WATER QUALITY AND STORMWATER RUNOFF STUDY

FINAL REPORT

INTERSTATE 710 CORRIDOR PROJECT BETWEEN OCEAN BOULEVARD AND THE STATE ROUTE 60 INTERCHANGE

07-LA-710-PM 5.4/24.6 EA: 249900
WBS 165.10.35

Prepared for

Metro

Los Angeles County
Metropolitan Transportation Authority

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ACRONYMS

2010 303(d) list	2010 CWA Section 303(d) List of Water Quality Limited Sections
ADA	American's with Disabilities Act
BAT	best available technology
BCPCT	best conventional pollutant control technology
BMP	Best Management Practice
BNSF`	BNSF Railway
BOD	biochemical oxygen demand
Caltrans	California Department of Transportation
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIDH	cast-in-drilled hole
CISS	cast-in steel shell
CWA	Clean Water Act
DWP	Los Angeles County Department of Water and Power
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
°F	degrees Fahrenheit
FHWA	Federal Highway Administration
GCCOG	Gateway Cities Council of Governments
HSA	hydrologic subarea
HDM	Highway Design Manual
I	Interstate
I-5 JPA	I-5 Joint Powers Authority
in/hr	inches per hour
ITS	Intelligent Transportation Systems
IWMD	Industrial Waste Management Division
km	kilometer

LARWQCB	Los Angeles Regional Water Quality Control Board
LBSWMP	Long Beach Storm Water Management Program
LPS	Locally Preferred Strategy
m	meter
MBA	methylene blue activated substance
MCL	maximum contaminant levels
MCS	Major Corridor Study
MEP	Maximum Extent Practicable
Metro	Los Angeles County Metropolitan Transportation Authority
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
mm	millimeter
MS4	Municipal Separate Storm Sewer Systems
MUN	municipal water use
NCHRP	National Cooperative Highway Research Program
ng/L	nanogram per liter
NEPA	National Environmental Policy Act
NB	Northbound
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	perchloroethylene
PCH	Pacific Coast Highway
PMCLs	primary maximum contaminant levels
POLA	Port of Los Angeles
POLB	Port of Long Beach

PS&E	Plans, Specifications, and Estimates
Q	flow rate in cubic feet per second (cfs)
Q_{WQF}	Water Quality Treatment BMP flow rate
RTIP	Regional Transportation Improvement Program
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users
SB	Southbound
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SR	State Route
SSP	standard special provision
SMCL	secondary maximum contaminant levels
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCE	trichloroethylene
TDM	Transportation Demand Management
TDS	total dissolved solids
TMDL	total maximum daily load
TOC	total organic carbon
TSM	Transportation Systems Management
TSS	total suspended solids
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDR	Water Discharge Requirements
WPCP	Water Pollution Control Program

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EXECUTIVE SUMMARY

The Los Angeles County Metropolitan Transportation Authority in coordination with multiple agencies, including the California Department of Transportation (Caltrans) and Gateway Cities Council of Governments, proposes to construct improvements along the I-710 Corridor from Ocean Boulevard in the City of Long Beach to State Route (SR) 60 in East Los Angeles (I-710 Corridor Project). Four build alternatives including Alternative 5A and 6A/B/C and a no-build alternative are under consideration.

Because the proposed build alternatives will disturb the existing ground surface and increase the impervious (paved) surface area of the existing freeway, they have the potential to adversely affect water quality within the receiving water bodies. The objective of this report is to describe the affected project environment and governing regulatory requirements, identify the potential water quality impacts and related mitigation measures, and, finally, summarize any net impacts that the proposed improvements will have to water quality.

With most any freeway improvement project, there is a potential to affect water quality during both the construction phase and the operational phase of the project. Specifically, the anticipated I-710 Corridor Project runoff characteristics have the potential to affect surface runoff with the disturbance of the ground surface and also groundwater during foundation excavation. Both operations will need to be undertaken within or in close proximity to the Los Angeles River, Compton Creek, Rio Hondo channel, and regional storm drain channels in order to construct the proposed improvements. The total disturbed area for Alternative 5A and Alternative 6A/B/C is 1,613 acres and 1,803 acres, respectively. The I-710 Corridor Project also has the potential to impact water quality during the operational phase of the project improvements due to the increase in the roadway surface area. The increase in impervious area for Alternative 5A and Alternative 6A/B/C is 109 acres and 308 acres, respectively.

This increase in impervious area brings an increase in the pollutant loads that require treatment. Because the I-710 Corridor Project directly connects to two water quality limited segments of the LA River that have Total Maximum Daily Load (TMDL) allocations associated with them, all approved permanent treatment Best Management Practices (BMPs) must be considered as options to treat the project runoff to the Maximum Extent Practicable (MEP). A preliminary selection of the proposed BMPs is outlined in the I-710 Corridor Project draft Storm Water Data Report (SWDR) and is discussed in Section 5 of this report. Currently there are several permanent BMPs installed along the 710 corridor including GSRDs, infiltration basins, and media filters. Additional BMPs have been planned based on the results of two Corridor Stormwater Management Studies completed in 2009. The studies cover the portion of the existing corridor from PM 6.9 to PM 26.5. There are 687 acres of existing impervious surface located within the I-710 Corridor Project footprint.

Additional impervious area also has the potential to increase the velocity and volume of project runoff at the existing pump stations and 30 existing drainage outlets. The increase in the 25-Year peak flow for Alternative 5A and Alternative 6A/B/C is 96 cfs and 771 cfs, respectively. All pump station connections, drainage outlets, and BMPs will be designed to accommodate the project design flows according to the Highway Design Manual and the Caltrans Project Planning Design Guide.

The required maintenance activities for the operation of the freeway and the freight corridor also have the potential to impact the water quality of receiving water bodies. Potential impacts during the construction and operational phases of the build alternatives will be addressed through the incorporation of design development BMPs, construction phase BMPs, treatment BMPs, and adherence to the necessary operational maintenance protocols identified in the Caltrans Stormwater Management Plan (SWMP).

