA of 1996 mandated the identification of EFH for federally managed fish species. EFH includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH, “waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle. EFH is described by Fishery Management Councils in amendments to Fishery Management Plans and is approved by the Secretary of Commerce acting through the NMFS (50 CFR 600.10) (NMFS 2004). The importance of EFH is not necessarily the presence of federally listed species, but what the habitat contributes to the surrounding environment (e.g., wetlands or near-shore ecosystems).

The proposed project is located within an area designated as EFH for Coastal Pelagic Species (CPS) and Pacific Coast Groundfish Species (PCGS). It is also located within a Habitat Area of Particular Concern (HAPC) for PCGS. HAPCs are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function. The HAPC designation does not necessarily mean additional protections or restrictions upon an area, but they help to prioritize and focus conservation efforts. Estuarine habitat within the BSA is stressed by development and provides an important but degraded migratory route for fish, including species that once inhabited the LA River but are now extirpated from the area due to upstream habitat loss, such as southern steelhead trout (*Oncorhynchus mykiss*). While the BSA at this time does not provide high quality

habitat, preservation of the HAPC area within the BSA would be important to future restoration efforts in other areas of the LA River.

Since tidal influence extends to the BSA, some members of the estuarine fish community and the demersal and pelagic fish community are expected to be present, but none of the fish species are estuarine resident species. The diversity and abundance of these groups are expected to be low compared to Queensway Bay. As identified in Table 1-2, the BSA supports suitable estuarine habitat within the LA River to support one (1) CPS; northern anchovy foraging and nursery. The BSA does not provide spawning habitat or shelter habitat for these species. Northern anchovy are documented to occur in the LA River; however, the most recent documented occurrence available occurred as a result of birds dropping the fish to surveyors, not as a result of catch from the LA River (FOLAR 2016). The remainder of the CPS and PCGS are not expected to occur within the BSA due to the distance away from Queensway Bay and open ocean, the highly-fluctuating salinity levels, and/or lack of suitable substrate.

Consultation with NMFS regarding impacts to EFH would be required since the project is anticipated to result in a “may affect, but not likely to adversely affect” determination regarding EFH.

3.1.7 Invasive Species

3.1.7.1 Caulerpa

The invasive algae *Caulerpa* (*Caulerpa taxifolia*) has the potential to cause ecosystem-level impacts to California’s bays and near-shore systems due to its extreme ability to outcompete other algae and seagrassess (NMFS 2008). In September 2001, Assembly Bill 1334 was enacted by the State of California banning the transport, sale, and possession of nine potentially invasive species of *Caulerpa*, including *C*. *taxifolia*. *Caulerpa* grows as a dense, smothering blanket, covering and killing all native aquatic vegetation in its path, when introduced in a native marine habitat. Fish, invertebrates, marine mammals, and sea birds that are dependent on native marine vegetation are displaced or die off from the areas where they once thrived. In areas where the species has become well established, it has caused ecological and economic devastation by overgrowing and eliminating native seaweeds, seagrasses, reefs, and other communities (NMFS 2008).

Known outbreaks in California (at Agua Hedionda Lagoon, San Diego and Huntington Harbor, Orange County) have been contained, however extensive surveys have not been conducted to identify this invasive plant in Southern California waters. *Caulerpa* has not been reported from San Pedro Bay or the Los Angeles/Long Beach Harbor complex. Site-specific *Caulerpa* surveys have not been conducted in the BSA.

In addition to Assembly Bill 1334, the NOAA and CDFW require that projects that have potential to spread this species through dredging and bottom-disturbing activities conduct pre-construction surveys using standard agency-approved protocols and NMFS/CDFW Certified Field Surveyors to determine whether this species is present (NMFS 2008). Because of this,

pre-construction surveys for *Caulerpa taxifolia* will be conducted by NMFS/CDFW Certified Field Surveyors prior to bottom-disturbing activities taking place in the LA River to ensure that the Shoemaker BSA is not infested with this nonnative invasive seaweed. If present, containment and eradication of any individuals of this species prior to construction would be required.

Chapter 4. Federally Listed Species within Action Area

4.1 Federally Listed/Proposed Plant Species

As identified in Table 1-1, nine federally listed as endangered, threatened, or candidate plant species are known to occur in the vicinity of the BSA. Due to the lack of suitable habitat in the urbanized BSA, none of the plant species that are federally listed as endangered, threatened, or candidate species have potential to occur in the BSA and are therefore not discussed further in this report.

4.2 Federally Listed/Proposed Animal Species

As identified in Table 1-1, 12 federally listed as endangered, threatened, or candidate animal species are known to occur in the vicinity of the BSA. Due to the lack of suitable habitat in the urbanized BSA, only two of these species, western snowy plover and California least tern, are expected to occur in the BSA. The rest of these species are not discussed further in this report. The results of surveys, critical habitat discussion, minimization/mitigation measures, project effects, and cumulative effects for the western snowy plover and California least tern are discussed in this section.

4.2.1 Discussion of Western Snowy Plover

The Pacific Coast distinct population segment (DPS) of western snowy plover was listed as federally threatened in 1993. Habitat loss/alteration and increased recreational use of beaches are the primary threats to the species (USFWS 2019). USFWS issued a Recovery Plan for this species in 2007 that identifies actions to recover and/or protect the species as well as requirements for delisting, and recovery, maintenance and management needs to work towards delisting (USFWS 2007). In 2006, USFWS published a 5-year review for the species that recommended no change in the listing status of the western snowy plover (USFWS 2006). A 5-year review initiated in 2018 has not been published at this time (USFWS 2018).

The western snowy plover is a small shorebird that primarily inhabits sandy beaches, dry salt flats, and dune habitats in coastal areas. The species forages upon terrestrial and aquatic invertebrates and nests in natural or scraped depressions on dry ground. The typical breeding season for the species is March through September. The Pacific Coast DPS of western snowy plover breeds along the Pacific coast of the U.S. and winters along the west coast from southern California through Baja Mexico (USFWS 2007).

4.2.1.1 Survey Results

Western snowy plover were not observed within the BSA during surveys conducted between 2009 and 2016. However, these surveys were not conducted with the intent of determining presence/absence of this species in the BSA. Nesting habitat for western snowy plover does not occur within the BSA, and the nearest known nesting site is approximately 12 miles south of the BSA at Bolsa Chica Ecological Reserve. Due to the distance of the BSA from this nearest nesting location, foraging western snowy plovers would be rare in the BSA. However, this species has been occasionally observed foraging in the LA River north of the BSA near the Willow Street Bridge, most recently on August 24, 2013, and near the Alondra Boulevard Bridge on August 26, 2018 (eBird 2019). It is noteworthy that almost all of the recorded observations of western snowy plover in the southern reach of the LA River have occurred in the month of August.

4.2.1.2 Critical Habitat

The BSA does not contain designated critical habitat for western snowy plover; the nearest critical habitat areas for the species are located at Bolsa Chica Reserve and Hermosa State Beach (USFWS 2012).

4.2.1.3 Avoidance and Minimization Efforts

The BSA does not support nesting habitat for the western snowy plover. Western snowy plovers are unlikely to, but may forage in the BSA between April and September. If present, foraging western snowy plovers would be able to move out of the BSA during construction and construction activities are not expected to restrict wildlife movement along the LA River. However, traffic using the new bridge has the potential to result in occasional bird strikes, which has a small probability of affecting western snowy plovers. By following the avoidance and minimization measures below, no noticeable changes in bird strike frequency are expected to occur as a result of project activities under Alternatives 2 and 3 (Design Options A and B).

BA-1: During construction, the City of Long Beach (City) will ensure that a biologist approved by the Carlsbad Fish and Wildlife Office (CFWO) and National Marine Fisheries Service (NMFS) (Project Biologist) will be on site weekly during Project construction within 200 feet of western snowy plover and California least tern habitat in order to ensure compliance with all conservation measures. The Project Biologist will be familiar with the habitats, plants, and wildlife in the Project area to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will also maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The biologist's name and contact information will be submitted to the CFWO and NMFS prior to initiating project construction. The contract of the biologist will allow direct communication with the CFWO and NMFS at

any time regarding the proposed project. The Project biologist will meet the qualifications defined under SSP 14 6.03D(1) Contractor Supplied Biologist.

BA-2: After the completion of construction, the City of Long Beach (City) will ensure that the Project Biologist will submit a final report to the CFWO within 120 days of project completion, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers and locations of listed species (if observed); observed listed species behavior (especially in relation to project activities); and remedial measures employed to avoid and minimize impacts to listed species. Raw field notes will be provided upon request by the CFWO.

BA-3: Prior to construction, the City of Long Beach (City) will ensure that an employee education program be developed and implemented by the Project Biologist. Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed Project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the program will 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 will not be allowed access to adjacent sensitive habitats); (4) occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, (5) penalties for violations of Federal and State laws, reporting requirements, (6) on-site pet prohibitions; (7) use of trash containers for disposal and removal of trash; and (8) Shoemaker Bridge Replacement Project (Project) features designed to reduce the impacts on listed species and habitat and promote continued successful occupation of adjacent habitat areas.

BA-4: During final Design, the City of Long Beach (City) will consider the incorporation of bridge poles or fencing into the design of the new bridge, as feasible, to avoid and minimize vehicle caused bird mortality, as well as in the context of other permitting considerations, such as visual impacts. Bridge poles or fencing that may be incorporated will be designed to be visible to birds, and to prevent perching by raptors, and will be of sufficient height to guide birds over vehicle traffic.

BA-5: During Final Design, the City of Long Beach (City) will ensure that the Project landscape design plan will not include the planting of tall trees adjacent to the Los Angeles River, as raptors may use tall trees for perching and nesting. Such action will discourage raptor species from preying upon foraging western snowy plovers and California least terns.

BA-6: If nighttime construction is necessary, the City of Long Beach (City) will ensure that all Project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from western snowy plover and California least tern habitat. Lighting will be of the lowest illumination necessary for safety, and light glare shields will be used to reduce the extent of illumination into western snowy plover and California least tern habitat.

BA-7: During construction, the City of Long Beach (City) will ensure that permanent project lighting will be of the lowest illumination necessary for safety, and such lighting will be directed toward the bridge and paved roadway and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. Caltrans will review the permanent lighting plans for the project and then submit them to the Carlsbad Fish and Wildlife Office.

BA-8: During construction, the City of Long Beach (City) will ensure that all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated areas located outside of jurisdictional wetlands or waters. The equipment will be located such that runoff from the designated areas will not enter western snowy plover and California least tern habitat, and will be shown on construction plans.

BA-9: During construction, the City of Long Beach (City) will ensure that the Project site will be kept as clear of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site. All spoils and material disposal will be disposed of properly. Disposal or temporary placement of excess fill, brush, or other debris will not be allowed in waters of the United States or their banks. All areas of temporary impact will be returned to original grade, and temporary construction fill will be removed from the waterway following project construction.

4.2.1.4 Project Effects

The proposed Project is not expected to directly affect any nesting western snowy plovers due to the lack of suitable nesting habitat. Foraging western snowy plovers are expected to move out of the Shoemaker BSA during construction. This may indirectly and temporarily limit foraging habitat for western snowy plovers during construction. However, these potential impacts will cease upon the completion of construction. New bridge designs could result in occasional bird strikes. However, by following the avoidance and minimization measures outlined above, no noticeable changes in bird strike frequency is expected to occur. Additionally, the project may result in permanent loss of up to 0.47 acre of foraging habitat (Table 4-2). Based on the USFWS National Wetland Inventory, there are a total of 337,730 acres of estuarine habitat available along the California Coast. The permanent loss of up to 0.47 acre of estuarine habitat within the BSA would equate to less than 0.001-percent of available foraging habitat in California and would not have a substantial adverse effect on this species.

4.2.1.5 Modifications to the Project to Mitigate Effects

Because the proposed project is not expected to directly affect any western snowy plovers, modifications to the project to mitigate effects will not be needed.

4.2.2 Discussion of California Least Tern

The California least tern was listed as federally endangered in 1970. USFWS issued a Recovery Plan for this species in 1980, and a Revised Recovery Plan in 1985 that identified requirements for delisting, and recovery, maintenance and management needs to work towards delisting (USFWS 1985). No critical habitat has been designated, and the BSA is not within and Habitat Conservation Plans established for this species. In 2006, USFWS published a 5-year review for the species that recommended downlisting to threatened due to a near-doubling of the California least tern population since listing in 1970 (USFWS 2006). A 5-year review initiated in 2010 has not been published at this time.

The California least tern is migratory, usually arriving in its breeding areas, from Northern California to southern Baja California, Mexico, by the last week of April. The nesting range in California has apparently always been widely discontinuous, with the majority of birds nesting in Southern California from Santa Barbara County south through San Diego County (USFWS 1985). There are only two breeding colonies in Los Angeles County, at Venice Beach and the Port of Los Angeles, approximately 4.5 miles southwest of the BSA. California least terns depart their nesting colonies around August and migrate along the California coast. Little is known about their wintering range. In addition to nesting sites, USFWS considers secure roosting and foraging areas essential to recovery of the species (USFWS 2006). California least terns forage primarily in near shore ocean waters and in shallow estuaries and lagoons. At colonies where feeding activities have been studied, California least terns foraged mostly within 2 miles (3.2 km) of the breeding area and in near shore ocean waters less than 60 feet (18.3m) deep (USFWS 2006).

4.2.2.1 Survey Results

California least tern were not observed within the BSA during surveys conducted between 2009 and 2016. However, these surveys were not conducted with the intent of determining presence/absence of this species in the BSA. Nesting habitat for California least tern does not occur within the BSA, and the nearest known nesting colony is 4.5 miles away at Pier 400 (Terminal Island), Los Angeles Harbor. The deepwater aquatic habitat in the LA River is the only potential foraging habitat within the BSA. Least terns may forage in the BSA from April to September, with the highest potential during fall migration (mid-August through late September) (Cooper 2006). Due to the distance of the BSA from the nearest nesting location at the Port of Los Angeles, foraging California least terns would be rare in the BSA. However, this species has been observed foraging in the LA River mouth below the Queensway Bridge and occasionally upstream.

4.2.2.2 Critical Habitat

No critical habitat has been designated for the California least tern.

4.2.2.3 Avoidance and Minimization Efforts

The BSA does not support nesting habitat for the California least tern. California least terns are unlikely to, but may forage in the BSA between April and September. If present, foraging California least terns would be able to move out of the BSA during construction and construction activities are not expected to restrict wildlife movement along the LA River. However, traffic using the new bridge has the potential to result in occasional bird strikes, which has a small probability of affecting California least tern. By following avoidance and minimization measures BA-1 through BA-9 , no noticeable changes in bird strike frequency are expected to occur as a result of project activities under Alternatives 2 and 3 (Design Options A and B).

BA-1: During construction, the City of Long Beach (City) will ensure that a biologist approved by the Carlsbad Fish and Wildlife Office (CFWO) and National Marine Fisheries Service (NMFS) (Project Biologist) will be on site weekly during Project construction within 200 feet of western snowy plover and California least tern habitat in order to ensure compliance with all conservation measures. The Project Biologist will be familiar with the habitats, plants, and wildlife in the Project area and will maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The biologist's name and contact information will be submitted to the CFWO and NMFS prior to initiating project construction. The contract of the biologist will allow direct communication with the CFWO and NMFS at any time regarding the proposed project. The Project biologist will meet the qualifications defined under SSP 14 6.03D(1) Contractor Supplied Biologist.

BA-2: After the completion of construction, the City of Long Beach (City) will ensure that the Project Biologist will submit a final report to the CFWO within 120 days of project completion, including photographs of impact areas and adjacent habitat, documentation that authorized impacts were not exceeded, and documentation that general compliance with all conservation measures was achieved. The report will specify numbers and locations of listed species (if observed); observed listed species behavior (especially in relation to project activities); and remedial measures employed to avoid and minimize impacts to listed species. Raw field notes will be provided upon request by the CFWO.

BA-3: Prior to construction, the City of Long Beach (City) will ensure that an employee education program be developed and implemented by the Project Biologist. Each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program prior to working on the proposed Project. They will be advised of the potential impact to the listed species and the potential penalties for taking such species. At a minimum, the

program will 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 will not be allowed access to adjacent sensitive habitats); (4) occurrence of the listed and sensitive species in the area (including photographs), their general ecology, sensitivity of the species to human activities, legal protection afforded these species, (5) penalties for violations of Federal and State laws, reporting requirements, (6) on-site pet prohibitions; (7) use of trash containers for disposal and removal of trash; and (8) Shoemaker Bridge Replacement Project (Project) features designed to reduce the impacts on listed species and habitat and promote continued successful occupation of adjacent habitat areas.

BA-4: During final Design, the City of Long Beach (City) will consider the incorporation of bridge poles or fencing into the design of the new bridge, as feasible, to avoid and minimize vehicle caused bird mortality, as well as in the context of other permitting considerations, such as visual impacts. Bridge poles or fencing that may be incorporated will be designed to be visible to birds, and to prevent perching by raptors, and will be of sufficient height to guide birds over vehicle traffic.

BA-5: During Final Design, the City of Long Beach (City) will ensure that the Project landscape design plan will not include the planting of tall trees adjacent to the Los Angeles River, as raptors may use tall trees for perching and nesting. Such action will discourage raptor species from preying upon foraging western snowy plovers and California least terns.

BA-6: If nighttime construction is necessary, the City of Long Beach (City) will ensure that all Project lighting (e.g., staging areas, equipment storage sites, roadway) will be selectively placed and directed toward the construction site and away from western snowy plover and California least tern habitat. Lighting will be of the lowest illumination necessary for safety, and light glare shields will be used to reduce the extent of illumination into western snowy plover and California least tern habitat.

BA-7: During construction, the City of Long Beach (City) will ensure that permanent project lighting will be of the lowest illumination necessary for safety, and such lighting will be directed toward the bridge and paved roadway and away from sensitive habitats. Light glare shields will be used to reduce the extent of illumination into sensitive habitats. Caltrans will review the permanent lighting plans for the project and then submit them to the Carlsbad Fish and Wildlife Office.

BA-8: During construction, the City of Long Beach (City) will ensure that all equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will be restricted to designated areas located outside of jurisdictional wetlands or waters. The equipment will be located such that runoff from the designated areas will

not enter western snowy plover and California least tern habitat, and will be shown on construction plans.

BA-9: During construction, the City of Long Beach (City) will ensure that the Project site will be kept as clear of debris as possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site. All spoils and material disposal will be disposed of properly. Disposal or temporary placement of excess fill, brush, or other debris will not be allowed in waters of the United States or their banks. All areas of temporary impact will be returned to original grade, and temporary construction fill will be removed from the waterway following project construction.

4.2.2.4 Project Effects

The proposed Project is not expected to directly affect any nesting California least terns due to the lack of suitable nesting habitat. Foraging California least terns are expected to move out of the Shoemaker BSA during construction. This may indirectly and temporarily limit foraging habitat for California least terns during construction. However, these potential impacts will cease upon the completion of construction. New bridge designs could result in occasional bird strikes. However, by following the avoidance and minimization measures outlined above, no noticeable changes in bird strike frequency is expected to occur. Additionally, the project may result in permanent loss of up to 0.47 acre of foraging habitat (Table 4-2). Based on the USFWS National Wetland Inventory, there are a total of 337,730 acres of estuarine habitat available along the California Coast. The permanent loss of up to 0.47 acre of estuarine habitat within the BSA would equate to less than 0.001-percent of available foraging habitat in California and would not have a substantial adverse effect on these species.

4.2.2.5 Modifications to the Project to Mitigate Effects

Because the proposed project is not expected to directly affect any California least terns, modifications to the project to mitigate effects will not be needed.

4.2.3 Southern California Steelhead

Legal Status and Distribution

Southern California steelhead were federally listed as endangered on August 18, 1997 and its status was reaffirmed on January 5, 2006 (71 FR 834). Critical habitat was designated for steelhead in 2005, none of which is in the Action Area (70 FR 52488, September 2, 2005).

The major historical steelhead watersheds in Southern California include the Santa Maria, Santa Ynez, Ventura, And Santa Clara Rivers (Good et al. 2005). South Of the Santa Monica Bay, several Major drainages and a number of smaller streams also supported runs of anadromous *O. mykiss* (of unknown size and frequency); The LA, San Gabriel, Santa Ana, Santa Margarita, San Luis Rey, San Dieguito, San Diego, Sweetwater Rivers, and San Juan and San Mateo Creeks also once supported O. mykiss migration, although size and frequency of these runs is unknown (Titus Et al. 2010; Swift et al. 1993). Steelhead populations are

declining because of impacts to their habitat such as increased water temperatures, dams, turbidity, and other habitat incursions (NMFS 2012; Caltrout 2017).

The LA River Watershed is considered to have been historically occupied by Southern California steelhead but populations south of Ventura County have been extirpated, except in Malibu Creek and San Mateo Creek in San Diego County (Moyle 2002) due to factors including urbanization, water diversions and damming of creeks.

As a reference, average water temperatures in San Mateo Creek, the southernmost location where steelhead are known to occur at this time, range between 13.0°C (55.4°F) in January and 19.6°C (67.3°F) in May with a maximum recorded temperature of 21.6 °C (USGS 2018a). Average water temperatures in the LA River are much higher and range between 18.9°C (66.0 °F) in January and 29.5°C (85.1 °F) in May with a maximum recorded temperature of 34.7°C (94.5 °F) (USGS 2018b). High water temperatures are a likely deterrent to this species in the LA River.

Life History and Habitat Requirements

Southern steelhead is an anadromous variant of rainbow trout closely related to Pacific salmon. The species was once abundant in California coastal and central valley drainages. However, population numbers have declined significantly in recent years. Steelhead spend a majority of their life in the ocean, but must enter freshwater to reproduce (NMFS 2012). Steelhead are dependent on small, clear-flowing, but not rapid, streams with gravel beds to complete its spawning cycle. Spawning areas must also have protective cover and an adequate food source (NMFS 2012).

Steelhead typically migrate to marine waters after spending one year or more in freshwater. Coastal steelhead populations typically begin upstream migration after a breach occurs in the sand bar between the ocean and estuary during winter storm events (November through June), with peak migration occurring January and February (62 FR 43945). Spawning generally occurs January through June with peaks in February and March (62 FR 43945). After several months, fry emerge from the gravel and begin to feed. Juveniles rear in freshwater from 1 to 4 years (usually 2 years), then migrate to the ocean as smolts during the spring (62 FR 43945). Southern California steelhead likely spend less time in freshwater during migration than other steelhead populations due to high water temperatures and poor water quality that create inhospitable conditions (Caltrout 2017).

Important aquatic environmental factors for steelhead include temperature, dissolved oxygen, salinity and water depth (Caltrout 2017). Ideal water temperature for steelhead is likely under 20°C (68°F) and the species can survive in temperatures between 20°C to 25°C (68°F to 77°F). Studies indicate that mortality increases rapidly in water temperatures over 25°C (77°F) (FOLAR 2008; Caltrout 2017).

Recovery Plan

NMFS issued the Southern California Steelhead Recovery Plan in January 2012. The Recovery Plan identifies recovery goals and actions intended to recover anadromous steelhead and ensure the long-term persistence of self-sustaining wild populations of steelhead across the Southern California Distinct Population Segment with the ultimate goal of removing Southern California steelhead from the Federal List of Endangered and Threatened Wildlife (NMFS 2012).

To recover steelhead, the following objectives have been identified:

- Prevent steelhead extinction by protecting existing populations and their habitats;
- Maintain current distribution of steelhead and restore distribution to some previously occupied areas;
- Increase abundance of steelhead to viable population levels, including the expression of all life history forms and strategies;
- Conserve existing genetic diversity and provide opportunities for interchange of genetic material between and within viable populations;
- Maintain and restore suitable habitat conditions and characteristics to support all life history stages of viable populations; and
- Conduct research and monitoring necessary to refine and demonstrate attainment of recovery criteria.

The Action Area is located within the Mojave Rim Biogeographic Population Group as identified in the Recovery Plan. The LA River is identified as a Core 3 population[1] within the Mojave Rim Biogeographic Population Group. Threats to Southern California steelhead in the Mojave River Biogeographic Population Group include Dams and Surface Water Diversions, Groundwater Extraction, and Culverts and Road Crossings (NMFS 2012).

Priority Recovery Actions identified within the Recovery Plan for the Mojave Rim Biogeographic Population Group include:

- Develop and implement operating criteria to ensure the pattern and magnitude water releases from dams, including Morris, San Gabriel, Cogswell, Santa Fe, Prado, Seven Oaks, and Bear Valley dams, provide the essential habitat functions to support the lifehistory and habitat requirements of adult and juvenile *O. mykiss*;
- Develop and implement a plan to physically modify dams, including Morris, San Gabriel, Cogswell, Santa Fe, Prado, Seven Oaks, and Bear Valley dams, to allow adult and juvenile

[1] Core 3 is the lowest level priority given to steelhead populations in the Recovery Plan. Recovery actions on Core 3 populations are not assigned as high an implementation priority as Core 1 and 2 populations, but NMFS considers these populations as potentially important in promoting connectivity between populations and genetic diversity across the Recovery Planning Area (NMFS 2012)

O. mykiss natural rates of migration between the estuary and upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean;

- Develop and implement a plan to physically modify or remove fish passage barriers at debris basins, diversions, roads, and highways to allow adult and juvenile *O. mykiss* natural rates of migration between the estuary and upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean;
- Develop and implement restoration and management plans for steelhead bearing watersheds. To the maximum extent feasible, plans should restore the physical configuration, size and diversity of the wetland habitats, eliminate exotic species, control artificial breaching of the sand bar, and establish effective buffers to restore estuarine functions and promote *O. mykiss* use (including rearing and acclimation) of the estuaries;
- Develop and implement an integrated wildland fire and hazardous fuels management plan, including monitoring, remediation and adaptive management, to reduce potentially catastrophic wildland fire effects to adult and juvenile *O. mykiss* and their habitat and preserve natural ecosystem processes (including sediment transport and deposition); and
- Develop and implement flood control maintenance plan for steelhead bearing watersheds to minimize the frequency and intensity of disturbance of instream habitats and riparian vegetation of the mainstem and tributaries to protect all *O. mykiss* life-history stages, including adult and juvenile migration, spawning, incubation and rearing, and their associated habitats.

4.2.3.2 Survey Results

Focused fish surveys were not conducted for the Project. HDR Biologists contacted staff at the Aquarium of the Pacific, Cabrillo Marine Aquarium and FOLAR in October 2018 to acquire any potential unpublished information regarding the status of Southern California steelhead in the LA River. Staff at the Aquarium of the Pacific stated that there are no documented sightings of Southern California steelhead in the LA River (Aquarium of the Pacific. 2018. Telephone conversation with Ronell Santos, HDR. October 9). Stephen Mejia with FOLAR also stated that there is no documentation of steelhead in the LA River near Shoemaker Bridge. FOLAR conducted a fish study in 2016 for the LA River and no steelhead were found (Mejia, Stephen. 2018. Telephone conversation with Ronell Santos, HDR. October 10). No response was received from Cabrillo Marine Aquarium.

FOLAR published *State of the River 2: The Fish Study* in 2008 which provides several sources that conclude that there have been no sightings of Southern California steelhead in the LA River in recent history (FOLAR 2008).

Southern California steelhead is not known to occur nor is it expected to occur in the LA River at this time since they have not been documented in the vicinity in recent history and are considered extirpated from the LA River.

4.2.3.3 Critical Habitat

Critical habitat was designated for steelhead in 2005, none of which is in the Action Area (70 FR 52488, September 2, 2005).

4.2.3.4 Avoidance and Minimization Efforts

In additiona to Measure BIO-1, the measures discussed below will be incorporated into the Project in order to avoid and minimize any impacts to the LA River as a result of Project construction. While these measures are designed to reduce impacts during Project construction, implementation of these measures will also reduce the potential for the Project to contribute to long-term water quality degradation.

BA-10: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around sensitive habitats adjacent to the Project footprint to designate Environmentally Sensitive Areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. The requirement to install highly visible barriers to designate ESAs will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan

BA-11: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that heavy equipment, including motor vehicles, will not be allowed to operate within the Environmentally Sensitive Areas (ESAs). All construction equipment will 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 will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent the runoff from any spills from entering waters of the United States (U.S.) Provisions to protect ESAs from heavy equipment, including motor vehicle access, will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-12: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that preconstruction surveys for the invasive seaweed (*Caulerpa taxifolia*) will be conducted by the National Marine Fisheries Service/California Department of Fish and Wildlife (NMFS/CDFW) Certified Field Surveyors prior to bottom-disturbing activities taking place in the Los Angeles River (LA River) to ensure that the Biological Study Area (BSA) is not infested with this nonnative invasive seaweed (*Caulerpa taxifolia*).

BA-13: If invasive seaweed (*Caulerpa taxifolia*) is found within the Biological Study Area (BSA), the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that a management plan will be prepared according to guidelines in the National Marine Fisheries Service (NMFS) Caulerpa Control Protocol, or other approved protocol, and submitted to U.S. Fish and Wildlife Service (USFWS) for

approval prior to the start of construction. Construction activities will not begin prior to approval of this plan, if needed.

BA-14: The City of Long Beach's (City) Resident Engineer or designated contractor will ensure that project construction will be carried out under standard best management practices (BMPs) (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, and fuel spill cleanup). The City Resident Engineer or designated contractor will ensure that during project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, lead paint, and other toxic substances will be enforced and that construction materials, equipment, debris, or waste will be placed or stored where it may accidentally deposit fill material or be subject to tidal erosion and dispersion. Construction materials will not be stored in contact with the soil.

BA-15: During construction, the City of Long Beach's (City) Resident Engineer or designated contractor will ensure that all soils and material, including contaminated topsoil and lead-based paint from demolished bridges, will be removed from the Biological Study Area (BSA) and disposed of properly. Floating booms will be used to contain debris discharged, and any debris discharged will be removed no later than the end of each day.

BA-16: The City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that the use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species will be prohibited in and around the Los Angeles River (LA River).

BA-17: During construction, the City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that any deliberate feeding of wildlife will be prohibited.

BA-18: During construction, the City's Resident Engineer or designated contractor will ensure that turbidity curtains be used in lieu of silt curtains, which are less effective at trapping sediment in tidal channels.

BA-19: During construction, the City's Resident Engineer or designated contractor will 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, SWPPP, annual fee, and signed certification statement to the State Water Resources Control Board (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).
- The SWPP 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 QSD 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.**

4.2.3.5 Project Effects

Since this species does not occur in the BSA, Southern California steelhead are not expected to occur in the BSA during Project construction; therefore, Project construction would not directly or indirectly impact this species.

Table 4-1 and figures in Appendix G details the potential temporary and permanent project impacts to deepwater aquatic habitat, all of which has potential as future Southern California steelhead habitat.

Table 4-1. Summary of Project Impacts to Deepwater Estuarine Habitat in the Los Angeles River (acres)

	Alternative 2		Alternative 3	
Type of Impact	**Design Option A**	**Design Option B**	**Design Option A**	**Design Option B**
Temporary Impacts				
Temporary	7.53	7.56	7.53	7.56
Permanent Impacts				
Permanent Decrease in Habitat from New Bridge Construction	0.54	0.51	0.54	0.51
Permanent Increase in Habitat from Existing Bridge Demolition	0.07	0.07	0.09	0.09
Total Net Permanent Decrease in Potential Southern California steelhead migration habitat	0.47	0.44	0.45	0.42

Potential Project effects to this species are limited to minimal loss of habitat that is identified in the 2012 Recovery Plan for long-term potential recovery. Bridge pier construction for the project would result in permanent loss of up to 0.47 acre of potential Southern California steelhead migratory habitat that is currently unoccupied. However, this amount of habitat is minimal compared to the overall amount of habitat in the LA River, and the new bridge piers would not create a barrier that would prevent Southern California steelhead migration within the LA River if this species was to be re-introduced to the LA River in the future. The project would not conflict with the recovery goals identified for the LA River Watershed in the 2012 Southern California Steelhead Recovery Plan. The project would not result in reduction of the chances for future recovery of Southern California steelhead in the LA River watershed.

Since the Project would not result in direct impacts to this species and would not affect its potential for long-term recovery according to the 2012 Southern California Steelhead Recovery Plan, the Project would have no effect on Southern California steelhead.

4.2.3.6 Modifications to the Project to Mitigate Effects

Because the proposed project is not expected to directly affect any Southern California steelhead, modifications to the project to mitigate effects will not be needed.

4.2.3.7 Cumulative Effects (Federal Endangered Species Act)

Due to the small amount of suitable foraging habitat for Southern California steelhead, the proposed Project is not expected to contribute to cumulative effects to this species.

4.3 United States Fish and Wildlife Service and National Marine Fisheries Service Endangered Species Act Determinations

Table 4-2 shows the determination of the federally listed species that have the potential to occur in the Shoemaker BSA. Based on the findings of the focused surveys and technical studies conducted to date, all of the federally listed species resulted in a “no effect” finding, with the exception of western snowy plover and California least tern. Implementation of the proposed Project as designed under both Alternatives 2 and 3 (Design Options A and B), including all avoidance and minimization measures described in this BA, would not affect the continued existence of the western snowy plover and California least tern or any other threatened or endangered species.

Because there are potential temporary indirect effects due to bridge construction, the proposed Project “may affect” western snowy plover and California least tern. However, these effects are not expected to be substantial for the following reasons: implementation of the specified avoidance, minimization, and mitigation measures, described in Chapter 4 of this BA, is expected to adequately offset the potential effects to California least terns, California least terns only use the Shoemaker BSA rarely for foraging, and western snowy plover and California least terns nesting habitat are absent from the project vicinity.

Since Southern California steelhead is not known to occur in the LA River at this time, the Project would result in minimal loss of potential future Southern California steelhead habitat, and the project will not restrict future migration of this species through the project area following project completion, the project will have *No Effect* on Southern California steelhead or its habitat.

Table 4-2. Determination of Federally Listed Species Potentially Occurring within the Disturbance Limits

Threatened, Endangered, or Proposed Species	Status	Presence of Suitable Habitat? Species Present during 2009-2016 Surveys?	Determination
United States Fish and Wildlife Service Species			
Plants			
Ventura marsh milk vetch *Astragalus pycnostachyus* var. *lanosissimus*	FE	No Not Found	No effect
Coastal dunes milk- vetch *Astragalus tener* var*. titi*	FE	No Not Found	No effect
Salt marsh bird's-beak *Chloropyron maritimum* ssp*. maritimum*	FE	No Not Found	No effect
San Diego button-celery *Eryngium aristulatum* var. *parishii*	FE	No Not Found	No effect
Gambel's water cress *Nasturtium gambelii*	FE	No Not Found	No effect
Spreading navarretia *Navarretia fossalis*	FT	No Not Found	No effect
California Orcutt grass *Orcuttia californica*	FE	No Not Found	No effect
Lyon's pentachaeta *Pentachaeta lyonii*	FE	No Not Found	No effect
Brand's star phacelia *Phacelia stellaris*	FC	No Not Found	No effect
Wildlife			
Palos Verdes blue butterfly *Glaucopsyche lygdamus palosverdesensis*	FE	No Not Found	No effect
Riverside fairy shrimp *Streptocephalus woottoni*	FE	No Not Found	No effect
Mohave Tui chub *Gila bicolor* ssp. *mohavensis*	FE	No Not Found	No effect
Green sea turtle *Chelonia mydas*	FT	No Not Found	No effect

Table 4-2. Determination of Federally Listed Species Potentially Occurring within the Disturbance Limits

Threatened, Endangered, or Proposed Species	Status	Presence of Suitable Habitat? Species Present during 2009-2016 Surveys?	Determination
Western snowy plover (coastal population) *Charadrius alexandrinus nivosus*	FT	Yes (Foraging) Not Found	May affect, not likely to adversely affect
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT	No Not Found	No effect
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	No Not Found	No effect
Coastal California gnatcatcher *Polioptila californica californica*	FT	No Not Found	No effect
Ridgway's rail *Rallus obsoletus levipes*	FE	No Not Found	No effect
California least tern *Sternula antillarum browni*	FE	Yes (Foraging) Not Found	May affect, not likely to adversely affect
Least Bell's vireo *Vireo bellii pusillus*	FE	No Not Found	No effect
Pacific pocket mouse *Perognathus longimembris pacificus*	FE	No Not Found	No effect
National Marine Fisheries Service Species			
Anadromous Fish			
Green sturgeon *Acipenser medirostris*	FT	No Not Found	No effect
Southern California steelhead *Oncoryhnchus mykiss*	FE	Yes Not Found	No effect
Marine Invertebrates			
Range black abalone *Haliotis cracherodii*	FE	No Not Found	No effect
Range white abalone *Haliotis sorenseni*	FE	No Not Found	No effect
Sea Turtles			
East Pacific green sea turtle *Chelonia mydas*	FT	No Not Found	No effect
Olive Ridley sea turtle *Lepidochelys olivacea*	FT/FE	No Not Found	No effect
Leatherback sea turtle *Dermochelys coriacea*	FE	No Not Found	No effect
North Pacific loggerhead sea turtle *Caretta caretta*	FE	No Not Found	No effect
Whales			

Table 4-2. Determination of Federally Listed Species Potentially Occurring within the Disturbance Limits

Threatened, Endangered, or Proposed Species	Status	Presence of Suitable Habitat? Species Present during 2009-2016 Surveys?	Determination
Blue Whale *Balaenoptera musculus*	FE	No Not Found	No effect
Fin Whale *Balaenoptera physalus*	FE	No Not Found	No effect
Humpback Whale *Megaptera novaeangliae*	FE	No Not Found	No effect
Southern Resident Killer Whale *Orcinus orca*	FE	No Not Found	No effect
North Pacific Right Whale *Eubalaena japonica*	FE	No Not Found	No effect
Sei Whale *Balaenoptera borealis*	FE	No Not Found	No effect
Sperm Whale *Physeter macrocephalus*	FE	No Not Found	No effect
Pinnipeds			
Guadalupe fur seal *Arctocephalus townsendi*	FT	No Not Found	No effect

FE = Federally Listed as Endangered
FT = Federally Listed as Threatened
FC = Federal Candidate

Chapter 5. Magnuson Stevens Fishery Conservation and Management Act of 1976 (as amended)

This act takes immediate action to conserve and manage fishery resources found off the coasts of the US, and the anadromous species and Continental Shelf fishery resources of the US, by exercising sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic anadromous species, Continental Shelf fishery resources and fishery resources in the special areas.

5.1 Essential Fish Habitat (EFH)

5.1.1 Essential Fish Habitat Background

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the MSFCMA to establish new requirements for EFH descriptions in federal fishery management plans. In addition the MSFCMA established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan. Pursuant to the MSFCMA:

- Federal agencies must consult with NOAA FISHERIES on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NOAA FISHERIES must provide conservation recommendations for any federal or state action that would adversely affect EFH;
- Federal agencies must provide a detailed response in writing to the NOAA FISHERIES within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the effect of the activity on EFH. In the case of a response that is inconsistent with the NOAA FISHERIES' EFH conservation recommendations, the federal agency must explain its reasons for not following the recommendations.

EFH has been defined for the purposes of the Magnuson-Stevens Act as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (NOAA FISHERIES 1999). NOAA FISHERIES has further added the following interpretations to clarify this definition:

- “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate;
- “Substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities;
- “Necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and
- “Spawning, breeding, feeding, or growth to maturity” covers the full life cycle of a species.

Adverse effect means any effect that reduces quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), or site-specific or habitat-wide effects, including individual, cumulative, or synergistic consequences of actions.

EFH consultation with the NOAA FISHERIES is required regarding any federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the Proposed Action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH. The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NOAA FISHERIES is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the MSFCMA, NOAA FISHERIES is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Wherever possible, NOAA FISHERIES utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation into the ESA Section 7 consultation, as represented by this BA.

5.1.2 Survey Results

As discussed in Section 3.1.6, the study area supports EFH that is suitable for northern anchovy. A discussion of biological characteristics of these species and the potential for the BSA to provide suitable habitat for them is included in Section 3.1.6.1. Under Section 305(b)(2) of the MSA, Federal agencies are required to consult with the Secretary of Commerce, through the NMFS/NOAA on any action that may adversely affect EFH.

A focused survey for species protected through the establishment of EFH within the BSA was not conducted. The potential for presence of northern anchovy was based on the habitat requirements of these species as provided in the Corps' *Essential Fish Habitat (EFH) Programmatic Consultation* (Corps 2005) and a discussion of estuarine resources within the BSA included in the *Draft Estuary Analysis for the I-710 Corridor Project between Ocean Boulevard and State Route 60 Interchange* (LSA 2009c) and within the *Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment (CRM 2017)*. Surveys in 2017 did not detect *Caulerpa* or eelgrass in the LA River at the Shoemaker Bridge.

5.1.3 Critical Habitat

Critical habitat is not designated for EFH species, but EFH is a protected habitat area. The BSA is within EFH for CPS and PCGS, as identified in Table 1-2. The BSA is also within an HAPC for estuarine waters.

5.1.4 Avoidance and Minimization Efforts

Measures BA-10 through BA-19, as discussed in Section 4.2.5, will be incorporated into the Project in order to avoid and minimize any impacts to the LA River as a result of Project construction. While these measures are designed to reduce impacts during Project construction, implementation of these measures will also reduce the potential for the Project to contribute to long-term degradation of important EFH characteristics within the action area.

5.1.5 Project Effects

Construction effects to fish may include localized disturbance or displacement of fish from noise, suspended sediment, and turbidity generated during in-water construction activities. The potential also exists for injury or mortality of juvenile fish that may not be able to readily move away from channel or nearshore areas directly affected by construction activities. Restricting in-water activities to the period May 1 through October 31 and implementing the minimization measures will minimize the potential for adverse effects.

The proposed project is not expected to directly affect northern anchovy due to the low probability of their occurrence in the Shoemaker BSA and as a result of the avoidance and minimization measures described in Section 4.2.2.3. However, the proposed Project would result in direct permanent and temporary effects to deepwater aquatic habitat through the construction and placement of support structures for the proposed new bridge. Table 4-1 and figures in Appendix G detail the potential temporary and permanent Project impacts to deepwater aquatic habitat, all of which is EFH.

The proposed Project would result in permanent loss of up to 0.47 acre of deepwater aquatic habitat within the LA River. Based on the USFWS National Wetland Inventory, this would equate to approximately 0.001-percent of available coastal deepwater estuarine habitat in Southern California and would not adversely affect the species.

The proposed Project is expected to result in up to 7.56 acres of temporary impacts to deepwater aquatic habitat. Areas of temporary direct impacts will result from the construction of the new Shoemaker Bridge and the demolition of the old bridge. However, these direct impacts will only occur during construction. Deepwater aquatic habitat would also be subject to an increase in permanent shade impacts as a result of the new Shoemaker Bridge under Alternative 2 (Design Options A and B), and the repurposed portion of the existing Shoemaker Bridge under Alternative 3 (Design Options A and B). Shading of habitat from bridges can result in decreased plant growth. Table 5-1 details the net change in shading of deepwater aquatic habitat as a result of the proposed Project.