During the construction phase of the I-710 Corridor Project, all applicable construction site BMPs will be incorporated into the construction documents including temporary soil stabilization, sediment and tracking control, and waste management. Groundwater removed during dewatering operations will be disposed of offsite at approved locations or treated on-site and incorporated into the grading operations.

Operational BMPs include design development, treatment BMPs, and maintenance BMPs. Proposed design development BMPs incorporated on this project include preserving existing vegetation wherever feasible, incorporation of concentrated flow conveyance systems with velocity reducing outlet structures, and providing slope protection with vegetation. Treatment BMPs include 24 biofiltration swales and stripes, 22 Austin Vault media filters, 7 gross solids removal devices, 1 detention basin, and 8 infiltration basins. All permanent treatment BMPS will have maintenance requirements associated with their implementation. Proposed operational maintenance BMPs include storm drain cleaning, normal roadway and bridge maintenance, in addition to maintaining all vegetated slopes.

With the incorporation of the proposed site specific BMPs during the construction and operational phases of the I-710 Corridor Project, along with adherence to BMP and operational maintenance protocols, no significant adverse impacts to water quality due to the construction and operation of the proposed improvements are anticipated.

1.0 I-710 CORRIDOR PROJECT DESCRIPTION

The Interstate 710 (I-710) Corridor Project study area includes the portion of I-710 (6 or 8 lanes) from Ocean Blvd. in Long Beach to State Route 60 (SR-60), a distance of approximately 18 miles (see Figure 1). At the freeway-to-freeway interchanges, the study area extends one mile east and west of I-710 for the Interstate 405 (I-405), State Route 91 (SR-91), Interstate 105 (I-105), and Interstate 5 (I-5) interchanges. The I-710 Corridor Project traverses portions of the cities of Bell, Bell Gardens, Carson, Commerce, Compton, Cudahy, Downey, Huntington Park, Lakewood, Long Beach, Los Angeles, Lynwood, Maywood, Paramount, Signal Hill, South Gate, and Vernon, and portions of unincorporated Los Angeles County, all within Los Angeles County, California.

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 Port of Los Angeles (POLA)/Port of Long Beach (POLB) shipping terminals and the Burlington Northern Santa Fe (BNSF)/Union Pacific Railroad (UP) railyards in the cities of Commerce and Vernon and destinations along I-710 as well as destinations north and east of I-710.

The I-710 Major Corridor Study (MCS), undertaken to address the mobility and safety needs of the I-710 Corridor and to explore possible solutions for transportation improvements, was completed in March 2005 and identified a community-based Locally Preferred Strategy (LPS) consisting of 10 general purpose (GP) 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 Funding Partners. Through a cooperative agreement, these agencies are funding the preparation of preliminary engineering and environmental documentation for the I-710 Corridor Project to evaluate improvements identified in the Major Corridor Study along the I-710 Corridor from Ocean Blvd. in the City of Long Beach to SR-60. The I-710 Funding Partners have continued 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 compliance and the lead agency for NEPA compliance 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 need for the 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 accident rates, especially truck-related, that are well above the statewide average for freeways of this type.

- At many locations along I-710, the on- and off-ramps do not meet current design standards and weaving sections within and between interchanges are of insufficient length.

- High volumes of both trucks and cars have led to severe 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.

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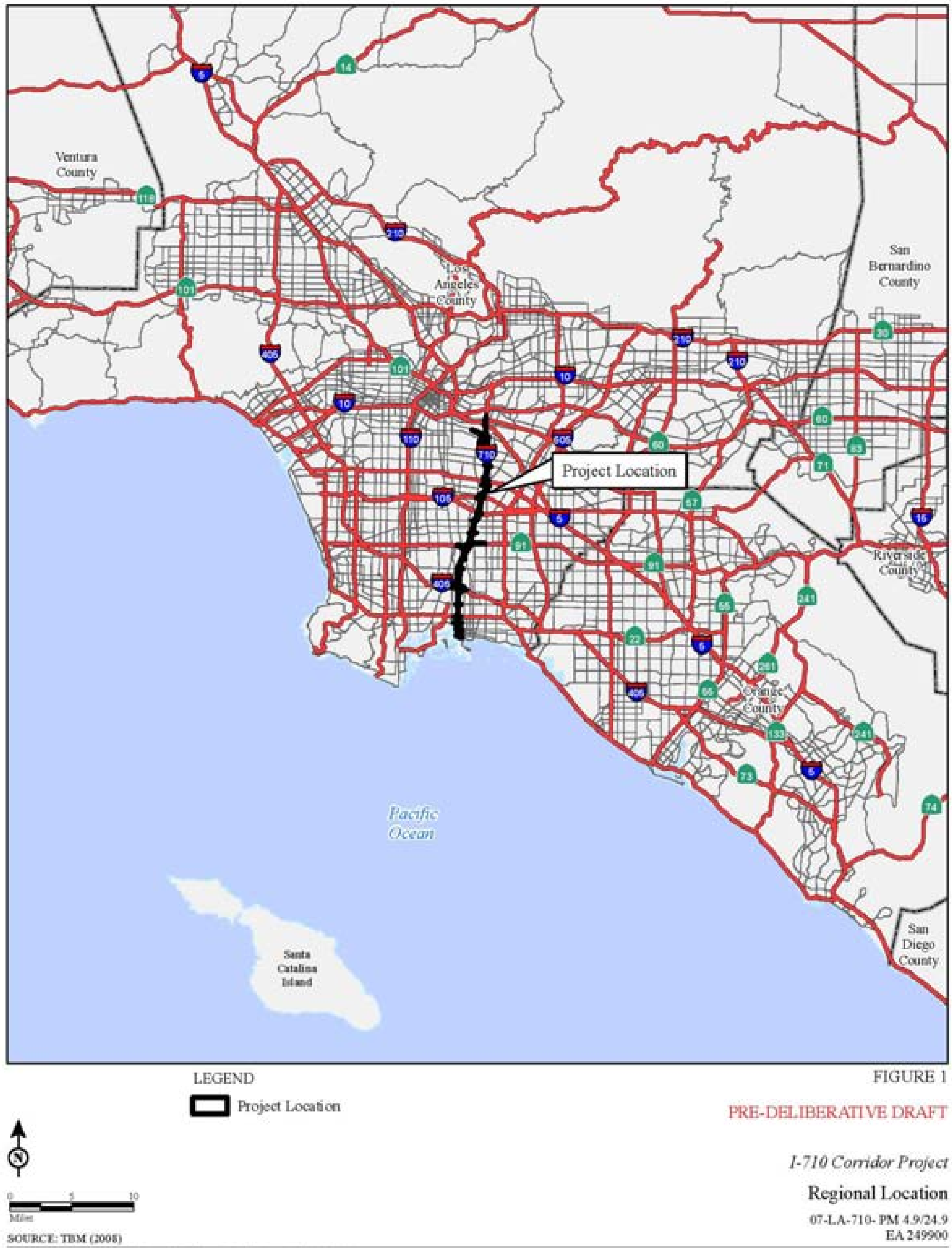

FIGURE 1

PRE-DELIBERATIVE DRAFT

I-710 Corridor Project

Regional Location

07-LA-710- PM 4.9/24.9
EA 249900

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The purpose of the I-710 Corridor Project is to achieve the following within the I-710 Corridor (2035 time frame):

- Improve air quality and public health
- Improve traffic safety
- Provide modern design for the I-710 mainline
- Address projected traffic volumes
- Address projected growth in population, employment, and activities related to goods movement (based on SCAG population projections and projected container volume increases at the two ports)

Four alternatives have been proposed for analysis in an Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) to address the proposed action. There are two build alternatives and one no-build alternative. These alternatives are described below. The two build alternatives are within the same study area as shown in Figure 1.

1.1 ALTERNATIVES

This section describes the alternatives based on the Major Corridor Study that were developed by a multidisciplinary technical team to achieve the I-710 Corridor Project purpose and subsequently were reviewed and concurred upon by the various committees involved in the I-710 Corridor Project community participation framework. Alternatives 2, 3, and 4 were considered but withdrawn from further environmental study as stand-alone alternatives but elements of these alternatives have been included in Build Alternatives 5A, 6A, 6B, and 6C. The alternatives are Alternative 1 (No Build Alternative), Alternative 5A (I-710 Widening up to 10 General Purpose [GP] Lanes), Alternative 6A (10 GP Lanes plus a Four-Lane Freight Corridor), Alternative 6B (10 GP Lanes plus a Zero-Emissions Four-Lane Freight Corridor), and Alternative 6C (10 GP Lanes plus a Four-Lane Freight Corridor Tolled).

Alternative 1 – No Build Alternative

The No Build Alternative does not include any improvements within the I-710 Corridor other than those projects that are already planned and committed to be constructed by or before the planning horizon year of 2035. The projects included in this alternative are based on Southern California Association of Governments (SCAG's) 2008 Regional Transportation Improvement Program (RTIP) project list, including freeway, arterial, and transit improvements within the SCAG region. This alternative also assumes that goods movement to and from the ports make maximum utilization of existing and planned railroad capacity within the I-710 Corridor. Alternative 1 is the baseline against which the Build Alternatives proposed for the I-710 Corridor Project will be assessed. The existing I-710 mainline generally consists of eight GP lanes north of I-405 and six GP lanes south of I-405.

Alternative 5A – I-710 Widening and Modernization

Alternative 5A proposes to widen the I-710 mainline to up to ten GP lanes (northbound [NB] I-710 and southbound [SB] I-710). This alternative will:

- Provide an updated design at the I-405 and State Route 91 (SR-91) interchanges (no improvements to the I-710/Interstate 5 [I-5] interchange are proposed under Alternative 5A)
- Reconfigure all local arterial interchanges within the project limits that may include realignment of on- and off-ramps, widening of on- and off-ramps, and reconfiguration of interchange geometry
- Eliminate local ramp connections over I-710 (9th to 6th St. and 7th to 10th St.) in the City of Long Beach
- Eliminate a local interchange at Wardlow Ave. in the City of Long Beach
- Add a local street connection under I-710 to Thunderbird Villas at Miller Way in the City of South Gate
- Add a local connection (bridge) over I-710 at Southern Ave. in the City of South Gate
- Add a local arterial interchange at NB and SB I-710/Slauson Ave. in the City of Maywood
- Shift the I-710 centerline at several locations to reduce right-of-way requirements.

Additionally, various structures such as freeway connectors, ramps, and local arterial overcrossings, structures over the Los Angeles River and structures over the two railyards throughout the project limits will be replaced, widened, or added as part of Alternative 5A.

In addition to improvements to the I-710 mainline and the interchanges, Alternative 5A also includes Transportation Systems/Transportation Demand Management (TSM/TDM), Transit, and Intelligent Transportation Systems (ITS) improvements. TSM improvements include provision of or future provision of ramp metering at all locations and the addition of improved arterial signage for access to I-710. Parking restrictions during peak periods (7:00 a.m.–9:00 a.m.; 4:00 p.m.–7:00 p.m.) will be implemented on four arterial roadways: Atlantic Blvd. between Pacific Coast Hwy. and SR-60; Cherry Ave./Garfield Ave. between Pacific Coast Hwy. and SR-60; Eastern Ave. between Cherry Ave. and Atlantic Blvd.; and Long Beach Blvd. between San Antonio Dr. and Firestone Blvd. Transit improvements that will be provided as part of the I-710 Corridor Project include increased service on all Metro Rapid routes and local bus routes in the study area. ITS improvements include updated fiber-optic communications to interconnect traffic signals along major arterial streets to provide for continuous, real-time adjustment of signal timing to improve traffic flow as well as other technology improvements.