Table 5-1. Summary of Shade Impacts to Deepwater Aquatic Habitat

Type of Impact	Alternative 2		Alternative 3	
	Design Option A (acres)	Design Option B (acres)	Design Option A (acres)	Design Option B (acres)
Existing Shading of Deepwater Aquatic Habitat from Existing Shoemaker Bridge	1.66 acres	1.66 acres	1.66 acres	1.66 acres
Shading of Deepwater Aquatic Habitat from New Shoemaker Bridge	2.16 acres	2.11 acres	2.16 acres	2.11 acres
Decrease in Existing Shading of E Deepwater Aquatic Habitat From Partial/Full Removal of Existing Shoemaker Bridge	1.43 acres	1.43 acres	1.66 acres	1.66 acres
Net Change in Shading of Deepwater Aquatic **Habitat**	**0.73 acre**	**0.68 acre**	**0.50 acre**	**0.45 acre**

Source: HDR 2018

A permanent shade increase of deepwater aquatic habitat of 0.73 acres would occur under Alternative 2 (Design Option A) and 0.68 acre under Alternative 2 (Design Option B). A permanent shade increase of deepwater aquatic habitat of 0.50 acre would occur under Alternative 3 (Design Option A) and 0.45 acre under Alternative 3 (Design Option B). Under both alternatives, the new bridge design would be in a northwest-southeast orientation, avoiding persistent shading over the course of a diurnal cycle.

In addition to direct permanent and temporary effects, the proposed project will result in temporary indirect impacts from construction-related effects such as the temporary reduction in benthic invertebrate fauna (i.e., food sources), an increased level of suspended solids from disruption of the soft-bottom, debris, potential fuel spills from construction equipment, and activities of equipment or personnel outside designated construction areas, as well as operational impacts such as effects on adjacent habitats caused by construction noise and vibration, storm water runoff, traffic, and litter. In addition, construction may indirectly affect

deepwater aquatic habitat permanently through enhancing the germination and proliferation of nonnative invasive plant species that out compete native plants and are of particular concern (e.g., *Caulerpa taxifolia*). The precise equipment and materials needed for construction activities in the LA River are unknown at this time. Any limitations of the equipment and materials will be determined in discussions with the resource agencies during the consultation and permitting processes.

The proposed Project would not result in substantial adverse effects to EFH or estuarine HAPC after implementation of avoidance and minimization measures BA-10 through BA-19.

5.1.6 Modifications to the Project to Mitigate Effects

Due to the avoidance and minimization measures described in Section 5.1.4, and the required pre-construction *Caulerpa* survey, project effects to EFH are anticipated to be minimal and project modifications to mitigate effects are not proposed.

5.1.7 Cumulative Effects (FESA)

Due to the low probability of occurrence for northern anchovy and the small amount of permanent effects to EFH, the proposed project is not anticipated to contribute substantially to cumulative effects to EFH.

5.1.8 Conclusions

The MSA requires the NMFS to protect EFH for those fish species regulated under the Federal Fisheries Management Plan. Numbers of northern anchovy within the BSA are expected to be minimal compared to those in Queensway Bay and open waters.

The proposed Project under both Alternatives 2 and 3 (Design Options A and B) would result in permanent loss of up to 0.47 acre of EFH that is suitable northern anchovy foraging and nursery habitat. This is less than 0.001-percent of total estuarine habitat along the California coast. Temporary impacts to waters of the U.S. as a result of bridge construction are included as permanent impacts for both Alternatives 2 and 3 (Design Options A and B) at this time since bridge design is not competed. Since Alternative 3 also includes removal of the existing Shoemaker Bridge, the proposed Project under Alternative 3 (Design Options A and B) would result in up to 3.69 acres of temporary effects to unvegetated estuarine EFH that is suitable northern anchovy foraging and nursery habitat.

The avoidance, minimization, and mitigation measures discussed in this report have been developed to reduce potential project impacts to EFH. Implementation of the specified avoidance, minimization, and mitigation measures, described in Chapter 4 of this BA, is expected to adequately offset the potential effects to protected wildlife species. The project would result in permanent impacts to less than 0.001-percent of total estuarine habitat available along the California coast. Because of this, the project would not have a substantial adverse effect on EFH for northern anchovy. Concurrence on this determination would be confirmed through an abbreviated EFH consultation with NMFS.

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Chapter 6. Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. “Take” is defined under the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. 1362) and further defined by regulation (50 CFR 216.3) as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal.

Under the 1994 Amendments to the MMPA, harassment is statutorily defined as, any act of pursuit, torment, or annoyance which:

- **(Level A Harassment)** has the potential to injure a marine mammal or marine mammal stock in the wild; or
- **(Level B Harassment)** has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild.

Incidental Harassment Authorizations may be issued by NMFS after consultation and with application of appropriate avoidance, minimization, and mitigation measures.

Potential occurrences of marine mammals known from the region were searched for on the iNaturalist website (www.iNaturalist.org) on October 8, 2018. The search included only verifiable records. The only marine mammals recorded in the vicinity of the project site include common and California sea lion (*Zalophus californianus*) and common bottlenose dolphin (*Tursiops truncatus*). All documented sightings of these species were near Queensway Bay, downstream of the Action Area.

HDR Biologists contacted staff at the Aquarium of the Pacific, Cabrillo Marine Aquarium and FOLAR in October 2018 to acquire any potential unpublished information regarding the status of marine mammals in the LA River. Staff at the Aquarium of the Pacific were reached at the time and stated that there are no documented sightings of marine mammals in the LA River, but it might be possible to find them there. These species would more likely be found in Santa Monica or the San Gabriel Areas (Aquarium of the Pacific. 2018. Telephone conversation with Ronell Santos. October 9). Stephen Mejia with FOLAR also stated that there is no documentation of any marine mammals in the LA River near Shoemaker Bridge (Mejia, Stephen. 2018. Telephone conversation with Ronell Santos. October 10). No response was received from Cabrillo Marine Aquarium.

6.1 Discussion of California Sea Lion

The California sea lion is one of the most common and widespread marine mammals along the California coast. The California sea lion is not a federally listed species; however, it is protected under the MMPA and therefore is addressed in regard to potential harassment from the proposed project.

California sea lions range from the Pacific coast of Central Mexico north to British Columbia, Canada. In California, they haul out on marina docks as well as jetties and buoys. Their primary breeding range is from the Channel Islands in Southern California to Central Mexico (NOAA 2015). Haul out sites (e.g., low-lying docks, piers, platforms, or sandy shoreline beaches) are necessary for sea lions for mating and giving birth, and also are used for predator avoidance, thermal regulation, social activity, parasite reduction, and rest.

6.1.1 Survey Results

California sea lions are occasionally found in the lower reaches of the LA River, primarily south of Ocean Boulevard (iNaturalist 2018). Individuals occasionally stray upstream as far north as Willow Street (e.g., one was seen during surveys for the I-710 Corridor Project north of Pacific Coast Highway on September 4, 2009). However, the generally shallow depth and the lack of suitable sites sea lions can use to haul themselves out of the water (e.g., low-lying docks, piers, platforms, or sandy shoreline beaches) limit their occurrence in the Action Area.

6.1.2 Critical Habitat

Critical habitat has not been designated for the California sea lion because it is not a federally listed species.

6.1.3 Avoidance and Minimization Efforts

Measures BA-10 through BA-19, as discussed in Section 4.2.5, will be incorporated into the Project in order to avoid and minimize any impacts to deepwater aquatic habitat within the LA River as a result of Project construction. While these measures are designed to reduce impacts during Project construction, implementation of these measures will also reduce the potential for the Project to contribute to long-term degradation of important habitat characteristics for California sea lion within the action area.

6.1.4 Project Effects

The California sea lion is not a federally listed species; however, it is protected under the MMPA. The MMPA of 1972 prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Most marine mammals are not expected to be found in the LA River. However, incidental occurrences of California sea lions have been known to occur as far north as Willow Street, approximately 1.9 miles upstream of the Action Area, or BSA (LSA 2012).

Although present in the Long Beach/Los Angeles Harbor complex, sea lions are not expected to be found far upstream in the LA River. However, incidental occurrences of California sea lions have been known to occur near the Action Area, or BSA. In the unlikely event that a California sea lion was to move through the Action Area, or BSA, during Project construction, it would be prevented from entering the construction area by physical barriers constructed for water diversions and sediment control. Because an open water passage would be maintained beneath the proposed bridge, construction would not prevent feeding further upstream. Due to the absence of haul-outs and rookery habitat, construction is not anticipated to disrupt behavioral patterns and cause harassment. The Project would not result in any long-term effects on this species.

Since marine mammals are unlikely to occur in the Action Area, and any California sea lions that may occur would be able to move away from construction activities to adjacent suitable habitat, the proposed Project is not expected to result in "harassment" of any marine mammals pursuant to the MMPA. An Incidental Harassment Authorization and associated Marine Mammal Protection Plan are not anticipated to be necessary.

6.1.5 Modifications to the Project to Mitigate Effects

Due to the avoidance and minimization measures described in Section 4.2.5, and the required pre-construction *Caulerpa* survey, the proposed project is not expected to directly affect California sea lions. Therefore, specific compensatory mitigation and modifications to the project to mitigate effects are not warranted.

6.2 Discussion of Bottlenose Dolphins

Common bottlenose dolphins (referred to hereafter simply as bottlenose dolphins) are found throughout the world in both offshore and coastal waters, including harbors, bays, gulfs, and estuaries of temperate and tropical waters (estuaries are the areas where rivers meet the sea). They can thrive in many environments and feed on a variety of prey, such as fish, squid, and crustaceans (NOAA 2018). The common bottlenose dolphin is not a federally listed species; however, it is protected under the MMPA and therefore is addressed in regard to potential harassment from the proposed Project.

6.2.1 Survey Results

Common bottlenose dolphins have been documented in Queensway Bay, but not upstream of that area (iNaturalist 2018). Riverbed mapping conducted in 2017 for the Shoemaker Bridge Replacement Project identified an area downstream of the Action Area, where remnant pier piles were observed jutting out from the soft bottom across the riverbed (CRM 2017). The structures varied from about one to three feet in height and at low tide, the water depths around these would be approximately -2 to -4 ft Mean Lowest Low Water. These piers appear to be remnant from a bridge that once crossed over the LA River at Broadway and was removed

sometime between 1953 and 1963 (NETR Online 2018). Shallow water depths downstream of the BSA may prevent common bottlenose dolphins from accessing the Action Area.

6.2.2 Critical Habitat

Critical habitat has not been designated for the common bottlenose dolphin because it is not a federally listed species.

6.2.3 Avoidance and Minimization Efforts

While common bottlenose dolphins are not anticipated to occur in the Action Area, implementation of Measures BIO-3 through BIO-14 will the potential for the Project to contribute to long-term degradation of estuarine habitat within the action area, that could potentially support common bottlenose dolphins.

6.2.4 Project Effects

The proposed Project is not expected to directly affect common bottlenose dolphins due to the low probability of their occurrence in the Action Area. However, the proposed Project would result in direct permanent and temporary effects to deepwater aquatic habitat through the construction and placement of support structures for the proposed new bridge, which are the same as those discussed in Section 5.1, above.

6.2.5 Modifications to the Project to Mitigate Effects

Due to the avoidance and minimization measures described in Section 5.1.4, and the required pre-construction *Caulerpa* survey, the proposed project is not expected to directly affect common bottlenose dolphins. Therefore, specific compensatory mitigation and modifications to the Project to mitigate effects are not warranted. Since common bottlenose dolphins are not expected to travel upstream into the Shoemaker BSA, there is no potential for incidental harassment during construction.

6.3 Cumulative Effects

Due to the low probability of occurrence of marine mammals in the Shoemaker BSA, cumulative impacts to California sea lions, common bottlenose dolphins, or other marine mammals are not expected to occur as a result of the proposed project. All Project impacts are expected to be indirect and temporary.

6.4 Conclusions

The MMPA protects the “take” of marine mammal species under otherwise legal activities that are protected under the Act. The Action Area, or BSA, does not provide high quality habitat for California sea lions or other marine mammals. Since the Project would not inhibit the movement of marine mammals along the LA River, and they could move away from direct Project activities, the Project is not expected to result in the “harassment” of any marine mammals, as defined in the MMPA.

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Appendix A Official Endangered Species Act Species Lists

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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In Reply Refer To:
Consultation Code: 08ECAR00-2017-SLI-0229
Event Code: 08ECAR00-2019-E-03265
Project Name: Shoemaker Bridge Replacement Project

August 09, 2019

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2017-SLI-0229

Event Code: 08ECAR00-2019-E-03265

Project Name: Shoemaker Bridge Replacement Project

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The Shoemaker Bridge Replacement Project, City of Long Beach, County of Los Angeles

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/33.77389049855062N118.2030989845981W



Counties: Los Angeles, CA

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Pacific Pocket Mouse *Perognathus longimembris pacificus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

From: Martinelli, Erin
To: nmfswcrca.specieslist@noaa.gov
Cc: Barrera, Sarah
Subject: Caltrans (District 7) Shoemaker Bridge Replacement Project
Date: Tuesday, September 10, 2019 10:50:00 AM

Quad Name **Long Beach (digital)**

Quad Number **33118-G2**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -

CC Chinook Salmon ESU (T) -

CVSR Chinook Salmon ESU (T) -

SRWR Chinook Salmon ESU (E) -

NC Steelhead DPS (T) -

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) - **X**

CCV Steelhead DPS (T) -

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -

CC Chinook Salmon Critical Habitat -

CVSR Chinook Salmon Critical Habitat -

SRWR Chinook Salmon Critical Habitat -

NC Steelhead Critical Habitat -

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat -

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) - **X**

Range White Abalone (E) - **X**

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - X

Olive Ridley Sea Turtle (T/E) - X

Leatherback Sea Turtle (E) - X

North Pacific Loggerhead Sea Turtle (E) - X

ESA Whales

Blue Whale (E) - X

Fin Whale (E) - X

Humpback Whale (E) - X

Southern Resident Killer Whale (E) - X

North Pacific Right Whale (E) - X

Sei Whale (E) - X

Sperm Whale (E) - X

ESA Pinnipeds

Guadalupe Fur Seal (T) - X

Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -

Chinook Salmon EFH -

Groundfish EFH - X

Coastal Pelagics EFH - X

Highly Migratory Species EFH - X

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans - X

MMPA Pinnipeds - X

Patrick Thompson, Associate District Biologist
Caltrans, Division of Environmental Planning
District 7

100 South Main Street
Los Angeles, CA 90012
Patrick.Thompson@dot.ca.gov
(213) 897-0707

Erin Martinelli
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100 Oceangate, Suite 1120
Long Beach, CA 90802
D 562.264.1137 **M** 562.399.0107
erin.martinelli@hdrinc.com

hdrinc.com/follow-us

Appendix B Vascular Plant Species Observed in the BSA

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APPENDIX B
VASCULAR PLANT SPECIES OBSERVED

The following vascular plant species were observed in the Shoemaker BSA by biologists Stan Spencer and Elizabeth Hohertz during site surveys conducted on January 21 and August 11, 2011 and on July 9, 2013 and by biologists Sarah Barrera and Florence Chan on July 19, 2016.

Taxonomy and scientific nomenclature conform to Hickman (1993). Common names for each taxa generally conform to Roberts (1998), although Abrams (1923, 1944, 1951) and Abrams and Ferris (1960) are used, particularly when species specific common names are not identified in Roberts (1998).

MAGNOLIOPHYTA: MAGNOLIOPSIDA	**DICOT FLOWERING PLANTS**
Asteraceae	**Sunflower family**
Baccharis pilularis	Coyote brush
Erigeron canadensis	Canadian horseweed
*Glebionis coronaria**	Garland chrysanthemum
*Helminthotheca echioides**	Bristly ox-tongue
Heterotheca grandiflora	Telegraph weed
*Senecio vulgaris**	Common groundsel
*Taraxacum officinale**	Common dandelion
Brassicaceae	**Mustard family**
*Lepidium didymum**	Lesser wart-cress
*Raphanus sativus**	Wild radish
*Sisymbrium erysimoides**	Mediterranean rocket
Caryophyllaceae	**Pink family**
Spergularia sp.	Sandspurry
Chenopodiaceae	**Saltbush family**
Atriplex triangularis	Spearscale
Chenopodium sp.	Goosefoot
*Salsola tragus**	Russian thistle
Fabaceae	**Pea family**
*Melilotus indicus**	Annual yellow sweetclover
Geraniaceae	**Geranium family**
*Erodium moschatum**	Musky stork's bill
Lythraceae	**Loosestrife family**
*Lythrum hyssopifolia**	Hyssop loosestrife

Malvaceae	**Mallow family**
*Malva parviflora**	Cheeseweed mallow
Myrtaceae	**Myrtle family**
Eucalyptus sp.*	Eucalyptus
Oxalidaceae	**Oxalis family**
*Oxalis pes-caprae**	Bermuda buttercup
Platanaceae	**Sycamore family**
Platanus racemosa	Western sycamore
Polygonaceae	**Buckwheat family**
*Polygonum aviculare**	Common knotweed
Solanaceae	**Nightshade family**
*Nicotiana glauca**	Tree tobacco

MAGNOLIOPHYTA: LILIOPSIDA	**MONOCOT FLOWERING PLANTS**
Arecaceae	**Palm family**
*Phoenix dactylifera**	Date palm
Washingtonia sp.	Fan palm
Poaceae	**Grass family**
*Avena barbata**	Slender wild oat
*Avena fatua**	Wild oat
*Bromus diandrus**	Ripgut brome
Eragrostis sp.	Lovegrass
Muhlenbergia rigens	Deergrass
*Pennisetum clandestinum**	Kikuyugrass
*Stipa miliacea**	Smilo grass

* Species not native to region

Appendix C Animal Species Observed in the BSA

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APPENDIX C
ANIMAL SPECIES OBSERVED

The following animal species were observed in the Shoemaker Replacement Project Biological Study Area by biologists Stan Spencer and Elizabeth Hohertz during site surveys conducted on January 21 and August 11, 2011, and July 9, 2013 and by biologists Sarah Barrera and Florence Chan on July 19, 2016.

AVES	**BIRDS**
Pelicanidae	**Pelicans**
Pelecanus occidentalis californicus	California brown pelican
Accipitridae	**Kites, Hawks, and Eagles**
Buteo jamaicensis	Red-tailed hawk
Falconidae	**Falcons**
Falco sparverius	American kestrel
Rallidae	**Rails and Gallinules**
Fulica americana	American coot
Columbidae	**Pigeons and Doves**
*Columba livia**	Rock pigeon
Corvidae	**Crows and Ravens**
Corvus brachyrhynchos	American crow
Sturnidae	**Starlings**
*Sturnus vulgaris**	European starling
Fringillidae	**Finches**
Carpodacus mexicanus	House finch
Passeridae	**Old World Sparrows**
*Passer domesticus**	House sparrow

* Introduced species, not native to region

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Appendix D Estuarine Resources Environmental Assessment for the Interstate 710 Corridor Project

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ESTUARINE RESOURCES ENVIRONMENTAL ASSESSMENT FOR THE INTERSTATE 710 CORRIDOR PROJECT COUNTY OF LOS ANGELES, CALIFORNIA

Prepared for

Metro

Los Angeles County
Metropolitan Transportation Authority

January 2010

Prepared by:

LSA

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, CA 92614

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LIST OF ACRONYMS AND ABBREVIATIONS

ACOE	United States Army Corps of Engineers
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe (Railroad)
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act of 1973
FOLAR	Friends of the Los Angeles River
FR	Federal Register
GCCOG	Gateway Cities Council of Governments
HAPC	Habitat Areas of Particular Concern
I-5	Interstate 5
I-710	Interstate 710
JPA	Joint Powers Authority
LPS	Locally Preferred Strategy
LSA	LSA Associates, Inc.
MBC	MBC Applied Environmental Sciences, Inc.
MCS	Major Corridor Study
Metro	Los Angeles County Metropolitan Transportation Authority
MLLW	mean lower low water
MMPA	Federal Marine Mammal Protection Act of 1972
MSA	Migratory Species Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
POLA	Port of Los Angeles
POLB	Port of Long Beach
ppt	parts per thousand
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act-A Legacy for Users
SCAG	Southern California Association of Governments
SR-60	State Route 60
UP	Union Pacific (Railroad)

1.0 INTRODUCTION

1.1 Project Purpose and Background

This analysis focuses on the estuarine communities of the Los Angeles River between Willow Street and Queensway Bay and the potential effects of structural modifications, relocation, and/or replacement of four bridges that span the Los Angeles River at Shoemaker Bridge, Anaheim Street, Pacific Coast Highway, and Willow Street within the City of Long Beach, California. These modifications are proposed for the Interstate 710 (I-710) Corridor Project.

1.1.1 Background

I-710, also known as the Long Beach Freeway, is a major north-south interstate freeway connecting the City of Long Beach to central Los Angeles. Within the I-710 Corridor Project study area, the freeway serves as the principal transportation connection for goods movement between the Ports of Los Angeles (POLA)/Long Beach (POLB), located at the southern terminus of the freeway, and the Burlington Northern Santa Fe/Union Pacific (BNSF/UP) Railroad railyards in the cities of Commerce and Vernon. The I-710 Major Corridor Study (MCS), undertaken to address the I-710 mobility and safety needs and to explore possible solutions for transportation improvements, was completed in March 2005 and identified a community-based Locally Preferred Strategy (LPS) consisting of ten general purpose lanes next to four separated freight movement lanes. The Los Angeles County Metropolitan Transportation Authority (Metro), the California Department of Transportation (Caltrans), the Gateway Cities Council of Governments (GCCOG), the Southern California Association of Governments (SCAG), POLA, POLB, and the Interstate 5 Joint Powers Authority (I-5 JPA) are collectively known as the I-710 Corridor Project Funding Partners. These agencies are collectively funding the preparation of preliminary engineering and environmental documentation for the proposed I-710 Corridor Project to evaluate improvements along the I-710 Corridor from Ocean Boulevard in the City of Long Beach to State Route 60 (SR-60). The I-710 Funding Partners are committed to conducting this engineering and environmental study effort within the same broad, continuous community participation framework that was used for the MCS.

The environmental impacts of the I-710 Corridor Project will be assessed and disclosed in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the Lead Agency for CEQA, and is the lead federal agency for NEPA pursuant to Section 6005 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (23 United States Code [USC] 327).

The purpose of the proposed I-710 Corridor Project is to achieve the following within the I-710 Corridor:

- Improve air quality and public health
- Improve traffic safety
- Address design deficiencies of the I-710 mainline
- Address projected traffic volumes
- Address projected growth in population, employment, and activities related to goods movement

The need for the proposed I-710 Corridor Project is as follows:

- I-710 experiences high heavy-duty truck volumes, resulting in high concentrations of diesel particulate emissions within the I-710 Corridor.
- I-710 experiences an accident rate that is well above the statewide average for freeways of this type.
- At many locations along I-710, the curves of on- and off-ramps do not meet current design standards and weaving sections between interchanges are of insufficient length.
- High volumes of both trucks and cars have led to traffic congestion throughout most of the day (6:00 a.m. to 7:00 p.m.) on I-710 as well as on the connecting freeways. This is projected to worsen over the next 25 years.
- Increases in population, employment, and goods movement between now and 2035 will lead to more traffic demand on I-710 and on the streets and roadways within the I-710 Corridor as a whole.

1.1.2 Estuarine Project Study Area

The overall I-710 Corridor Project study area includes the portion of I-710 from Ocean Boulevard in Long Beach to SR-60, a distance of approximately 18 miles. As part of the project, four bridges will either be realigned or improved between Willow Street and Queensway Bay (Figure 1). The estuary between these two locations encompasses the study area for this Estuary Analysis. The location of each of the four bridges is shown on Figures 2 through 5.



FIGURE 1

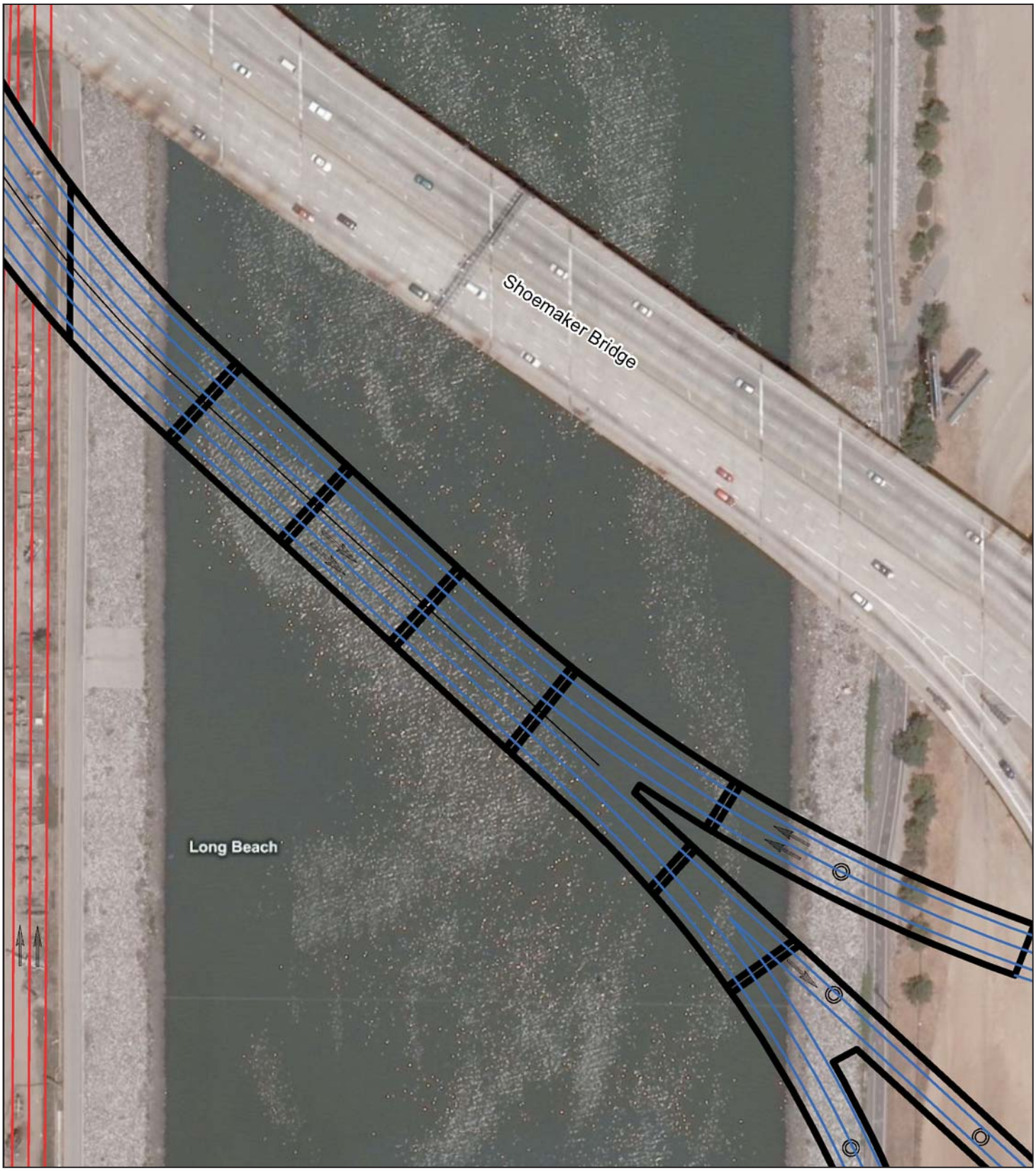
N

I-710 Corridor Project
Estuary Analysis

Estuarine Study Area for the I-710 Corridor Project

SOURCE: Google

I:\URS0801\G\Bio\Estuarine Study\Estuarine Study Area.cdr (1/20/10)



LEGEND

Collector/Distributor and Ramp Geometrics

Freight Corridor Geometrics

Mainline Geometrics - All Build Alternatives

N

0 50 100

FEET

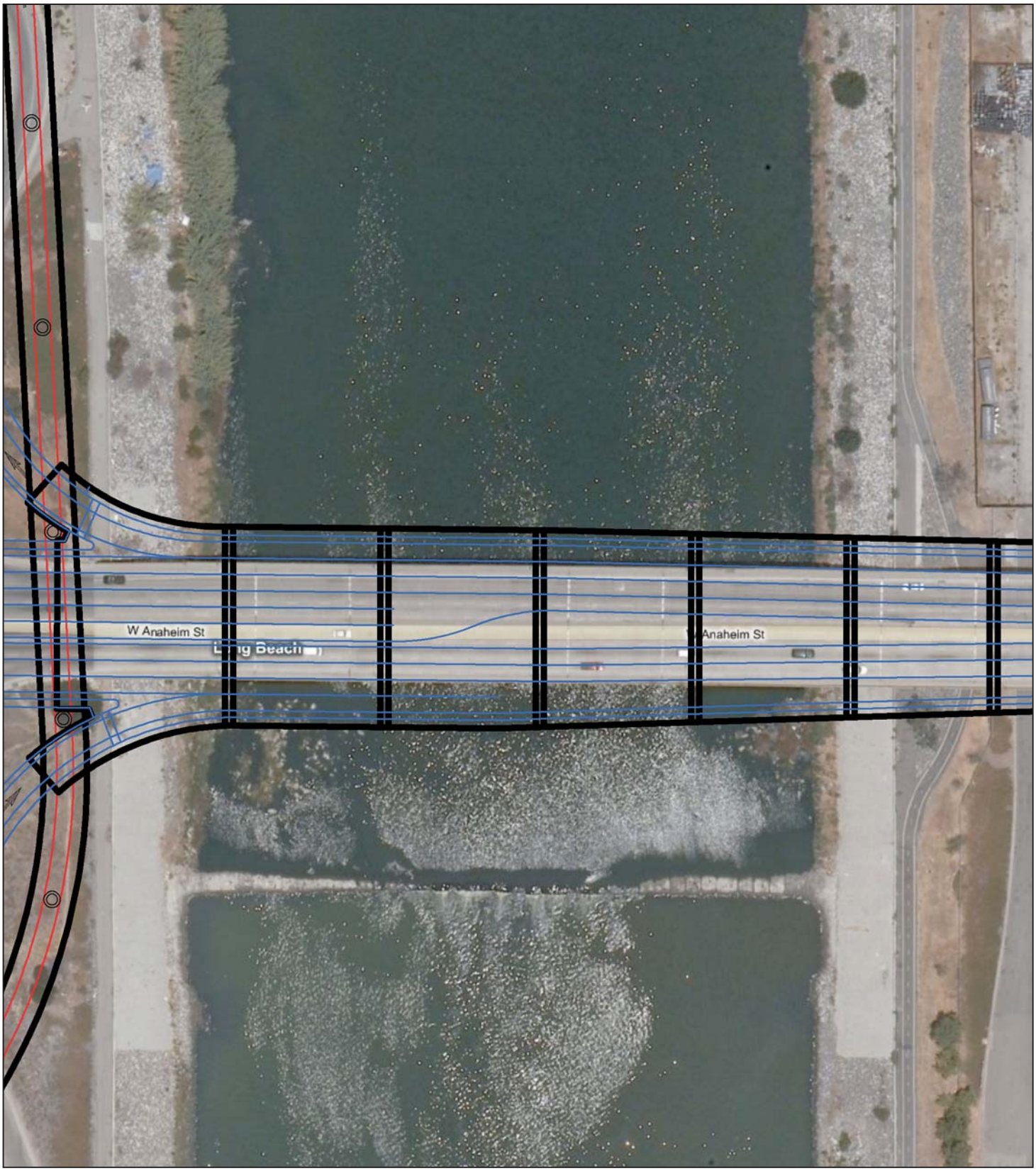
SOURCE: Bing (2008)

FIGURE 2

I-710 Corridor Project
Estuary Analysis

Shoemaker Bridge (7th Street)

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LEGEND

- Collector/Distributor and Ramp Geometrics
- Freight Corridor Geometrics
- Mainline Geometrics - All Build Alternatives

N

0 50 100

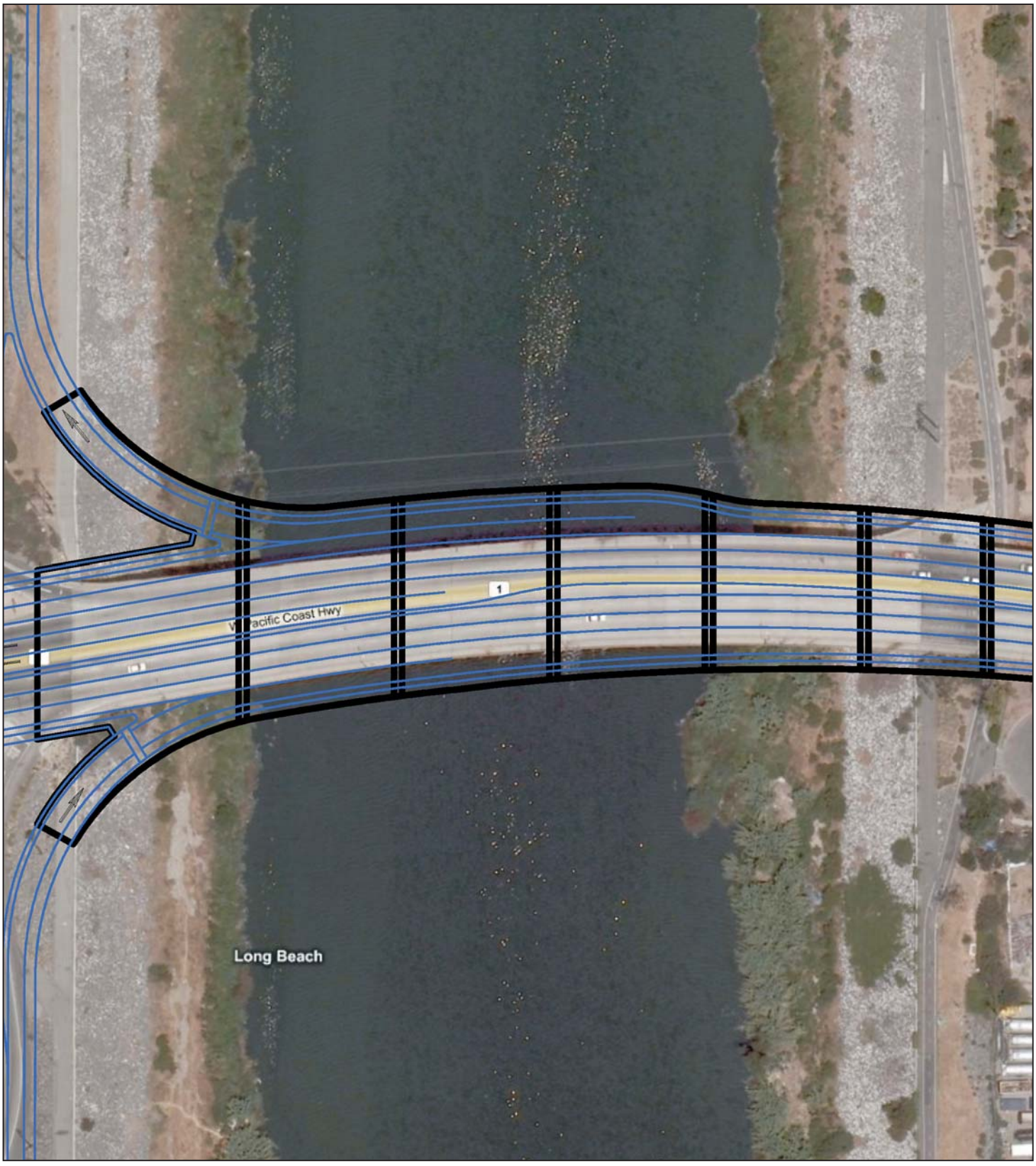
FEET

SOURCE: Bing (2008)

FIGURE 3

I-710 Corridor Project
Estuary Analysis
Anaheim Street Bridge

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LEGEND

Collector/Distributor and Ramp Geometrics

Freight Corridor Geometrics

Mainline Geometrics - All Build Alternatives

N

0 50 100

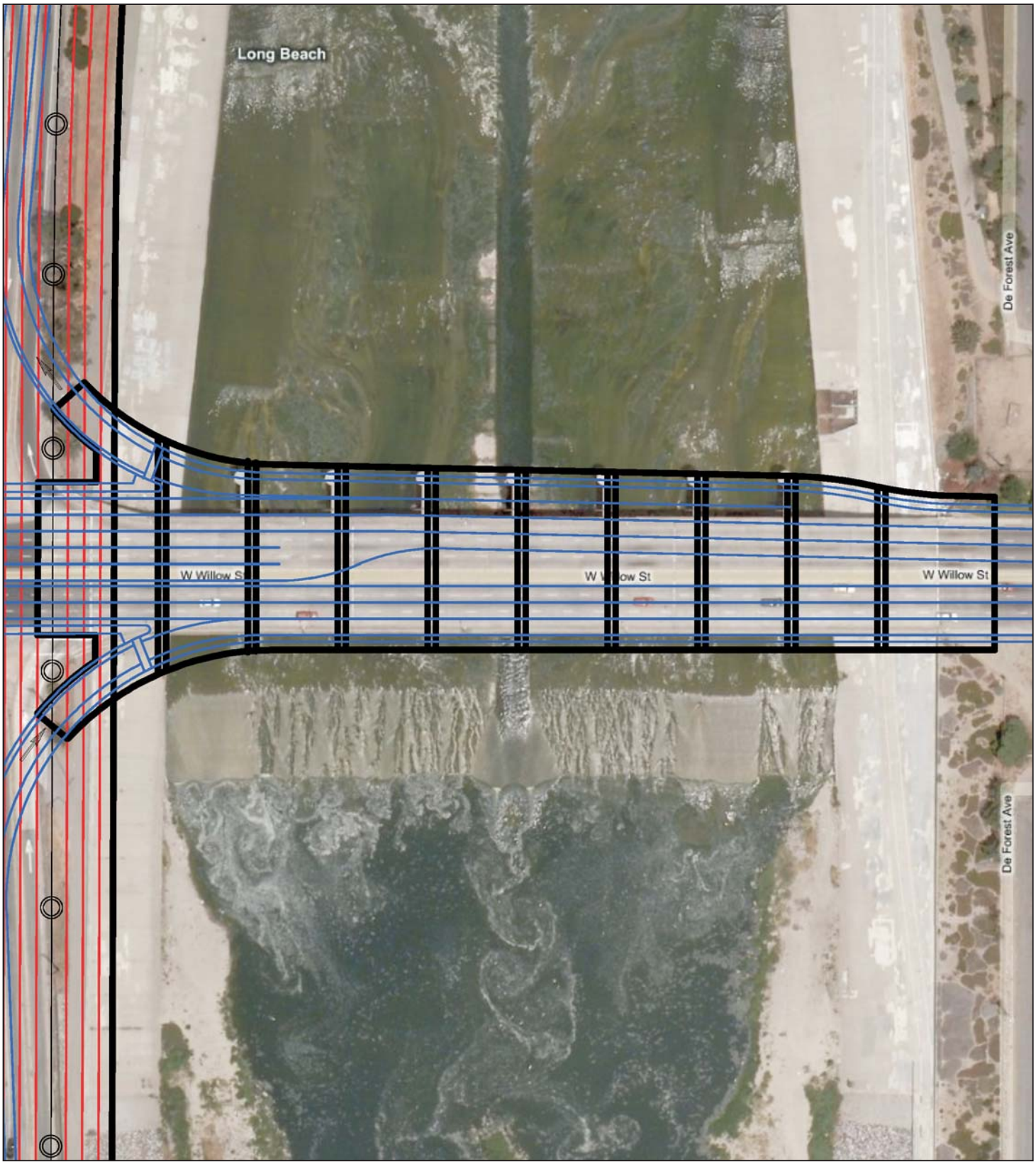
FEET

SOURCE: Bing (2008)

FIGURE 4

I-710 Corridor Project
Estuary Analysis
Pacific Coast Highway Bridge

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LEGEND

- Collector/Distributor and Ramp Geometrics
- Freight Corridor Geometrics
- Mainline Geometrics - All Build Alternatives

N

0 50 100

FEET

SOURCE: Bing (2008)

FIGURE 5

I-710 Corridor Project
Estuary Analysis
Willow Street Bridge

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1.1.3 Historical Perspective

The following is an excerpt from the Los Angeles County Department of Public Works website[1] :

> The Los Angeles River Watershed covers a land area of over 834 square miles from the eastern portions of the Santa Monica Mountains, Simi Hills, and Santa Susana Mountains to the San Gabriel Mountains in the west. The watershed encompasses and is shaped by the path of the Los Angeles River, which flows from its headwaters in the mountains westward to the northern corner of Griffith Park, where the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. The Los Angeles River, which once flowed freely over the coastal plain, was channelized between 1914 and 1970 to control the runoff and reduce the impacts of major flood events in the region. Prior to 1923, the Los Angeles River emptied into the Cerritos Channel in Inner Los Angeles Harbor (Harbors Environmental Project 1973). Today, the Los Angeles River is lined on 47.9 miles of its 51-mile length. Along much of its course, the Los Angeles River had intermittent flows during much of the year prior to channelization. In addition, many of its tributaries did not reach the Los Angeles River except during storm events. The current flow in the Los Angeles River is effluent-dominated, with approximately 80 percent of its flow originating at dischargers and the remaining flow coming from storm drain runoff and groundwater reaching the surface. The Los Angeles River enters San Pedro Bay at Queensway Bay in the southwestern corner of the City of Long Beach.
>
> The major tributaries of the Los Angeles River include Burbank Western Channel, Pacoima Wash, Tujunga Wash, and Verdugo Wash in the San Fernando Valley; and the Arroyo Seco, Compton Creek, and Rio Hondo south of the Glendale Narrows. The Los Angeles River Watershed has 22 lakes within its boundaries, including Devil Gates Dam, Hansen Basin, Lopez Dam, Pacoima Dam, and Sepulveda Basin. In addition, there are a number of spreading grounds in the watershed, including sites at Dominguez Gap, the Headworks, Hansen Dam, Lopez Dam, and Pacoima Dam. The Los Angeles River is hydraulically connected to the San Gabriel River through the Whittier Narrows Reservoir, although this occurs primarily during large storm events.

[1] http://ladpw.org/wmd/watershed/LA/

2.0 EXISTING CONDITIONS

2.1 RIVER CHARACTERISTICS

2.1.1 Depth, Flow Rates, Salinity, and Temperature

River depths vary depending on flow rates and the section of the Los Angeles River. During low-flow periods, the depths in the lower Los Angeles River estuary vary from less than three feet to ten feet. Comparatively, the depth in Inner Queensway Bay (near the Queen Mary) is about 30 feet (MBC Applied Environmental Sciences, Inc. [MBC] 1994). Upstream in the Glendale Narrows area, depths in the channel are approximately five to seven feet (Friends of the Los Angeles River [FOLAR] 2008).

During the low-flow periods, the flow in the Los Angeles River is primarily from wastewater treatment plant outflows (i.e., from both the Sepulveda Basin and Glendale Narrows areas (FOLAR 2008). During flooding events, flow velocities increase substantially from the various creeks that empty into the Los Angeles River (e.g., Rio Hondo and Compton Creek). FOLAR measured rates from 15 to 20 feet per second to up to 30 feet per second during storm events (FOLAR 2008). During high-flow storm events, the near-freshwater characteristics of the Los Angeles River flow also reduce the salinity within the lower reaches of the Los Angeles River for short periods of time.

Tidal influence extends to at least as far north as Willow Street (MBC 1994). Therefore, the range in seasonal salinity within the I-710 Corridor Lower Los Angeles River Estuarine Biological Study Area (hereafter referred to as estuarine study area) is likely to extend between near-freshwater to near-marine (0 to 33 parts per thousand [ppt]). The estuarine character of the Lower Los Angeles River is reflected in seasonal water quality monitoring conducted by MBC (1994). In fall 1994, a lens of low-salinity water was present, with surface salinities as low as 28 ppt in the Los Angeles River and 32.2 ppt in Inner Queensway Bay. In winter 1994, following substantial rainfall in the Los Angeles Basin, salinity was even lower in the lower reach of the Los Angeles River (24.3 ppt), and the freshwater lens covered the entire Queensway Bay study area to depths of seven to 13 feet, averaging 30.8 ppt at the surface. In the summer, Los Angeles River Stations 1 and 2 (between Queensway Bridge and Ocean Boulevard) exhibited lower salinities than other Outer Queensway Bay Stations. Low salinities extended to the bottom in the Los Angeles River, whereas they were restricted to surface waters in Queensway Bay.

Water temperatures exhibit normal seasonal variation within the Los Angeles River estuary area (MBC 1994). Surface water temperatures at Los Angeles River Stations 1 and 2 varied from 15.8 degrees Celsius (February 1990) to 22.8 (June 1994), while bottom water temperatures ranged from 15.1 to 21.8 degrees Celsius during the same time periods.

2.1.2 Bottom Features

The Los Angeles River estuary between Willow Street and Queensway Bay in Long Beach has a natural, soft-bottom environment consisting of sands and muds for the last three miles before emptying into San Pedro Bay. MBC (1994) noted that in-River sediments were approximately 95 percent fine-to-coarse sands halfway between Ocean Boulevard and Queensway Bridge and approximately 20 percent medium-to-fine sands and 80 percent silts and clays south of Queensway Bridge at the estuary's mouth. Much of the sediment load carried by the Los Angeles River is deposited in Queensway Bay. The Los Angeles River mouth is dredged periodically and the dredged materials are deposited at beaches to the south, where they are transported even further downcoast by littoral drift (MBC 1994).

Upstream, however, the substrate is much different. For example, in the area of the Glendale Narrows—an approximately eight-mile stretch of natural-bottom river that extends from Riverside Drive near Griffith Park to the Figueroa Bridge in Cypress Park—the substrate is approximately 80 percent boulders, large rocks, and cobble; the remaining 20 percent is gravel and sand (FOLAR 2008). Islands of sand, rock, or silt are occasionally found upstream of Willow Street and can be colonized by riparian plants, which are covered during flood periods. These islands either shift positions or are washed away during high-flow events.

LSA Associates, Inc. (LSA) biologists Richard Erickson and Rick Ware conducted a site reconnaissance survey within the estuarine study area on October 1, 2009. Unconsolidated boulder-to-silt substrates supported riparian vegetation along the estuarine study area shoreline primarily between Willow Street and Pacific Coast Highway (Figures 2–4 and 6). South of this point, the cover of riparian habitat decreased and protective riprap cover increased along much of the Los Angeles River's waterline between Anaheim Street and Shoemaker Bridge (Figures 7 and 8). This riprap along the Los Angeles River bank provides habitat for rocky intertidal plants and invertebrates, and foraging habitat for shorebirds and marsh birds. Man-made structures (dikes and weirs) and boulders within the Los Angeles River provide roosting habitat for seabirds, shorebirds, and water fowl during low-flow periods (Figure 9).



Figure 6 - Riparian habitat south of Pacific Coast Highway (October 1, 2009).



Figure 7 - Riprap shoreline south of Shoemaker Bridge (October 1, 2009).

FIGURES 6 & 7



Figure 8 - Protective riprap at the water's edge.



Figure 9 - In-estuary roosting habitat at Anaheim Street Bridge (October 1, 2009).

FIGURES 8 & 9

I-710 Corridor Project
Estuary Analysis
Site Photos

2.2 BIOLOGICAL ENVIRONMENT

The estuarine study area extends between Queensway Bay on the south and Willow Street on the north (Figure 1) and consists of several habitat types. Intertidal habitats extend from the extreme low to extreme high water mark (-1.2 to +7.0 feet mean lower low water [MLLW]). Portions of these shoreline types are exposed to both air and water during the tidal cycle. The types of habitats in this zone include mudflat and hardscape (quarry rock and cobble riprap, bridge abutments, and cemented river banks) that support intertidal plants and invertebrates. Habitats below the extreme low-tide zone are "subtidal" and are never exposed. Estuarine study area subtidal habitats include unconsolidated, soft-bottom sands and muds that constitute the majority of the estuary's bottom. Isolated boulders and submerged portions of bridge abutments are also colonized by benthic (bottom-dwelling) invertebrates. The estuary's water column is the third major habitat type, supporting plankton and fish. A City of Long Beach man-made marsh (Golden Shore Marine Reserve) is located at the extreme southeast section of the Los Angeles River estuary, 0.15 mile south of Ocean Boulevard (Figure 10).

2.2.1 Rocky Intertidal

The hard substrate of riprap, bridge abutments, weirs, and other structures provides surface area for sessile marine animals and plants and mobile macro-invertebrates that would not be present in the absence of these structures. The hardscape of these structures supports mussels, barnacles, sponges, and other types of invertebrates and plants that constitute the "biofouling community."[1] Fishes and birds are attracted to the biofouling habitat because it is a constant source of food along the Los Angeles River's bank.

The estuarine-rocky intertidal in the Los Angeles River is not a sensitive habitat because of the highly variable salinity and temperature regimes and the presence of river-borne sediments that silt over the low-lying riprap. Based on field surveys conducted on October 1, 2009, the rocky intertidal lining of the estuary is species-poor and consists of low to high cover of barnacles (*Balanus amphitrite* and *B. glandula*; Figure 11) and mussels (*Mytilus galloprovincialis* and *Geukensia demissa*; Figure 12), a covering of filamentous green algae (*Ulva* spp.), and a filamentous red algae turf. Barnacles and other organisms are also found on the bridge abutments (Figure 13). Tubes of polychaete worms were visible on the undersides of rocks. The abundance and diversity of these species decrease within increasing brackish and freshwater conditions.

[1] Biofouling refers to the accumulation of microorganisms, plants, algae, and/or animals on wetted structures.



Figure 10 - Golden Shores Marine Preserve, facing south (October 1, 2009).



Figure 11 - Clusters of barnacles on a sediment-covered riprap apron lining the river estuary's shoreline.

FIGURES 10 & 11



Figure 12 - Mussels (*Mytilus* and *Geukensia*) on riprap south of Shoemaker Bridge (7th Street) mixed with sediments on the rocky shoreline.



Figure 13 - Base of the bridge abutment at Anaheim Street, showing colonization by barnacles and other fouling species of invertebrates.

FIGURES 12 & 13

2.2.2 Benthic Infauna

The benthic invertebrate community of estuaries, bays, and harbors, and open ocean environments is made up of a complex of species that live on the sediment surface (epibenthic) or in the soft-bottom sediments (infauna). Within estuarine areas, organisms are found in a range of sediment regimes from fine to coarse, and have affinities to both offshore benthic communities and coastal bay and to harbor communities that live in finer sediments and areas of restricted water circulation. While the majority of benthic invertebrates obtain their nutrition by consuming organic detritus, some graze on diatoms and algae or actively prey on other invertebrates. In turn, bottom-feeding fishes and resident soft-bottom-dwelling fishes (e.g., gobies, juvenile flatfish, and sand bass [*Morone chrysops*]) rely on these benthic organisms as food sources.

Common types of benthic organisms that are associated with bay and estuarine sediments include flatworms, amphipod crustaceans, crabs, snails, clams, polychaete worms (capitellids, spionids, cirratulids, and ophelliids), oligochaete worms, and brittle stars. Sediment physical and chemical characteristics, water column properties, tidal circulation, storm water runoff and other contaminant sources, and embayment configuration all play a role in determining the types of benthic organisms present as well as where these organisms live.

Los Angeles River Benthic Communities. Benthic infaunal sampling was conducted at five stations in the fall and winter and ten stations in the summer by MBC in 1994 using a hand-operated box-corer. Stations 1 and 2 were located in the Los Angeles River estuary. Station 1 was located 0.3 mile south of the Ocean Avenue Bridge. Station 2 was located 0.5 mile south of the Queensway Bridge. Infaunal density and biomass were high in the Los Angeles River and generally decreased from Inner Queensway Bay to Outer Queensway Bay (MBC 1994). Species richness at Station 1 ranged between 24 and 56 species, while the number of species at Station 1 varied between 13 and 27 species.

Generally, species richness increased with distance from the Los Angeles River, although more species were present at Station 1 during February than at other stations in Queensway Bay. Species richness and abundance increased from fall to summer, except at Station 3 in Queensway Bay, where abundance declined, and at Station 2, at the lower end of the Los Angeles River, where species richness declined. For the most part, the increases were areawide and appear to be due to natural seasonal variation. In winter, the number of species at Station 1 was exceptionally high, probably due to recruitment of opportunistic species following dredging.

The polychaete annelids *Capitella capitata*, *Cossura candida*, *Prionospio lighti*, and *Mediomastus* spp. were present in all three surveys and were the most abundant of the "core" species (i.e., those that persist and characterize the habitat). These four species are

common in confined embayments in southern California. *Capitella* and other abundant opportunistic species (*Pseudopolydora paucibranchiata*, *Polydora ligni*, oligochaetes, harpacticoid copepods, and two species of amphipods, *Corophium insidiosum*, and *C. acherusicum*), typical of areas with high organic loading, low dissolved oxygen, and substrate disturbance, were found almost exclusively in the Los Angeles River. *Prionospio lighti* and *Mediomastus* spp. are more generalist in that they occur in a wide range of habitats but prefer semiprotected locations. They were found throughout the MBC 1994 study area, although they were most abundant in Queensway Bay.

The community at Shoreline Lagoon resembled that in Queensway Bay, although clams (*Theora lubrica* and *Tagelus californiensis*) were more abundant. Other locations in Queensway Bay were intermediate in nature, with affinities either to the Los Angeles River (*Capitella capitata* and *Polydora ligni* being dominant) or Outer Queensway Bay (abundant *Cossura candida*).

Benthic macro-invertebrates were incidentally collected in the Los Angeles River at Station 2 during beam trawl and otter trawl fish surveys. In beam trawl collections, four species were collected. Ghost shrimp (*Neotrypaea* sp.) dominated the invertebrate catch, while nassid snails (*Nassa* sp.) and purple shore crabs (*Pachygrapsus crassipes*) were collected in low numbers. Otter trawls taken in the Los Angeles River at Station 2 collected six species of benthic invertebrates. The catch was dominated by blackspotted bay shrimp (*Crangon nigromaculata*) and tuberculate pear crabs (*Pyromaia tuberculata*).

Benthic infaunal sampling was not conducted in the Los Angeles River north of the Ocean Avenue Bridge. Based on studies of other estuarine and riverine areas in southern California, it can be inferred that the diversity and abundance of marine and estuarine species within the Los Angeles River estuary decreases with increasing distance away from Queensway Bay, and the diversity and abundance of brackish water and freshwater invertebrates increases with increasing freshwater influence (Marine Biological Consultants and Southern California Coastal Water Research Project 1980; Coastal Resources Management, Inc. 2006). Numbers and richness of oligochaete worms, insect larvae, and freshwater clams likely increase in upstream reaches of the Los Angeles River where freshwater influence is more consistent.

2.2.3 Fishes

Ichthyoplankton (fish eggs and larvae) was sampled by MBC for the 1994 MBC Study in the Lower Los Angeles River and in Outer Queensway Bay near the bottom and in the water column in the fall and winter. Overall, Queensway Bay provided a semiprotected habitat for small and juvenile fish. The ichthyoplankton of the Los Angeles River MBC 1994 study area varied both spatially and seasonally in terms of both composition and abundance. Gobies

(Gobiidae), northern anchovy (*Engraulis mordax*), and white croakers (*Genyonemus lineatus*) were the most abundant larval ichthyoplankton in both the fall and winter. Gobies were more abundant in the Los Angeles River, while northern anchovy and white croaker were more abundant in Outer Queensway Bay. Other eggs and larvae collected in the Los Angeles River included spotted turbot (*Pleuronichthys ritteri*), hornyhead turbot (*P. verticalis*), California lizard fish (*Synodus lucioceps*), and California tonguefish (*Symphurus atriacaudus*). Overall, icthyoplankton species richness and density were higher in the winter, due primarily to an increase in the number of cheekspot goby (*Illypnus gilberti*) in the Los Angeles River. Cheekspot goby normally occur in lagoons and shallow embayments, whereas queenfish (*Seriphus politus*) prefer nearshore habitats with somewhat deeper water. California tonguefish are found over mud or sandy bottoms at varying depths. Juvenile cheekspot goby, arrow goby (*Clevelandia ios*), and California halibut (*Paralichthys californicus*) were collected in the Lower Los Angeles River zone.

Although beach seines were not set within the enclosed Golden Shores Marine Preserve, beach seines set nearby the estuarine study area in the Shoreline Lagoon collected an abundance of shallow-water species typically found within bay environments: topsmelt (*Atherinops affinis*), cheekspot goby, arrow goby, and diamond turbot (*Hypsopsetta guttulata*). This indicates that these species may also be present within the channels of the Golden Shores Marine Preserve.

Thirteen species of demersal (bottom-associated) fish were collected in the Lower Los Angeles River at Station 2. Dominant species included white croaker, queenfish, northern anchovy, and slough anchovy (*Anchoa delicatissima*). Additionally, pelagic (water column) species caught by using lampara nets in Inner Queensway Bay included high numbers of Pacific sardine (*Sardinops sagax*) and Pacific pompano (*Peprilus simillimus*).

Overall, the pelagic fish assemblage in Queensway Bay was similar to those found in previous surveys in Outer Long Beach Harbor and Queensway Bay (MBC 1984a) and was dominated by northern anchovy, queenfish, Pacific sardine, white croaker, and Pacific pompano.

Bay and estuarine fish will be found within the lower reach of the Los Angeles River based on the degree and interaction of both tidal and fresh water influence. Since tidal influence extends to approximately as far north as Willow Street, some members of the estuarine fish community and the demersal and pelagic fish community are expected to be present, but the diversity and abundance of these groups are expected to be low compared to Queensway Bay.

At the opposite end of the salinity spectrum, the freshwater fish and invertebrate community have the potential to extend to the Lower Los Angeles River project area during extended periods of heightened freshwater flow. During the LSA October 1, 2009, Lower Los Angeles River field reconnaissance survey, six carp (*Cyprinus carpio*) were observed 655 feet south of the Pacific Coast Highway Bridge, over an apron of rock riprap (Figure 14). The plant community on the banks of the Los Angeles River included mulefat (*Baccharis salicifolia*), rush (*Juncus* spp.), and cattails (*Typha* spp.).

FOLAR (2008) examined the freshwater fish community makeup in the Glendale Narrows area, an approximately eight-mile stretch of natural-bottom river that extends from Riverside Drive near Griffith Park to the Figueroa Bridge in Cypress Park. The catch consisted of eight species of fishes, bullfrog (*Rana catesbiana*; larvae [tadpoles]), and red swamp crayfish (*Procambarus clarki*). The fish species collected included 83 fathead minnow (*Pimephales promelas*); 58 carp; 24 black bullhead (*Ameiurus melas*); seven Amazon sailfin catfish (*Pteroplichthys pardalis*); 688 mosquitofish (*Gambusia affinis*); 92 green sunfish (*Lepomis cyanellus*); one largemouth bass (*Micropterus salmoides*); and 271 tilapia (*Oreochromis* sp). Some of these species have a potential to be present in the estuarine study area during and following periods when the Lower Los Angeles River is under the influence of heavy runoff.

2.3 ESSENTIAL FISH HABITAT

This assessment of Essential Fish Habitat (EFH) for the I-710 Corridor Project is being provided in conformance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (Federal Register [FR] 62, 244; December 19, 1997). The 1996 amendments to the Magnuson-Stevens Act set forth a number of new mandates for the National Marine Fisheries Service (NMFS), eight regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The councils, with assistance from NMFS, are required to delineate EFH for all managed species. Federal action agencies that fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to the NMFS recommendations. Impacts to Habitat Areas of Particular Concern (HAPC) are described in the regulations as subsets of EFH that are rare; particularly susceptible to human-induced degradation, especially ecologically important habitats; or located in an environmentally stressed area, including estuaries and eelgrass.

The I-710 Corridor Project within Queensway Bay and the lower reaches of the Los Angeles River is located within an area designated as EFH for Coastal Pelagic FMP species (Pacific Fishery Management Council [PFMC] 1998) and Pacific Groundfish FMP species (PFMC 2008). Species managed under the Highly Migratory Species Fisheries Management Plan



Figure 14 - A school of six Carp present 655 feet south of the Pacific Coast Highway Bridge on October 1, 2009 (Source: LSA Associates, Inc.).



Figure 15 - Eelgrass (*Zostera marina*) "shoot" and cluster of "blades" arising from the shoot (considered a "Turion Unit")

FIGURES 14 & 15

(FMP) may have EFH within the project area but EFH has not been designated for these species under the Migratory Species Act (MSA). In addition, because these are highly mobile species, they are likely to be transient rather than stationary within the estuarine study area. Salmonids have designated EFH under the Pacific Salmonid Management Plan, but it is highly unlikely that they would occur in the estuarine study area and, therefore, they are not considered. Four coastal pelagic finfish species managed under the FMP are known to occur within San Pedro Bay (Table 1a). Northern anchovy and Pacific sardine compose a significant portion of nearshore otter trawl catches and contribute moderately to the nearshore fish biomass of the nearshore area of San Pedro Bay (MBC 1997). They ranked highest in abundance during six of the 11 monitoring surveys between 1972 and 1997 offshore of the San Gabriel River and were never ranked lower than the fifth most abundant species. Northern anchovy compose a portion of the commercial bait fishery in San Pedro Bay. This species is a planktivore, and is preyed upon by larger fish and seabirds. Larvae of northern anchovy are also part of the Queensway Bay ichthyofauna and ichthyoplankton community.

Three Pacific groundfish FMP species have the potential to be present in Queensway Bay (Table 1b): leopard shark (*Triakis semifasciata*), spiny dogfish shark (*Squalus acanthias*), and California scorpionfish (*Scorpaena guttata*). These species have been reported within Queensway Bay, each with very low occurrences. The potential presence of groundfish species occurring within the estuarine study area is low due to a lack of suitable habitat. Of the three species that may occur in the estuarine study area (Table 1b) all are expected to be rare or absent within the riverine habitat.

Table 1a: Coastal Pelagic Management Plan Species Potentially Affected by the Interstate 710 Corridor Project

Common Name	Scientific Name	Comment
Northern anchovy	*Engraulis mordax*	Abundant in Queensway Bay and Lower Los Angeles River.[4] Common to abundant during each of 11 surveys between 1972 and 1997. Second most abundant species overall offshore. Adult and larvae present in area.[1,2,3]
Pacific sardine	*Sardinops sagax*	Dominant catch in Queensway Bay.[4] Present during 6 of 11 surveys, low to moderate abundance. Mid-ranked in abundance compared to other species. Mostly adults in the general area.[1,2]
Pacific mackerel	*Scomber japonicus*	Present in Queensway Bay.[1] Incidental catch at depths shallower than 30 feet. Present in one survey (1997). Predominantly adults in project area.[1,2,3]
Jack mackerel	*Trachurus symmetricus*	Incidental catch at depths shallower than 30 feet. Present during one survey (1994). Predominantly adults in project area.[1,2,3] Present in Queensway Bay.[4]

Sources: [1] MBC Applied Environmental Sciences, Inc., 1997.
[2] MEC Analytical Systems, Inc., 1988.
[3] MEC Analytical Systems, Inc., 1999.
[4] MBC Applied Environmental Sciences, Inc., 1994.

Table 1b: Pacific Groundfish Managed Species Potentially within the Project Area

Common Name	Scientific Name	Comment
Leopard shark	*Triakis semifasciata*	Uncommon in Queensway Bay.
Spiny dogfish shark	*Squalus acanthias*	Uncommon in Queensway Bay.
California scorpionfish	*Scorpaena guttata*	Incidental catch in Queensway Bay, although it is more commonly found in open coastal environs rather than bays and estuaries.

Source: MBC Applied Environmental Sciences, Inc., 1994.

2.4 SENSITIVE SPECIES

2.4.1 Eelgrass (*Zostera Marina*)

Eelgrass is considered an HAPC and a subset of EFH under 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (FR 62, 244; December 19, 1997). This seagrass provides habitat and structure for benthic invertebrates and organisms that live on the protruding blades and shoots (Figure 15). Common invertebrates that live on this species of seagrass include anemones (*Epiactis* sp. and *Bunodeopsis* sp.), flatworms, polychaete worms, snails (*Alia carinata*), gammarid amphipods, and caprellid amphipods (Coastal Resources Management, Inc. 2009). These, in turn, are fed upon by fishes that forage in the eelgrass beds.

Eelgrass canopy (consisting of shoots and blades approximately two to three feet long) attracts many marine invertebrates and fishes. The vertical relief of the vegetation enhances the abundance and the diversity of the marine life compared to areas where the sediments are barren (Phillips 1984; MBC 1986; Hoffman 1986, 1990, 1991). The vegetation also serves a nursery function for many juvenile fishes, including species of commercial and/or sports fish value (California halibut and barred sand bass). A diverse community of bottom-dwelling invertebrates (i.e., clams, crabs, and worms) lives within the soft sediments that cover the root and rhizome mass system. Eelgrass meadows are critical foraging centers for seabirds (such as the endangered California least tern [*Sterna antillarum*]) that seek out juvenile topsmelt attracted to the eelgrass cover. Finally, eelgrass is an important contributor to the detrital (decaying organic) food web of bays as the decaying plant material is consumed by many benthic invertebrates (such as polychaete worms) and reduced to primary nutrients by bacteria.

Eelgrass is not known to occur in the Los Angeles River, although detailed bottom surveys of this region have not been conducted. It is a eurysaline species and can live in a wide range of saline regimes, although it prefers estuarine-to-marine salinities (Phillips 1984).

Eelgrass is present along the Long Beach shoreline between Junipero Avenue and 1st Street east of the Downtown Marina (Coastal Resources Management, Inc. 2009), approximately two miles east of the Ocean Boulevard bridge within the estuarine study area, at depths between -2 and -8 feet MLLW. It actively competes with the red algae *Gracilariopsis* for light and space throughout this stretch of nearshore shallow-water habitat.

While their presence is not documented within Queensway Bay and the Los Angeles River, other species of eelgrass have a very low potential to be in the area. A wide-bladed eelgrass (*Zostera pacifica)* is known to occur along the outer coast of Santa Barbara County and the Channel Islands (Coyer et al. 2007), while a second species, dwarf eelgrass (Zostera japonica), is an invasive and is native to Asia. It threatens to upset the natural balance of California's wetlands throughout California and is therefore a species of interest to CDFG. It has been found in Humboldt Bay (Frimodig and Ramey 2009; Foss et al. 2007).

2.4.2 Fishes

California Grunion (*Leuresthes tenuis*). This fish species is not a formally listed species but is considered sensitive because of its beach spawning activity and potential impacts from beach disturbances such as beach cleaning and beach nourishment. This species is also an important forage fish for several species that are protected or regulated. It uses the high intertidal sandy beach habitat of many southern California beaches as spawning habitat. Grunion lay their eggs in the wet beach sands during the highest spring tides from late February/early March to as late as early September (Walker 1952). This species was collected in Shoreline Park within Queensway Bay (MBC 1994) and is known to spawn along the Long Beach shoreline between the Downtown Marina and Alamitos Bay Peninsula. It is unlikely to occur within the Los Angeles River.

Steelhead Trout (*Onchorynchus mykiss*). Steelhead trout is a federally listed endangered species and California State Species of Special Concern. It is also one of the species listed in the Pacific Salmonid Management Plan. The steelhead trout is an anadromous seagoing rainbow trout that lives approximately two to four years of its life (this period varies greatly) in the open ocean prior to returning to the stream where it was spawned. It is dependent on small, clear-flowing, but not rapid, streams with gravel beds to complete its spawning cycle. The area must also have protective cover and an adequate food source. Steelhead populations are declining because of impacts to their habitat such as dams, turbidity, and other habitat incursions.[1]

Except for the colonization of a small population in San Mateo Creek in northern San Diego County, steelhead trout appear to have been completely extirpated from nearly all systems

[1] National Marine Fisheries Service, http://www.nmfs.noaa.gov/pr/species.

in the southern portion of the range of the Distinct Population Segment (DPS) from Malibu Creek to the Mexican border.[1] They do not occur within the Los Angeles River watershed.

Tidewater Goby (*Eucyclogobius newberryi).* The tidewater goby is a federally listed endangered species that has been expatriated from many southern California creek mouths. It is currently found in shallow marine areas and lower reaches of streams from San Diego northward to Humboldt County waters, where salinity is less than 10 ppt (United States Fish and Wildlife Service [USFWS] 1995). The population of tidewater goby is depleted due to reduced or eliminated flows in the lower reaches of coastal streams; pollution; and the filling in, channelization, and other physical alteration of their habitats. The population disappeared from approximately 74 percent of the coastal lagoons from Morro Bay southward to San Diego (USFWS 1995). Habitat conducive to tidewater gobies is absent from Alamitos Bay. It is not present within the Los Angeles River.

California Halibut. Although it does not have a formal special status, the California halibut is considered a sensitive species by resource agencies because of its commercial value and a continued regionwide reduction of its nursery habitat in bays and wetlands. California halibut spawn at sea, and the species' larval stages are planktonic. After several months, larval fish settle to the bottom and migrate into shallow coastal waters. Young-of-the-year fish (YOTY) prefer shallow waters between approximately -1.5 feet and -3.5 feet MLLW, whereas juveniles prefer deeper channel bottoms to a maximum depth of approximately -15 feet MLLW. After spending nearly nine months in coastal embayments, juveniles move out into the open coastal environment Bay (Horn and Allen 1981; Allen 1976b, 1986). The species uses the inshore waters of bays, harbors, and estuaries as nursery and foraging habitat. Larval-to-juvenile halibut are known to occur within Queensway Bay and within the lower reaches of the Los Angeles River (MBC 1994).

2.4.3 Reptiles

Sea Turtles. Several species of federally listed threatened and endangered sea turtles could potentially occur in the nearshore open water habitats surrounding Alamitos Bay. There are no known nesting beaches for these species in the United States, but they have been observed off the coast of southern California (California State Lands Commission 1998). These species include the endangered leatherback sea turtle (*Dermochelys coriacea*), the threatened green sea turtle (*Chelonia mydas*), the loggerhead sea turtle (*Caretta caretta*), and the olive ridley sea turtle *(Lepodochelys olivacea*).

In the eastern North Pacific, green turtles have been sighted from Baja California to southern Alaska, but most commonly occur from San Diego south. Occasionally, green sea

[1] National Marine Fisheries Service, http://www.nmfs.noaa.gov/pr/species.

turtles have been found offshore of Orange County and Los Angeles County, north of their more common southerly range limit due to movement during warmer-water El Nino periods (Coastal Resources Management 2007a and 2007b; pers. comm. with Eric Wilson, EDAW, Inc.). Green sea turtles have been reported in the San Gabriel River, where they encounter the warmer, discharged waters of the power generating facilities located farther up the Los Angeles River.

There is no evidence that these species breed in southern California or within the estuarine study area. Green turtles are mostly herbivorous. They spend most of their time feeding on algae in the sea and seagrasses that grow in shallow waters. As juveniles, they eat plants and other organisms such as jellyfish, crabs, sponges, snails, and worms. As adults, they are strictly herbivorous (Ernst 1994; Crite, J. 2000).

Green sea turtles have been stranded or sighted along the Long Beach shoreline and the vicinity of Alamitos Bay. In October 2004, there were three green sea turtles stranded in the Belmont Shore area and one green sea turtle stranded in the Treasure Island Marina area. In October 2006, the Long Beach Aquarium attached a satellite transmitter to a green sea turtle that had live-stranded in Long Beach. The turtle was tracked south to the San Clemente area and then turned around and headed back north to the Long Beach area, where it remained for several weeks, presumably foraging on eelgrass or algae in the area (EDAW 2007; Christina Fahy, July 2007). A 21-inch juvenile green sea turtle (estimated to be between three and five years old) was found by fishermen casting lines in the channel at the intersection of Pacific Coast Highway and the San Gabriel River on August 29, 2008 (Aquarium of the Pacific 2008). It was stranded within the intake channel and was reported to have been harassed by several unknown individuals. It was removed and transferred to the Long Beach Aquarium for rehabilitation from minor injuries. The potential for sea turtles to be present in the Los Angeles River is expected to be very low.

2.4.4 Marine Mammals

Marine mammals, although present in the Long Beach/Los Angeles Harbor complex, are not expected to be found in the Los Angeles River, with the exception of incidental occurrences of perhaps California sea lions (*Zalophus californicus*). Harbor seals (*Phoca vitulina*) and California sea lions forage on baitfish in the outer harbor and rest on buoys and breakwaters. Bottlenose dolphin (*Tursiops truncatus*) and California gray whales (*Eschrichtius robustus*) are highly migratory and are usually observed in the outer harbor and offshore of the breakwater. The occurrences of any cetacean, including gray whales, would be rare within the Los Angeles River, although both bottlenose dolphins and gray whales are known to occasionally enter other river mouths and estuaries (i.e., the San Gabriel River mouth; R. Ware, pers. observation).

2.5 INVASIVE SPECIES

2.5.1 *Caulerpa Taxifolia*

The invasive *Caulerpa taxifolia* algae (Figure 16) has the potential to cause ecosystem-level impacts to California's bays and nearshore systems due to its extreme ability to outcompete other algae and seagrasses (NMFS 2008). *Caulerpa taxifolia* grows as a dense, smothering blanket, covering and killing all native aquatic vegetation in its path, when introduced in a nonnative marine habitat. Fish, invertebrates, marine mammals, and sea birds that are dependent on native marine vegetation are displaced or die off from the areas where they once thrived. *Caulerpa taxifolia* is a tropical-subtropical species that is used in aquariums. It was introduced into southern California in 2000 (Agua Hedionda Lagoon and Huntington Harbor) by way of individuals likely dumping their aquaria waters into storm drains, or directly into the lagoons.

While outbreaks have been contained, the Water Resources Board, through NMFS and the California Department of Fish and Game (CDFG), requires that projects that have potential to spread this species through dredging and bottom-disturbing activities conduct preconstruction surveys to determine whether this species is present using standard agency-approved protocols and NMFS/CDFG Certified Field Surveyors (NMFS 2008).

Site-specific *Caulerpa* algae surveys have not been conducted in the estuarine study area. However, it has not been reported from San Pedro Bay or the Long Beach/Los Angeles Harbor complex. Site-specific surveys for this invasive will be required as part of permit conditions for any bridge work or dredging associated with the I-710 Corridor Project.

2.5.2 *Undaria Pinnatifida*

The brown macrophyte *Undaria pinnatifida* has been recorded in the Long Beach Harbor and Anaheim Bay (R. Ware, pers. observation). This species was not observed during the reconnaissance survey conducted by LSA along the Los Angeles River bank on October 1, 2009.

2.5.3 *Zostera Japonica*

Dwarf eelgrass (*Zostera japonica*) is native to Asia and threatens to upset the natural balance of California's wetlands. It has been found in Humboldt Bay (Foss et al. 2007).[1] It has not been found in Queensway Bay or the estuarine study area.

[1] http://www.dfg.ca.gov/invasives/dwarfeelgrass.



Figure 16 - *Caulerpa taxifolia* (Source: NMFS).

FIGURE 16

I-710 Corridor Project
Estuary Analysis
Site Photos

3.0 IMPACT ASSESSMENT

3.1 PROJECT COMPONENTS

The I-710 Corridor Project would renovate, expand, or relocate four bridge complexes that span the Lower Los Angeles River (Figures 2 through 5) within the estuarine study area. Major construction work will be required within the banks of the Los Angeles River using heavy equipment to remove, repair, expand, or relocate and rebuild the bridges. The following is a general discussion of short-term and long-term impacts associated with bridge work, and possible measures to avoid, reduce, or compensate for adverse impacts to estuarine habitats in the Lower Los Angeles River.

3.2 IMPACTS ON WATER QUALITY AND BIOLOGICAL RESOURCES

- Temporary and/or permanent reduction in soft-bottom estuarine habitat and secondary production (loss of benthic invertebrate fauna) and food sources as a consequence of increasing bridge abutment surface area.

- Temporary losses of organisms living on hardscape (i.e., barnacles and mussels) on bridge abutments and/or affected areas along the Los Angeles River bank.

- Disruption and potential loss of riparian and estuarine vegetation along the Los Angeles River bank.

- An increase in the amount of shading of open water habitat, reducing primary productivity from increased bridge surface areas.

- Temporary disruption of fishery and seabird foraging areas during construction as a result of water quality and sediment impacts (i.e., release of detectable levels of sediment contaminants and resuspension into the water column, increased turbidity, and reduced dissolved oxygen.

- Accidental oil or fuel spills that could potentially occur could result in significant effects on water quality and, subsequently, the fish and wildlife upstream and downstream of construction, depending on the severity of the spill. Such events are likely to be localized spills of lighter, refined diesel fuels, gasoline, and lubricating oils that are highly toxic to marine life. The potential for the occurrence of petroleum product leaks or spills would be low but the potential for significant, long-term effects on marine resources would be moderate to high.

- Temporary increases in the level of above- and below-water noise due to pile driving, drilling, and other bridge removal and construction activities that will have a temporary impact on fishes and birds.

- Debris (cement, rebar, asphalt) will be added to the Los Angeles River. This material must be removed following completion of the I-710 Corridor Project.

3.3 IMPACTS ON SENSITIVE SPECIES

- **Eelgrass**. It is unlikely that eelgrass will be impacted by the I-710 Corridor Project. However, preconstruction surveys will be required by the United States Army Corps of Engineers (ACOE) and the California Coastal Commission (CCC) prior to the initiation of construction to determine whether eelgrass is present and will be affected by the I-710 Corridor Project. If it is found in the I-710 Corridor Project study area, then a mitigation plan will be prepared, and mitigation measures will be implemented to restore eelgrass vegetation and potential eelgrass habitat to an impact ratio of 1.2:1 for the loss of vegetation and to an impact ratio of 1:1 for potential eelgrass habitat (NMFS 1991, as amended).

- **California Halibut.** Juvenile halibut may be present in the general project vicinity. During construction, any juveniles in the immediate area of pile-driving activity will swim to areas outside the immediate impacted zone. No mortality is anticipated as a result of construction activities.

- **Green Sea Turtle.** Green sea turtles would not likely be affected by bridge construction activities.

Marine Mammals. All marine mammals are protected by the Federal Marine Mammal Protection Act of 1972 (MMPA). The MMPA prohibits the intentional taking, import, or export of marine mammals without a permit. Several of the species that occur within the Southern California Bight (SCB) are also protected under the Federal Endangered Species Act of 1973 (ESA). A species that is listed as threatened or endangered under the ESA is categorized as depleted under the MMPA. Unintentional take of a depleted species is allowed by permit only if the activity is determined to have a negligible impact. Intentional take of a depleted species is only allowed under a scientific research permit. It is unknown what types of in-water equipment may be required; however, a barge and a crane may be required. Impacts related to any vessel movements, as well as noise and vibrations produced via pounding, drilling, and other above- or underwater activities, are unknown at this time, but the relative paucity of marine mammals within the Los Angeles River and the distance between the proposed bridge construction areas and areas that marine mammals

frequent in the Outer Long Beach Harbor suggest there will be less than significant impacts to this resource group.

3.4 Impacts on Fishery Management Plan Species

Of the four finfish FMP species identified as present in Queensway Bay, only the northern anchovy is expected to be present in any significant numbers in the Los Angeles River's estuarine reach. The majority of the anchovy population is expected to occur in Queensway Bay and San Pedro Bay at depths greater than 12 feet. Therefore, potential impacts on coastal pelagic FMP species or their EFH are expected to be minimal. I-710 Corridor Project-related impacts could result in the northern anchovy temporarily avoiding the I-710 Corridor Project study area and a minimal potential for mortality of larval anchovy. An increase in the suspended sediment load would temporarily increase the exposure of these species to potentially harmful levels of contaminants and clog their gills, resulting in a reduced ability to feed. Of 84 groundfish FMP species, three species—the leopard shark, spiny dogfish shark, and California scorpionfish—have been reported within Queensway Bay, and none have been reported in the estuarine study area. The potential impact of the I-710 Corridor Project on FMP groundfish species is expected to be minimal. There will be no construction-related impacts on salmonid or highly migratory species or their EFH.

3.5 Impacts on Invasive Species

- ***Caulerpa Taxifolia.*** No *Caulerpa* is present within the estuarine study area, which precludes the potential spread of this species during construction and/or operation of the facilities. However, a *Caulerpa* algae survey will be conducted according to the NMFS Control Protocol prior to construction. If this species is found, then protocols for the eradication of *Caulerpa* will be implemented to remove this species from the I--710 Corridor Project study area.[1] Metro will conform to the 2008 Caulerpa Control Protocol, which requires survey results to be submitted to the National Marine Fisheries Service (NMFS) and CDFG within 15 days of completion. This protocol also requires that NOAA and CDFG be notified within 24 hours if *Caulerpa* is identified at a permitted project site.

- ***Undaria Pinnatifida.*** No *Undaria* has been reported from the Los Angeles River, although it has been reported to be present in nearby Long Beach Harbor. Therefore, it is unlikely to be spread as a consequence of the I-710 Corridor Project.

[1] http://swr.ucsd.edu/hcd/CaulerpaControlProtocol.htm.

- ***Zostera Japonica***. No dwarf eelgrass has been reported in the estuarine study area, and its presence within the estuarine study area is unlikely because it is found on mudflat habitat. However, if it is found within the I-710 Corridor Project study area, its presence will be reported immediately to the NMFS and CDFG and eradication efforts will be undertaken.

4.0 AVOIDANCE, MINIMIZATION AND/OR MITIGATION MEASURES

4.1 WATER QUALITY

Impacts to water quality associated with the portion of the I-710 Corridor Project in the Los Angeles River will likely be temporary and would be minimized through the implementation of construction Best Management Practices (BMPs) to minimize turbidity plumes and possible contaminants released into the water column during construction activity. Turbidity will be minimized by using silt curtains where feasible. All floatable debris generated by the construction activities will be contained and trash and debris will be disposed of properly. All construction debris will be removed from the sea floor. With the implementation of water quality BMPs to reduce the spread of any turbidity plume, there should be no adverse impacts to estuarine resources, including benthic communities, eelgrass, and fish communities outside of the localized construction zone.

4.2 ESTUARINE BIOLOGICAL RESOURCES

Project avoidance, minimization and/or mitigation measures to reduce potential adverse impacts to estuarine resources, sensitive species, and rare and endangered species are provided below.

- No construction materials, equipment, debris, or waste shall be placed or stored where it may be subject to tidal erosion and dispersion. Construction materials shall not be stored in contact with the soil.
- All trash shall be disposed of in the proper trash receptacles at the end of each construction day.
- Any construction debris shall be removed from the site.
- Floating booms shall be used to contain discharged debris and any debris discharged shall be removed no later than the end of each day.
- If turbid conditions are generated during construction, a silt curtain shall be utilized to control turbidity. Sediment resuspension will be minimized to the greatest extent possible.
- Construction methods shall include BMPs to minimize, where feasible, the intensity of underwater and abovewater sound production so as to lessen the potential adverse impacts on fishes and marine mammals.

- Prudent measures shall be taken to prevent all discharge of fuel or oily waste from heavy machinery or construction equipment or power tools into the Los Angeles River. Hazardous material spill contingency planning documents shall be prepared and maintained on site, along with hazardous material cleanup equipment and gear.

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Appendix E Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment

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SHOEMAKER BRIDGE, LOS ANGELES RIVER ESTUARY MARINE BIOLOGICAL IMPACT ASSESSMENT FOR PROPOSED GEOTECHNICAL CORING STUDIES



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1.0 INTRODUCTION

1.1 PROJECT PURPOSE

Coastal Resources Management, Inc. (CRM) was retained by Ruth Villalobos Associates (RVA, Inc.) to identify potential biological concerns associated with conducting geotechnical field exploration in the vicinity of the Shoemaker Bridge that crosses over the Los Angeles River Estuary (LARE) in Long Beach, California (Figures 1 and 2). This information is required as part of the regulatory permit application process for the project which includes a California Department of Fish and Wildlife Lake and Streambed Alteration Permit (Fish and Game Code - FGC § 1600), Clean Water Act (CWA) Section 401 Certification, a CWA Section 404 permit to the discharge of dredged or fill material into waters of the United States, and a CWA Section 408 permit to modify, alter, or occupy any existing U.S. Army Corps of Engineers-constructed public works project. In addition, CDFW and NOAA Fisheries require that projects with disturbing activities within an estuary to conduct a survey for *Caulerpa* species to ensure aquatic habitat is not displaced by the introduction or spread of an invasive aquatic species.

In order to identify the existing biological resources within the vicinity of proposed Geotechnical investigations, CRM conducted a field survey in the LARE estuary in the vicinity of the existing Shoemaker Bridge and proposed footprint of a new Shoemaker Bridge (Figure 3) on October 26th and 27th, 2017. The survey was focused on identifying (1) habitat types (2) the presence of any eelgrass (*Zostera marina*) and invasive algae (*Caulerpa taxifolia*), and any potential sensitive biological resources observed during the survey.