Alternative 5A also includes improvements to 42 local arterial intersections within the I-710 Corridor Project study area (see Figure 2). These improvements generally consist of lane restriping or minimal widening to provide additional intersection turn lanes that will reduce traffic delay and improve intersection operations for those intersections with projected Level of Service (LOS) F.

In addition to the transportation system improvements described above, Alternative 5A also includes:

- Aesthetic Enhancements: Landscaping and irrigation systems would be provided within the corridor where feasible. Urban design and aesthetic treatment concepts for community enhancement will be integrated into the design of the I-710 Corridor Project. These concepts will highlight unique community identities within a unified overall corridor theme; strengthen physical connections and access/mobility within and between communities; and implement new technologies and best practices to ensure maximum respect for the environment and natural resources. They will continue to evolve and be refined through future phases of project development.

- Drainage/Water Quality Features: Alternative 5A includes modifications to the Los Angeles River levee; new, extended, replacement, and additional bents and pier walls in the Los Angeles River; additional and extended bents and pier walls in the Compton Channel; modifications to existing pump stations or provision of additional pump stations; and detention basins and bioswales that will provide for treatment of surface water runoff prior to discharge into the storm drain system.

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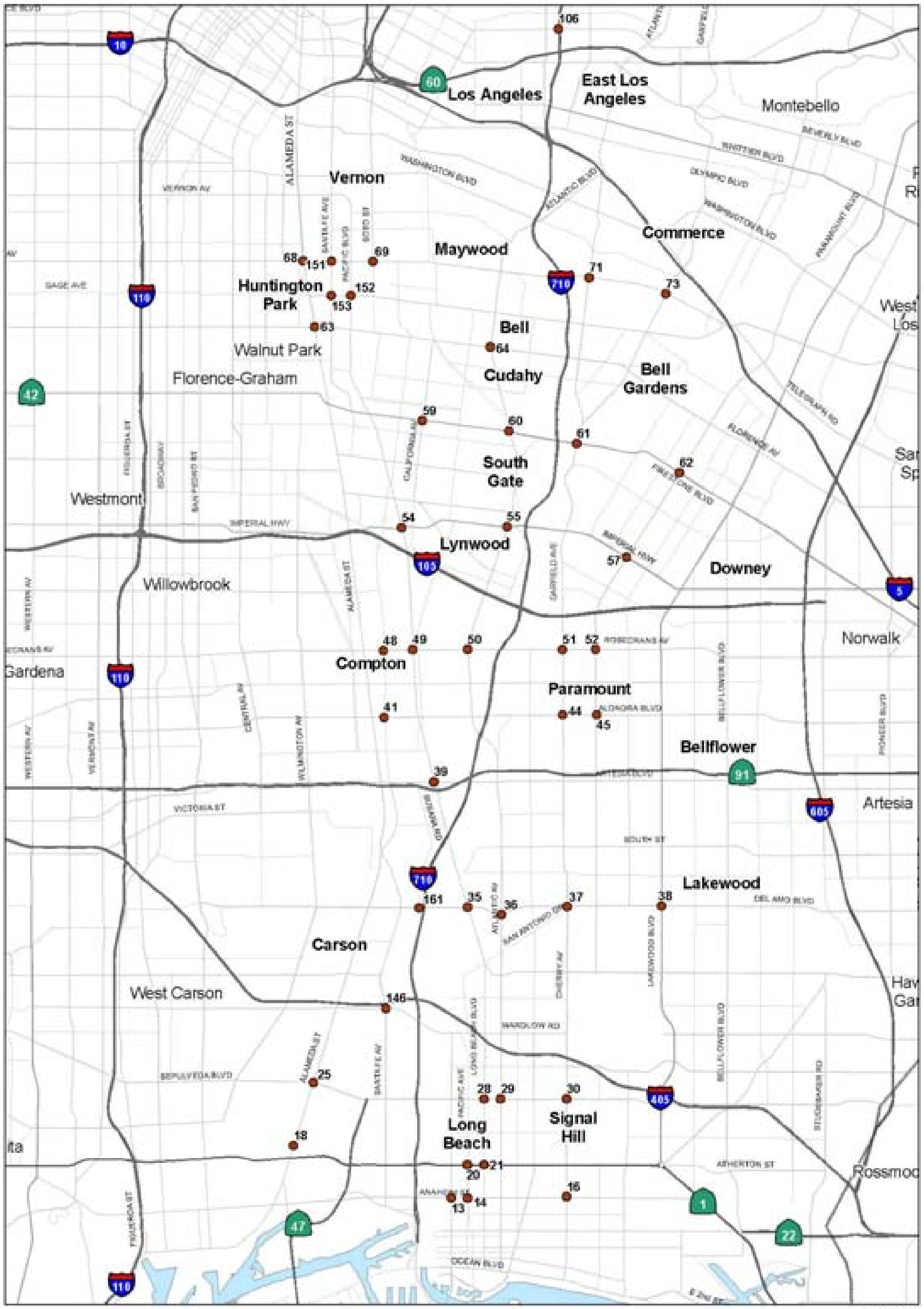

LEGEND

● Arterial Intersection Improvements

SOURCE: TAM (2007)

FIGURE 2

PRE-DELIBERATIVE DRAFT

I-710 Corridor Project

Project Location

07-LA-710- PM 4.9/24.9

EA 249900

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Alternative 6A – I-710 Widening plus Freight Corridor (Trucks)

Alternative 6A includes all the components of Alternatives 1 and 5A described above. (The alignment of the GP lanes in Alternative 6A will be slightly different than Alternative 5A in a few locations.) In addition, this alternative includes a separated four-lane freight corridor (FC) from Ocean Blvd. northerly to its terminus near the UP and BNSF railyards in the City of Commerce. The FC would be built to Caltrans highway design standards and would be restricted to the exclusive use of heavy-duty trucks (5+ axles). In Alternative 6A these trucks are assumed to be conventional" trucks (conventional trucks are defined to be newer [post-2007] diesel/fossil-fueled trucks [new or retrofitted engines required per new regulations and standards].

The FC would be both at-grade and on elevated structure with two lanes in each direction. There are exclusive, truck only ingress and egress ramps to and/or from the FC at the following locations:

- Harbor Scenic Dr. (NB ingress only)
- Ocean Blvd. (NB ingress only)
- Pico Ave. (NB ingress and SB egress only)
- Anaheim St. (NB ingress and SB egress only)
- SB I-710 GP lanes just south of Pacific Coast Hwy (SB egress only)
- NB I-710 GP lanes north of I-405 at 208th St. (NB ingress only)
- SB I-710 GP lanes north of I-405 at 208th St. (SB egress only)
- Eastbound (EB) SR-91 (NB egress only)
- Westbound (WB) SR-91 (SB ingress only)
- Patata St (NB egress and SB ingress only)
- SB I-710 GP lanes at Bandini Blvd. (SB ingress only)
- NB I-710 GP lanes at Bandini Blvd. (NB egress only)
- Washington Blvd. – (NB egress only and SB ingress only) (Design Options 1 and 2)
- Washington Blvd. (NB egress and SB ingress via Indiana Ave) (Design Option 3)
- Sheila St – (NB egress only) (Design Option 3)

In addition to the FC feature, Alternative 6A includes:

- Partial modification to the I-5 interchange, notably the replacement of the NB I-710 to NB I-5 connector (right-side ramp replacement of left-side ramp) and a realigned SB I-5 to SB I-710 connector and 5 SB GP lanes from SR-60 to Washington Blvd.
- 3 NB GP lanes from I-5 to SR-60

- Retention of and modification to the I-710 SB on- and off-ramps at Eastern Avenue to slightly realign them.

- A local connection over I-710 at Patata St. in the cities of South Gate and Bell Gardens.

In addition to the aesthetic enhancements and drainage / water quality features described for the I-710 Corridor Project Alternative 5A, Alternative 6A will include the following features to address the freight corridor.

Aesthetic Enhancements: In addition to the aesthetic enhancements described above for Alternative 5A, specific aesthetic treatments will be developed for the FC, including use of screen walls and masonry treatments on the FC structures (including soundwalls).

Drainage/water quality features: Alternative 6A includes features to capture and treat the additional surface water runoff from the FC. Runoff from the freight corridor will be collected in shoulder and median drains and then piped through the structure (in elevated sections) to a suitable outlet location on the ground. Collected runoff will then be treated to the Maximum Extent Practicable (MEP) using site-specific treatment BMPs before being released into the Los Angeles River or other receiving water body.

Los Angeles River: Some modifications to the Rio Hondo, Compton Creek, and Los Angeles River channels are necessary to accommodate the construction of new bridge structures. Modifications to the east levee of the Los Angeles River are also necessary to accommodate the relocation of several Department of Water & Power electrical transmission lines and make room for the elevated freight corridor.

Alternative 6B – Widening plus Freight Corridor (Zero-Emission Vehicles)

Alternative 6B includes all the components of Alternative 6A as described above, but would restrict the use of the FC to zero-emission trucks rather than conventional trucks. This proposed zero emission truck technology is assumed to consist of trucks powered by electric motors in lieu of internal combustion engines and producing zero tailpipe emissions while traveling on the freight corridor. The specific type of electric motor is not defined, but feasible options include linear induction motors, linear synchronous motors or battery technology. The power systems for these electric propulsion trucks could include, but is not limited to, hybrid with dual-mode operation (ZEV Mode), Range Extender EV (Fuel Cell or Turbine with ZEV mode), Full EV (with fast charging or infrastructure power), road-connected power (e.g., overhead catenary electric power distribution system), alternative fuel hybrids, zero NOx dedicated fuel engines (CNG, RNG, H2 ICE), and range extender EV (turbine). For purposes of the I-710 environmental studies, the zero-emission electric trucks are assumed to receive electric power while traveling along the FC via an overhead catenary electric power distribution system (road-connected power).

Alternative 6B also includes the assumption that all trucks using the FC will have an automated control system that will steer, brake, and accelerate the trucks under computer control while traveling on the FC. This will safely allow for trucks to travel in “platoons” (e.g., groups of 6–8 trucks) and increase the capacity of the FC from a nominal 2,350 passenger car equivalents per lane per hour (pces/ln/hr) (as defined in Alternative 6A) to 3,000 pces/ln/hr in Alternative 6B.

The design of the FC will also allow for possible future conversion, or be initially constructed, as feasible (which may require additional environmental analysis and approval), of a fixed-track guideway family of alternative freight transport technologies (e.g., Maglev). However, this fixed-track family of technologies has been screened out of this analysis for now, as they have been determined to be inferior to electric trucks in terms of cost and ability to readily serve the multitude of freight origins and destinations served by trucks using the I-710 corridor.

Alternative 6C – 10 GP Lanes plus a Four-Lane Freight Corridor with Tolls

Alternative 6C includes all the components of Alternative 6B as described above, but would toll trucks using the FC. Although tolling trucks in the FC could be done under either Alternative 6A or 6B; for analytical purposes, tolling has only been evaluated for Alternative 6B as this alternative provides for higher FC capacity than Alternative 6A due to the automated guidance feature of Alternative 6B.

Tolls would be collected using electronic transponders which would require overhead sign bridges and transponder readers like the SR-91 toll lanes currently operating in Orange County, where no cash toll lanes are provided. The toll pricing structure would provide for collection of higher tolls during peak travel periods.