1.2 PROJECT LOCATION

Shoemaker Bridge is located within the City of Long Beach, California and several major streets with the 710 Freeway (Figures 1 and 2). Site coordinates are 33.776911° N, 118.205448° W. The bridge bisects the lower reach of the Los Angeles River Estuary approximately 0.7 miles north of Ocean Boulevard.



Figure 1. Location of Shoemaker Bridge that crosses over the Los Angeles River Estuary in Long Beach, California



Figure 2. . Project Area Boundaries

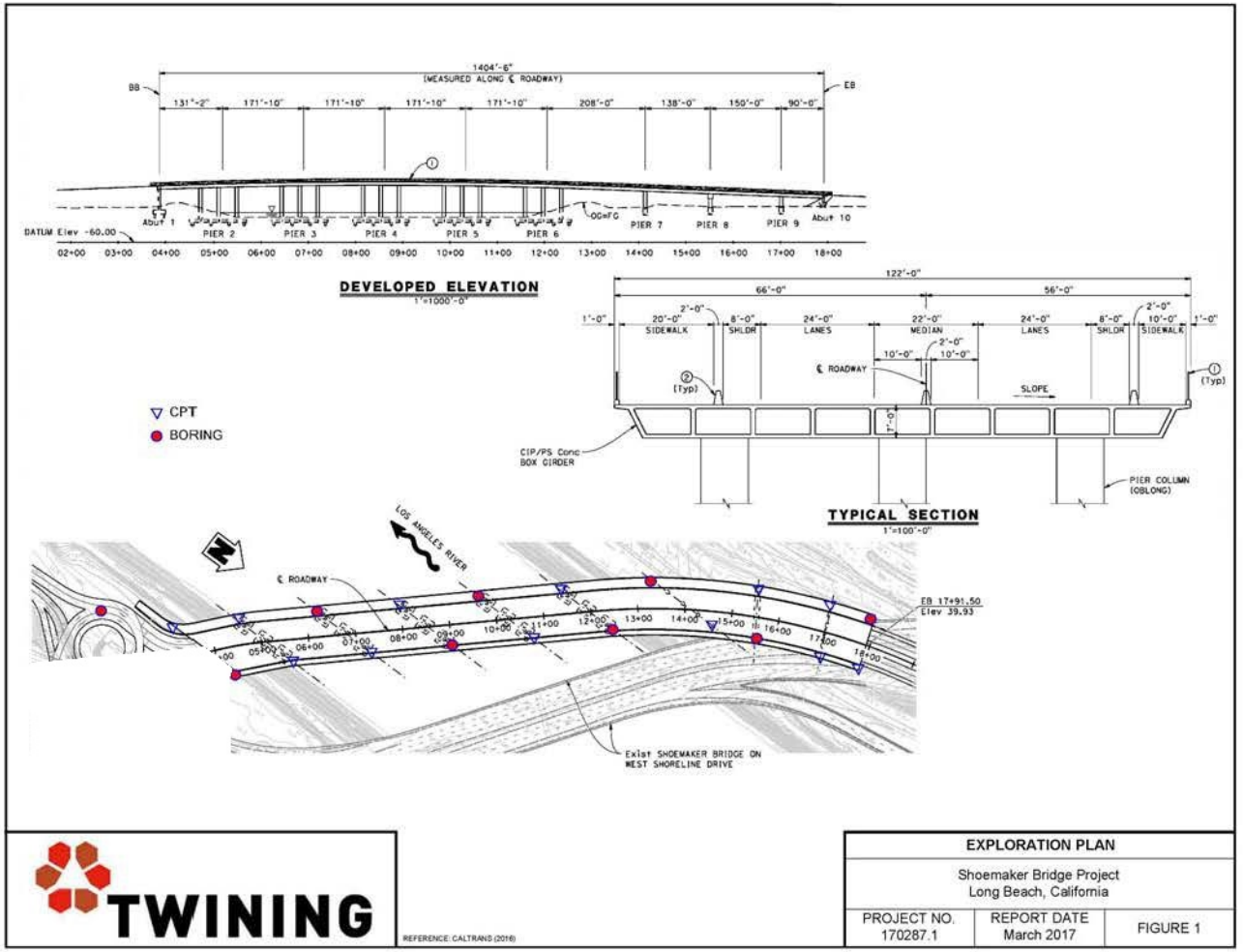


Figure 3. Existing and Proposed Bridge Layouts

1.3 DESCRIPTION OF INVASIVE ALGAE (*CAULERPA TAXIFOLIA*) AND EELGRASS (*ZOSTERA MARINA*)

Invasive (noxious) algae. *Caulerpa* (Figure 5) is a potential threat to southern California marina ecosystems. This species, originally found in the Mediterranean, can be extremely harmful to marine ecosystems because it invades, out-competes, and eliminates native algae, seagrasses, kelp forests and reef systems by forming a dense blanket of growth on mud, sand, or rock surfaces (National Marine Fisheries Service, California Department of Fish and Game, and San Diego Regional Water Quality Control Board [undated brochure]). It can grow in shallow coastal lagoons as well in deeper ocean waters and can grow rapidly up to nine feet in length.



Figure 4. *Caulerpa taxifolia* (with eelgrass in the background)
Source: http://swr.nmfs.noaa.gov/hcd/prior.htm

The ecological consequences of the spread of this invasive alga can be extremely serious and can result in a significant loss of plant and animal productivity. While corrective measures to eradicate this species have been taken, it is important to follow up and monitor the presence or absence of *Caulerpa* within the southern California bay and coastal ecosystems in order to contain the spread of the species. The photograph above illustrates *Caulerpa's* characteristic bright green color, flat, leafy fern-like fronds (branches), and below-ground root system.

Caulerpa not been documented within the Los Angeles River Estuary, Queensway Bay, San Pedro Bay, the Port of Long Beach, or Alamitos Bay. However, *Caulerpa taxifolia* was found within Agua Hedionda Lagoon in North San Diego County and in Huntington Harbour in 2000 and 2001 but was eradicated following heavy treatment with chlorine. Surveys for this invasive are conducted as part of continued concern that this species may re-appear in southern California embayments, and are mandated by the California Coastal Commission and U.S. Army Corps of Engineers.

Eelgrass. Eelgrass is a flowering marine plant that forms meadows in southern California embayments (Figure 4). This plant is considered a Habitat Area of Particular Concern (HAPC) and a subset of Essential Fish Habitat under 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (FR 62, 244, December 19, 1997). This seagrass provides habitat and structure for benthic invertebrates and organisms that live on the protruding blades and shoots. Common invertebrates that live on this species of seagrass include anemones (*Epiactis* sp., and *Bunodeopsis* sp.), flatworms, polychaete worms, snails (*Alia carinata*), gammarid amphipods, and caprellid amphipods (Coastal Resources Management, Inc. 2009). These in turn, are fed upon by fishes that forage in the eelgrass beds.

It enhances the abundance and the diversity of the marine life compared to areas where the sediments are barren. Eelgrass beds absorb large quantities of the greenhouse gas carbon dioxide from the atmosphere (carbon sequestration) and store it, thus decreasing the effects of global warming (carbon storage). Eelgrass vegetated areas are "carbon sinks" and contain large stores of carbon accumulated over hundreds to thousands of years.



Figure 5. Eelgrass, *Zostera marina*
(Source Photo: Coastal Resources Management, Inc.)

The vegetation also serves a nursery function for many juvenile fishes, including species of commercial and/or sports fish value (California halibut and barred sand bass). A diverse community of bottom-dwelling invertebrates (i.e., clams, crabs, and worms) lives within the soft sediments that cover the root and rhizome mass system. Eelgrass meadows are also critical foraging centers for seabirds (such as the endangered California least tern) that seek out baitfish (i.e., juvenile topsmelt) attracted to the eelgrass cover.

Lastly, eelgrass is an important contributor to the detrital (decaying organic) food web of bays as the decaying plant material is consumed by many benthic invertebrates (such as polychaete worms) and reduced to primary nutrients by bacteria.

Because of the high ecological value of eelgrass meadows, it is important to document the location and amount of eelgrass in areas of proposed waterside developments, and to mitigate any losses by avoiding, reducing, or compensating for any adverse effects on eelgrass habitats and communities.

In 2014, CRM conducted eelgrass and invasive algae surveys between Queensway Bay and Catalina Land in the very lower reach of the Los Angeles River Estuary for the Army Corps of Engineers Los Angeles River Estuary Dredge Project (Coastal Resources Management, Inc. (2014). No eelgrass or invasive algae was in this reach of the River but it was found between Alamitos Beach and Junipero Ave.

2.0 SURVEY METHODS

The survey was conducted by Mr. Rick Ware, (Senior Marine Biologist), Mr. Rick Hollar (Coastal Engineer), Mr. Tom Gerlinger (Marine Biologist), and Mr. Dave Ball (Coastal Engineer). The survey was conducted in conformance with the Southern California Eelgrass Mitigation Policy (National Marine Fisheries Service, 1991 as amended) and the *Caulerpa* Survey and Control Protocol (NOAA Fisheries, West Coast Division, 2014). For invasive algae, a non-infected system, low-intensity survey was performed since *Caulerpa* has never been recorded from Alamitos Bay. Field conditions noted during the survey included water temperature, water clarity, bottom type, common marine life, and the presence or absence of eelgrass and invasive algae Depths were standardized to Mean Lower Low Water (MLLW) based upon time of observation and tidal corrections for Long Beach Outer Harbor (Pier A) NOAA tidal survey station.

The marine biological survey was conducted in two phases. First, remote mapping of the river bottom was conducted to document the presence or absence of Submerged Aquatic Vegetation (SAV) from CRM's research vessel on October 26th, 2017. While the sonar survey lines were being run, GPS waypoints were marked at locations where downlooking sonar returns depicted various bottom types (soft-bottom, rip-rap, and the potential presence of SAV; see example, Figure 8). These waypoints and resulting maps were then used to conduct follow-up target verification surveys using a Remote Video Camera system on October 27th to identify possible types of SAV and unidentified sonar targets encountered on October 26th. An additional bathymetric survey was completed on October 27th at the request of the City of Long Beach to document Los Angeles River Estuary depths between the Shoemaker Bridge Project Area and the lower reach of the River located just north of the West Ocean Boulevard Bridge.

2.1 DOWNLOOKING SONAR SURVEY

Data Collection. CRM's Lowrance Carbon HDS-12 Chartplotter/Ecosounder and Downlooking Sonar System was used to acoustically collect data on bottom depth, subsurface features, and Submerged Aquatic Vegetation (SAV) from the unit's 200-kilohertz (kHz) transducer acoustic signal associated with a Wide Area Augmentation System (WAAS)-corrected global positioning system (GPS) position. In addition, a 455/800 kHz transducer and power module with dual channels (Structurescan and downlooking) provided a 180 degree view and a downlooking view of the seafloor (data were logged on the 800-kHz channel).

Acoustic beam angle for the 200-kHz signal on the 83/200-kHz dual frequency transducer (standard transducer on HDS units) was 20 degrees; the beam coverage for the 455/800 dual frequency transducer was 180 degrees with side lobe angles of 0.9 degree and the down-looking lobe of 1.1 degrees. This narrow elliptical beam essentially "scans" seafloor bottoms. Ping rates were set at 15 per second. Pulse width was dynamic and varied depending on depth, which varied between 2 and 30 feet. Acoustic data were collected at the Lowrance default of 3,200 bytes per second. The range window on the unit was set to Auto, which maximized the resolution of the acoustic envelope at the full range of depths sampled (approximately 0 to 20 feet).

GPS positions were recorded every one second, and bottom features from pings that elapsed between positional reports were averaged for each coordinate/data point. Therefore, the attribute value (e.g., depth and plant height) of each data point along a traveled path comprised a summary of 5 to 30 pings. Each ping went through a quality test to determine whether features could be extracted and, if so, was sent on to feature detection algorithms. Those failing quality assurance tests were removed from the set considered for summarization. An example of the ability of the unit's ability to detect SAV is shown in Figure 6.

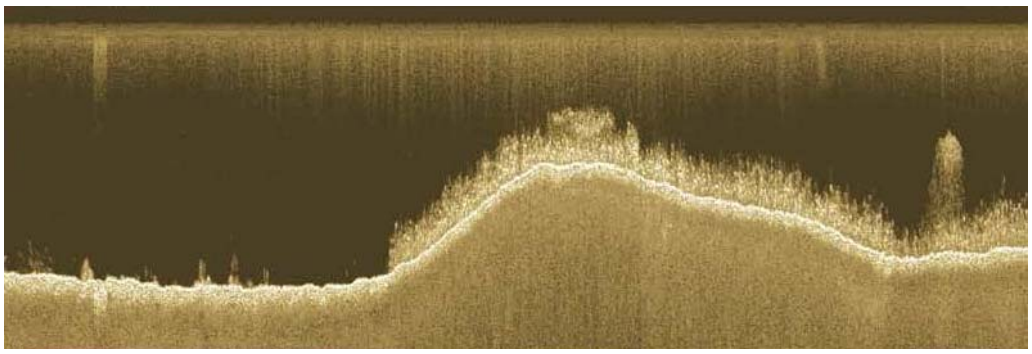


Figure 6. Down-looking Sonar Image Produced by the Lowrance HDS 12 Carbon unit. Submerged Aquatic Vegetation (i.e., eelgrass and benthic algae is recorded as in this example). A school of baitfish is also observed in this image above the eelgrass

Data were collected along 71 survey track lines throughout the 12 acre survey area (Figure 7). Track lines spacing was 10 to 25 ft (Figure 4). The vessel was run at a speed of between 0.5 and 2 knots. Acoustic (traditional, down-looking, and sidescan) and GPS signals were logged to data storage cards (.sl2 format). In the office, the data were uploaded to C-Map EcoSound Mapping Program for analysis (http://www.cibiobase.com).

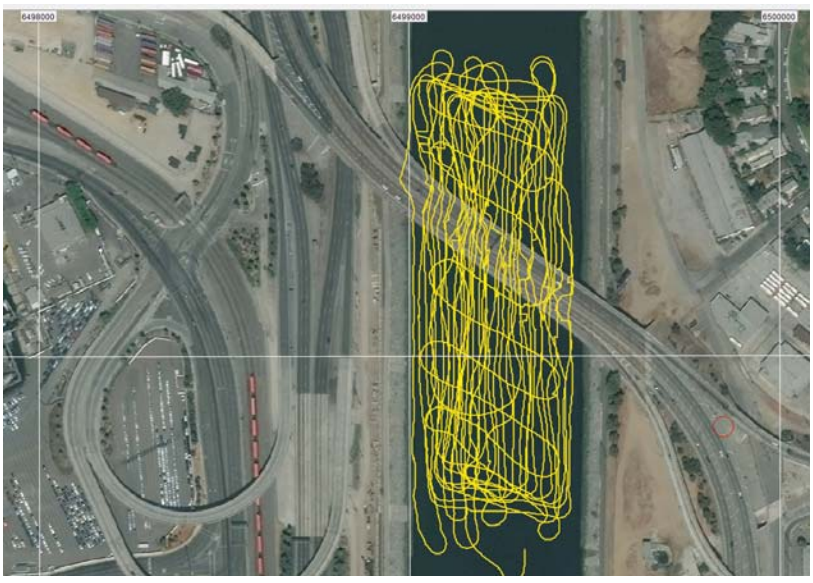


Figure 7. Survey Track Lines for the Bioacoustics Survey

On Day 2 (October 27th, 2017) a separate bathymetric survey was conducted to provide a general depth distribution in the Los Angeles River Estuary between the northern limit of the Shoemaker Bridge Project Area and the downstream terminus of the LA River Estuary at the Queensway Bay Bridge (Figure 8). This survey was a separate survey request from the City of Long Beach. The western boundary of the survey was limited to the eastern half of the River between Golden Shores Marine Biological Reserve and Ocean Avenue Bridge due to the presence of a trash debris barrier and marginal depths (Figure 8).



Figure 8. Survey Track Lines for the Los Angeles River Estuary Depth Profile Survey

2.2 TARGET VERIFICATION SURVEY

Following the completion of the bioacoustical survey, CRM conducted Remote Underwater Video (RUV) surveys to identify specific river floor targets obtained by the bioacoustical equipment and to characterize bottom habitat types any observed marine life. The camera system was an Ocean Systems, Inc. Deep Blue Professional Grade Underwater Video Camera ("Splash Cam") attached to a military-grade umbilical cable (Figure 8). The camera dimensions were 3" diameter wide and 3.5" long. The unit's resolution was 540 TV lines, the CCD was a 1/3" Sony Super HAD, and the focus was fixed 1 inch to focal infinity. The lens was a 3.6 mm wide angle lens. This unit is designed to operate in super low light conditions and was augmented with a GoPro 4 HD camera mounted one foot (ft) above the Splash Cam (Figure 8). Real-time observations were made on the vessel with the Splash Cam along pre-determined tracks and specific waypoints that were marked during the prior day's survey. Each of the pre-determined tracks was recorded with the GoPro 4 camera and reviewed in the office to verify field observations.



Figure 9. Ocean Systems Deep Blue High-Resolution and GoPro 4 Camera Set Up for Remote Target Verification Survey

2.3 DATA PROCESSING

Bathymetry. Echosounder-generated depth data were standardized to Mean Lower Low Water (MLLW) based on the Long Beach Outer Harbor (Pier A) tidal reference station. Data were checked for errors and consistency and corrected for tide and vessel draft. The dense bathymetric data were thinned to nominal 25 ft spacing. The thinned data were then input into TerraModel 10.3 to develop a Digital Terrain Model (DTM). Contours and sounding labels were generated and output as an AutoCAD dfx file that was subsequently imported into ArcGIS 10.1 for presentation.

Potential SAV Detection. Data analyses were performed using cloud-based software models and statistical algorithms incorporated into the CMap-EcoSound program, Acoustic signals from HDS 200-kHz transducers travel through submerged aquatic vegetation (SAV) on their way to bottom. Seafloors typically register a sharper echo return than the vegetation above. The distance between the seafloor acoustic signature and top of the plant canopy, if present, were recorded as the plant height for each ping. Processed acoustical signal depth and potential vegetation returns were uploaded to the BioBase ordinary point kriging algorithm that predicted values in unsampled locations based on the geostatistical relationship of the input points. The kriging algorithm is an "exact" interpolator in locations where sample points are close in proximity and do not vary widely. Kriging smooths bottom feature values where the variability of neighborhood points is high. Using this technique, a kriging-generated map was produced to provide preliminary map of possible vegetation probability distribution based on detected acoustical structure or perceived SAV height returns. This map was then used to refine the remote camera target verification survey.

3.0 SURVEY RESULTS

3.1 PHYSICAL DATA

Project Area Depths. Shoemaker Bridge Project Area depths ranged between -1.2 feet (ft) over rip rap and -8.33 ft in the River. Bottom contours are shown in Figure 10. In the Shoemaker Bridge Project Area, mean depth was -5.7 +/- 0 .8 ft MLLW (n=6,911 readings. Soft-bottom river depths located beyond the channel rip rap were deeper than 5 feet deep.

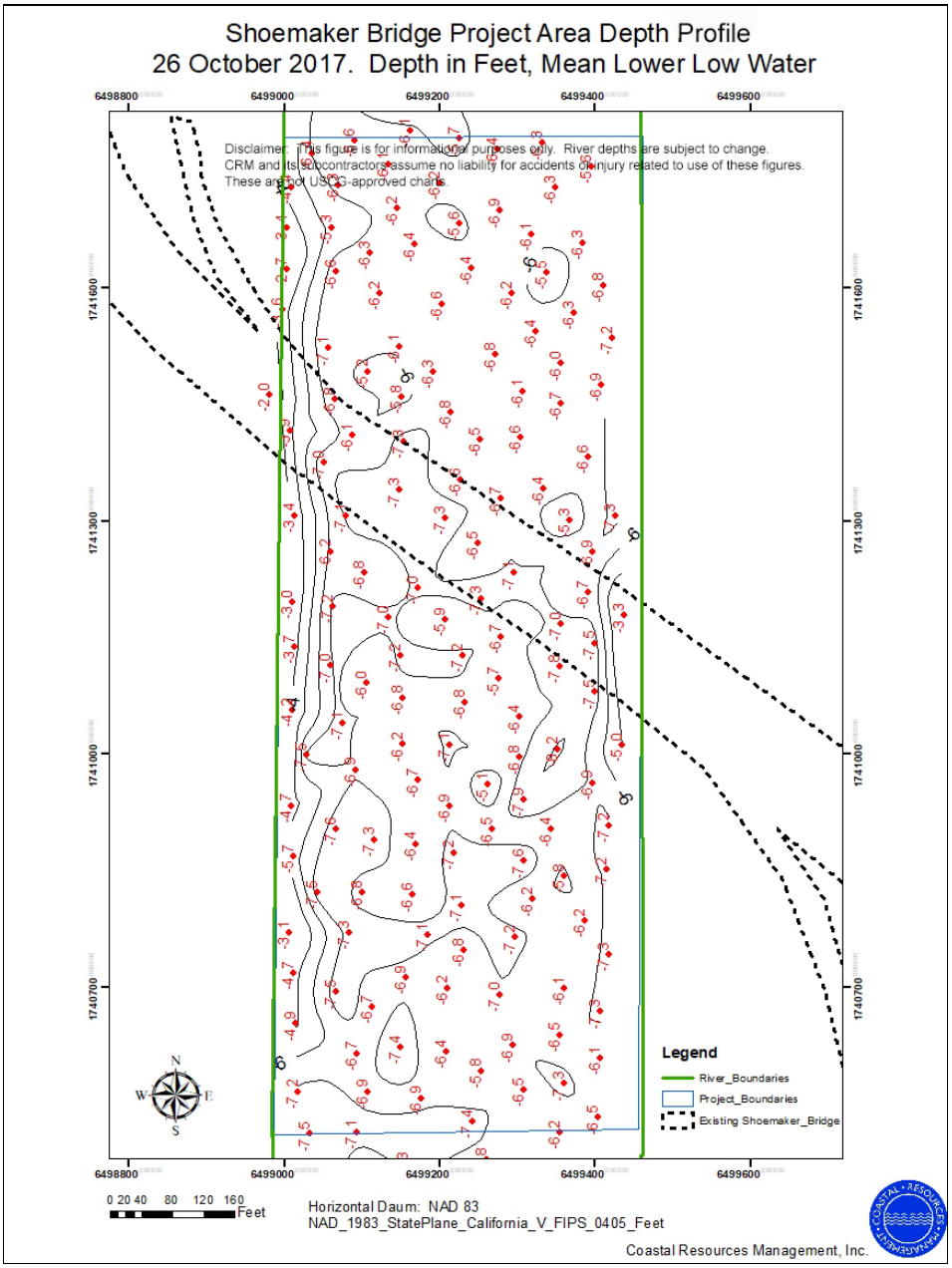


Figure 10. Shoemaker Bridge Project Area Depth Profile

Los Angeles River Estuary Approach to Shoemaker Bridge. Appendix 1 provides depth contours in the Los Angeles River Estuary between the Golden Shore Marine Reserve and the northern limit of the Shoemaker Bridge Project Area divided into 6 sections. Depths ranged between -0.75 ft and -22.4 ft, averaging -7.4 +/- 4 ft (n=3,636 measurements). The following discussion focuses on areas that could be potential navigational hazards for geotechnical field investigations associated with the Shoemaker Bridge Project.

Potential Navigational Hazards in the Los Angeles River Estuary

Shallow Depth Areas. Most of the River above the Queensway Bay Bridge was deeper than -5 ft MLLW within the CRM track boundaries. Some areas of the River were inaccessible between the Golden Shores Marine Biological Reserve and Ocean Avenue Bridge because of limited depths and a trash-debris boom and could not be mapped.

Two areas of the Los Angeles River Estuary were identified to pose some unknown level of navigational hazard based upon bathymetric and sonar data. Area 1 (Figure 11) was located just downstream of the Golden Shore Marine Reserve where water depths were extremely shallow and shoaled up to less than 1 ft deep for about 750 feet of the River. The River south of this location was dredged by the U.S. Army Corps of Engineers in 2015 and was mapped to depths of -22.4 ft MLLW near the Queensway Bay Bridge.

Submerged Structures

The riverbed mapping effort identified a second area of potential hazards where remnant pier piles were observed (Figures 12a, 12b, 12c). This area was located at the south end of the project area about 440 ft south of the existing Shoemaker Bridge. Several piles were observed jutting out from the soft bottom across the riverbed. The structures varied from about one to three feet in height so at low tide, the water depths would be approximately -2 to -4 ft MLLW. The origin of these structures is not known, but a historical record search of aerial maps for the area may elicit some clarification. Structure may also be located farther downstream and a more complete sidescan sonar survey may be necessary to document any additional potential hazards.

Surface Water Temperatures. Surface water temperature ranged between 68.5 to 69.6 degrees Fahrenheit (F) during the two-day survey.

3.2 SURVEY AREA OF COVERAGE

The survey area is shown in Figures 2 and survey track lines are shown in Figure 7. The bioacoustics survey “field of view” with the 200 kHz transducer (based on the transducer’s 20 degree down-angle) was 3.5 ft at an average survey depth of 9.8 ft. The total bioacoustics track line distance was 10.1 miles. The Area of Potential Effect (APE) was 12 acres. Based on these measurements, the CRM survey area covered 4.3 acres of river bed.

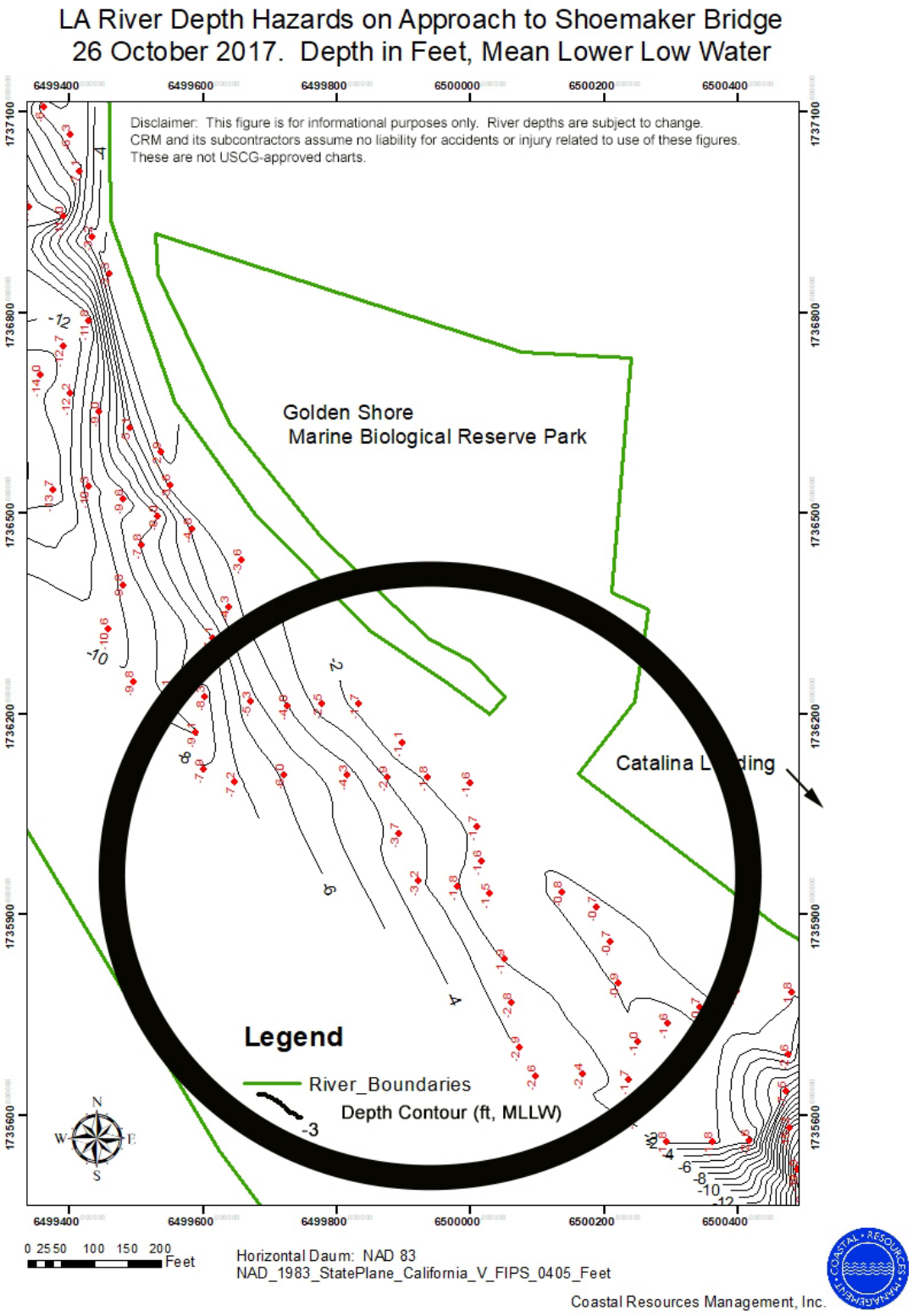


Figure 11. Navigational Hazard in the Lower Los Angeles River

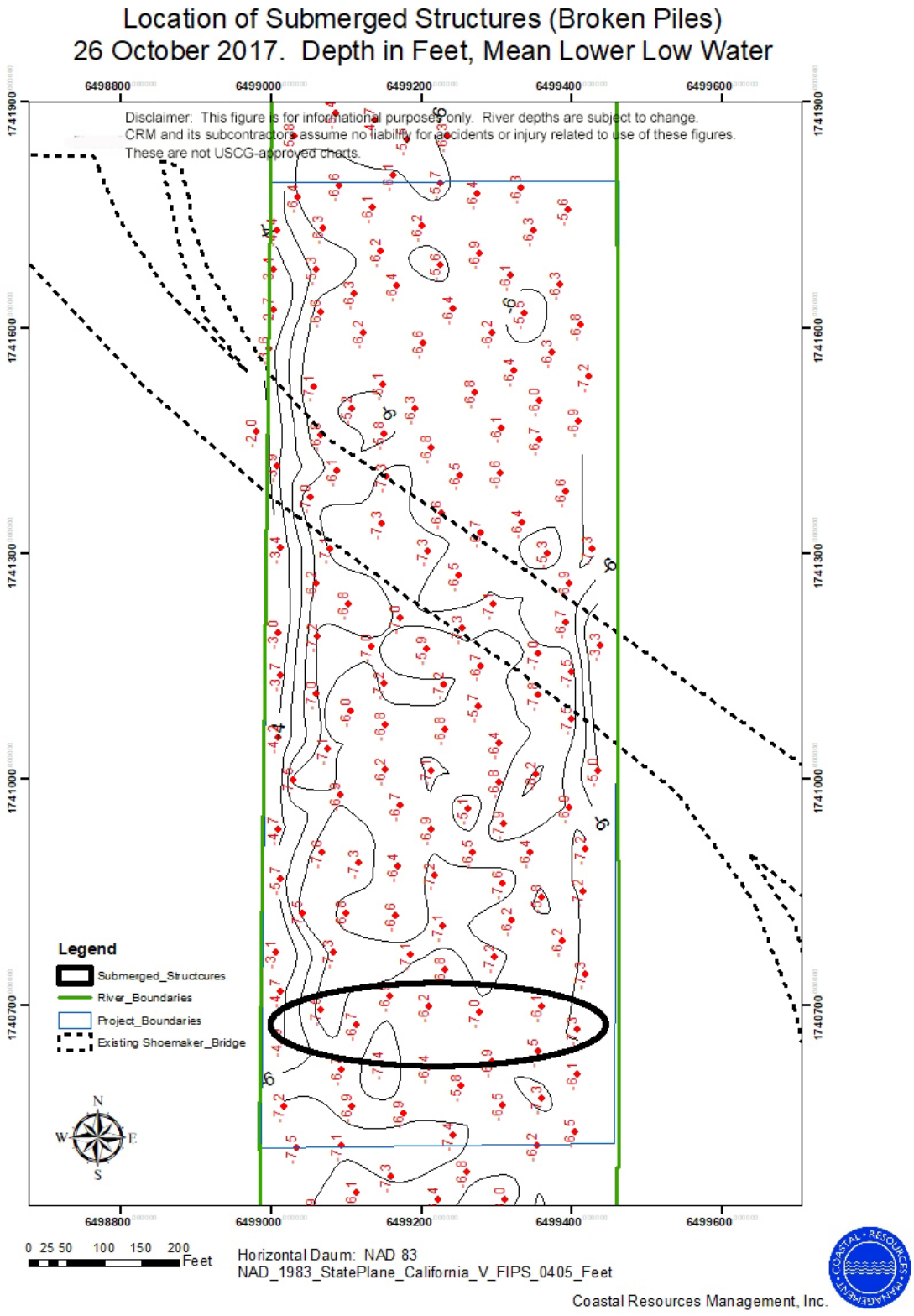


Figure 12a. General Location of Observed Submerged Structures (Broken Piles)

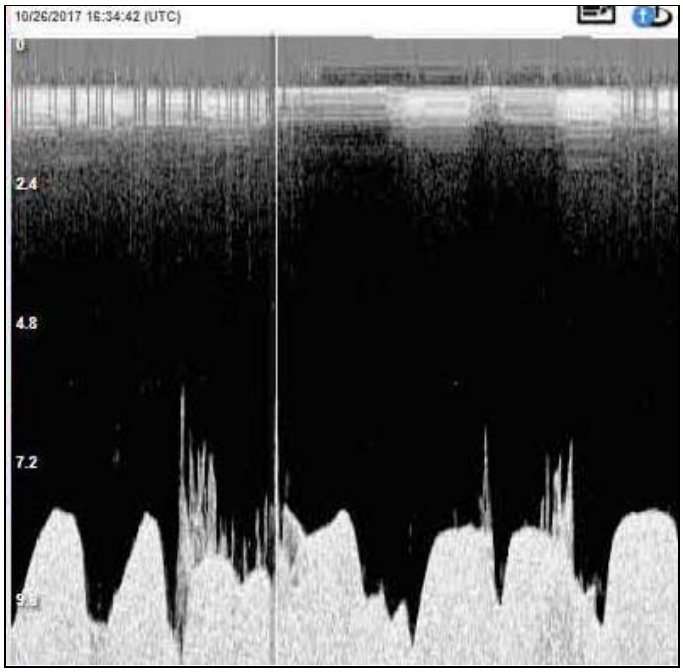


Figure 12b. Sonar Representation of Submerged Structures (450/800 KHz frequency) Note: Depths uncorrected for tides in this representation.



Figure 12c. Partial View of Cut-Off Piling Colonized By Mussels in the River at the South End of the Shoemaker Bridge Project Area. Several piles were observed extending between the east-and-west banks. The general locations are shown in Figure 12a.

3.3 HABITAT TYPES

Riparian habitat and protective rip rap cover were found along the River's waterline (Figures 13a and 13b). This rip rap provides habitat rocky intertidal plants and invertebrates, and foraging habitat for shorebirds and marsh birds. The vegetation provides cover and foraging habitat for marsh birds. The rip rap extended subtidally to the riverbed sediments (Figure 13c). The river bed sediments consisted of fine brown muds with evidence of biological activity in the form of burrows (Figure 13a). Occasional bottom debris and decaying vegetation colonized by invertebrates was observed, but this was an infrequent observance (Figure 13b).



Figure 13a. East Bank of River Immediately Upstream of Shoemaker Bridge



Figure 13b. East Bank Near Shoemaker Bridge

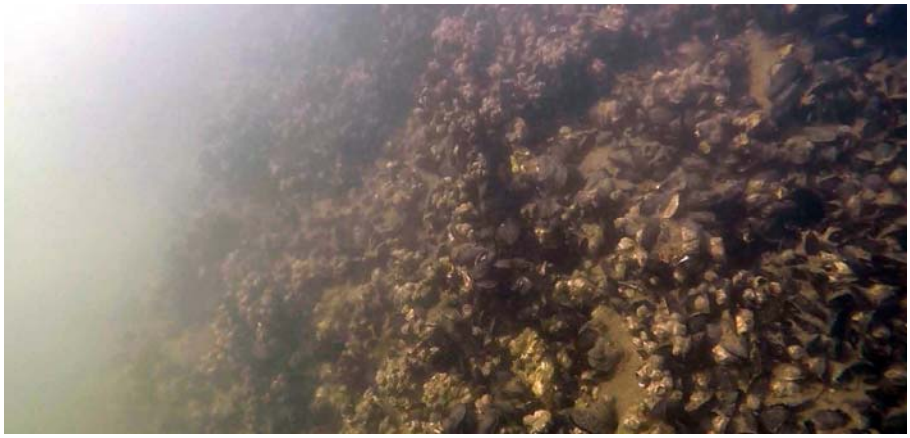


Figure 13c. Subtidal Rip Rap Slope



Figure 14a. Bottom Sediments in the Project Area



Figure 14b. Bottom Debris and Decaying Vegetative Material Lying on the River Bottom

3.4 *CAULERPA TAXIFOLIA*

No invasive algae (*Caulerpa taxifolia*) was observed in the 12 acre project area. The agency-required invasive algae survey form is presented in Appendix 2. The bottom area covered by bioacoustical survey was 35.6 %. A 20% minimum coverage bottom coverage is required for non-infected invasive algae systems (NMFS, 2008).

3.5 EELGRASS

No eelgrass (*Zostera marina*) was observed in the 12-acre project area.

3.6 FEDERAL-OR-STATE LISTED SPECIES

No federal-or-state-listed endangered, threatened, rare, or otherwise sensitive marine flora, invertebrates, sea turtles, fish, or marine mammals were observed within the survey area on October 26th and October 27th, 2017.

3.7 ESSENTIAL FISH HABITAT AND FISHERIES MANAGEMENT PLAN SPECIES. CRM conducted an Essential Fish Habitat Analysis for the Route 710 Improvement Project in the Lower Los Angeles River (CRM, 2009). Of four finfish FMP species identified to be present in Queensway Bay, only the northern anchovy (*Engraulis mordax*) was expected to be present in any significant numbers in the River's estuarine reach. The majority of the anchovy population was expected to occur in Queensway Bay and San Pedro Bay at depths greater than 12 feet deep.

3.8 OTHER BIOLOGICAL OBSERVATIONS

The plant community on the banks of the River included mulefat, rush, and cattails. Based upon field surveys conducted on 10 October 2009, the rocky intertidal lining the river bank is species poor and consists of low-to-high cover of barnacles (*Balanus amphitrite* and *B. glandula*), mussels (*Mytilus galloprovincialis* and *Geukensia demissa*; a covering of filamentous green algae (*Ulva* spp.), and a filamentous red algae turf (CRM, 2009).

No Submerged Aquatic Vegetation (SAV) was observed during the 2017 survey. However, invertebrates were present on the intertidal and subtidal rip rap during the 26 October, 2017 bottom habitat video target verification survey. Barnacles and mussels were also observed on the submerged structures and bottom debris. Tubes of polychaete worms were visible on the underside of rocks and the soft bottom riverbed.

No fish were observed during the survey, although we observed several cormorants (*Phalacrocorax* sp.) successfully fishing on baitfish, and surface activity consistent with baitfish schooling behavior. We also observed fish schools on the sonar traces but were not able to identify the species. Most likely, the schools were topsmelt (*Atherinops affinis*) or similar species. During the CRM October 2009 Lower Los Angeles River field reconnaissance survey, six carp also were observed nearby, 200 meters south of the Pacific Coast Highway bridge over an apron of rock rip rap (CRM, 2009).

4.0 IMPACT ASSESSMENT

4.1 PROPOSED GEOTECHNICAL WORK (Source: Twining Laboratories, 2017)

Twining, Inc. (Twining) is proposing to conduct geotechnical exploration in the Los Angeles River for the Shoemaker Bridge project in Long Beach, California (Twining Laboratories, 2017). In general, the work will consist of drilling into the unlined bottom of the Los Angeles River for purposes of collecting soil samples and performing geotechnical engineering analyses related to the design of the bridge foundations. Additionally, the work will consist of the advancement of cone penetration tests (CPTs) in the bottom of the unlined Los Angeles River for the purpose of collecting critical geotechnical engineering data that will be used in the analyses for design of the bridge foundations. The amount of sediments released into the water during this process is expected to be minimal. The river at the drilling location is unlined and the anticipated sources of sediment disturbance are the following:

Drilling in the Los Angeles River will be performed by Gregg Drilling using an amphibious carrier mounted with a drill rig. The amphibious carrier was selected for drilling based on the uncertainty of the depth of water at the drilling location due to tidal action and seasonal changes in water depth. The amphibious carrier can operate in deep, shallow and no-water conditions.

Gregg Drilling will transport the amphibious carrier by trucks to Curtin Maritime located at 1500 Pier C Street in Long Beach, California (Figure 15). The carrier will be assembled at the Curtin facility and then placed in the water with a crane adjacent to their facility. The carrier will then either self-propel to the project location or be towed to the project location. If the water is less than about 2 to 3 feet-deep, the amphibious carrier will track along the bottom of the unlined channel which will stir sediments along its path of travel. If the water is deeper than 3 feet, the tracks will not be in contact with the river bottom and will not stir any sediment.

Setting the 10-inch-diameter steel casing by pushing into the bottom of the unlined river will stir sediments while being pushed. After pushing, the casing will remain relatively still and not cause additional sediment disturbance. If needed, the amphibious carrier will be anchored in place using up to four anchors that will rest on the bottom of the river. Minor amounts of sediments will be disturbed while these anchors are in place.

Upon completion of drilling, the borehole will be flushed with seawater through the closed-loop circulatory system which will remove the soil cuttings from the borehole and deposit the cuttings into the on-board tank. The boring will be backfilled with slurry and displacing the water in the borehole into the on-board tank. Finally, the casing will be removed which will stir a minor amounts of sediments as it is withdrawn from the bottom of the river.

It is possible that the casing pushed into the river bottom could be compromised during the drilling, which could result in the release of sediments. The amount of sediment that could



Figure 15. Location of Amphibious Carrier Mobilization Area
Relative to the Shoemaker Bridge Project Area

be released in this scenario is difficult to quantify, but drilling would be immediately halted to minimize sediment release. Drilling would commence after resetting the casing at the bottom of the river and reestablishing a closed-loop system. The project will require three days of drilling.

4.2 POTENTIAL IMPACTS ON WATER QUALITY

Short-term impacts to water quality will result in result in the resuspension of fine sediments into the water column that will create a localized turbidity plume in the local area. Turbidity may also increase if vessel propellers impact the basin seafloor or prop wash stirs up bottom sediments.

Water clarity will return to ambient levels following the cession in-water activities. To limit the potential for degradation of water quality, other Best Management Practices (BMPs) are provided in Section 5.0.

4.3 POTENTIAL IMPACTS ON MARINE BIOTA

Invasive Algae (*Caulerpa taxifolia*). There is no evidence that the invasive algae Caulerpa taxifolia exists at the project site; therefore the project will not impact this invasive species.