Design Options

For alternatives 6A, 6B, and 6C, three design options for the portion of I-710 between the I-710/Slauson Ave interchange to just south of the I-710/I-5 interchange are under consideration. These configurations will be fully analyzed so that they can be considered in the future selection of a Preferred Alternative for the project. These options are as follows:

Design Option 1

Design Option 1 applies to Alternatives 6A, 6B and 6C and provides access to Washington Blvd using three ramp intersections at Washington Blvd.

Design Option 2

Design Option 2 applies to Alternatives 6A, 6B, and 6C and provides access to Washington Blvd. using two ramp intersections at Washington Blvd.

Design Option 3

Design Option 3 applies only to Alternative 6B[1] and removes access to Washington Blvd. at its current location. The ramps at the I-710/Washington Blvd. interchange would be removed to accommodate the proposed FC ramps in and out of the railyards. The SB off-ramp and NB-on-ramp access would be accommodated by Alternative 6B in the vicinity of the existing interchange by the proposed new SB off-ramp and NB on-ramp at Oak St. and Indiana St. These two ramps are proposed as mixed-flow ramps (freight connector ramps that would also allow automobile traffic). However, the SB on-ramp and NB off-ramp traffic that previously used the Washington Blvd. interchange would be required to access the Atlantic Blvd./Bandini Blvd. interchange located south of the existing Washington Blvd. interchange to ultimately reach I-710.

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[1] Design Option 3 only applies to Alternative 6B because it was not included in the travel demand modeling for either Alternative 6A or 6C.

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2.0 AFFECTED ENVIRONMENT

2.1 I-710 CORRIDOR PROJECT LOCATION AND LAND USE

The I-710 Corridor Project is located within the Los Angeles Basin and discharges to two Los Angeles County watersheds: Dominguez Channel/Los Angeles Harbor and Los Angeles River. A portion of the I-710 Corridor Project is adjacent to San Gabriel River Watershed, and related transportation improvement projects may discharge to this particular watershed. These hydrologic units are further divided into hydrologic subareas (HSA), which are delineated principally on the basis of topography and watershed divides. See Figure 2 in Appendix A for a copy of the Regional Watershed Map.

The area surrounding the I-710 Corridor Project is highly developed and industrialized because of its proximity to the POLA and POLB and 13 highly urban and developed cities. Surrounding land uses range from residential and light commercial to heavy industrial shipyards and refineries. The I-710 Corridor is a main north-south corridor from Los Angeles to POLB.

The Los Angeles-San Gabriel hydrologic unit includes most of Los Angeles County, including the I-710 Corridor Project study area. The overall drainage area totals approximately 1,608 square miles. Much of the area is covered with semi-permeable or non-permeable materials because most of Los Angeles County's population resides within this hydrologic unit and the land uses are mixed as residential, commercial, and industrial. The Los Angeles River and San Gabriel River are major natural drainage systems for the coastal watersheds of the Transverse Ranges. These surface waters also recharge large reserves of groundwater that exist in alluvial aquifers underlying the Los Angeles Coastal Plain.

2.2 SURFACE HYDROLOGY

The I-710 Corridor Project study area receives a mean annual precipitation of 12 to 14 inches entirely in the form of rain. Temperatures range from near freezing during the winter season to near 90 degrees Fahrenheit (°F) in the summer, with an average monthly high of 75°F and 47°F, respectively.

The Los Angeles River watershed comprises approximately 834 square miles of land in the middle to lower portions of Los Angeles County. The Los Angeles River Channel has historically been highly modified and is significantly managed by the U.S. Army Corps of Engineers (USACE). Most of the Los Angeles River Channel is concrete, with a hard bottom and sides. As with the other watersheds, the Los Angeles River watershed boundary is defined by multiple networks of storm drains and smaller flood control channels terminating at various locations along the Los Angeles River mainstream.

Major tributaries within this lower portion of the Los Angeles River include the Rio Hondo and Compton Creek; Compton Creek is located within the I-710 Corridor Project study area. The Los Angeles River is hydraulically connected to the San Gabriel River Watershed by the Rio Hondo through the Whittier Narrows Reservoir. The bottom of the Los Angeles River is lined with concrete until Willow Street in Long Beach. Below Willow Street, the bottom of the river is unlined and tidally influenced. (Los Angeles Regional Water Quality Control Board, 2007b.)

The flow in the Los Angeles River varies greatly over the course of the year. During the dry season, most of the water in the river is from wastewater effluent, whereas in the wet season, the river contains runoff from large storms. In addition to variability in seasonal flow, the flow in the channel increases greatly as the river flows toward its mouth on the Pacific Ocean. At the Los Angeles County Department of Public Works F319-R Station on Wardlow Street, south of the study area in Long Beach, the median and maximum daily average flow were 164 cubic feet per second (cfs) and 43,900 cfs from 1991 to 2000. A 100-year storm event was 142,000 cfs. (Los Angeles River Revitalization Master Plan, 2007.)

The Dominguez Watershed comprises approximately 110 square miles of land in the southern portion of Los Angeles County. The Dominguez Watershed boundary is defined by a complex network of storm drains and smaller flood control channels terminating at the Consolidated Slip in Los Angeles Harbor. The Dominguez Channel extends from the Los Angeles International Airport to the Los Angeles Harbor and drains large, if not all, portions of the cities of Inglewood, Hawthorne, El Segundo, Gardena, Lawndale, Redondo Beach, Torrance, Carson, and Los Angeles. The remaining land areas within the watershed drain to several debris basins and lakes or directly to the Los Angeles and Long Beach Harbors. Tributaries to Dominguez Channel include several storm drains and minor channels. Approximately 96 percent of the watershed area is developed; the overall land uses are transportation, commercial, industrial, and residential. All current known discharges are monitored and regulated as part of the National Pollutant Discharge Elimination System (NPDES) permit system, as administered by the Los Angeles Regional Water Quality Control Board. (Los Angeles Regional Water Quality Control Board, 2007a.)