Eelgrass (*Zostera marina*). Eelgrass is not present at the project site, and therefore will not be affected.

Listed or Otherwise Sensitive Species. No impacts to state-or-federal listed endangered, threatened, rare, or otherwise sensitive species of marine plants, marine invertebrates, or fishes are anticipated from dredging and/or other water-side drilling activity. This assessment however, does not address marine birds and terrestrial wildlife.

Essential Fish Habitat and Fishery Management Plan Species. There are no Habitats of Particular Concern (HAPC, i.e., eelgrass or kelp beds) in the project area. Potential impacts coastal pelagic FMP species and groundfish species are expected to be minimal. Project-related impacts could result in northern anchovy temporarily avoiding the project area, and a minimal potential for mortality of larval anchovy. An increase in the suspended sediment load would temporarily increase the exposure of these species to potentially harmful levels of contaminants and clog their gills, resulting in a reduced ability to feed. Of 84 groundfish FMP species, three species-the leopard shark, spiny dogfish shark, and California sculpin have been reported within Queensway Bay, and none with the Los Angeles River project area.

O**ther Marine Life.** Short-term reductions in benthic organisms will occur due to any river bed amphibious carrier contact with the sediments, any anchoring, and vessel grounding. These reductions are substantially less than seasonal changes due to high flow rates in the River that will remove and redistribute river sediments and benthic organisms. Geotechnical coring impacts are short-term and benthic communities will begin to recolonize the sediments following the cessation of coring and vessel-related activity in the project area.

The coring project will not affect the rip rap and plant communities located along the shoreline. However, if the amphibious carrier is launched from the western side of the River near Shoemaker Bridge, care should be taken to avoid damage to riparian wetland habitat and rip rap-associated organisms.

5.0 RECOMMENDATIONS AND BEST MANAGEMENT PRACTICES

5.1 DEPTH PROFILES

1. CRM's depth survey (provided on 12-hours' notice) provided an initial indication of depths within the project region relative to the ability of the Gregg Amphibious Carrier to access the project area. Preliminary results suggest that depths **may** be sufficient for the amphibious tracker to avoid contact with the riverbed based on local sounds relative to Mean Lower Low Water if the carrier is mobilized from Curtin Maritime and placed in the water in the immediate vicinity of the Shoemaker Bridge. CRM recommends the geotechnical study be conducted during neap* tides to minimize extreme fluctuations (particularly the low tide height).
2. The actual tide height and timing of tides at Shoemaker Bridge may differ slightly, since our tidal datum station was Long Beach Harbor, Pier A.
3. Secondly, if the amphibious carrier has to access the Shoemaker Bridge from Queensway Bay, there are depth restrictions on the north side of Queensway Bridge.
4. Lastly, the downlooking sonar survey indicated bottom hazards may exist approximately 400 ft south of Shoemaker Bridge between the east and west banks of the river. We are not sure if these are the only obstructions that might be present
5. CRM highly recommends a site-specific sidescan sonar survey and a bridge-specific tidal study to definitively determine the tidal conditions within the project area.

5.2 BEST MANAGEMENT PRACTICES TO REDUCE POTENTIAL IMPACTS TO MARINE LIFE AND ESSENTIAL FISH HABITAT

1. No construction materials, equipment, debris, or waste should be place or stored where it may be subject to tidal erosion and dispersion. Construction materials shall not be stored in contact with the soil.
2. All trash should be disposed of in the proper trash receptacles at the end of each construction day.
3. Any construction debris should be removed from the site.
4. Floating booms should be used to contain debris when feasible and any debris discharged shall be removed no later than the end of each day.
5. If turbid conditions are generated during construction, a silt curtain should be utilized to control turbidity. Construction methods shall be used that are the least-damaging to benthic sediments and organisms.

***Neap tide**: refers to a period of moderate tides during each month when the sun and moon are at right angles to each other.

6. Reasonable and prudent measures should be taken to prevent all discharge of fuel or oily waste from heavy machinery or construction equipment or power tools into the Los Angeles River Estuary. The City of Long Beach shall have adequate equipment available to contain such spills immediately.

6.0 LITERATURE CITED

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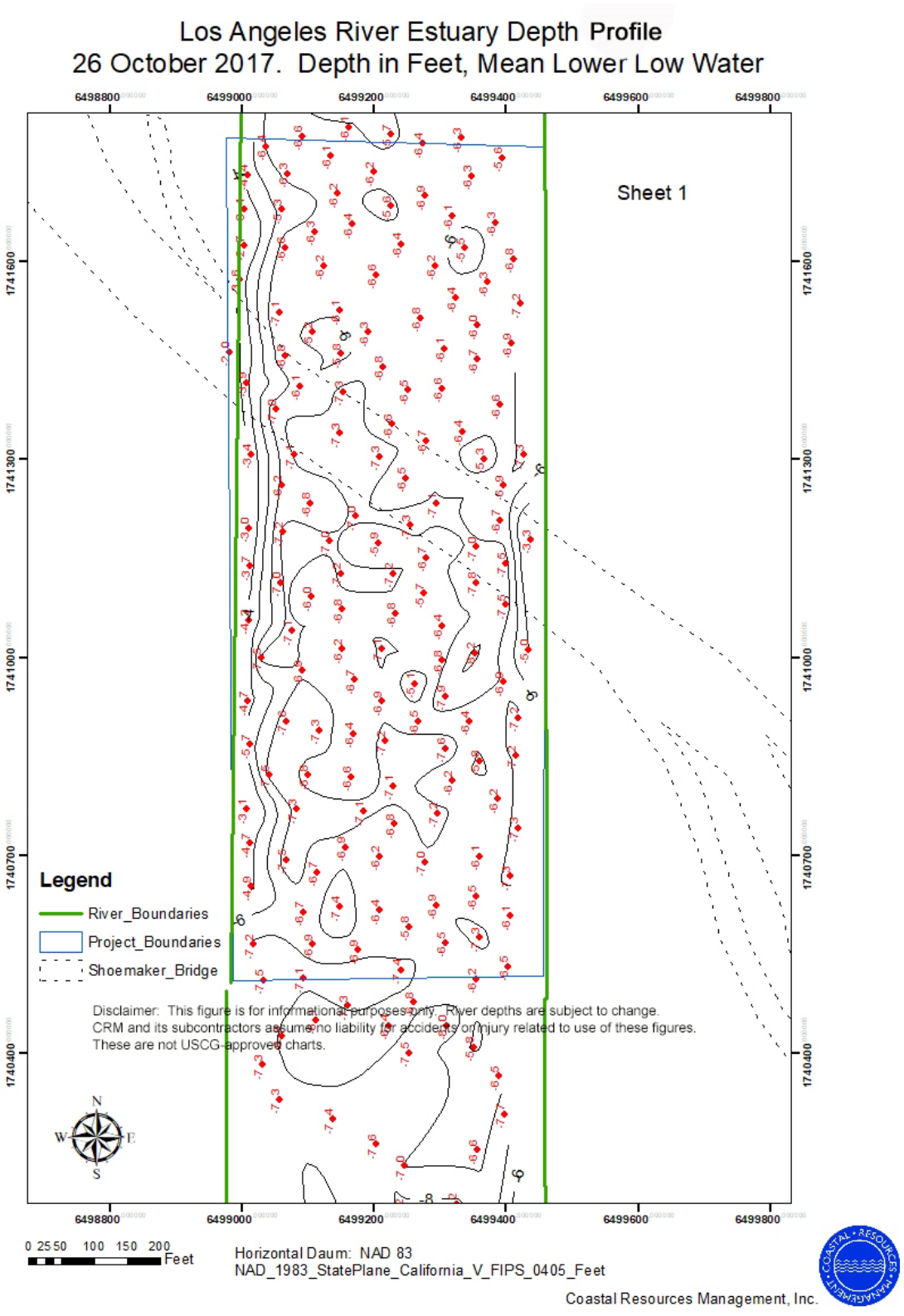
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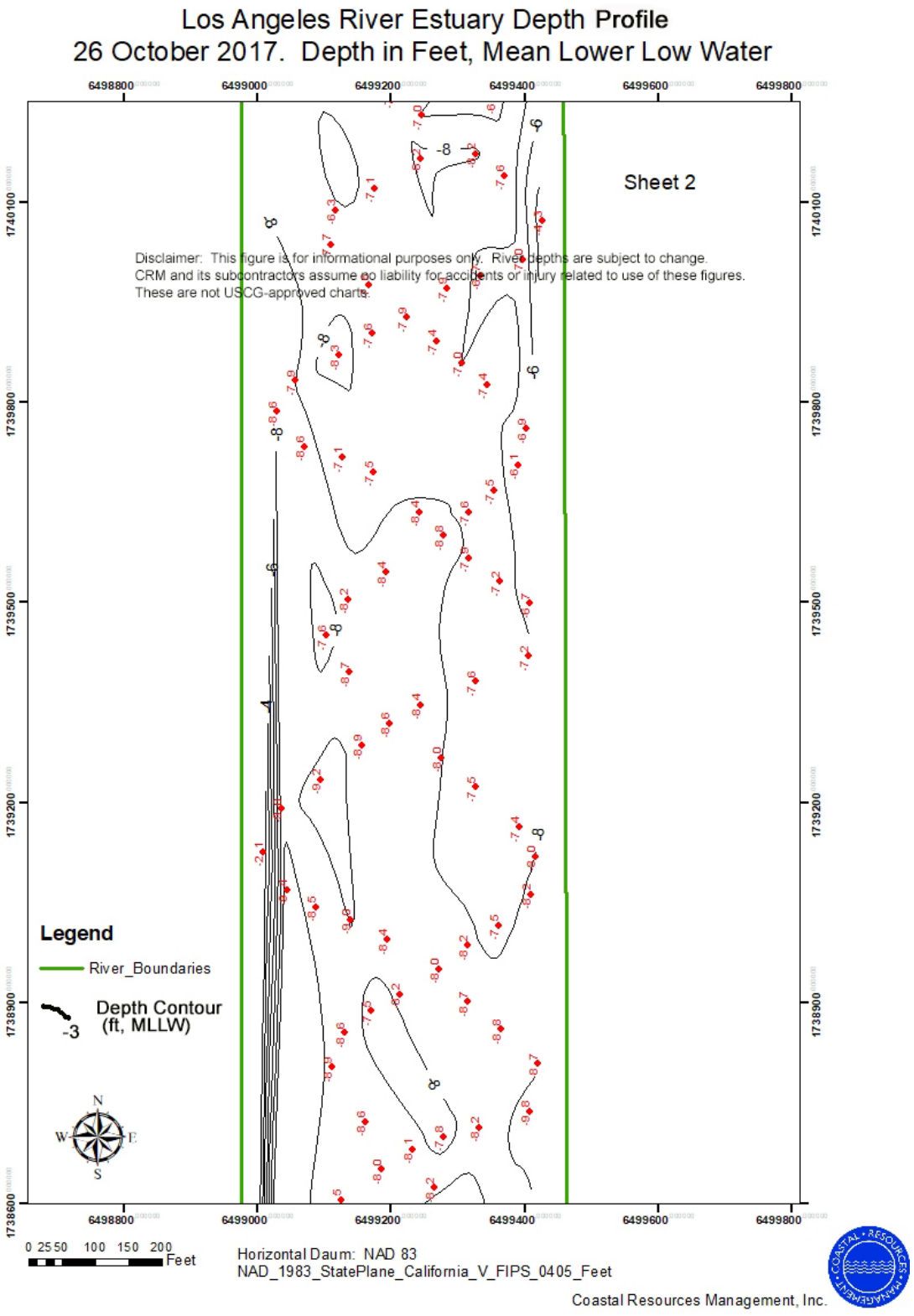
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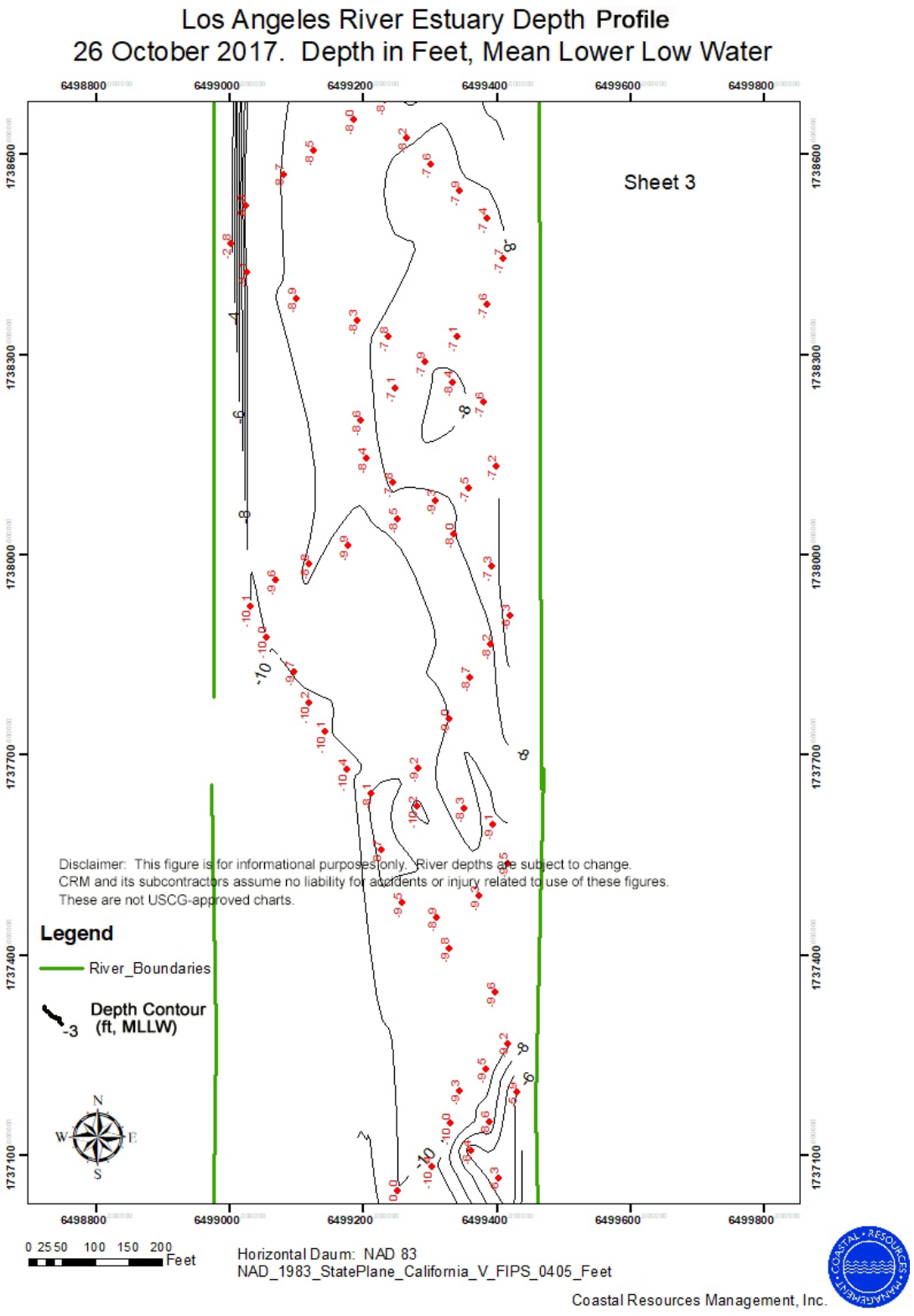
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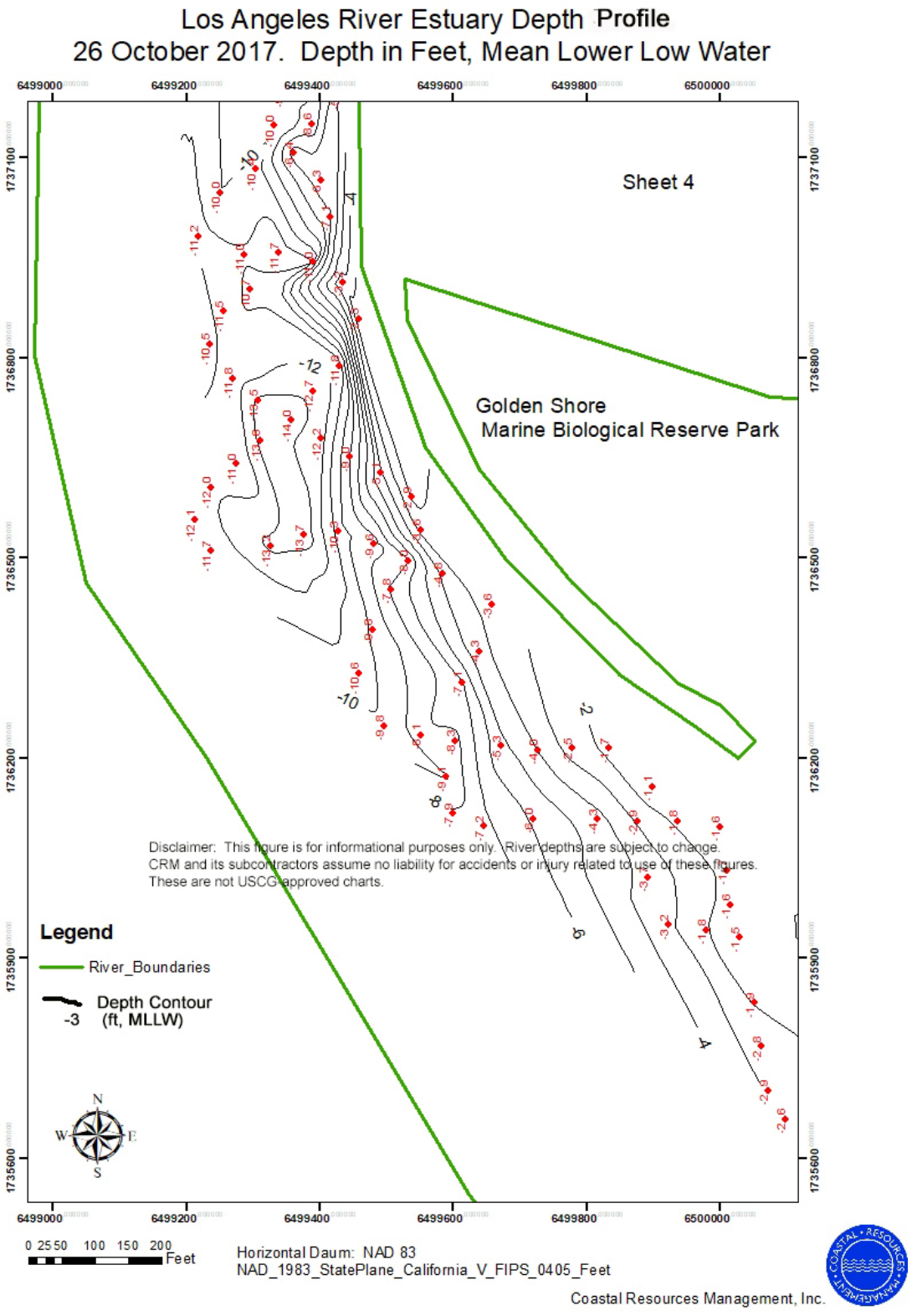
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APPENDIX 1.
CRM LOS ANGELES RIVER ESTUARY DEPTH PROFILE
BETWEEN THE QUEENSWAY BAY BRIDGE AND SHOEMAKER BRIDGE

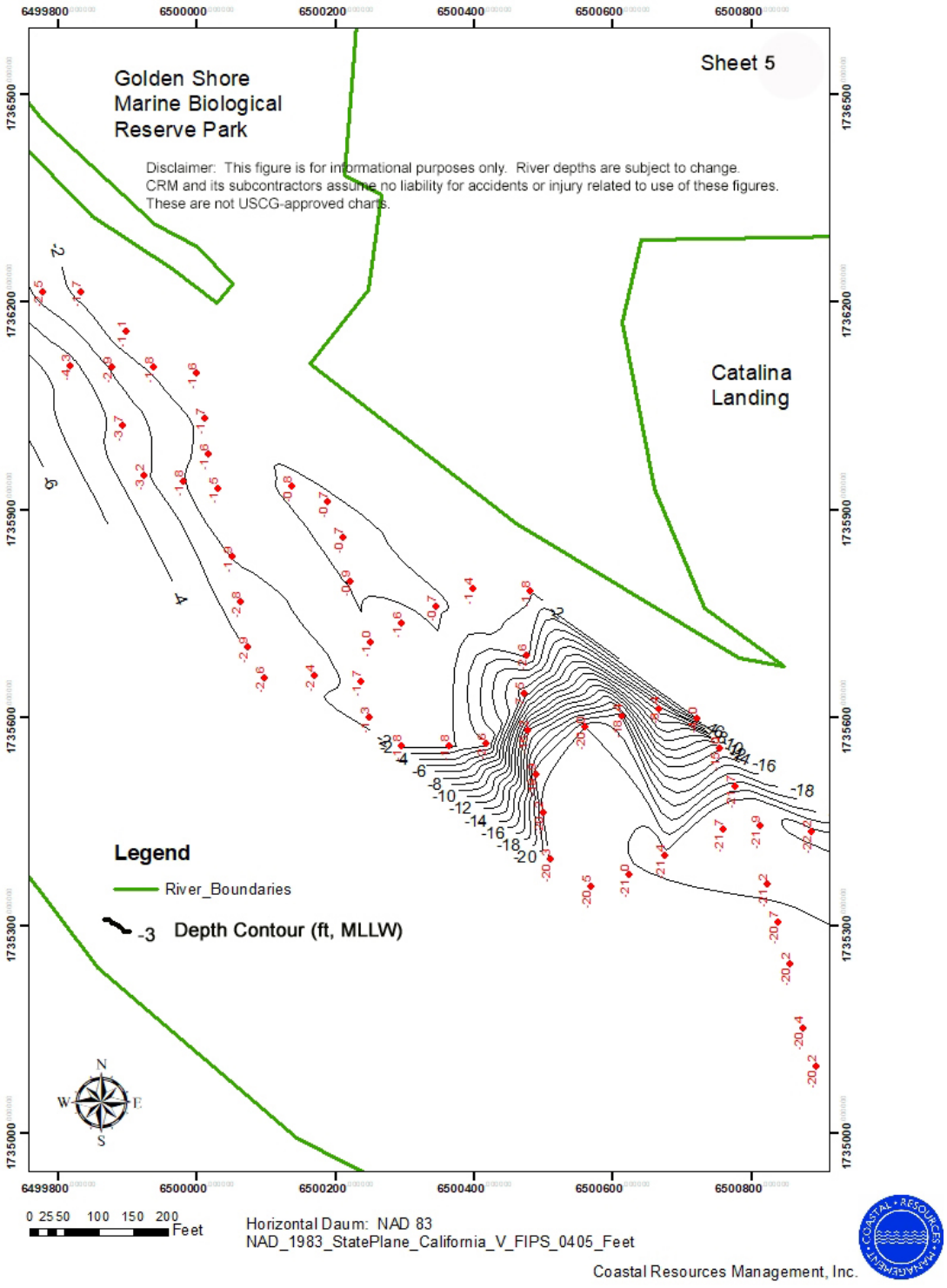

Los Angeles River Estuary Depth Profile
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6499600
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1741000
1740700
1740400
Legend
River_Boundaries
Project_Boundaries
Shoemaker_Bridge
Disclaimer: This figure is for informational purposes only. River depths are subject to change.
CRM and its subcontractors assume no liability for accidents or injury related to use of these figures.
These are not USCG-approved charts.
N
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0 25 50 100 150 200
Feet
Horizontal Daum: NAD 83
NAD_1983_StatePlane_California_V_FIPS_0405_Feet
Coastal Resources Management, Inc.


Los Angeles River Estuary Depth Profile
26 October 2017. Depth in Feet, Mean Lower Low Water
Sheet 2
Disclaimer: This figure is for informational purposes only. River depths are subject to change.
CRM and its subcontractors assume no liability for accidents or injury related to use of these figures.
These are not USCG-approved charts.
Legend
River_Boundaries
Depth Contour
(ft, MLLW)
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Coastal Resources Management, Inc.

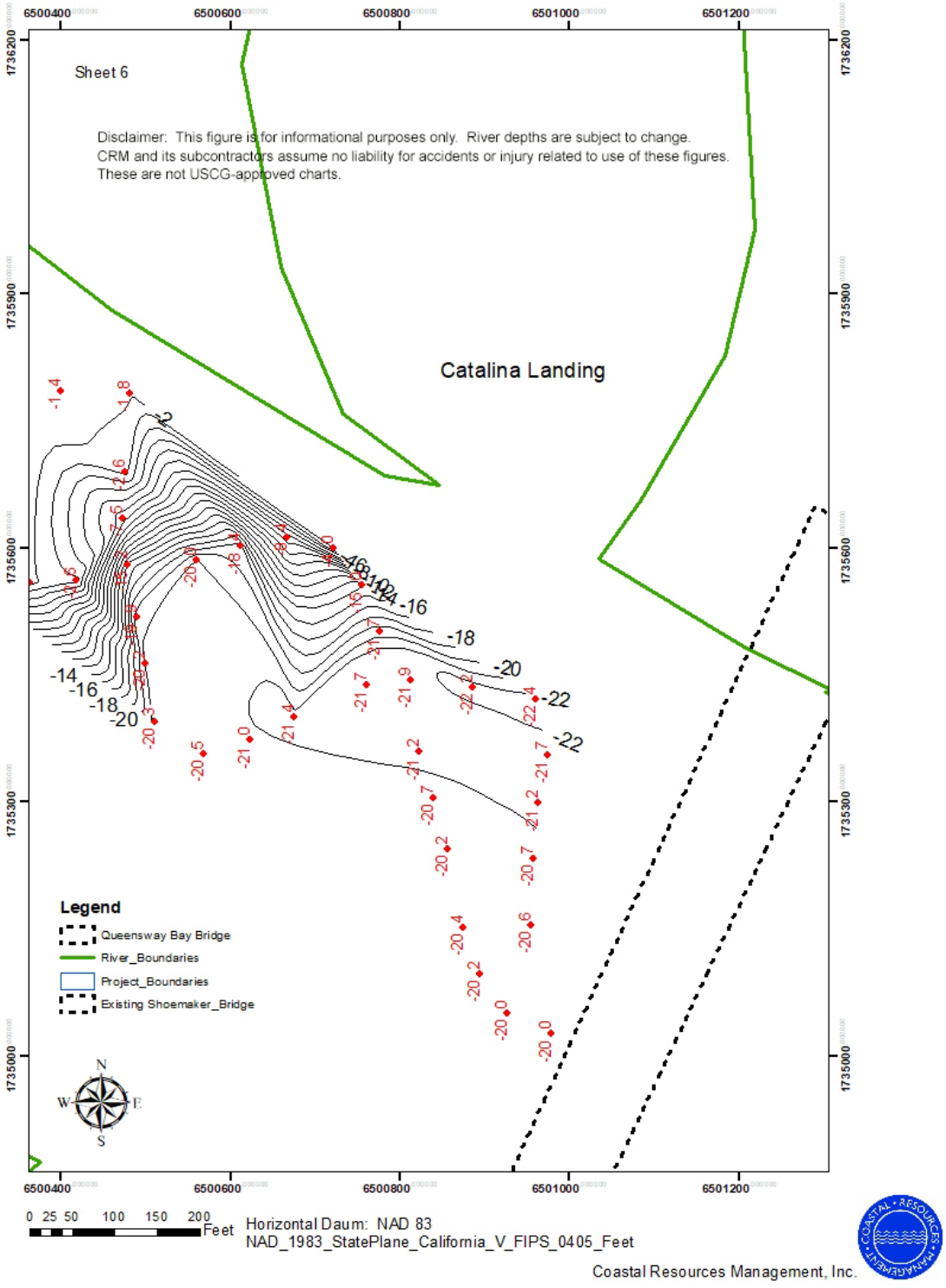

Los Angeles River Estuary Depth Profile
26 October 2017. Depth in Feet, Mean Lower Low Water
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Disclaimer: This figure is for informational purposes only. River depths are subject to change.
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These are not USCG-approved charts.
Legend
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Feet
Horizontal Daum: NAD 83
NAD_1983_StatePlane_California_V_FIPS_0405_Feet
Coastal Resources Management, Inc.


Los Angeles River Estuary Depth Profile
26 October 2017. Depth in Feet, Mean Lower Low Water
Sheet 4
Golden Shore
Marine Biological Reserve Park
Disclaimer: This figure is for informational purposes only. River depths are subject to change.
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These are not USCG approved charts.
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River_Boundaries
Depth Contour
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0 25 50 100 150 200
Feet
Horizontal Daum: NAD 83
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Coastal Resources Management, Inc.

Los Angeles River Estuary Depth Profile
26 October 2017. Depth in Feet, Mean Lower Low Water



Los Angeles River Estuary Depth Profile
26 October 2017. Depth in Feet, Mean Lower Low Water



A**PPENDIX 2.** ***CAULERPA TAXIFOLIA*** **REPORTING FORM**

Caulerpa taxifolia Survey Reporting Form

PROPOSED GEOTECHNICAL CORING ACTIVITY NEAR THE SHOEMAKER BRIDGE, LOS ANGELES RIVER ESTUARY

SURVEY DATE:
October 26th and October 27th, 2017

Prepared for:

Ruth Villalobos & Associates
3602 Inland Empire Blvd., Suite C310, Ontario, CA 91764
Contact: Miranda Losing, Environmental Analyst
(909) 245-1129; mlosing@rvacorp.com

Prepared by:

Coastal Resources Management, Inc.
144 N Loreta Walk, Long Beach, CA
Contact: Rick Ware, Principal/Senior Marine Biologist
(949) 412-9446; rware.crm@gmail.com

November 8th, 2017

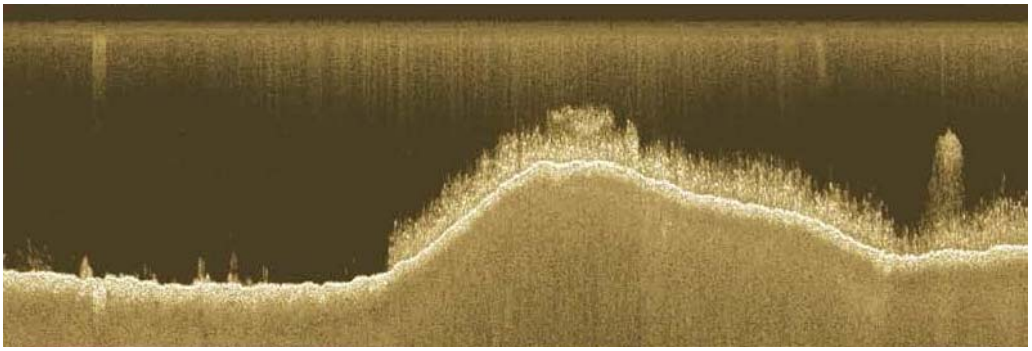
This form is required to be submitted for any surveys conducted for the invasive exotic alga *Caulerpa taxifolia* that are required to be conducted under federal or state permits and authorizations issued by the U.S. Army Corps of Engineers or Regional Water Quality Control Boards (Regions 8 & 9). The form has been designed to assist in controlling the costs of reporting while ensuring that the required information necessary to identify and control any potential impacts of the authorized actions on the spread of *Caulerpa*. Surveys required to be conducted for this species are subject to modification through publication of revisions to the *Caulerpa* survey policy. It is incumbent upon the authorized permittee to ensure that survey work is following the latest protocols. For further information on these protocols, please contact: Bryant Chesney, National Marine Fisheries Service (NOAA Fisheries), (562) 980-4037, or William Paznokas, California Department of Fish & Game, (858) 467-4218.

(

Report Date:	November 8th, 2017
Name of bay, estuary, lagoon, or harbor:	Los Angeles River Estuary (LARE) See Figures 1 and 2.
Specific Location Name:	Shoemaker Bridge crossing over the LARE.
Site Coordinates: (UTM, Lat./Long., datum, accuracy level, and an electronic survey area map or hard copy of the map **must** be included).	Accuracy: < 1 meter, Lat/Long. 33.779911° N 118.205448° W.
Survey Contact: (name, phone, e-mail)	Rick Ware, Senior Marine Biologist, Coastal Resources Management, Inc. Certified NMFS *Caulerpa* Surveyor (949) 412-9446, rware.crm@gmail.com
Personnel Conducting Survey (if other than above): name, phone, email	
Permit Reference: (ACOE Permit No., RWQCB Order or Cert. No.)	USACE: 404 SPL-2017-00449-LRS CDFW: Notification No. 1600-2017-0140-R5 Regional Board: 401 Water Quality Cert. (File No. 17-095)
Is this the first or second survey for this project?	1st
Was *Caulerpa* Detected?: (if *Caulerpa* is found, please immediately contact NOAA Fisheries or CDFG personnel identified above)	**X X** **No, *Caulerpa* was not found at this site.**

Description of Permitted Work: (describe briefly the work to be conducted at the site under the permits identified above)	**(Source: Twining Laboratories).** See Figure 3. Twining, Inc. (Twining) is proposing to conduct geotechnical exploration in the Los Angeles River for the Shoemaker Bridge project in Long Beach, California (Twining Laboratories, 2017). In general, the work will consist of drilling into the unlined bottom of the Los Angeles River for purposes of collecting soil samples and performing geotechnical engineering analyses related to the design of the bridge foundations. Additionally, the work will consist of the advancement of cone penetration tests (CPTs) in the bottom of the unlined Los Angeles River for the purpose of collecting critical geotechnical engineering data that will be used in the analyses for design of the bridge foundations. The amount of sediments released into the water during this process is expected to be minimal. The river at the drilling location is unlined and the anticipated sources of sediment disturbance are the following:

	Drilling in the Los Angeles River will be performed by Gregg Drilling using an amphibious carrier mounted with a drill rig. The amphibious carrier was selected for drilling based on the uncertainty of the depth of water at the drilling location due to tidal action and seasonal changes in water depth. The amphibious carrier can operate in deep, shallow and no-water conditions. Gregg Drilling will transport the amphibious carrier by trucks to Curtin Maritime located at 1500 Pier C Street in Long Beach, California. The carrier will be assembled at the Curtin facility and then placed in the water with a crane adjacent to their facility. The carrier will then either self-propel to the project location or be towed to the project location. If the water is less than about 2 to 3 feet-deep, the amphibious carrier will track along the bottom of the unlined channel which will stir sediments along its path of travel. If the water is deeper than 3 feet, the tracks will not be in contact with the river bottom and will not stir any sediment. Setting the 10-inch-diameter steel casing by pushing into the bottom of the unlined river will stir sediments while being pushed. After pushing, the casing will remain relatively still and not cause additional sediment disturbance. If needed, the amphibious carrier will be anchored in place using up to four anchors that will rest on the bottom of the river. Minor amounts of sediments will be disturbed while these anchors are in place. Upon completion of drilling, the borehole will be flushed with seawater through the closed-loop circulatory system which will remove the soil cuttings from the borehole and deposit the cuttings into the on-board tank. The boring will be backfilled with slurry and displacing the water in the borehole into the on-board tank. Finally, the casing will be removed which will stir a minor amounts of sediments as it is withdrawn from the bottom of the river. It is possible that the casing pushed into the river bottom could be compromised during the drilling, which could result in the release of sediments. The amount of sediment that could be released in this scenario is difficult to quantify, but drilling would be immediately halted to minimize sediment release. Drilling would commence after resetting the casing at the bottom of the river and reestablishing a closed-loop system. The project will require three days of drilling.	
Description of Site:	*Depth range:*	Depths in the Shoemaker Bridge Project Area ranged between -1.2 feet (ft) over rip rap and -8.33 ft in the River. In the Shoemaker Bridge Project Area, mean depth was -5.7 +/- 0 .8 ft MLLW (n=6,911 readings). Soft-bottom river depths were deeper than 5 feet MLLW.
	Temperature:	68.5 to 69.6 degrees Fahrenheit (F
	Salinity:	0-32 parts per thousand
	Dominant flora:	None.
	Dominant fauna:	No organisms were observed on the soft bottom. However, bioturbation and burrows of marine organisms were observed. Intertidal and subtidal rip rap organisms observed included low-to-high cover of barnacles (*Balanus amphitrite* and *B. glandula*), mussels (*Mytilus galloprovincialis* and *Geukensia demissa*. No fish were observed during the survey, although we observed several cormorants successfully fishing on bait fish during the survey, and surface activity consistent with baitfish schooling behavior. We also observed fish schools on the sonar traces but were not able to identify the species. Most likely, the schools were topsmelt (*Atherinops affinis*) or similar species. **Federal-or-State Listed Species**. No federal-or-state-listed endangered, threatened, rare, or otherwise sensitive marine flora, invertebrates, fish, reptiles, or marine mammals were observed at the project site during the survey.

	Exotic species encountered (including any other Caulerpa species):	None
	Other site description notes:	None
Description of Survey Effort:	*Survey date and time period:*	October 26th and October 27th, 2017
Description of Survey Effort: please describe the surveys conducted including type of survey (SCUBA, remote video, etc.) and survey methods employed, date of work, and survey density (estimated percentage of the bottom actually viewed.	*Horizontal visibility in water:*	Underwater visibility (horizontal) averaged 3 feet based upon the average depth (9.8 ft) and the 20 degree down-angle beam of the 200 KHz transducer
	Survey type and methods:	CRM's Lowrance Carbon HDS-12 Chartplotter/Ecosounder and Downlooking Sonar System was used to acoustically collect data on bottom depth, subsurface features, and Submerged Aquatic Vegetation (SAV) from the unit's 200-kilohertz (kHz) transducer acoustic signal associated with a Wide Area Augmentation System (WAAS)-corrected global positioning system (GPS) position. In addition, a 455/800 kHz transducer and power module with dual channels (Structurescan and downlooking) provided a 180 degree view and a downlooking view of the seafloor (data were logged on the 800-kHz channel). Acoustic beam angle for the 200-kHz signal on the 83/200-kHz dual frequency transducer (standard transducer on HDS units) was 20 degrees; the beam coverage for the 455/800 dual frequency transducer was 180 degrees with side lobe angles of 0.9 degree and the down-looking lobe of 1.1 degrees. This narrow elliptical beam essentially "scans" seafloor bottoms. Ping rates were set at 15 per second. Pulse width was dynamic and varied depending on depth, which varied between 2 and 30 feet. Acoustic data were collected at the Lowrance default of 3,200 bytes per second. The range window on the unit was set to Auto, which maximized the resolution of the acoustic envelope at the full range of depths sampled (approximately 0 to 20 feet). GPS positions were recorded every one second, and bottom features from pings that elapsed between positional reports were averaged for each coordinate/data point. Therefore, the attribute value (e.g., depth and plant height) of each data point along a traveled path comprised a summary of 5 to 30 pings. Each ping went through a quality test to determine whether features could be extracted and, if so, was sent on to feature detection algorithms. Those failing quality assurance tests were removed from the set considered for summarization. An example of the ability of the unit's ability to detect SAV is below.  Down-looking Sonar Image Produced by the Lowrance HDS 12 Carbon unit. Submerged Aquatic Vegetation (i.e., eelgrass and benthic algae is recorded as in this example). A school of baitfish is also observed in this image above the eelgrass

		Data were collected along 71 survey track lines throughout the 12 acre survey area (Figure 4). Track lines spacing was 10 to 25 ft (Figure 4). The vessel was run at a speed of between 0.5 and 2 knots. Acoustic (traditional, down-looking, and sidescan) and GPS signals were logged to data storage cards (.sl2 format). In the office, the data were uploaded to C-Map EcoSound Mapping Program for analysis (http://www.cibiobase.com). Data analyses were performed using cloud-based software models and statistical algorithms incorporated into ciBioBase developed by Contour Innovations, LLC, St. Paul, Minnesota (Contour Innovations LLC 2013; http://www.cibiobase.com). Following the completion of the bioacoustical survey, CRM conducted Remote Underwater Video (RUV) surveys to identify specific river floor targets obtained by the bioacoustical equipment and to characterize bottom habitat types any observed marine life. The camera system was an Ocean Systems, Inc. Deep Blue Professional Grade Underwater Video Camera ("Splash Cam") attached to a military-grade umbilical cable. The camera dimensions were 3" diameter wide and 3.5" long. The unit's resolution was 540 TV lines, the CCD was a 1/3" Sony Super HAD, and the focus was fixed 1 inch to focal infinity. The lens was a 3.6 mm wide angle lens. This unit is designed to operate in super low light conditions and was augmented with a GoPro 4 HD camera mounted one foot (ft) above the Splash Cam (Figure 8). Real-time observations were made on the vessel with the Splash Cam along pre-determined tracks and specific waypoints that were marked during the prior day's survey. Each of the pre-determined tracks was recorded with the GoPro 4 camera and reviewed in the office to verify field observations.
Describe any limitations encountered during the survey efforts.	*Survey personnel:*	Rick Ware (CRM Senior Marine Biologist, certified *Caulerpa* surveyor) Rick Hollar and Dave Ball (Coastal Engineers) Tom Gerlinger (CRM Vessel Skipper)
	Survey density:	Data were collected along 71 survey track lines. The total bioacoustics track line distance was 10.1 miles. The Area of Potential Effect (APE) was 12 acres. Based on these measurements, the CRM survey area covered 4.3 acres of river bed (35.6%) of the 12-acre APE. A minimum of 20% coverage is required for non-infected Caulerpa systems.
	Survey limitations:	No survey limitations
Other Information: (use this space to provide additional information or references to attached maps, reports, etc.)	See attached: Figure 1 Regional Project Area Figure 2 Shoemaker Bridge Project Area Figure 3. Geotechnical Coring Locations Figure 4. Survey Vessel Track Lines	

FIGURES 1 THROUGH 4



Figure 1. Location of Shoemaker Bridge that crosses over the Los Angeles River Estuary in Long Beach, California



Figure 2. Coastal Resources Management, Inc. Invasive Algae Project Area

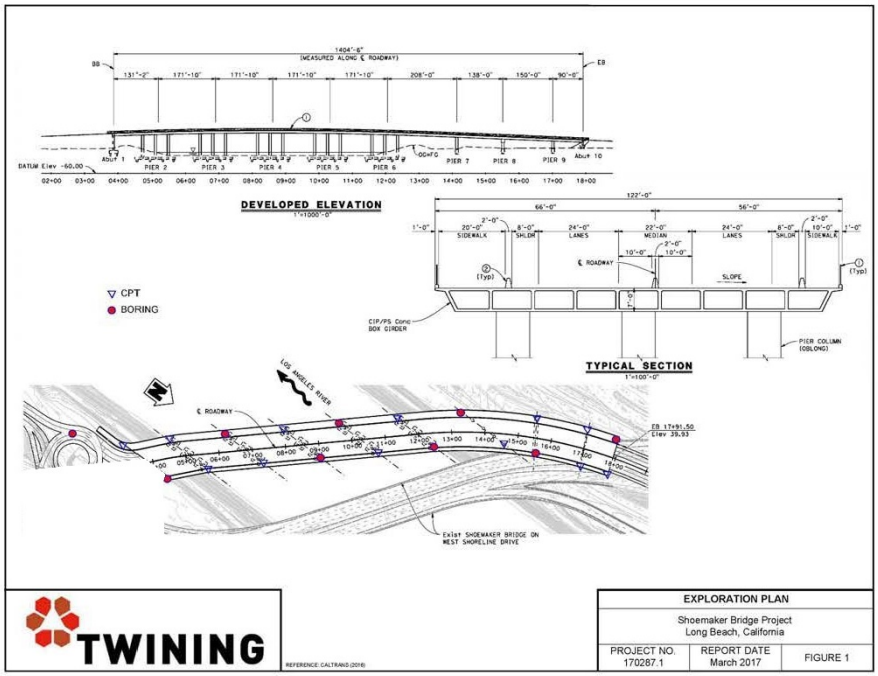


Figure 3. Existing and Proposed Bridge Layouts

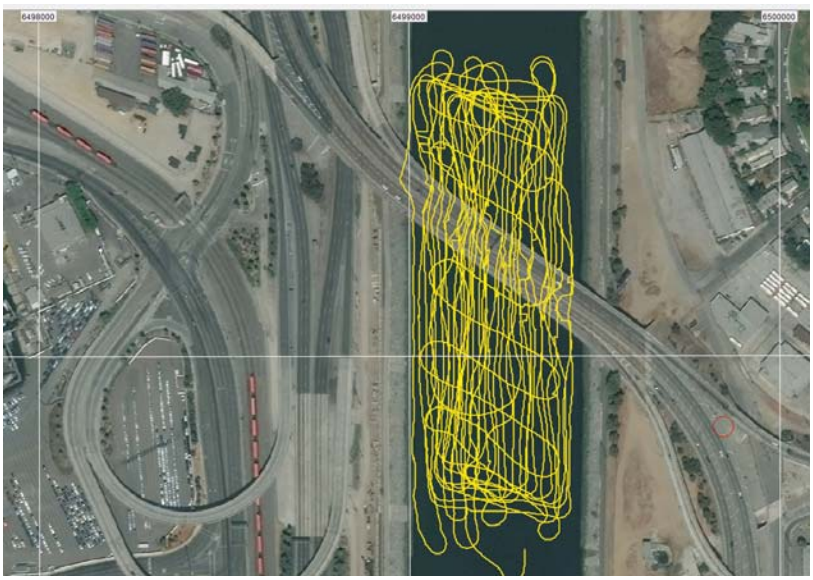


Figure 4. Survey Track Lines for the Bioacoustics Survey

Appendix F Assessment of Southern Steelhead Trout and Marine Mammals for the Shoemaker Bridge Replacement Project

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Memo

Date:	Tuesday, October 16, 2018
Project:	Shoemaker Bridge Replacement Project
To:	Paul Caron (Caltrans District 7), Patrick Thompson (Caltrans District 7)
From:	Sarah Barrera, HDR
Subject:	**Assessment of Southern Steelhead Trout and Marine Mammals for the Shoemaker Bridge Replacement Project**

Introduction

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

The existing Shoemaker Bridge conveys vehicular traffic over the LA River and SR-710 northbound lanes. 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, 6th and 7th Streets to Atlantic Boulevard. These limits provide the logical termini to facilitate the replacement of the existing bridge and accommodate planned City improvements, as well as the proposed improvements in the I-710 Corridor Project. Although the proposed Project is part of the overall design for the I-710 Corridor Project, due to the need for the proposed Project, it is being carried forward as a separate EAP. According to the July 2007 Structure Maintenance and Investigation Local Agency Bridge List, the Shoemaker Bridge is structurally deficient. Upon the completion of building a new replacement structure, the City intends to relinquish operational control and ownership of the bridge to Caltrans. In accordance with a right-of-way (ROW) Contract between the City and Caltrans, dated July 25, 2000, the Shoemaker Bridge must be provided by the City in an acceptable and safe condition prior to relinquishment.

The existing Shoemaker Bridge is geometrically and structurally deficient. Higher than average accident rates have been recorded on the bridge and ramp connections, in part due to the existing geometrics. An assessment of existing geometric and operational conditions, as compared to current Highway Design Manual standards, reveals that sight distance, ramp design, weaving length, shoulder width, and level of service are all deficient. Furthermore, the bridge alignment is not compatible with the planned I-710 corridor freeway improvements. The

existing alignment of West Shoreline Drive precludes the City's plans for the expansion of Cesar E. Chavez and Drake Parks. If the Shoemaker Bridge were to remain, at a minimum, the existing nonstandard features would remain and the existing bridge alignment would preclude planned improvements by other locally and regionally significant projects.

A Draft Natural Environment Study and Draft Biological Assessment have been prepared for the Project (HDR 2018a and 2018b) and are currently being reviewed by Caltrans. This letter is intended to provide additional technical information needed for National Marine Fisheries Service (NMFS) to review the Project in sufficient detail to determine to what extent the Project may affect southern California steelhead (*Oncorhychus mykiss*). The Project also provides additional documentation of marine mammal presence within the LA River. The Project is located within a portion of the LA River designated as an Essential Fish Habitat. Estuarine habitat within the Action Area, also referred to as the Biological Study Area (BSA), is stressed by development and provides an important but degraded migratory route for fish, including species that once inhabited the LA River but are now extirpated from the area due to upstream habitat loss, such as southern California steelhead. While the Action Area at this time does not provide high quality habitat, preservation of any Habitat Area of Particular Concern (HAPC) within the Action Area, also referred to as the Biological Study Area (BSA), would be important to future restoration efforts in other areas of the LA River.

Description of Proposed Action

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 non-motorized 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 Limits are shown in Figure 1. Project Design Features of Alternatives 2 and 3 are shown on Figure 2.

Although most of the modifications and construction would occur within the existing Caltrans or City ROW, a partial property acquisition, aerial easement, and temporary construction easements (TCE) from the Los Angeles Flood Control District 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 Adopted Federal Transportation Improvement Program* and the Southern California Association of Government's *2016 Regional Transportation Plan* for Los Angeles County as Project ID: LA0G830.

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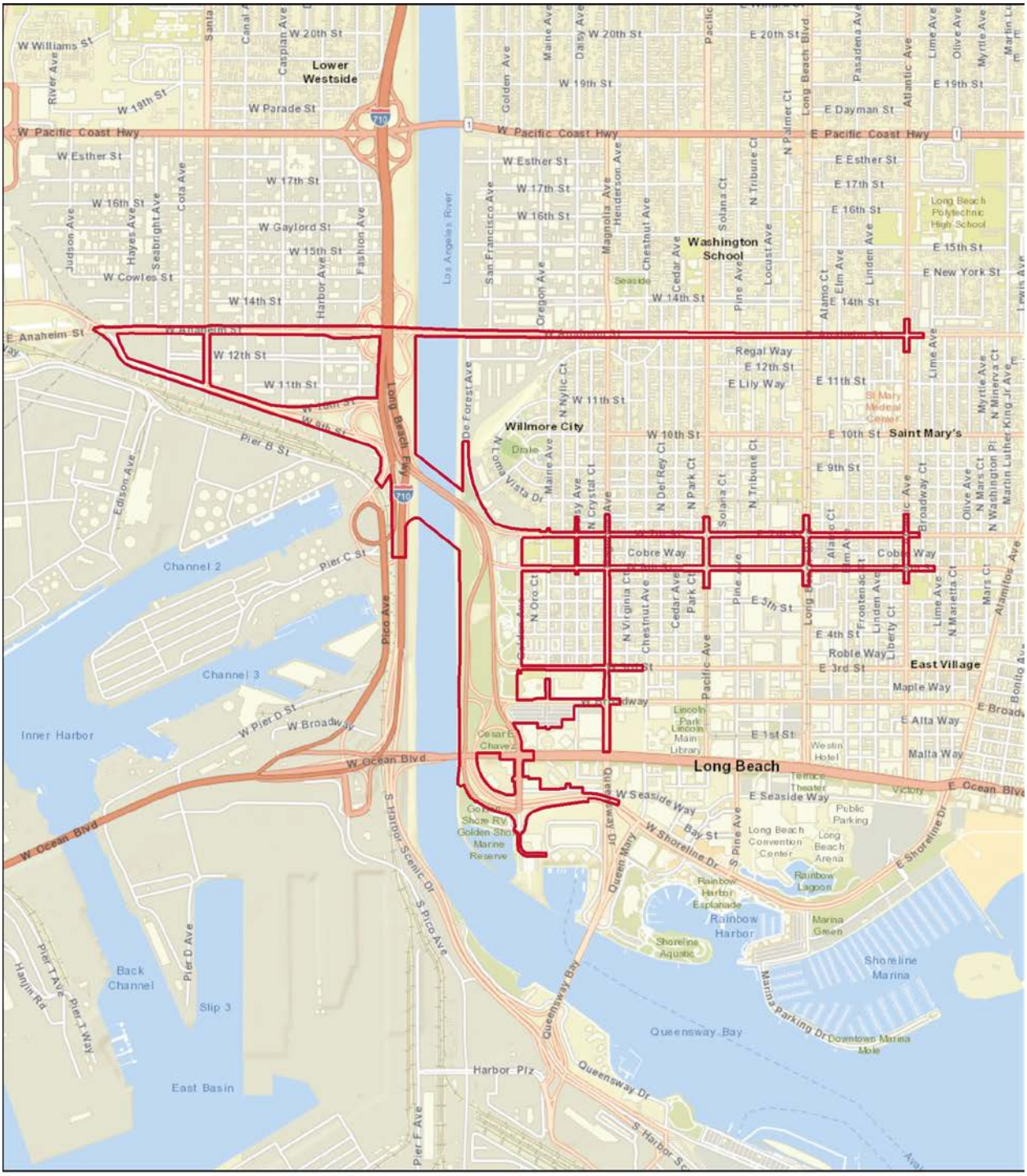


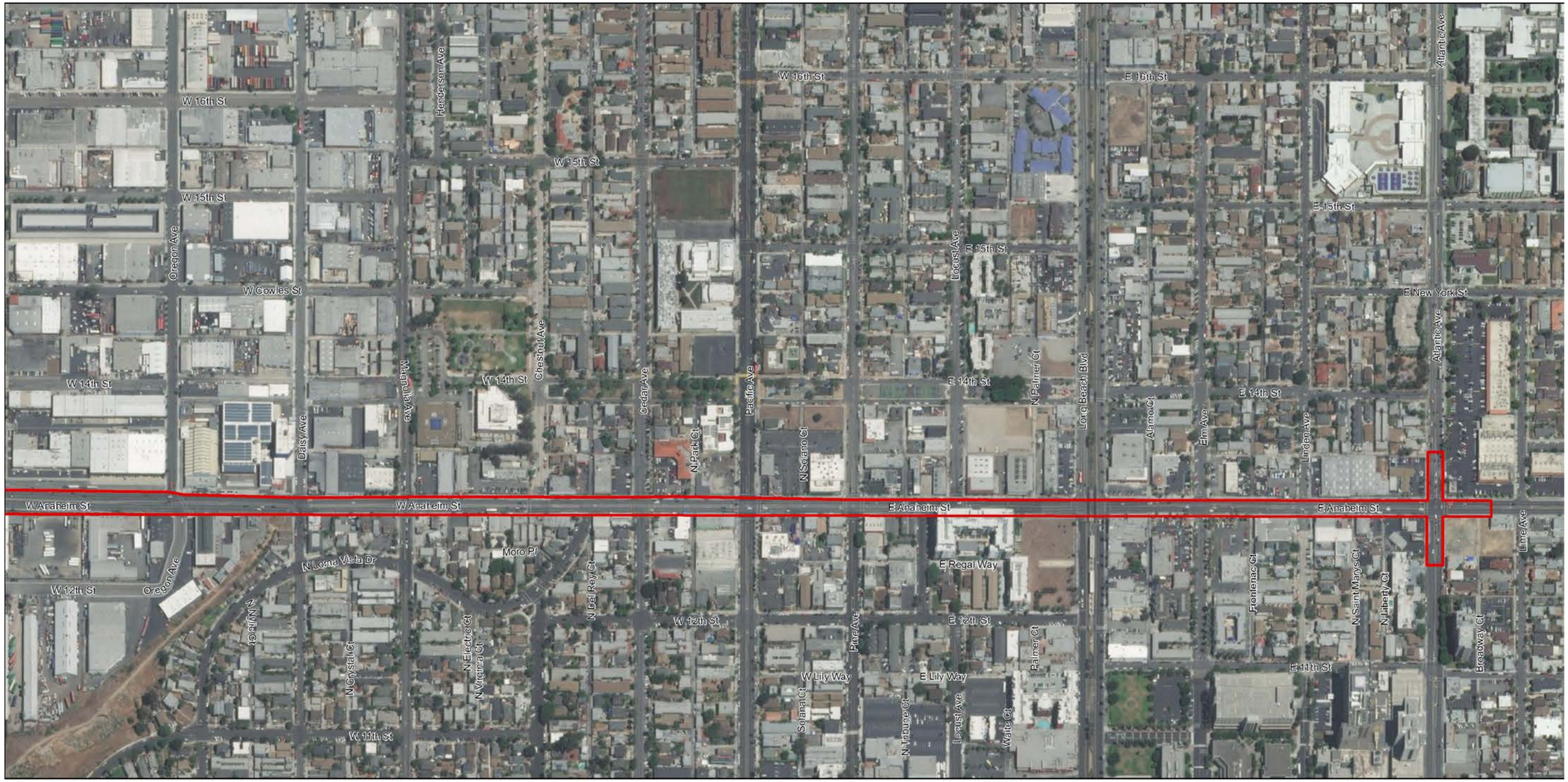
Figure 1. Project Limits

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Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 1 of 5)

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07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 2 of 5)

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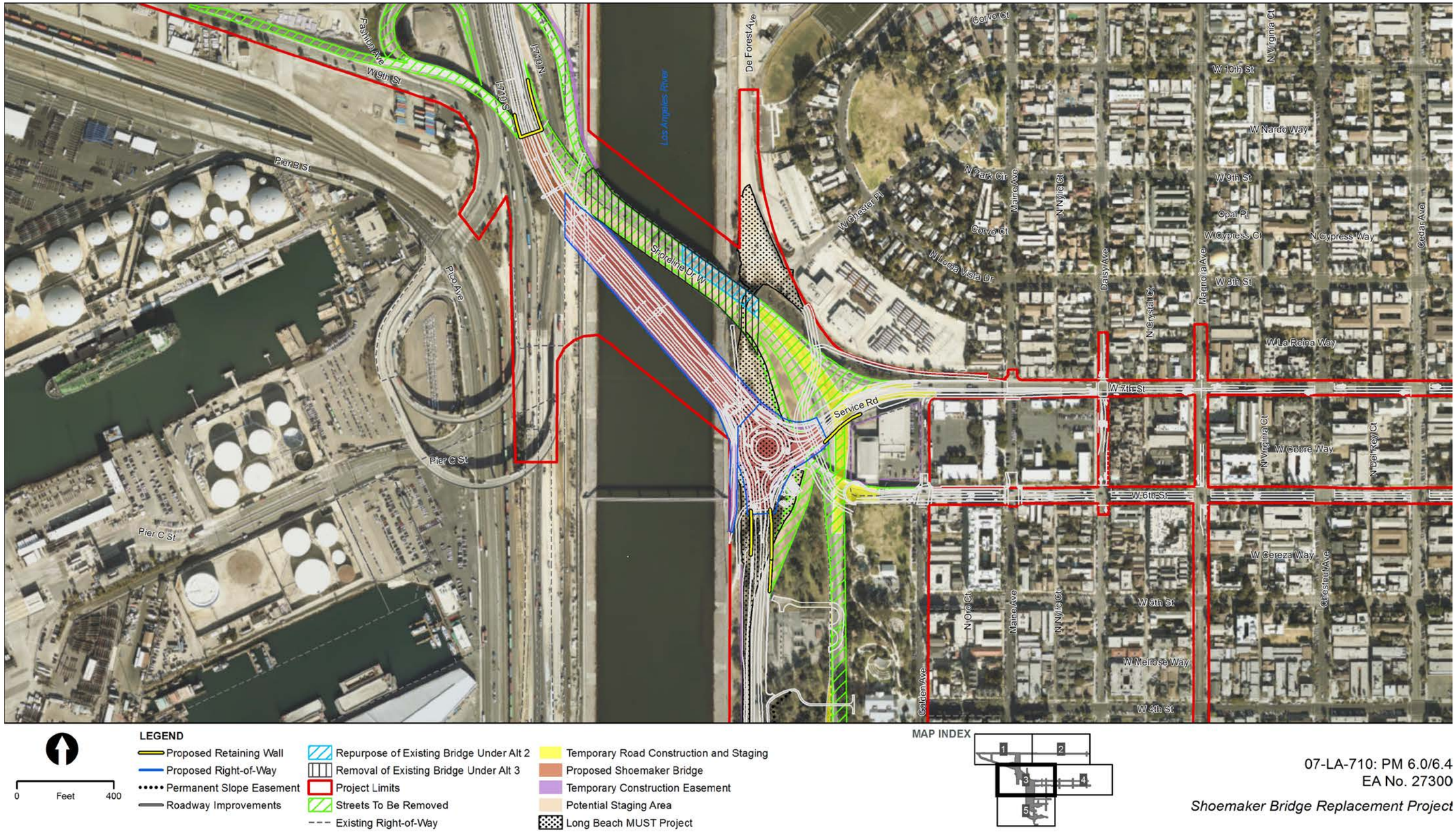


Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 3A of 5)

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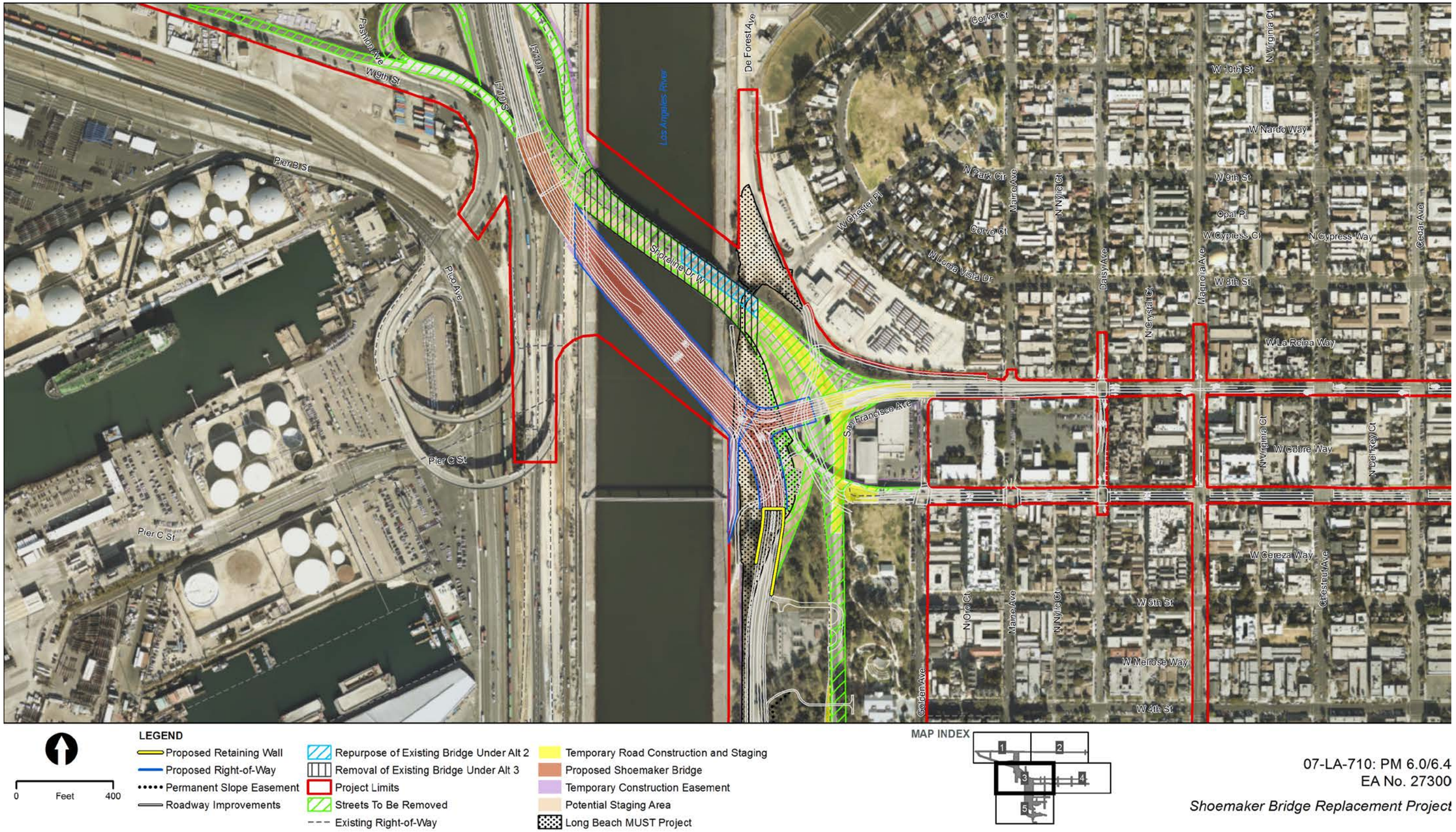


Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 3B of 5)

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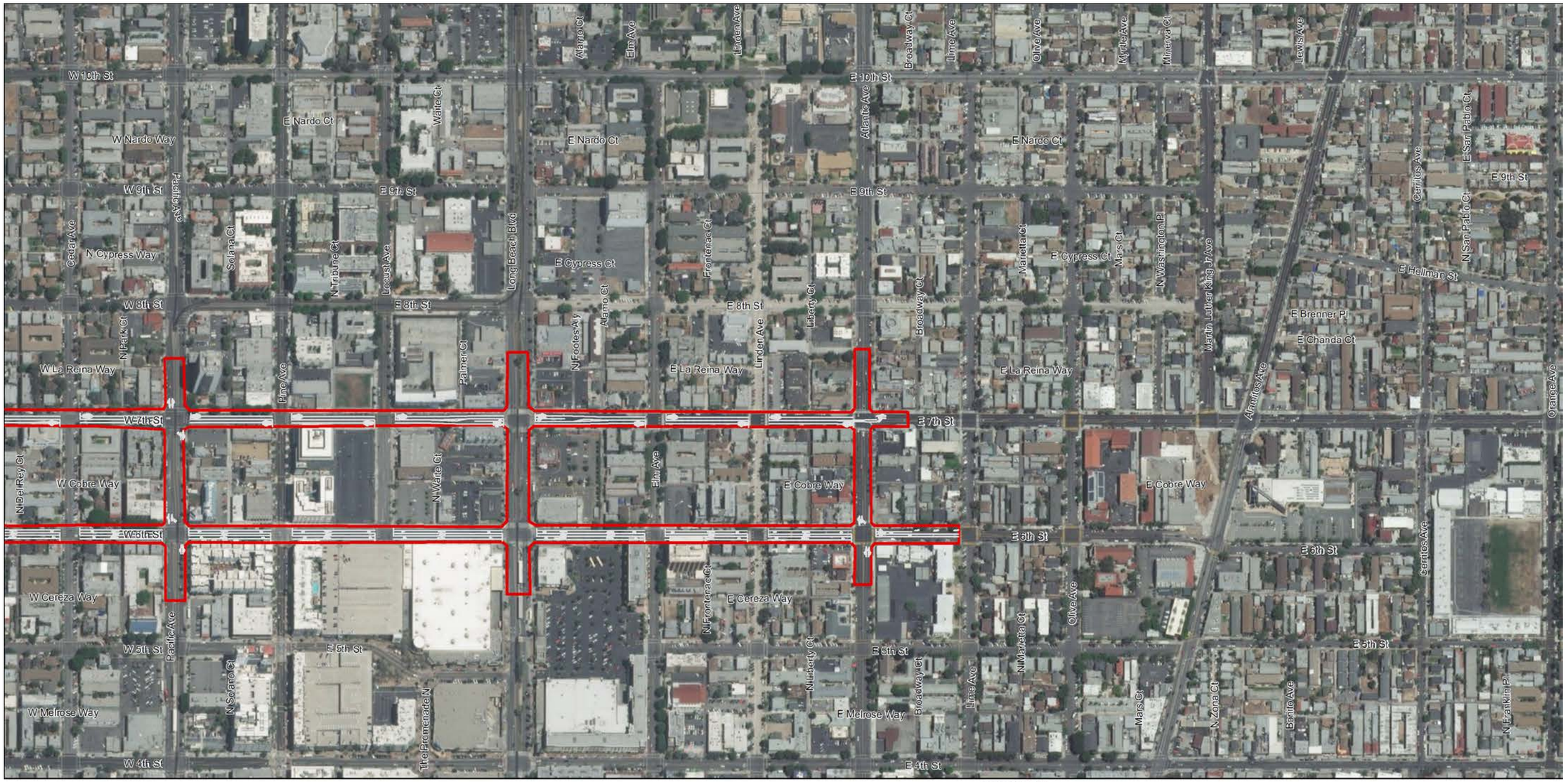
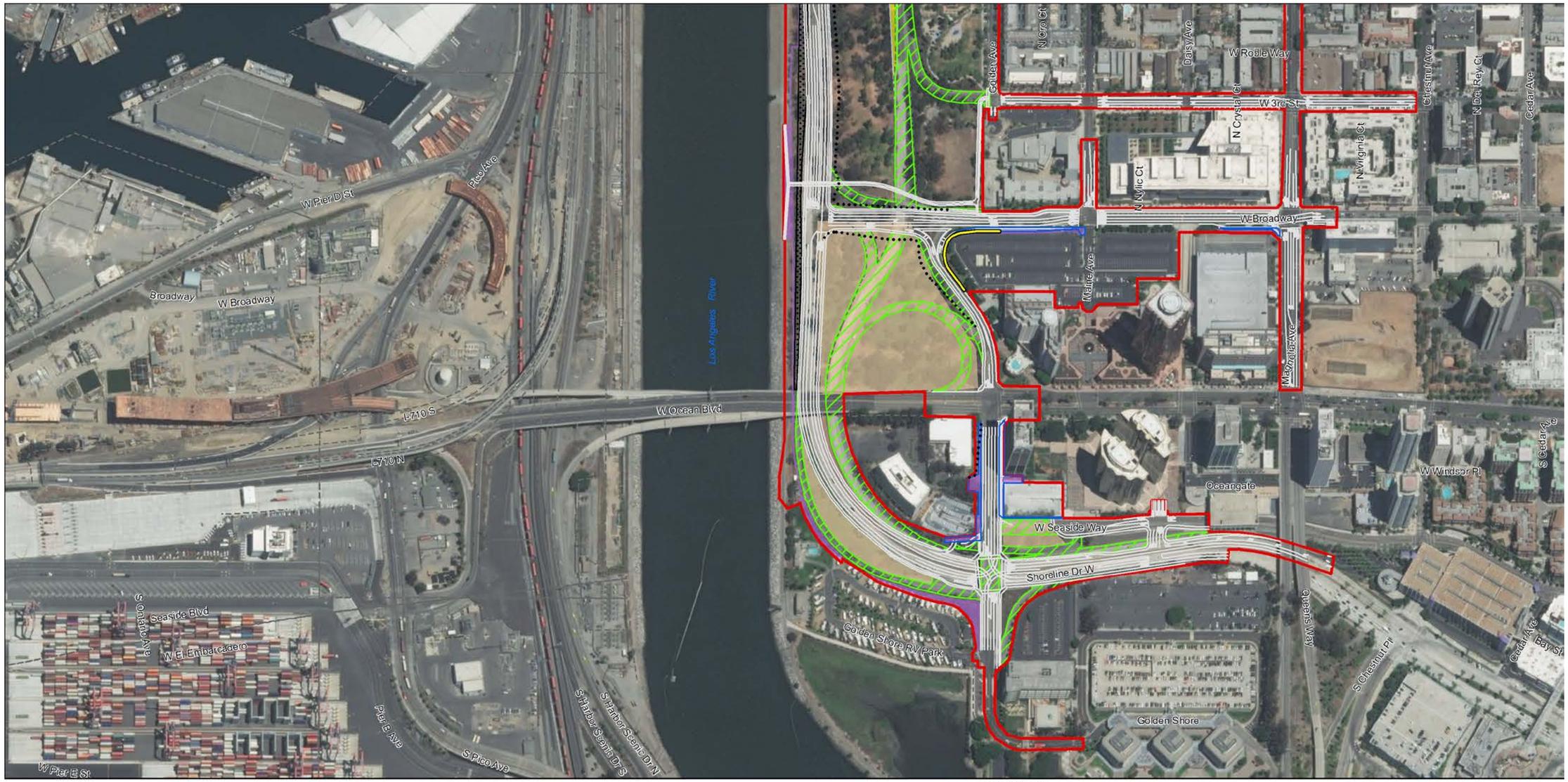


Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 4 of 5)

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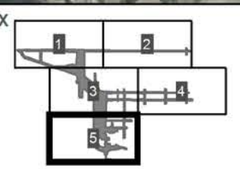


LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
- Permanent Slope Easement
- Roadway Improvements
- Repurpose of Existing Bridge Under Alt 2
- Removal of Existing Bridge Under Alt 3
- Project Limits
- Streets To Be Removed
- Existing Right-of-Way
- Temporary Road Construction and Staging
- Proposed Shoemaker Bridge
- Temporary Construction Easement
- Potential Staging Area
- Long Beach MUST Project

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MAP INDEX



07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure 2. Project Design Features of Alternatives 2 and 3 (Sheet 5 of 5)

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Project Alternatives

This section describes the proposed design alternatives developed by a multidisciplinary team to achieve the proposed Project's purpose while avoiding or minimizing environmental impacts. The alternatives, as described in this section, consist of Alternative 1 (No Build), Alternative 2, and Alternative 3.

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.

Alternative 2

Build 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 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 repurposed into a non-motorized 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.

The deck of the new bridge would accommodate two through ramp lanes in each direction, shoulders, barriers, and a bicycle and pedestrian path 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

The build alternatives include modifications to nine local streets, including West Shoreline Drive, Ocean Boulevard, Golden Shore/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 is 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 at West Shoreline Drive and 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 3rd Street section 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 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 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 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 WB 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.

Alternative 3

Similar to Alternative 2, Alternative 3 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. It 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 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 Alternatives 2 and 3 is the removal of the existing Shoemaker Bridge. The same ramp/connectors proposed under Alternative 2 would apply under Alternative 3.

Bridge Construction Schedule and Methods

A minimum of two bridge types are being considered: a Single Pylon Cable Stay bridge consisting of one pier in the LA River and a Segmental bridge consisting of two piers in the LA River), as shown in Attachment A. Construction of bridge foundations and piers in the LA River channel will be scheduled during the dry season (approximately June through September). Means and methods for water diversion have not been established at this time but could include coffer dams or other techniques to divert low flow and/or tidal water away from the work area. All foundation work is expected to be completed in one dry season. Remaining bridge work will completed from overhead.

Review Methodology

Relevant literature regarding southern California steelhead habitat, distribution, and recovery was reviewed. An official Endangered Species Act list was obtained on October 5, 2018 using National Marine Fisheries' California Species List Tool (Attachment B). Documents sources during the literature review also included scientific papers, regulatory agency publications, California Department of Fish and Wildlife's Fish Passage Assessment Database, iNaturalist.org online species observations search tool, and websites of local fishery organizations including

Friends of the Los Angeles River (FOLAR) and Caltrout. Phone calls were placed to the Aquarium of the Pacific, Cabrillo Marine Aquarium, and FOLAR to acquire information regarding sightings of steelhead or marine mammals near the Action Area or BSA.

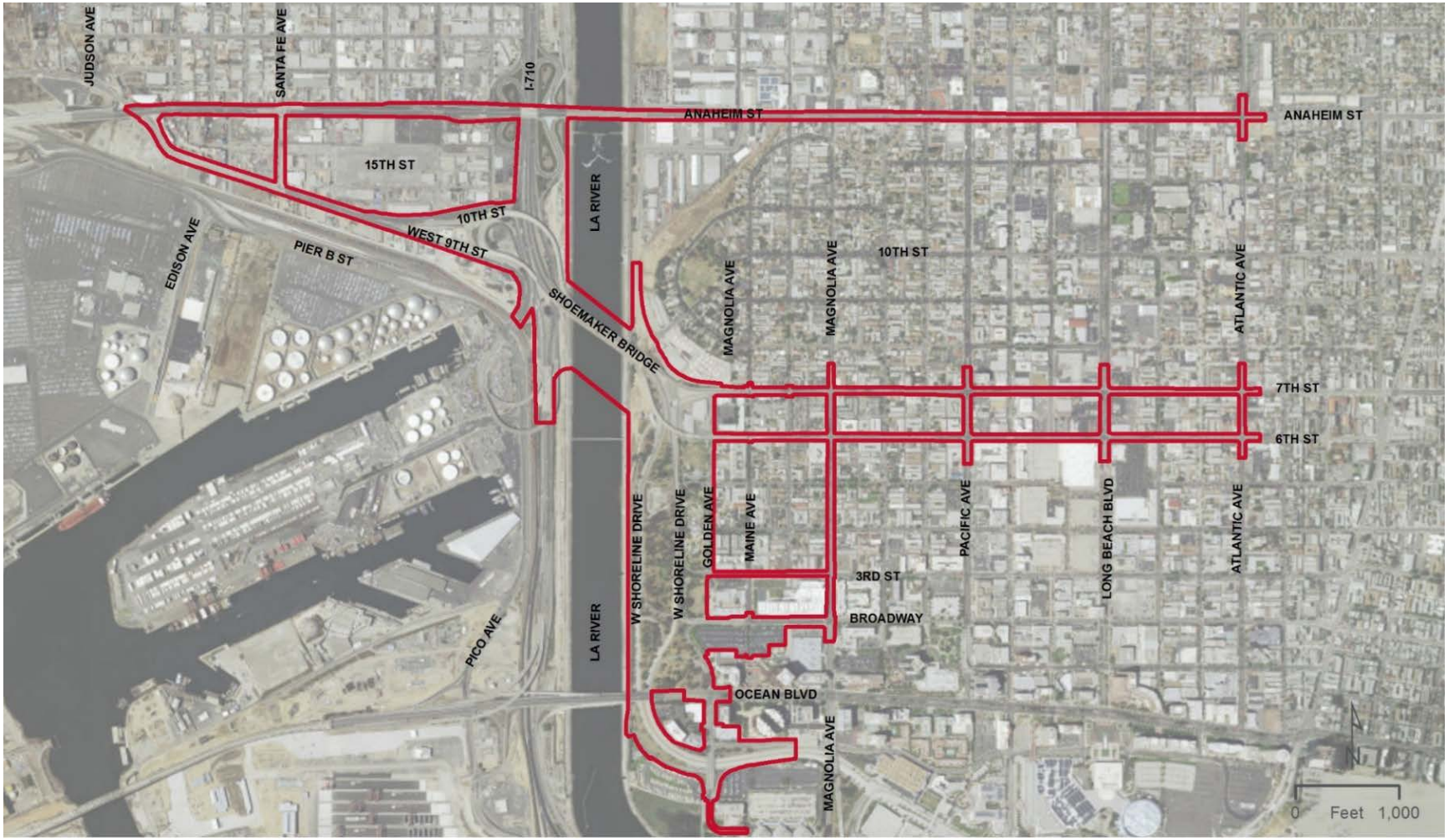
Information regarding habitat within the Action Area or BSA was obtained from the Shoemaker Bridge Replacement Project Draft NES (HDR 2018a). The *Estuarine Resources Environmental Assessment for the Interstate 710 Corridor Project, County of Los Angeles*, California (LSA 2012) and the *Shoemaker Bridge, Los Angeles River Estuary, Marine Biological Impact Assessment for Proposed Geotechnical Coring Studies* [Coastal Resources Management, Inc (CRM) 2017] reports, both included as appendices to the 2018 Draft Natural Environment Study were also reviewed.

Action Area

The project is located in the City of Long Beach, projected Sections 2, 3, and 4 T4S, R13W and projected Sections 34, 35, and 36 of T5S, R13W on the U.S. Geological Survey (USGS) Long Beach, California 7.5-minute series topographical quadrangle.

The Action Area for this Project, or BSA, as shown on Figure 3, includes the most recent project footprint and assumes the maximum anticipated potential direct and indirect impact area for all build alternatives. The limits of the Action Area were extended beyond the maximum extent of potential direct impact where necessary to identify sensitive biological resources within and immediately adjacent to the Project limits.

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LEGEND

Biological Study Area

Figure 3. Action Area/Biological Study Area

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Southern California Steelhead

Legal Status and Distribution

Southern California steelhead were federally listed as endangered on August 18, 1997 and its status was reaffirmed on January 5, 2006 (71 FR 834). Critical habitat was designated for steelhead in 2005, none of which is in the Action Area (70 FR 52488, September 2, 2005).

The major historical steelhead watersheds in Southern California include the Santa Maria, Santa Ynez, Ventura, And Santa Clara Rivers (Good et al. 2005). South Of the Santa Monica Bay, several Major drainages and a number of smaller streams also supported runs of anadromous *O. mykiss* (of unknown size and frequency); The LA, San Gabriel, Santa Ana, Santa Margarita, San Luis Rey, San Dieguito, San Diego, Sweetwater Rivers, and San Juan and San Mateo Creeks also once supported O. mykiss migration, although size and frequency of these runs is unknown (Titus Et al. 2010; Swift et al. 1993). Steelhead populations are declining because of impacts to their habitat such as increased water temperatures, dams, turbidity, and other habitat incursions (NMFS 2012; Caltrout 2017).

Life History and Habitat Requirements

Southern steelhead is an anadromous variant of rainbow trout closely related to Pacific salmon. The species was once abundant in California coastal and central valley drainages. However, population numbers have declined significantly in recent years. Steelhead spend a majority of their life in the ocean, but must enter freshwater to reproduce (NMFS 2012). Steelhead are dependent on small, clear-flowing, but not rapid, streams with gravel beds to complete its spawning cycle. Spawning areas must also have protective cover and an adequate food source (NMFS 2012).

Steelhead typically migrate to marine waters after spending one year or more in freshwater. Coastal steelhead populations typically begin upstream migration after a breach occurs in the sand bar between the ocean and estuary during winter storm events (November through June), with peak migration occurring January and February (62 FR 43945). Spawning generally occurs January through June with peaks in February and March (62 FR 43945). After several months, fry emerge from the gravel and begin to feed. Juveniles rear in freshwater from 1 to 4 years (usually 2 years), then migrate to the ocean as smolts during the spring (62 FR 43945). Southern California steelhead likely spend less time in freshwater during migration than other steelhead populations due to high water temperatures and poor water quality that create inhospitable conditions (Caltrout 2017).

Important aquatic environmental factors for steelhead include temperature, dissolved oxygen, salinity and water depth (Caltrout 2017). Ideal water temperature for steelhead is likely under 20°C (68°F) and the species can survive in temperatures between 20°C to 25°C (68°F to 77°F). Studies indicate that mortality increases rapidly in water temperatures over 25°C (77°F) (FOLAR 2008; Caltrout 2017).

Recovery Plan

NMFS issued the Southern California Steelhead Recovery Plan in January 2012. The Recovery Plan identifies recovery goals and actions intended to recover anadromous steelhead and ensure the long-term persistence of self-sustaining wild populations of steelhead across the Southern California Distinct Population Segment with the ultimate goal of removing southern California steelhead from the Federal List of Endangered and Threatened Wildlife (NMFS 2012).

To recover steelhead, the following objectives have been identified:

- Prevent steelhead extinction by protecting existing populations and their habitats;
- Maintain current distribution of steelhead and restore distribution to some previously occupied areas;
- Increase abundance of steelhead to viable population levels, including the expression of all life history forms and strategies;
- Conserve existing genetic diversity and provide opportunities for interchange of genetic material between and within viable populations;
- Maintain and restore suitable habitat conditions and characteristics to support all life history stages of viable populations; and
- Conduct research and monitoring necessary to refine and demonstrate attainment of recovery criteria.

The Action Area is located within the Mojave Rim Biogeographic Population Group as identified in the Recovery Plan. The LA River is identified as a Core 3 population[1] within the Mojave Rim Biogeographic Population Group. Threats to southern California steelhead in the Mojave River Biogeographic Population Group include Dams and Surface Water Diversions, Groundwater Extraction, and Culverts and Road Crossings (NMFS 2012).

Priority Recovery Actions identified within the Recovery Plan for the Mojave Rim Biogeographic Population Group include:

- Develop and implement operating criteria to ensure the pattern and magnitude water releases from dams, including Morris, San Gabriel, Cogswell, Santa Fe, Prado, Seven Oaks, and Bear Valley dams, provide the essential habitat functions to support the lifehistory and habitat requirements of adult and juvenile *O. mykiss*;
- Develop and implement a plan to physically modify dams, including Morris, San Gabriel, Cogswell, Santa Fe, Prado, Seven Oaks, and Bear Valley dams, to allow adult and

[1] Core 3 is the lowest level priority given to steelhead populations in the Recovery Plan. Recovery actions on Core 3 populations are not assigned as high an implementation priority as Core 1 and 2 populations, but NMFS considers these populations as potentially important in promoting connectivity between populations and genetic diversity across the Recovery Planning Area (NMFS 2012)

juvenile *O. mykiss* natural rates of migration between the estuary and upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean;

- Develop and implement a plan to physically modify or remove fish passage barriers at debris basins, diversions, roads, and highways to allow adult and juvenile *O. mykiss* natural rates of migration between the estuary and upstream spawning and rearing habitats, and passage of smolts and kelts downstream to the estuary and ocean;
- Develop and implement restoration and management plans for steelhead bearing watersheds. To the maximum extent feasible, plans should restore the physical configuration, size and diversity of the wetland habitats, eliminate exotic species, control artificial breaching of the sand bar, and establish effective buffers to restore estuarine functions and promote *O. mykiss* use (including rearing and acclimation) of the estuaries;
- Develop and implement an integrated wildland fire and hazardous fuels management plan, including monitoring, remediation and adaptive management, to reduce potentially catastrophic wildland fire effects to adult and juvenile *O. mykiss* and their habitat and preserve natural ecosystem processes (including sediment transport and deposition); and
- Develop and implement flood control maintenance plan for steelhead bearing watersheds to minimize the frequency and intensity of disturbance of instream habitats and riparian vegetation of the mainstem and tributaries to protect all *O. mykiss* life-history stages, including adult and juvenile migration, spawning, incubation and rearing, and their associated habitats.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) protects the “take” of marine mammal species that are protected under the Act under otherwise legal activities. “Take” is defined under the MMPA as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. 1362) and further defined by regulation (50 CFR 216.3) as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal.