Compton Creek merges with the Los Angeles River just south of the Del Amo Boulevard/I-710 interchange. The Compton Creek Watershed is predominantly residential, composed of small single-family homes, multifamily units, and large areas of commercial and industrial facilities. Compton Creek, a tributary to the Los Angeles River, drains a watershed of approximately 42.1 square miles (or just fewer than 27,000 acres) located generally between Los Angeles and Long Beach in Los Angeles County. Compton Creek receives 12 NPDES individual permit discharges upstream of the I-710 Corridor Project. The creek channel begins at the convergence of several underground storm drains in the city of Los Angeles at Main Street between 107th and 108th. The creek flows generally south through a 5.8-mile channel reach with a concrete bottom and vertical sides. The channel widens just north of SR-91 in Compton and has a natural earthen bottom and armored trapezoidal sides, which extend approximately 2.7 miles to just above the confluence with the Los Angeles River. In this earthen bottom portion, vegetation is present in the channel bottom. (Compton Creek Watershed Management Plan, June 2005.)

The San Gabriel River Watershed totals approximately 212 square miles and has extensive undisturbed riparian and woodland habitats; however, the river is channelized within the I-710 Corridor Project study area. This portion of the San Gabriel River has been extensively modified and is lined with concrete from approximately Firestone Boulevard to the Alamitos Bay estuary. Flows in this lower reach of the San Gabriel River are primarily effluent from several wastewater treatment facilities and urban runoff. It is not expected that the I-710 Corridor Project would directly discharge into the San Gabriel River Watershed; however, it is possible for related roadway improvements just east of the I-105/I-710 interchange to discharge into this watershed, depending on the local topography.

2.3 FLOODPLAIN

The existing floodplain (Zone A) as depicted by Flood Insurance Rate Maps (FIRM) 06037C1810, 06037C1815F, 06037C1820F, 06037C1955F, 06037C1962F, and 06037C1964F, dated September 26, 2008, indicate that the base flood plain resides largely within the LA River channel levees. The floodplain also includes areas outside of the channel levees that are subject to shallow flooding (Zone AH). These Zone AH areas are located in the vicinity of Anaheim Street in the City of Long Beach and also within the northwest quadrant of the 710/105 interchange.

2.4 SURFACE WATER QUALITY

The Los Angeles River is located within the one of the most densely populated and industrialized region of the U.S. Managing and mitigating urban runoff flows is an ongoing responsibility of all stakeholders impacting the Los Angeles River and related tributaries. The lower and middle portion of the Los Angeles River, where the I-710 Corridor Project is located, is especially impaired from urban runoff.

In addition, there are numerous permitted discharges in the watershed. These numbers are based on local zip codes adjacent to the planned I-710 Corridor Project. As of January 2010, these consisted of the following:

- 134 NPDES permitted discharges, six major NPDES discharges, 15 minor individual permits, and 68 dischargers covered by general permits
- Minor permits include groundwater dewatering, recreational lake overflow, swimming pool wastes, and groundwater seepage
- Two municipal stormwater permits
- 377 discharges under an industrial stormwater permit
- 89 discharges under a construction stormwater permit (Los Angeles Regional Water Quality Control Board, 2010.)

Identified Pollutants

Pollutants from dense clusters of residential, industrial and other urban activities have impaired water quality in the middle and lower watershed area. Added to this complex mixture of pollutant sources (in particular, pollutants associated with urban and stormwater runoff), is the high number of point source permits. Excessive nutrients (and their effects) and coliform are widespread problems in the watersheds, as well as excessive metals.

The majority of the Los Angeles River Watershed is considered impaired due to a variety of point and nonpoint sources. The 2010 CWA Section 303 (d) List of Water Quality Limited Sections (2010 303(d)) implicates pH, ammonia, a number of metals, coliform, trash, scum, algae, oil, Diazinon as well as other pesticides, and volatile organics for a total of 20 individual impairments (reach/constituent combinations). Some of these constituents are of concern throughout the length of the river, while others are of concern only in certain reaches. Impairment may be due to water column exceedances, excessive sediment levels of pollutants, or bioaccumulation of pollutants. The beneficial uses threatened or impaired by degraded water quality are aquatic life, recreation, groundwater recharge, and municipal water supply. The table below shows the complete list of impairments:

Table 1. Los Angeles River Watershed Pollutant Listing

Water Quality Limited Segment Name	Pollutant
Compton Creek	Coliform Bacteria Benthic - Mactoinvertebrate Bioassessments Trash Copper Lead pH
Los Angeles River Estuary (Queensway Bay)	Chlordane (sediment) DDT (sediment) PCBs (Polychlorinated biphenyls) (sediment) Sediment Toxicity Trash
Los Angeles River Reach 1 (Estuary to Carson Street)	Coliform Bacteria Cyanide Cadmium Diazinon Trash Ammonia Copper, Dissolved Lead Nutrients (Algae) pH Zinc, Dissolved
Los Angeles River Reach 2 (Carson to Figueroa Street)	Coliform Bacteria Copper Nutrients (Algae) Oil Trash Ammonia Lead Nutrients (Algae)

Dominguez Channel drains a highly industrialized area with numerous nonpoint sources of pollution for polycyclic aromatic hydrocarbons (PAHs) and also contains remnants of persistent legacy pesticides as well as PCBs, which results in poor sediment quality within the channel and in adjacent Inner Harbor areas. Although highest in Dominguez Channel estuary and Consolidated Slip (the part of the Inner Harbor immediately downstream of Dominguez Channel) sediments, Dichlorodiphenyltrichloroethane (DDT) is pervasive throughout the harbors. Metals, particularly copper, remain elevated at some locations in the sediments of the inner harbors. A likely major nonpoint source contributor to these concentrations is antifouling paint containing copper that leaches from the many ships and boats in the harbors. Sediment toxicity occurs more frequently in parts of the Inner Harbor than elsewhere. The Consolidated Slip continues to exhibit a very impacted benthic invertebrate community.