Under the 1994 Amendments to the MMPA, harassment is statutorily defined as, any act of pursuit, torment, or annoyance which:

- **(Level A Harassment)** has the potential to injure a marine mammal or marine mammal stock in the wild; or
- **(Level B Harassment)** has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but

which does not have the potential to injure a marine mammal or marine mammal stock in the wild.

Incidental Harassment Authorizations may be issued by NMFS after consultation and with application of appropriate avoidance, minimization, and mitigation measures.

Literature Review and Research Results

Within the Action Area, the LA River is an earthen-bottom flood control channel that supports year-round flows supported by urban runoff, tidal in-flows and occasional storm events. River bed sediments consist of fine brown muds with evidence of biological activity in the form of burrows (CRM 2017). No submerged aquatic vegetation was observed, but occasional bottom debris and decaying vegetation colonized by invertebrates was observed (CRM 2017). No invasive algae (*Caulerpa taxifolia*) or eelgrass was observed in the Action Area, in 2017 (CRM 2017). Additionally, no federal-or-state-listed endangered, threatened, rare, or otherwise sensitive marine flora, invertebrates, sea turtles, fish, or marine mammals were observed within the survey area on during surveys conducted on October 26th and October 27th, 2017 (CRM 2017).

Southern California Steelhead

The LA River Watershed is considered to have been historically occupied by southern California steelhead but populations south of Ventura County have been extirpated, except in Malibu Creek and San Mateo Creek in San Diego County (Moyle 2002) due to factors including urbanization, water diversions and damming of creeks.

As a reference, average water temperatures in San Mateo Creek, the southernmost location where steelhead are known to occur at this time, range between 13.0°C (55.4°F) in January and 19.6°C (67.3°F) in May with a maximum recorded temperature of 21.6 °C (USGS 2018a). Average water temperatures in the LA River are much higher and range between 18.9°C (66.0 °F) in January and 29.5°C (85.1 °F) in May with a maximum recorded temperature of 34.7°C (94.5 °F) (USGS 2018b). High water temperatures are a likely deterrent to this species in the LA River.

FOLAR published *State of the River 2: The Fish Study* in 2008 provides several sources that conclude that there have been no sightings of southern California steelhead in recent history (FOLAR 2008).

HDR Biologists contacted staff at the Aquarium of the Pacific, Cabrillo Marine Aquarium and FOLAR in October 2018 to acquire any potential unpublished information regarding the status of southern California steelhead in the LA River. Staff at the Aquarium of the Pacific stated that there are no documented sightings of southern California steelhead in the LA River (Aquarium of the Pacific. 2018. Telephone conversation with Ronell Santos, HDR. October 9). Stephen Mejia with FOLAR also stated that there is no documentation of steelhead in the LA River near Shoemaker Bridge. FOLAR conducted a fish study in 2016 for the LA River and no steelhead were found (Mejia, Stephen. 2018. Telephone conversation with Ronell Santos, HDR. October 10). No response was received from Cabrillo Marine Aquarium.

Marine Mammals.

Potential occurrences of marine mammals known from the region were searched for on the iNaturalist website (www.iNaturalist.org) on October 8, 2018. The search included only verifiable records. The only marine mammals recorded in the vicinity of the project site include common and California sea lion (*Zalophus californianus*) and common bottlenose dolphin (*Tursiops truncatus*). All documented sightings of these species were near Queensway Bay, downstream of the Action Area.

California sea lions are occasionally found in the lower reaches of the LA River, primarily south of Ocean Boulevard (iNaturalist 2018). Individuals occasionally stray upstream as far north as Willow Street (e.g., one was seen during surveys for the I-710 Corridor Project north of Pacific Coast Highway on September 4, 2009). However, the generally shallow depth and the lack of suitable sites sea lions can use to haul themselves out of the water (e.g., low-lying docks, piers, platforms, or sandy shoreline beaches) limit their occurrence in the Action Area. These "haul-out" sites are necessary for seals for mating and giving birth, but not all haul-out sites are for reproduction. Other benefits of haul-out sites may include predator avoidance, thermal regulation, social activity, parasite reduction, and rest.

Common bottlenose dolphins have been documented in Queensway Bay, but not upstream of that area (iNaturalist 2018). Riverbed mapping conducted in 2017 for the Shoemaker Bridge Replacement Project identified an area downstream of the Action Area, where remnant pier piles were observed jutting out from the soft bottom across the riverbed (CRM 2017). The structures varied from about one to three feet in height and at low tide, the water depths around these would be approximately -2 to -4 ft Mean Lowest Low Water. These piers appear to be remnant from a bridge that once crossed over the LA River at Broadway and was removed sometime between 1953 and 1963 (NETR Online 2018). Shallow water depths downstream of the BSA may prevent common bottlenose dolphins from accessing the Action Area.

As previously discussed, HDR Biologists contacted staff at the Aquarium of the Pacific, Cabrillo Marine Aquarium and FOLAR in October 2018 to acquire any potential unpublished information regarding the status of marine mammals in the LA River. Staff at the Aquarium of the Pacific were reached at the time and stated that there are no documented sightings of marine mammals in the LA River, but it might be possible to find them there. These species would more likely be found in Santa Monica or the San Gabriel Areas (Aquarium of the Pacific. 2018. Telephone conversation with Ronell Santos. October 9.). Stephen Mejia with FOLAR also stated that there is no documentation of any marine mammals in the LA River near Shoemaker Bridge (Mejia, Stephen. 2018. Telephone conversation with Ronell Santos. October 10). No response was received from Cabrillo Marine Aquarium.

Project Effects

Southern California Steelhead

Southern California steelhead is not known to occur nor is it expected to occur in the LA River at this time since they have not been documented in the vicinity in recent history and are

considered extirpated from the LA River. Southern California steelhead are not expected to occur in the Action Area. Project construction would not directly or indirectly impact this species since it is considered absent from the LA River watershed at this time.

Potential Project effects to this species are limited to long-term, post-construction effects as a result of permanent loss of up to 0.47 acre of potential southern California steelhead migratory habitat that is currently unoccupied. The bridge piers would not create a barrier that would prevent southern California steelhead migration within the LA River if this species was to be re-introduced to the LA River in the future. Table 1 and Figures in Attachment C show the temporary and permanent impacts to potential southern California steelhead habitat in the LA River for the Project.

Table 1. Summary of Project Impacts to the Los Angeles River (acres)

	Alternative 2		Alternative 3	
Type of Impact	**Design Option A**	**Design Option B**	**Design Option A**	**Design Option B**
Temporary Impacts				
Temporary	7.53	7.56	7.53	7.56
Permanent Impacts				
Permanent Decrease in Habitat from New Bridge Construction	0.54	0.51	0.54	0.51
Permanent Increase in Habitat from Existing Bridge Demolition	0.07	0.07	0.07	0.07
Total Net Permanent Decrease in Potential southern California steelhead migration habitat	0.47	0.44	0.47	0.44

Since the Project would result in the permanent loss of potential southern California steelhead habitat, the Project may affect but is not likely to adversely affect southern California steelhead.

Marine Mammals

The California sea lion is not a federally listed species; however, it is protected under the MMPA. The MMPA of 1972 prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Most marine mammals are not expected to be found in the LA River. However, incidental occurrences of California sea lions have been known to occur as far north as Willow Street, approximately 1.9 miles upstream of the Action Area, or BSA (LSA 2012).

Potential Project impacts to California sea lions are addressed in the Biological Assessment (BA) (HDR 2018b) with regard to potential harassment associated with the proposed Project. The BA concludes that marine mammals, although present in the Long Beach/Los Angeles Harbor complex, are not expected to be found in the LA River. However, incidental occurrences of California sea lions have been known to occur near the Action Area, or BSA. In the unlikely event that a California sea lion was to move through the Action Area, or BSA, during Project

construction, it would be prevented from entering the construction area by physical barriers constructed for water diversions and sediment control. Because an open water passage would be maintained beneath the proposed bridge, construction would not prevent feeding further upstream. Due to the absence of haul-outs and rookery habitat, construction is not anticipated to disrupt behavioral patterns and cause harassment. The project would not result in any long-term effects on this species.

Other marine mammal species, including common bottlenose dolphin, are present in Queensway and San Pedro Bays downstream of the Project. The Action Area, or BSA, does not provide high quality habitat for California sea lions or other marine mammals. Since the Project would not inhibit the movement of marine mammals along the LA River, and they could move away from direct Project activities, the Project is not expected to result in the "harassment" of any marine mammals, as defined in the MMPA.

Modifications to the Project to Mitigate Effects

As indicated in the Project BA (HDR 2018b), the measures discussed below will be incorporated into the Project in order to avoid and minimize any impacts to the LA River as a result of Project construction. While these measures are designed to reduce impacts during Project construction, implementation of these measures will also reduce the potential for the Project to contribute to long-term water quality degradation.

BA-3: California Department of Transportation **(**Caltrans) and the City of Long Beach (City) will designate a U.S. Fish and Wildlife Service/National Marine Fisheries Service (USFWS/NMFS) approved biologist (Project biologist) who will 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) during construction. The Project biologist will be familiar with the protected habitats, plants, and wildlife. The Project biologist will also maintain communications with the contractor to ensure that issues relating to biological resources are appropriately and lawfully managed. The Project biologist will review final plans, designate areas that need temporary fencing (e.g., ESA fencing), and monitor construction. The Project biologist will meet the qualifications defined under SSP 14 6.03D(1) Contractor Supplied Biologist.

BA-4: The City of Long Beach's (City) Resident Engineer will ensure that prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed around sensitive habitats adjacent to the Project footprint to designate Environmentally Sensitive Areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. The requirement to install highly visible barriers to designate ESAs will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-5: The City of Long Beach's (City) Resident Engineer will ensure that heavy equipment, including motor vehicles, will not be allowed to operate within the Environmentally

Sensitive Areas (ESAs). All construction equipment will 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 will occur in developed or designated nonsensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent the runoff from any spills from entering waters of the United States (U.S.) Provisions to protect ESAs from heavy equipment, including motor vehicle access, will be done in accordance with SSP 14 6.03D(2) Natural Resource Protection Plan.

BA-6: The City of Long Beach's (City) Resident Engineer will ensure that preconstruction surveys for the invasive seaweed (*Caulerpa taxifolia*) will be conducted by the National Marine Fisheries Service/California Department of Fish and Wildlife (NMFS/CDFW) Certified Field Surveyors prior to bottom-disturbing activities taking place in the Los Angeles River (LA River) to ensure that the Biological Study Area (BSA) is not infested with this nonnative invasive seaweed (*Caulerpa taxifolia*).

BA-7: If invasive seaweed (*Caulerpa taxifolia*) is found within the Biological Study Area (BSA), the City of Long Beach's (City) Resident Engineer will ensure that a management plan will be prepared according to guidelines in the National Marine Fisheries Service (NMFS) Caulerpa Control Protocol, or other approved protocol, and submitted to U.S. Fish and Wildlife Service (USFWS) for approval prior to the start of construction. Construction activities will not begin prior to approval of this plan, if needed.

BA-8: The City of Long Beach’s (City’s) Resident Engineer will ensure that an employee education program for all construction personnel will be developed and implemented by the biological monitor prior to construction. At a minimum, the program will 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 will 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) Shoemaker Bridge Replacement Project (Project) features designed to reduce the impacts on listed species and habitat and promote continued successful occupation of adjacent habitat areas.

BA-9: The City of Long Beach’s (City) Resident Engineer shall ensure that project construction will be carried out under standard best management practices (BMPs) (e.g., no staging or vehicle repair in sensitive areas, implementation of erosion control measures, and fuel spill cleanup). The City Resident Engineer or designated contractor shall ensure that during project construction, the proper use and disposal of oil, gasoline, diesel fuel, antifreeze, lead paint, and other toxic substances will be enforced and that construction materials, equipment, debris, or waste will be placed or stored where it

may accidentally deposit fill material or be subject to tidal erosion and dispersion. Construction materials will not be stored in contact with the soil.

BA-10: During construction, the City of Long Beach's (City) Resident Engineer or designated contractor shall ensure that all soils and material, including contaminated topsoil and lead-based paint from demolished bridges, will be removed from the Biological Study Area (BSA) and disposed of properly. Floating booms will be used to contain debris discharged, and any debris discharged will be removed no later than the end of each day.

BA-11: The City of Long Beach's (City's) Resident Engineer will ensure that the use of rodenticides, herbicides, insecticides, or other chemicals that could potentially harm listed species will be prohibited in and around the Los Angeles River (LA River).

BA-12: During construction, the City of Long Beach's (City's) Resident Engineer or designated contractor will ensure that any deliberate feeding of wildlife will be prohibited.

BA-13: During construction, the City's Resident Engineer or designated contractor will ensure that turbidity curtains be used in lieu of silt curtains, which are less effective at trapping sediment in tidal channels.

BA-14: During construction, the City's Resident Engineer or designated contractor will 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, SWPPP, annual fee, and signed certification statement to the State Water Resources Control Board (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).
- The SWPP 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 QSD 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.

Effects Determination for Listed and Protected Species

Southern California Steelhead

Construction effects may include localized disturbance or displacement of fish from noise, suspended sediment, and turbidity generated during in-water construction activities. The potential also exists for injury or mortality of juvenile fish that may not be able to readily move away from channel or nearshore areas directly affected by construction activities. Restricting in-water activities to the period May 1 through October 31 and implementing the minimization measures will minimize the potential for adverse effects.

Since southern California steelhead does not currently occupy the LA River, the Project will not result in any direct effects to this species during project construction. Long-term effects on potential southern California steelhead habitat would be minimal and include the loss of up to 0.47 acre of potential habitat as a result of new bridge pier construction if this species were to be reintroduced to the LA River in the future. This is a small amount of habitat in relation to the overall size of the LA River. The ability for southern California steelhead to migrate upstream and downstream will be maintained post-construction.

Since southern California steelhead is not known to occur in the LA River at this time, the Project would result in minimal loss of potential future southern California steelhead habitat, and the project will not restrict future migration of this species through the project area following project completion, the project will have *No Effect* on southern steelhead or its habitat.

Marine Mammals

Since marine mammals are unlikely to occur in the Action Area, and any California sea lions that may occur would be able to move away from construction activities to adjacent suitable habitat, the proposed Project is not expected to result in “harassment” of any marine mammals pursuant to the MMPA. An Incidental Harassment Authorization and associated Marine Mammal Protection Plan are not anticipated to be necessary.

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http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.431.9090&rep=rep1&type=pdf

U.S. Geological Survey (USGS). 2018a. National Water Information System: Web Interface. USGS 11046372 San Mateo C Lagoon A Mouth Nr San Clemente Ca. Accessed October 10, 2018. https://waterdata.usgs.gov/nwis/dv/?site_no=11046372&agency_cd=USGS&referred_module=sw

2018b. National Water Information System: Web Interface. USGS 11103000 Los Angeles R A Long Beach Ca. Accessed October 10, 2018. https://waterdata.usgs.gov/ca/nwis/dv/?site_no=11103000&agency_cd=USGS&referred_module=sw.

Attachment A. Preliminary Bridge Plans

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Single Pylon Cable Stay Bridge Design

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

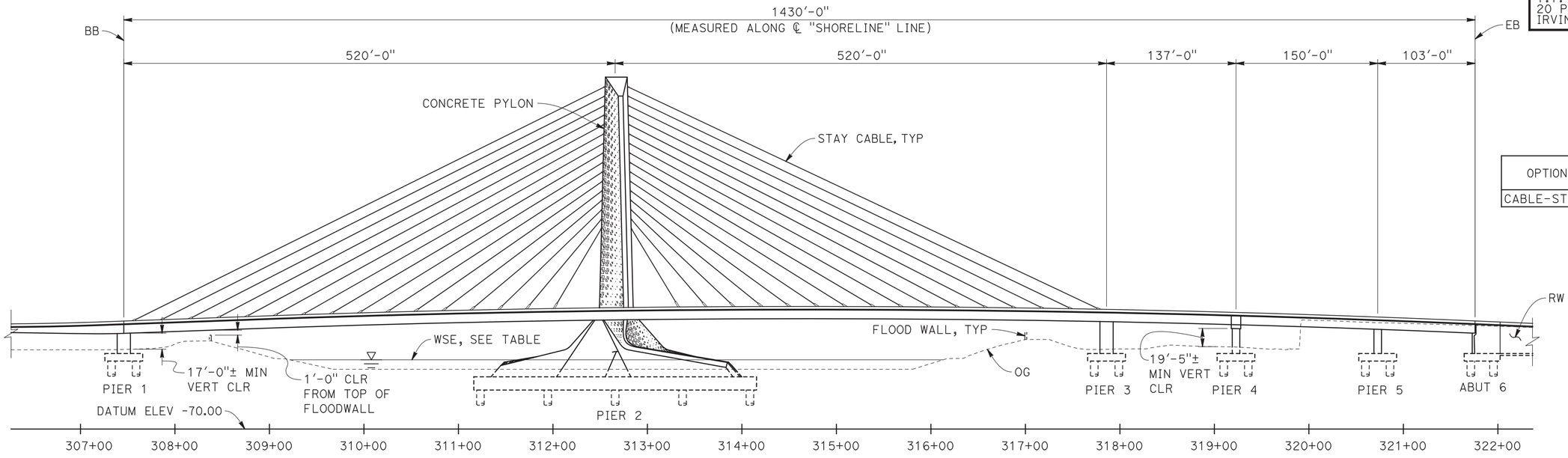
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



PROFILE GRADE
No Scale



OPTION	WSE (ft) NAVD 88	
	AVERAGE	PIER
CABLE-STAYED	25.33'	27.14'

DEVELOPED ELEVATION
1"=60'

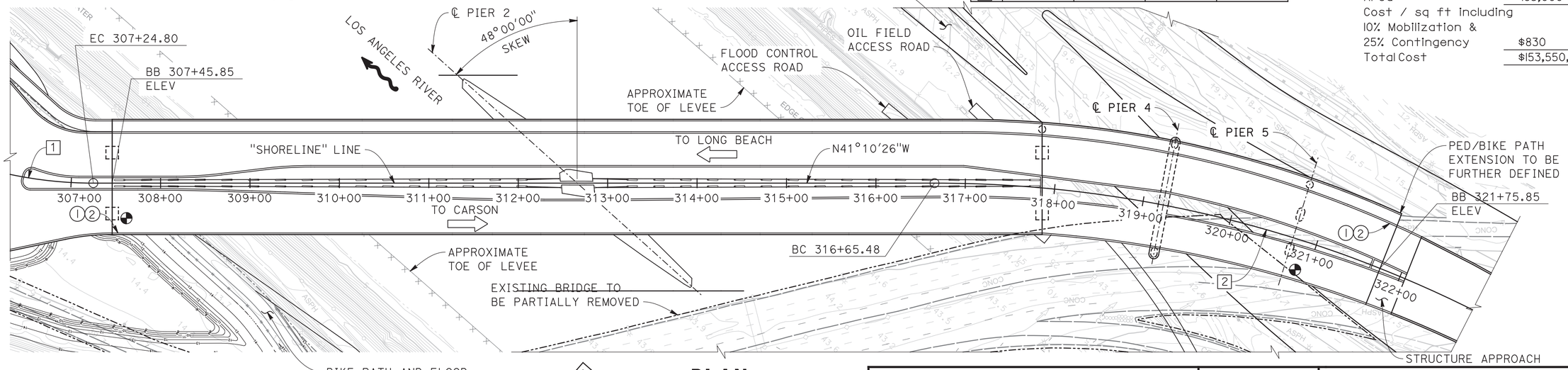
NOTES:
1. Paint "SHOEMAKER BRIDGE"
2. Paint "BRIDGE No."

LEGEND:
- Indicates point of minimum vertical clearance
- Indicates existing structure
- Indicates direction of traffic
- Indicates flow

CURVE DATA

No.	R	Δ	T	L
1	450.00'	18°33'17"	73.51'	145.73'
2	1350.00'	28°51'17"	347.31'	679.87'

Date of Estimate	03-15-18
Structure Depth	= 14.00 ft
Length	= 1430.00 ft
Width	= 129.37 ft
Area	= 185,000 sq ft
Cost / sq ft Including 10% Mobilization & 25% Contingency	$830
Total Cost	$153,550,000



PLAN
1"=60'

DESIGNED BY	D. FITZWILLIAM	DATE	3/15/18
DRAWN BY	I. MARTIN	DATE	3/15/18
CHECKED BY	S. DULOR	DATE	3/15/18
APPROVED	S. DULOR	DATE	3/15/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 1
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

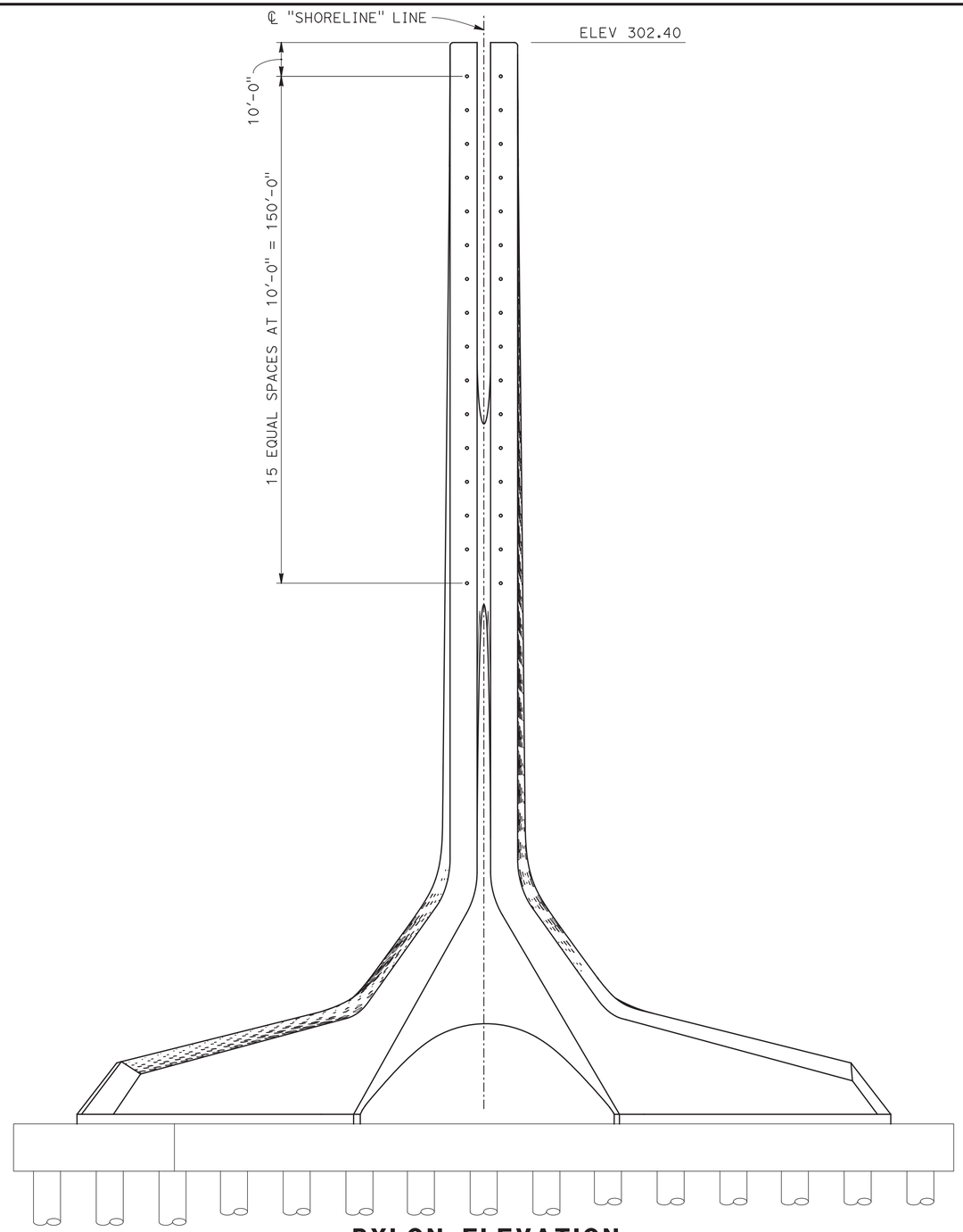
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



PYLON ELEVATION

1"=20'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618

DESIGNED BY	D. FITZWILLIAM	DATE	3/15/18
DRAWN BY	I. MARTIN	DATE	3/15/18
CHECKED BY	S. DULOR	DATE	3/15/18
APPROVED	S. DULOR	DATE	3/15/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 3

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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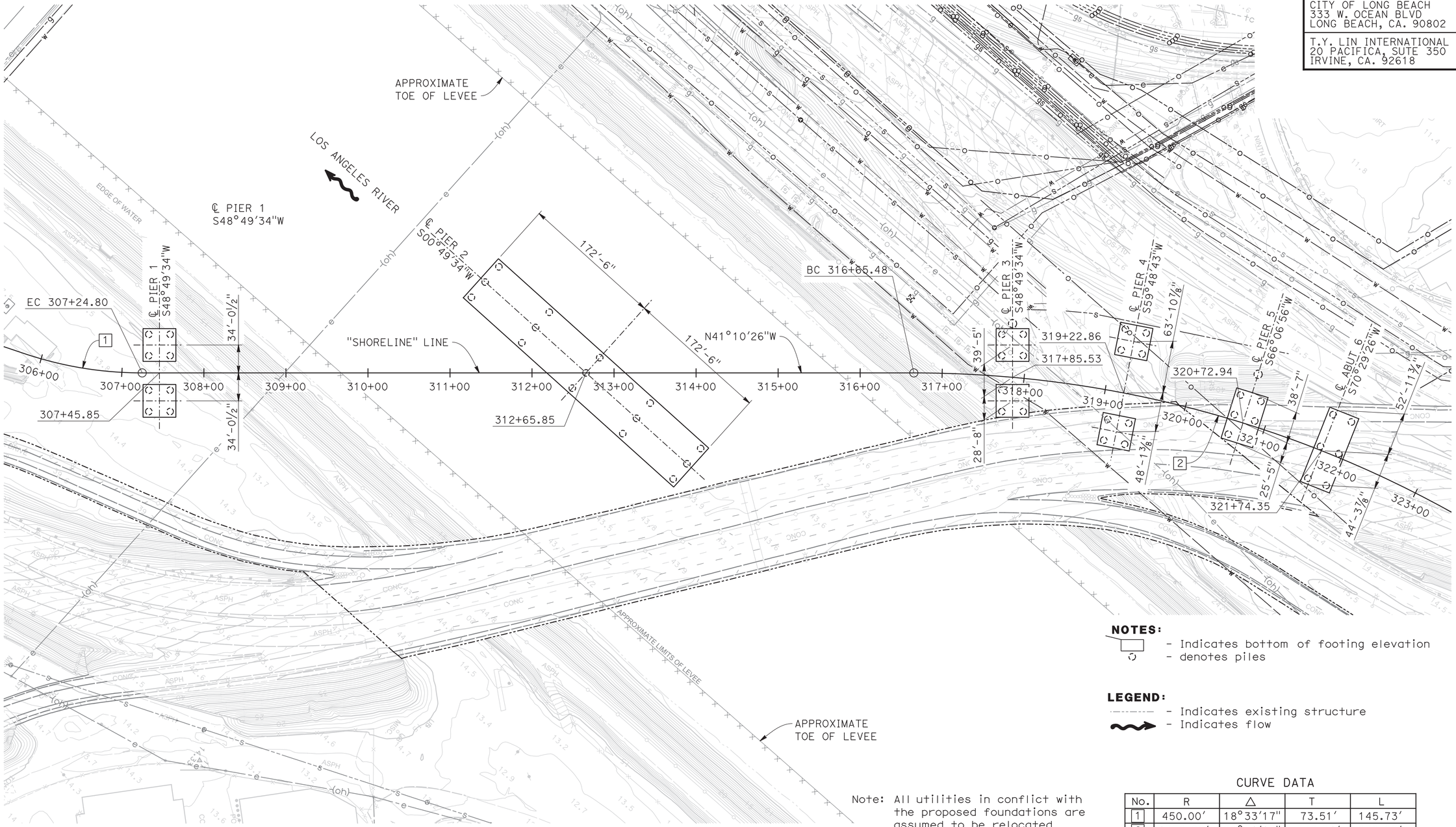
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
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IRVINE, CA. 92618



NOTES:

- Indicates bottom of footing elevation
- denotes piles

LEGEND:

- Indicates existing structure
- Indicates flow

Note: All utilities in conflict with the proposed foundations are assumed to be relocated prior to construction

CURVE DATA

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1"=60′

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CHECKED BY	S. DULOR	DATE	3/15/18
APPROVED	S. DULOR	DATE	3/15/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 3
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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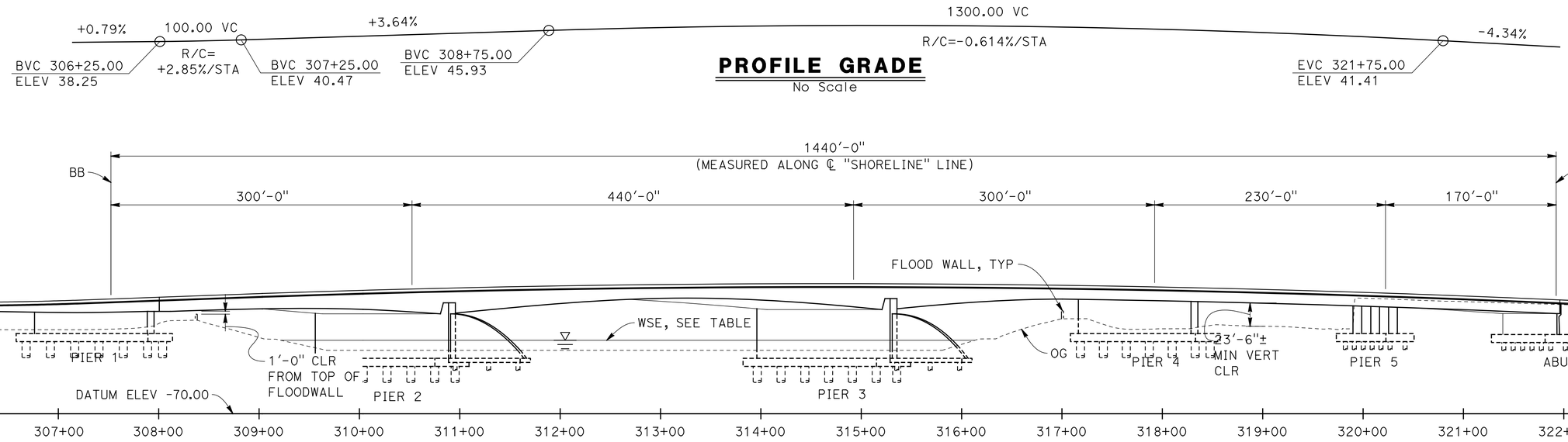
Segmental Bridge Design

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



NOTES:

① Paint "SHOEMAKER BRIDGE"

② Paint "BRIDGE No."

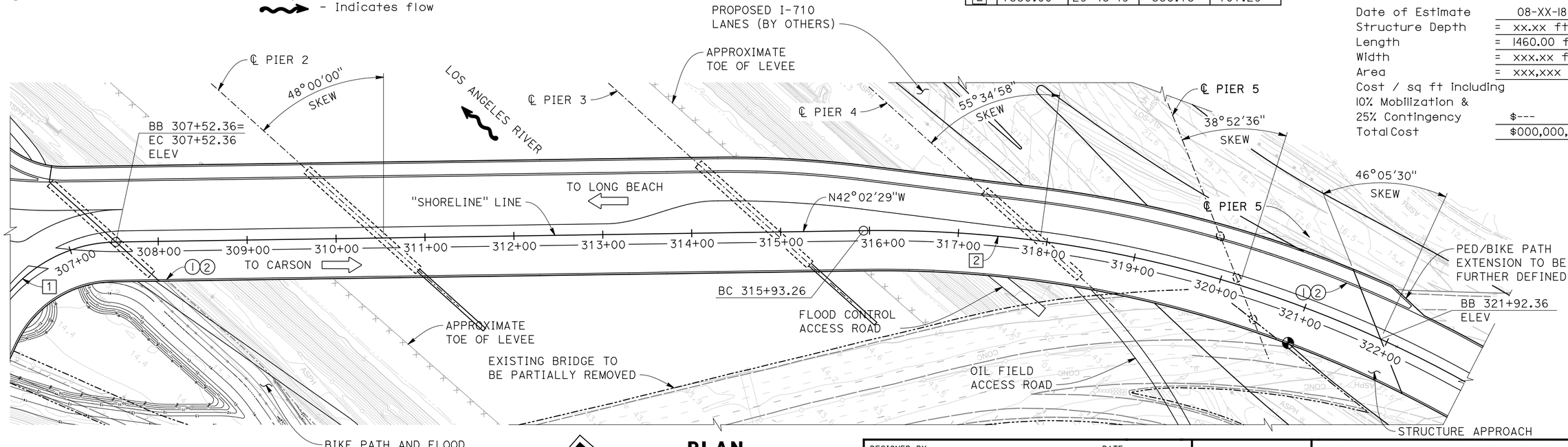
LEGEND:

- ◒ - Indicates point of minimum vertical clearance
- ------ - Indicates existing structure
- ⇨ - Indicates direction of traffic
- ≈≈≈ - Indicates flow

CURVE DATA

No.	R	△	T	L
1	160.00′	64°12′35"	100.39′	179.31′
2	1350.00′	29°45′49"	358.75′	701.29′

Date of Estimate	08-XX-18
Structure Depth	= xx.xx ft
Length	= 1460.00 ft
Width	= xxx.xx ft
Area	= xxx,xxx sq ft
Cost / sq ft including 10% Mobilization & 25% Contingency	$---
Total Cost	$000,000,000



DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 1

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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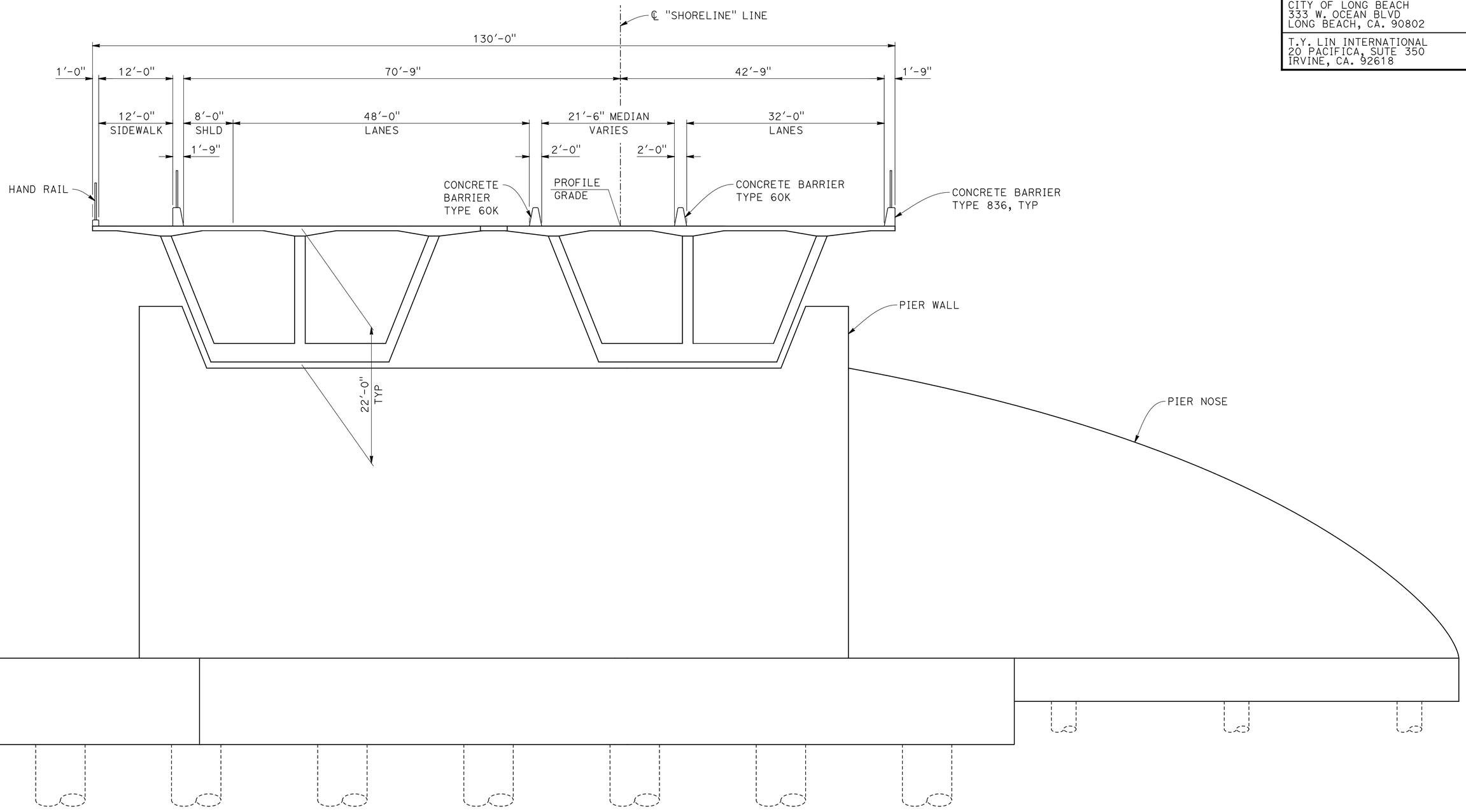
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



TYPICAL SECTION

1/8"=1'-0"

DESIGN OVERSIGHT

SIGN OFF DATE

DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 2

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

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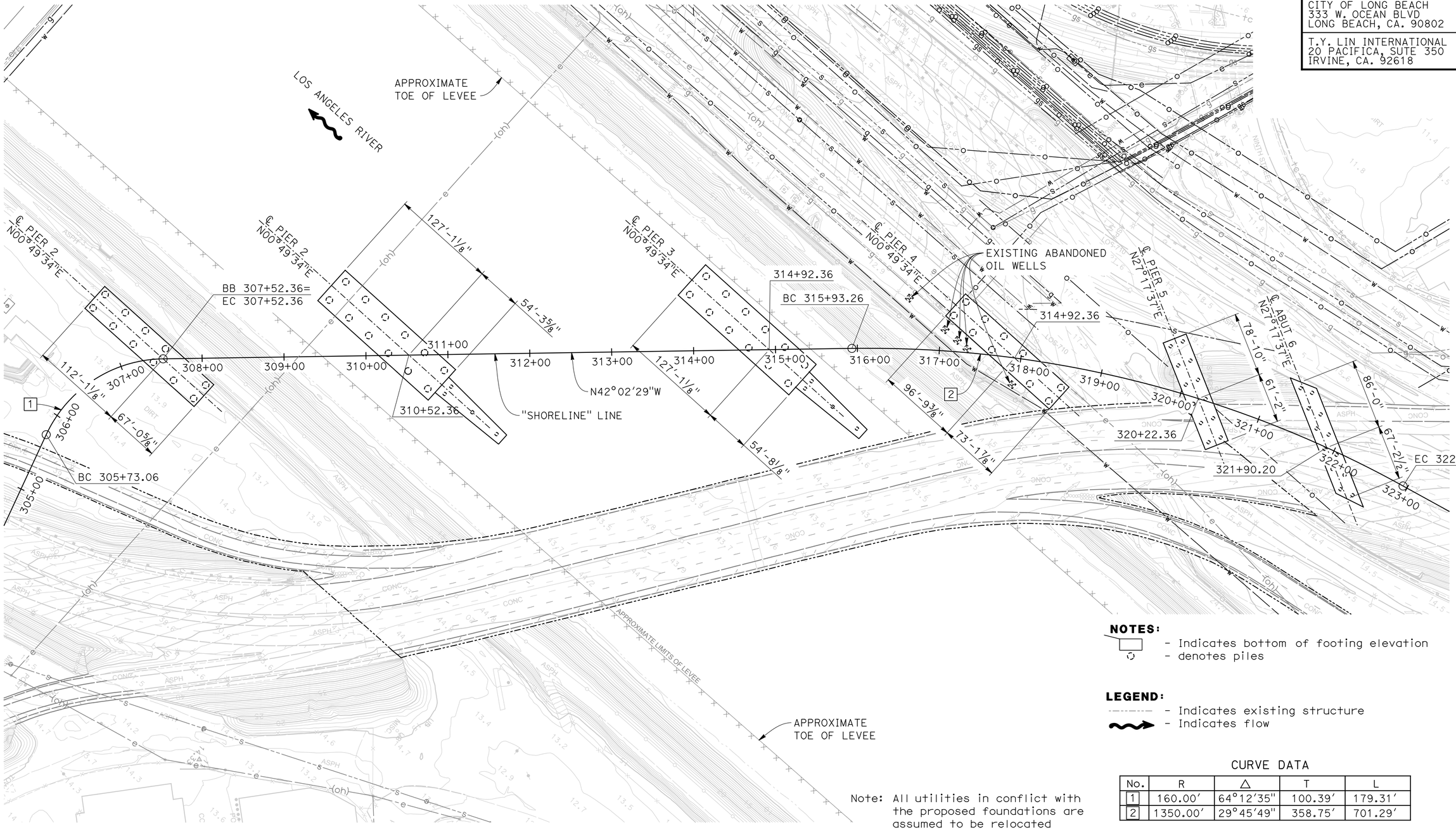
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
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20 PACIFICA, SUTE 350
IRVINE, CA. 92618



NOTES:

- Indicates bottom of footing elevation
- denotes piles

LEGEND:

- Indicates existing structure
- Indicates flow

CURVE DATA

No.	R	△	T	L
1	160.00′	64°12′35"	100.39′	179.31′
2	1350.00′	29°45′49"	358.75′	701.29′

Note: All utilities in conflict with the proposed foundations are assumed to be relocated prior to construction

PLAN
1"=60′

DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

DESIGN OVERSIGHT

SIGN OFF DATE

PLANNING STUDY NO. 3
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

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Attachment B. National Marine Fisheries Service Species List

Acquired October 5, 2018 using the online California Species List Tools (https://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html)

Listed Species and Critical Habitat in the Action Area

NMFS Species List for the Long Beach, California topographic quadrangle

ESA Anadromous Fish

SC Steelhead DPS (E)

sDPS Green Sturgeon (T) -

ESA Marine Invertebrates

Range Black Abalone (E) -

Range White Abalone (E) -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -

Olive Ridley Sea Turtle (T/E) -

Leatherback Sea Turtle (E) -

North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -

Fin Whale (E) -

Humpback Whale (E) -

Southern Resident Killer Whale (E) -

North Pacific Right Whale (E) -

Sei Whale (E) -

Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -

Essential Fish Habitat

Groundfish EFH -

Coastal Pelagics EFH -

Highly Migratory Species EFH -

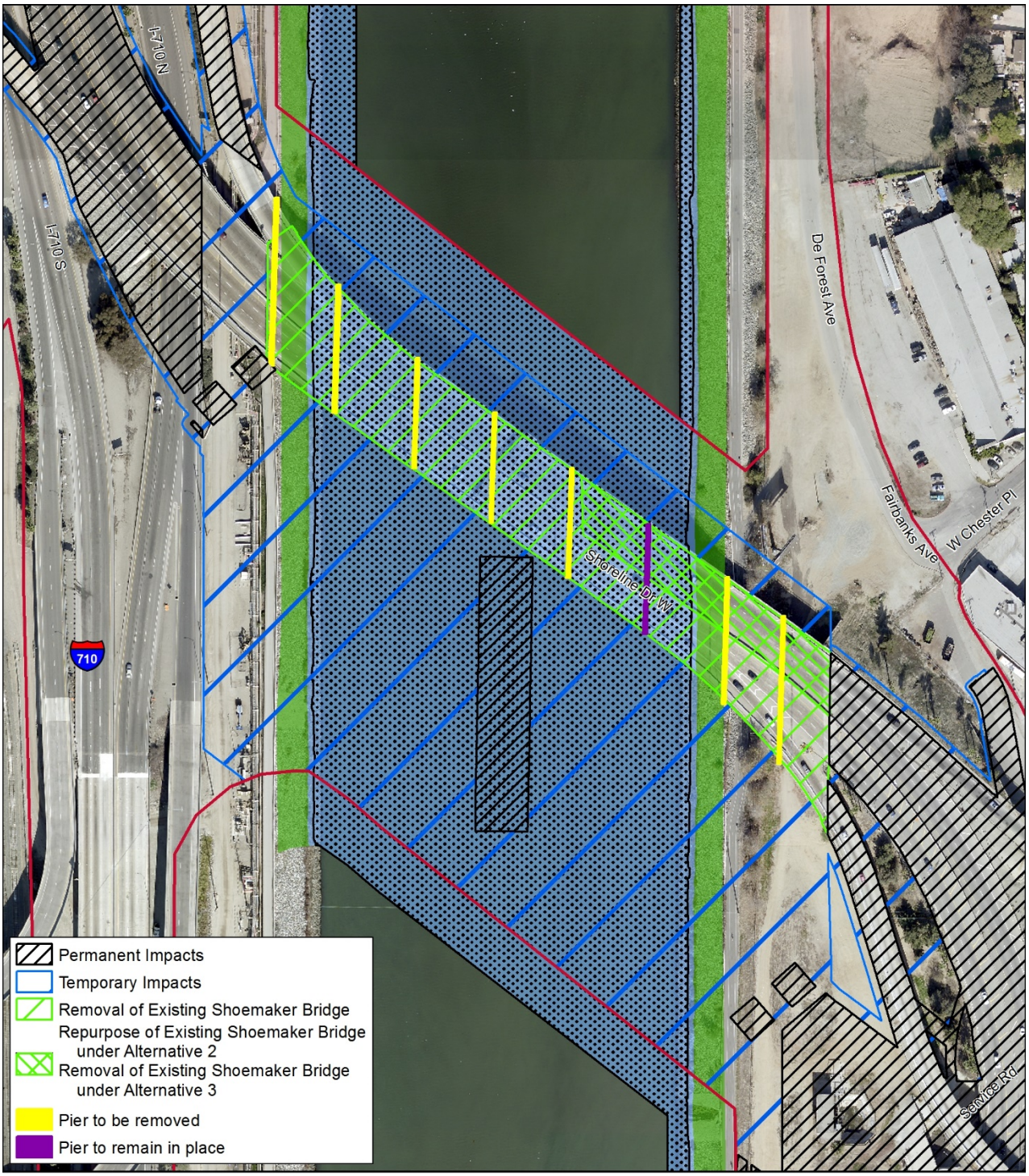
ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans - **X**

MMPA Pinnipeds - **X**

Attachment C. Bridge Impact Figures

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0 Feet 100

LEGEND

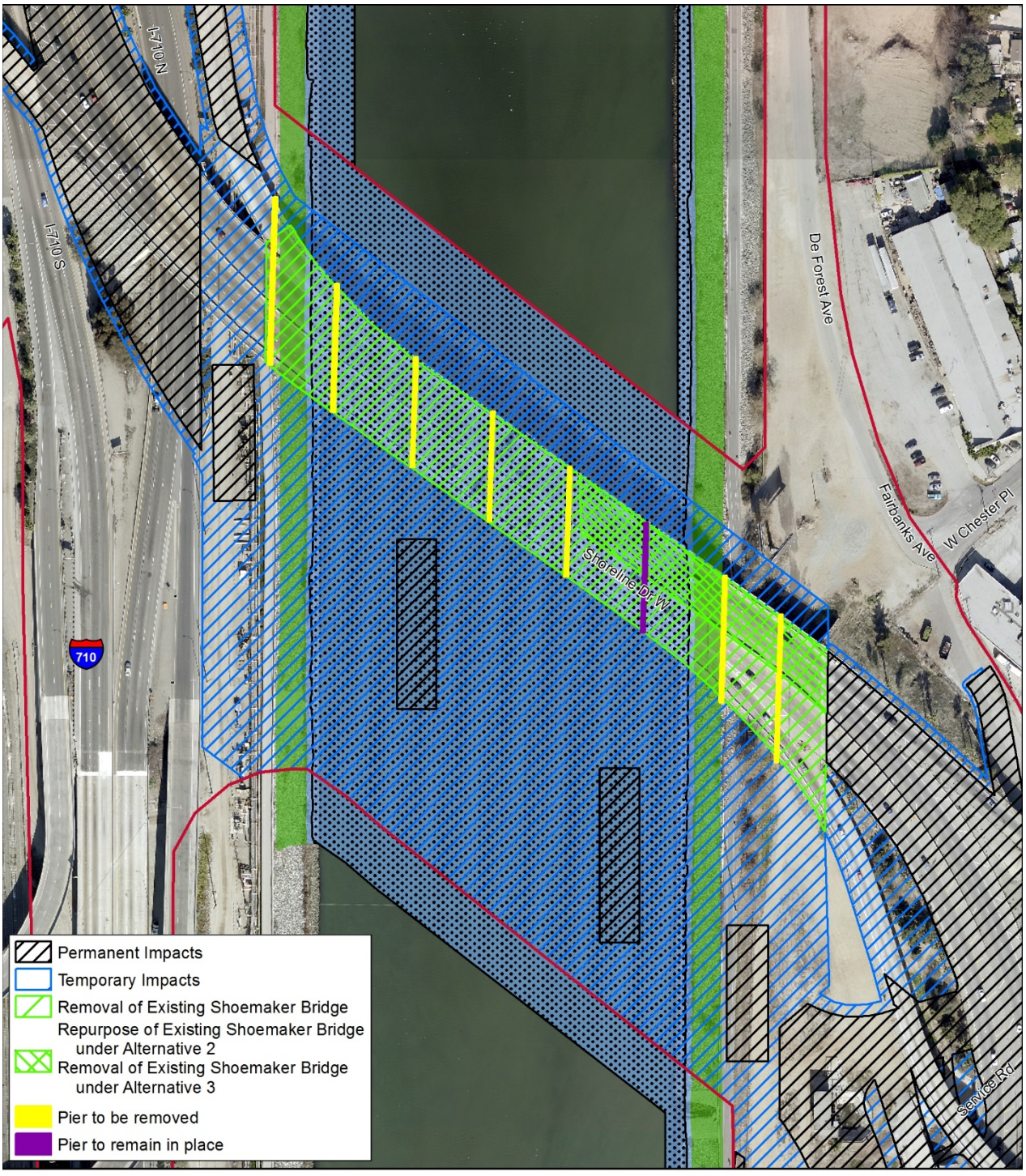
- Biological Study Area
- Section 10 Jurisdiction
- Section 404\401 and CDFW Jurisdiction
- CDFW Jurisdiction

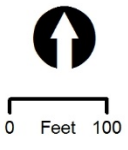
07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure A. Single Pylon Cable Stay Bridge Impacts

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LEGEND

- Biological Study Area
- Section 10 Jurisdiction
- Section 404\401 and CDFW Jurisdiction
- CDFW Jurisdiction

07-LA-710: PM 6.0/6.4
EA No. 27300

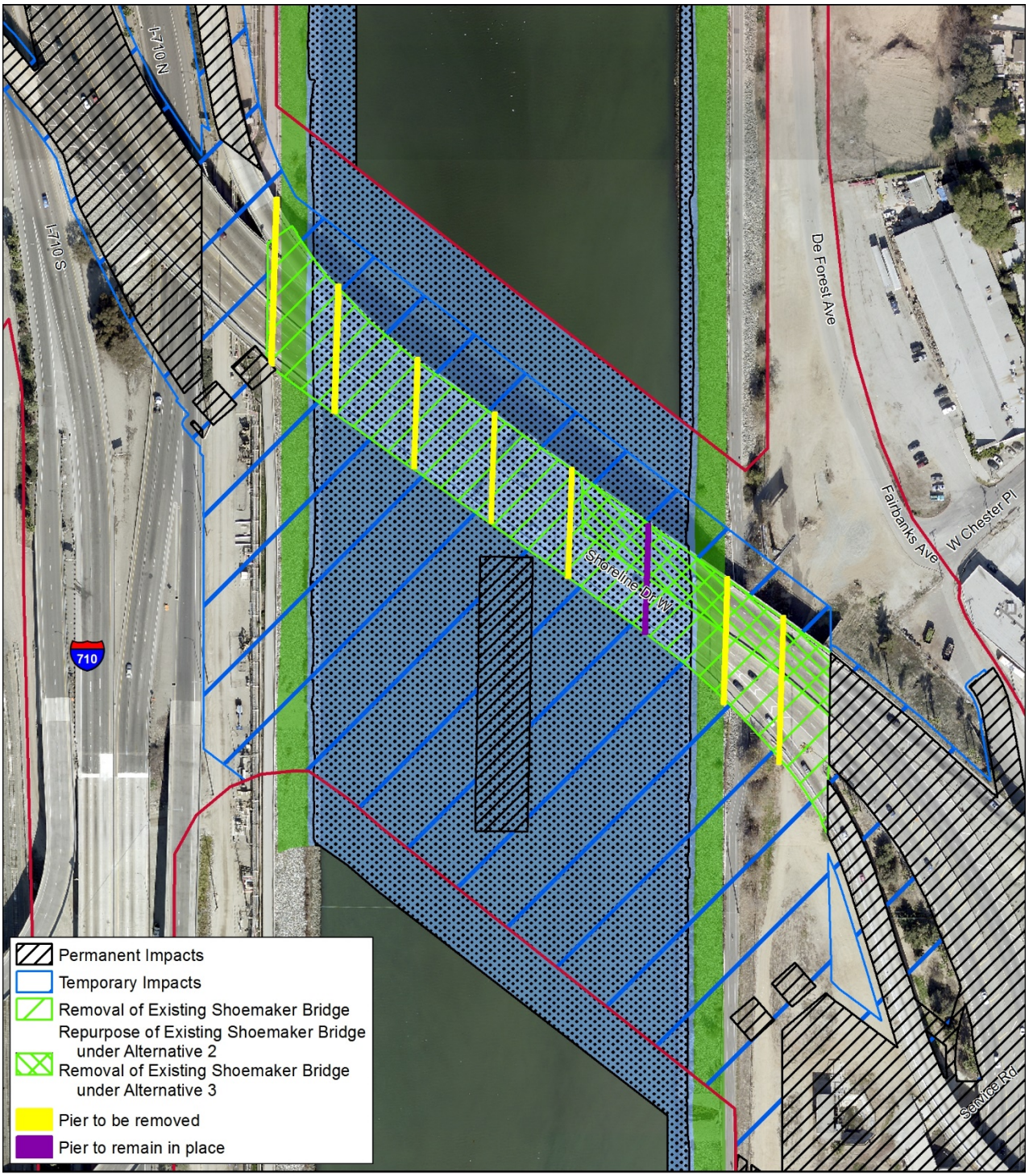
Shoemaker Bridge Replacement Project

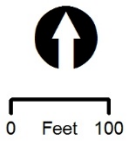
Figure B: Segmental Bridge Impacts

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Appendix G Figures: Project Impacts to Deepwater Aquatic Habitat

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LEGEND

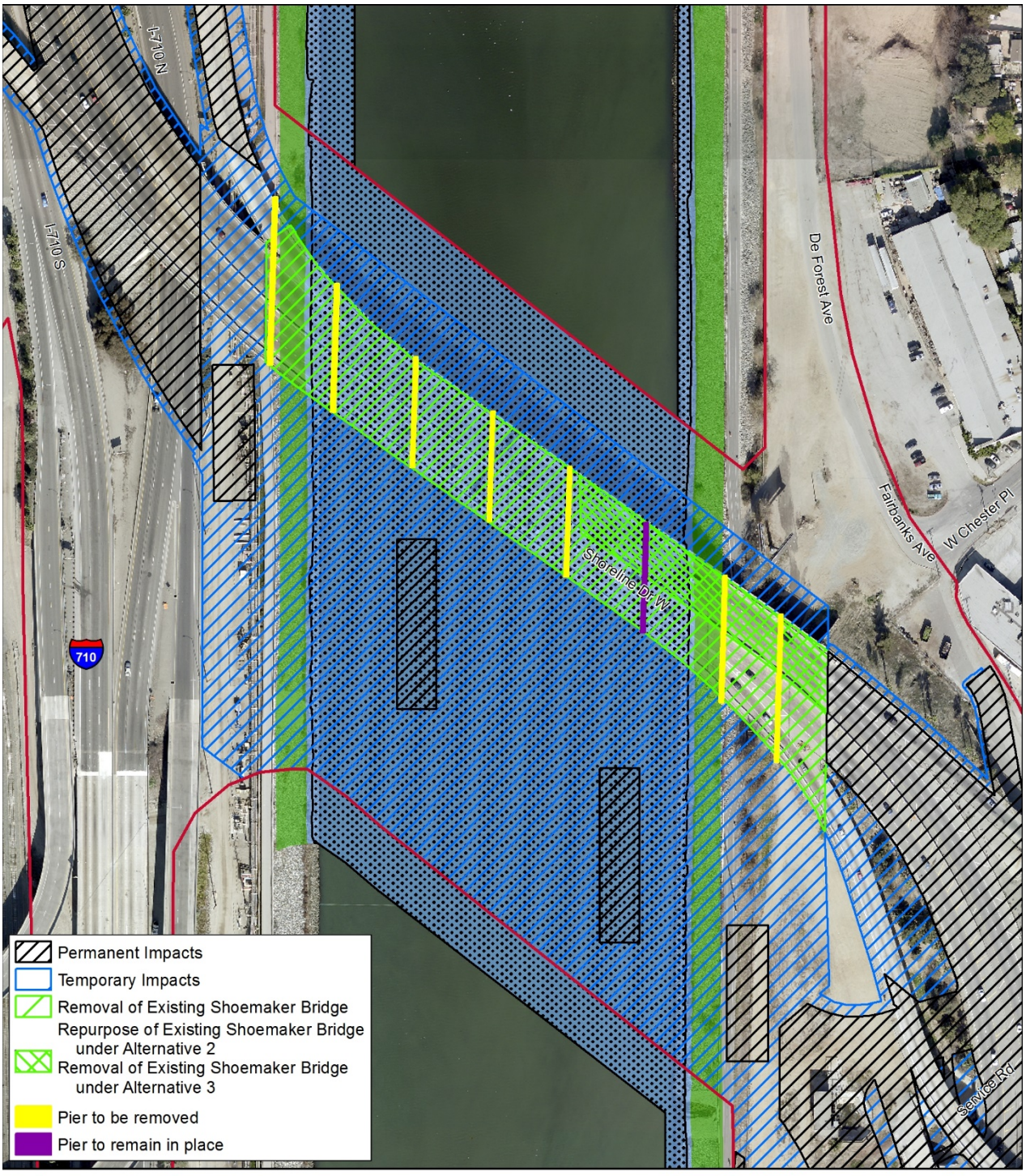
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07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure A. Single Pylon Cable Stay Bridge Impacts

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07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure B: Segmental Bridge Impacts

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Single Pylon Cable Stay Bridge Design

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

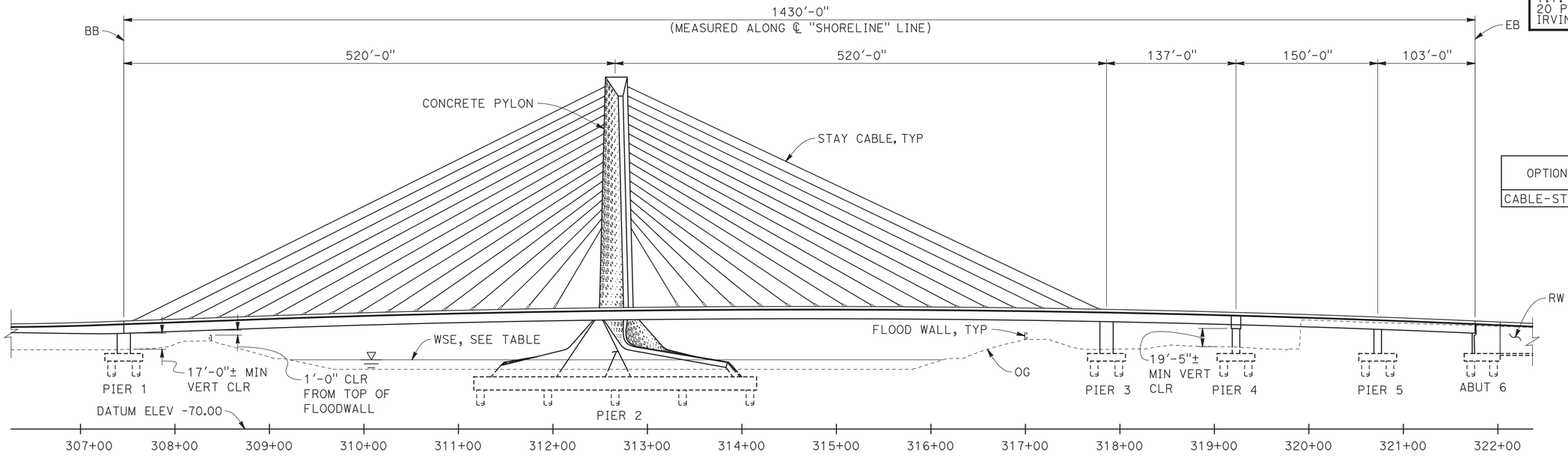
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
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T.Y. LIN INTERNATIONAL
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PROFILE GRADE
No Scale



OPTION	WSE (ft) NAVD 88	
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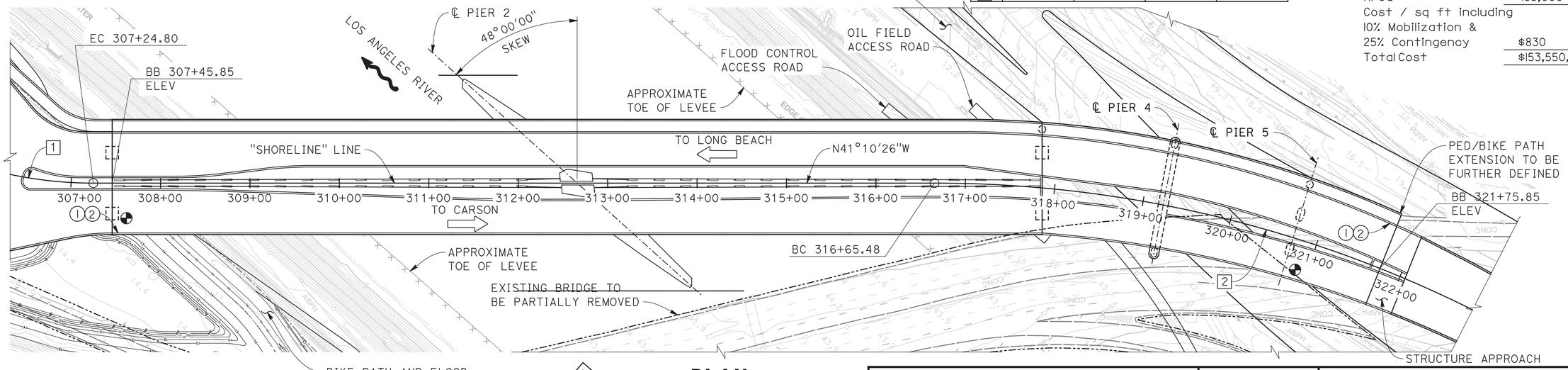
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STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 1
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

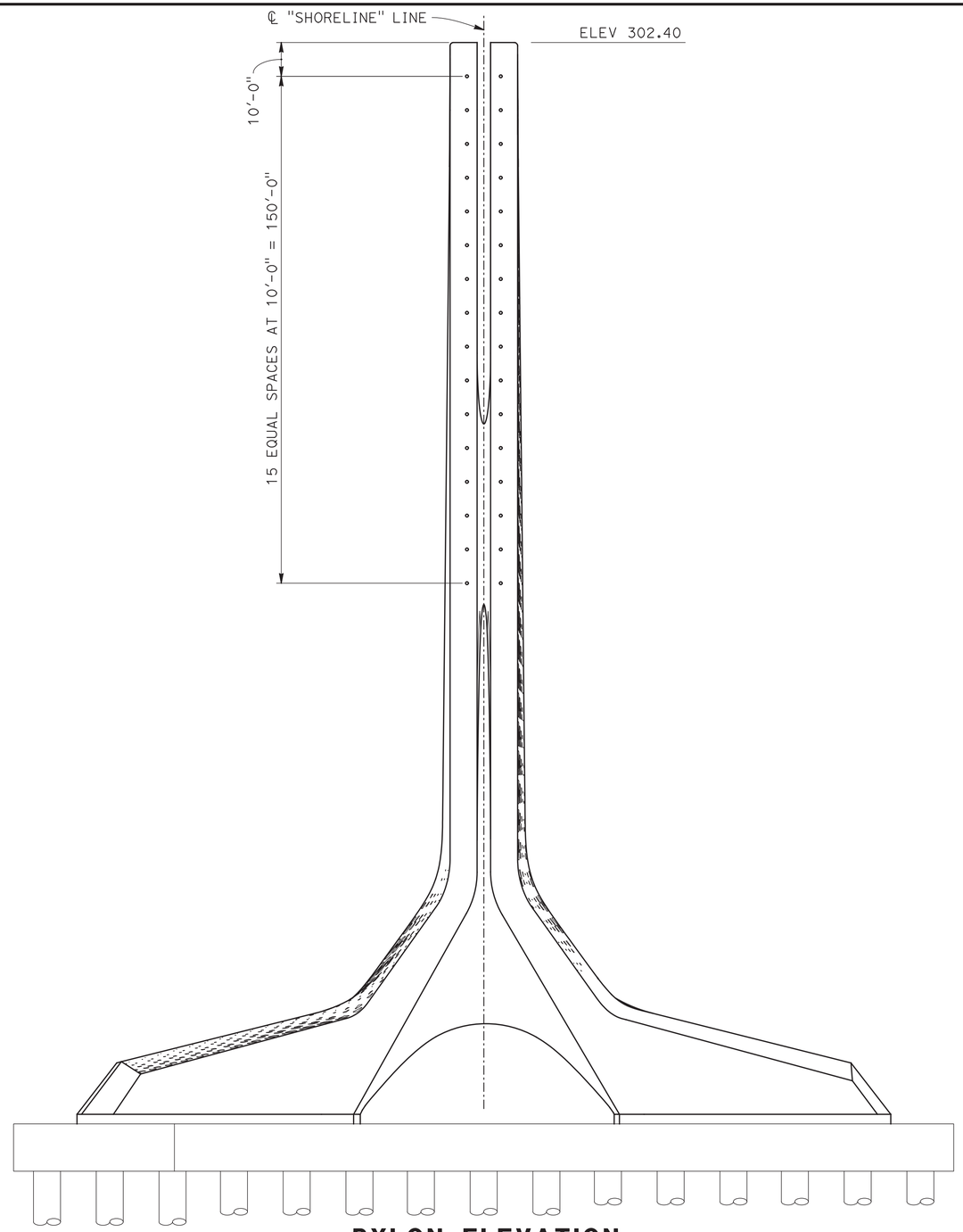
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



PYLON ELEVATION

1"=20'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
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STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 3

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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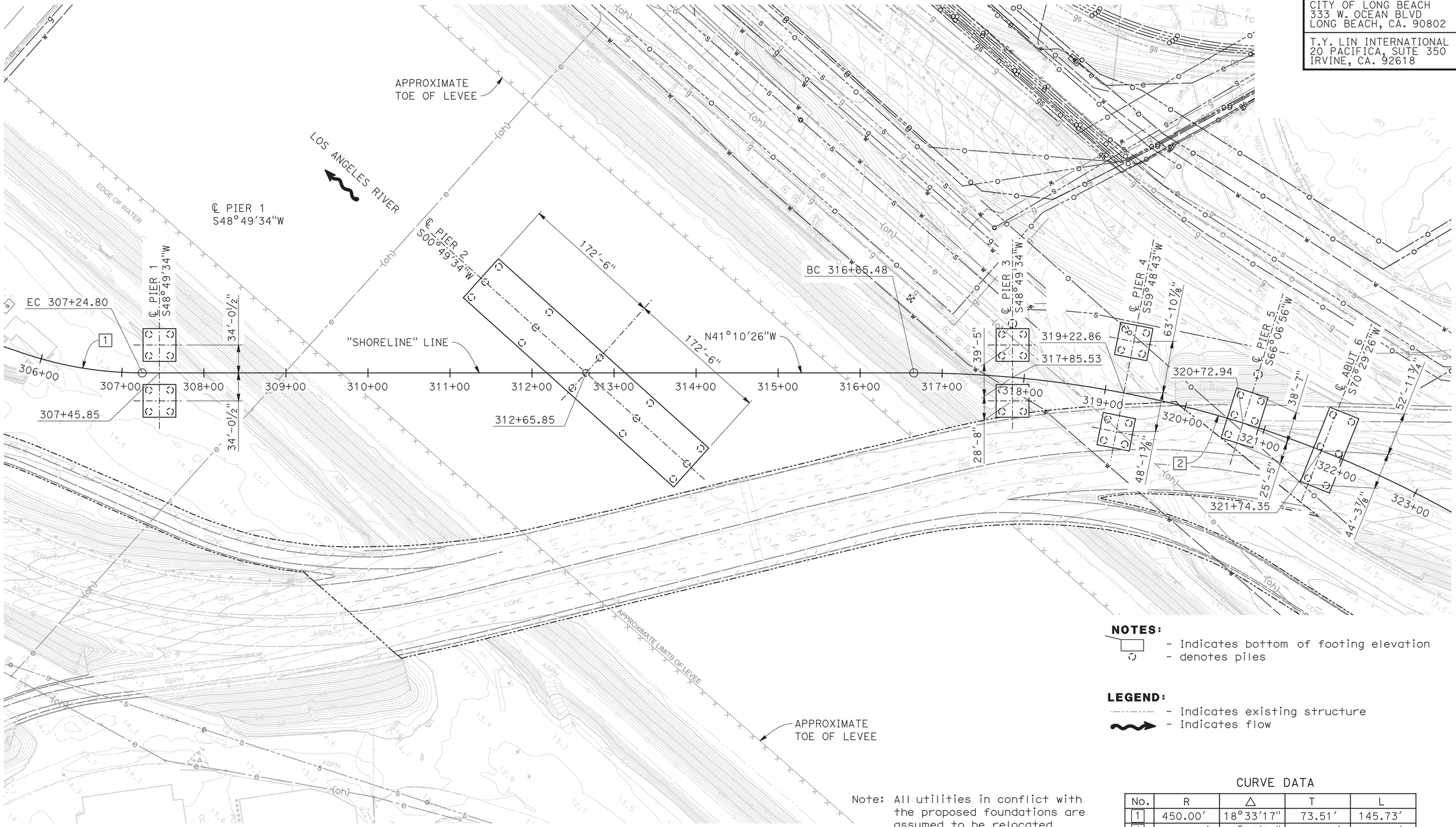
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
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CITY OF LONG BEACH
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IRVINE, CA. 92618



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- Indicates flow

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STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 3
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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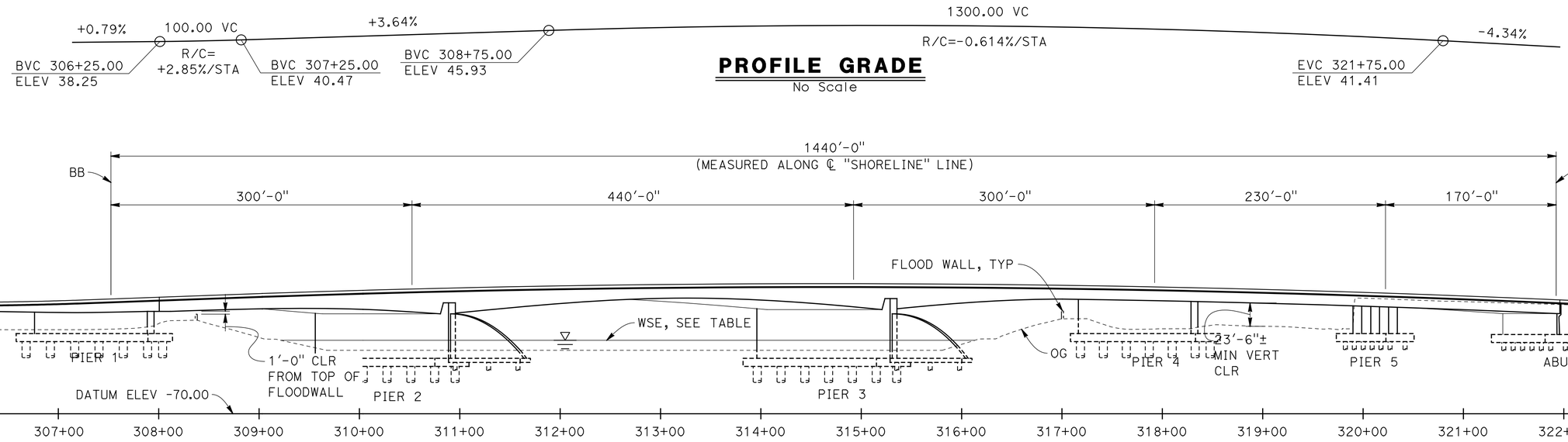
Segmental Bridge Design

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



NOTES:

① Paint "SHOEMAKER BRIDGE"

② Paint "BRIDGE No."

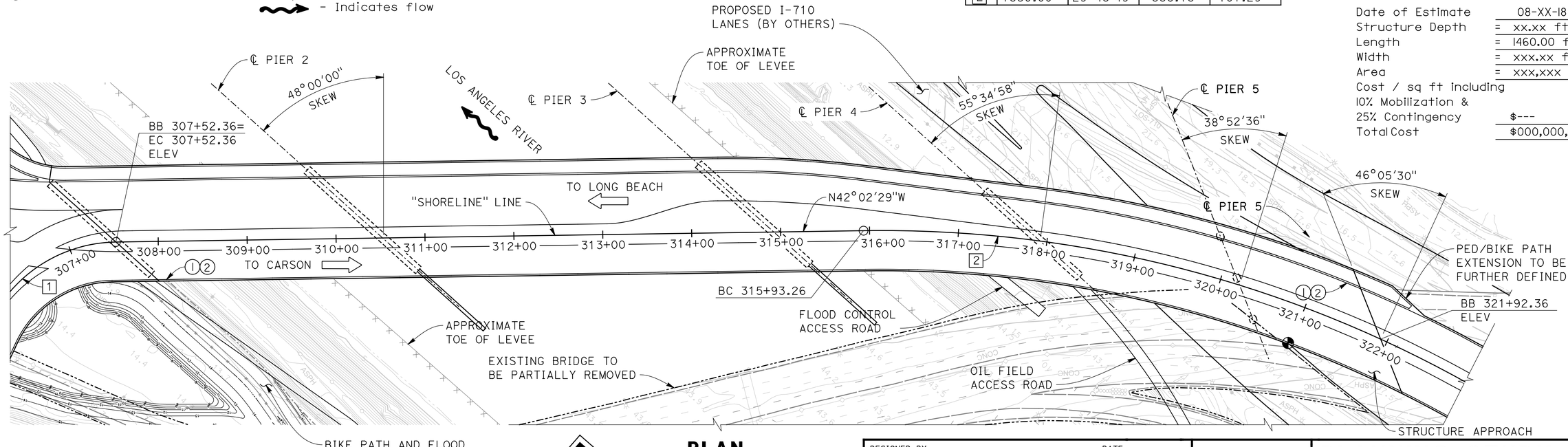
LEGEND:

- ◒ - Indicates point of minimum vertical clearance
- ------ - Indicates existing structure
- ⇨ - Indicates direction of traffic
- ≈≈≈ - Indicates flow

CURVE DATA

No.	R	△	T	L
1	160.00′	64°12′35"	100.39′	179.31′
2	1350.00′	29°45′49"	358.75′	701.29′

Date of Estimate	08-XX-18
Structure Depth	= xx.xx ft
Length	= 1460.00 ft
Width	= xxx.xx ft
Area	= xxx,xxx sq ft
Cost / sq ft including 10% Mobilization & 25% Contingency	$---
Total Cost	$000,000,000



DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 1

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

DESIGN OVERSIGHT

SIGN OFF DATE

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 7/16/10)

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CONTRACT NO.: X

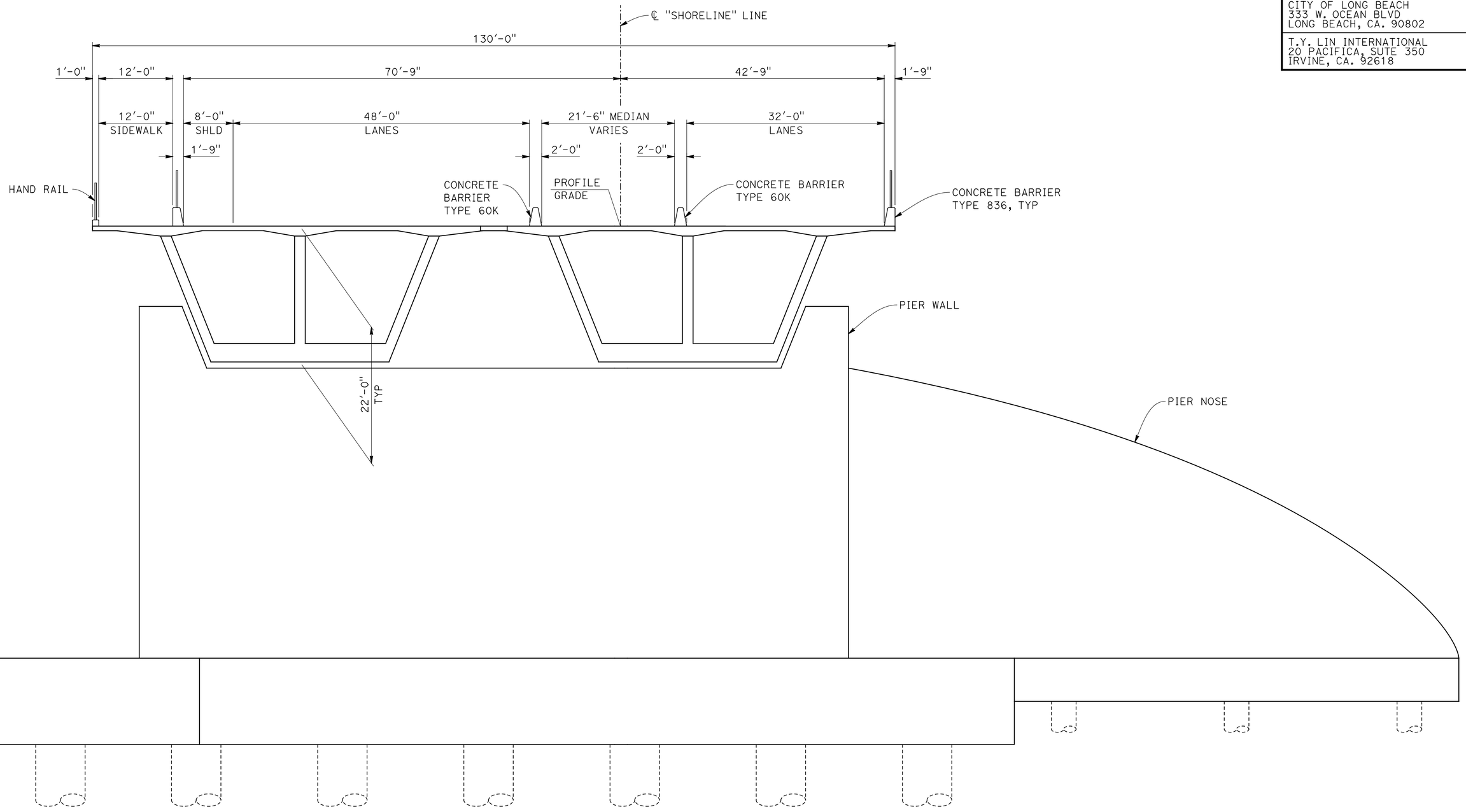
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PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



TYPICAL SECTION

1/8"=1'-0"

DESIGN OVERSIGHT

SIGN OFF DATE

DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

PLANNING STUDY NO. 2

SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

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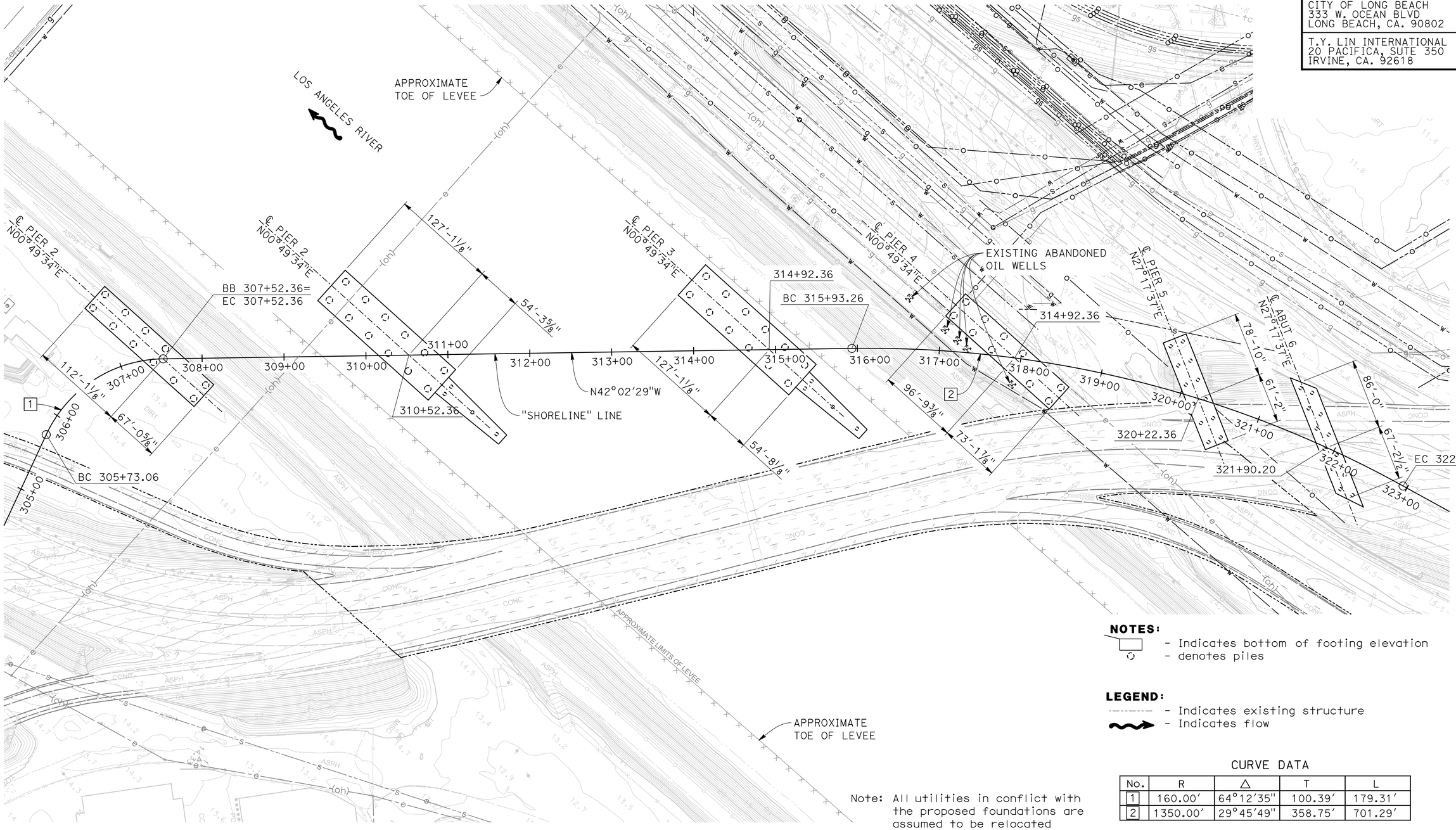
CONTRACT NO.: X

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT
07	LA	710	PM6.0/6.4

CITY OF LONG BEACH
333 W. OCEAN BLVD
LONG BEACH, CA. 90802

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUTE 350
IRVINE, CA. 92618



NOTES:

- Indicates bottom of footing elevation
- denotes piles

LEGEND:

- Indicates existing structure
- Indicates flow

CURVE DATA

No.	R	△	T	L
1	160.00′	64°12′35"	100.39′	179.31′
2	1350.00′	29°45′49"	358.75′	701.29′

Note: All utilities in conflict with the proposed foundations are assumed to be relocated prior to construction

PLAN
1"=60′

DESIGNED BY	D. FITZWILLIAM	DATE	8/xx/18
DRAWN BY	I. MARTIN	DATE	8/xx/18
CHECKED BY	S. DULOR	DATE	8/xx/18
APPROVED	S. DULOR	DATE	8/xx/18

STEPHANE DULOR
PROJECT ENGINEER

DESIGN OVERSIGHT

SIGN OFF DATE

PLANNING STUDY NO. 3
SHOEMAKER BRIDGE

BRIDGE NO.	UNIT: N/A
SCALE: AS SHOWN	PROJECT NUMBER & PHASE: PA/ED

USERNAME => jmartin DATE PLOTTED => 8/23/2018 TIME PLOTTED => 3:19:20 PM