Table 2. Dominguez Channel Estuary Pollutant Listing

Water Quality Limited Segment Name	Pollutant
Dominguez Channel Estuary (unlined portion below Vermont Ave)	Ammonia Benthic Community Effects Benzo(a)pyrene (PAHs) Benzo[a]anthracene Chlordane (tissue) Chrysene (C1-C4) Coliform Bacteria DDT (tissue and sediment) Dieldrin (tissue) Lead (tissue) PCBs (Polychlorinated biphenyls) Phenanthrene Pyrene Sediment Toxicity Zinc (sediment)

2.5 REGIONAL GROUNDWATER

Publicly available regional groundwater data and reports were reviewed and documented for the purposes of the groundwater assessment. This approach provided a general assessment of groundwater conditions.

Regional Groundwater Basins

The I-710 Corridor Project is located within the Coastal Plain (Subbasin number 4-11) of the Los Angeles Groundwater Basin and is specifically underlain by the West Coast (Subbasin number 4-11.03) and Central (Subbasin number 4-11.04) sub-basins. The Los Angeles coastal plain aquifer system is contained in a coastal plain basin that extends over an area of approximately 860 square miles. Groundwater development began in the basin in the 1870s, when the demands of irrigated agriculture began to exceed surface-water supplies; however, urbanization subsequently displaced most of the agriculture in the basin, and today the predominant use of water is for public supply. The coastal plain basin is adjacent to the Santa Monica Mountains and the Puente Hills on the north, the Elysian Hills on the east, the San Joaquin Hills on the south, and on the west by the Pacific Ocean. The mountains are underlain by consolidated rocks of igneous, metamorphic, and marine-sedimentary origin. These consolidated rocks surround and underlie thick unconsolidated alluvial deposits. The major drainages in the basin are the Los Angeles, the San Gabriel, and the Santa Ana Rivers, all of which have headwaters outside of the basin. (USGS, 2010 online.)

West Coast Basin

The West Coast sub-basin has a surface area of 91,300 acres (142 square miles). This is an adjudicated basin with many water agencies involved with the overall management. The West Coast sub-basin is bounded on the north by the Ballona Escarpment, an abandoned erosional channel from the Los Angeles River. It is adjacent to the Newport-Inglewood fault zone on the east and the Pacific Ocean and consolidated rocks of the Palos Verdes Hills on the south and west (DWR, 2004). The surface of the sub-basin is crossed in the south by the Los Angeles

River through the Dominguez Gap, and the San Gabriel River through the Alamitos Gap, both of which then flow into San Pedro Bay.

Central Basin

The Central sub-basin is the primary groundwater sub-basin of the Coastal Plain and is 177,000 acres (277 square miles). The Central sub-basin is located within the southeastern part of the Coastal Plain. This sub-basin is bounded on the north by a surface divide called the La Brea High and on the northeast and east by emergent, less-permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills. The southeast boundary between Central Basin and Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport-Inglewood fault system and the associated folded rocks of the Newport-Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean. (DWR, 2004.)

Hydrogeology

The geology of the Central Plain is well documented. This section specifically focuses on the hydrogeologic subsurface conditions. Throughout the Central Basin, groundwater occurs in Holocene- and Pleistocene-age sediments at relatively shallow depths. The Central Basin is historically divided into forebay and pressure areas. The Los Angeles forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Central Basin through the Los Angeles Narrows from the San Fernando Groundwater Basin. The Montebello forebay extends southward from the Whittier Narrows where the San Gabriel River encounters the Central Basin and is the most important area of recharge in the sub-basin. Both forebays have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer system of this sub-basin (DWR 1961).

The Whittier area extends from the Puente Hills south and southwest to the axis of the Santa Fe Springs-Coyote Hills uplift and contains up to 1,000 feet of freshwater-bearing sediments. The Central Basin pressure area is the largest of the four divisions and contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, which extend to about 2,200 feet below the surface (DWR 1961). The estimated average specific yield of these sediments is around 18 percent. Throughout much of the sub-basin, the aquifers are confined, but areas with semi-permeable aquicludes allow some interaction between the aquifers (DWR 1961). The main productive freshwater-bearing sediments are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations (DWR 1961). Throughout most of the sub-basin, the near-surface Bellflower aquiclude restricts vertical percolation into the Holocene-age Gaspur aquifer and other underlying aquifers and creates local semi-perched groundwater conditions. The main additional productive aquifers in the sub-basin are the Gardena and Gage aquifers within the Lakewood Formation and the Silverado, Lynwood, and Sunnyside aquifers within the San Pedro Formation (DWR 1961). Historically, groundwater flow in the Central Basin has been from recharge areas in the northeast part of the sub-basin, toward the Pacific Ocean on the southwest. However, pumping has lowered the water level in the Central Basin, and water levels in some aquifers are about equal on both sides of the Newport-Inglewood uplift, decreasing subsurface outflow to the West Coast sub-basin (DWR 1961).

The water-bearing deposits include the unconsolidated and semi-consolidated marine and alluvial sediments of the Holocene, Pleistocene, and Pliocene ages. Discharge of groundwater from the sub-basin occurs primarily by pumping extractions (DWR 1961).

The principal aquifers present in the sub-basins are below:

Table 3. Hydrogeologic Descriptions

Aquifers				
Aquiclude	**Age**	**Formation**	**Lithology**	**Depth**
semi-perched	Holocene	Alluvium	Sand, silt, clay	60
Bellflower			Silty clay, clay	80
Gaspur			Coarse sand, gravel	120
Bellflower			Silty clay, clay	200
Gardena			Sand, gravel	160
Gage	Pleistocene	Lakewood Formation	Fine to coarse-grained sand and gravel	160
Lynwood	Lower Pleistocene	San Pedro Formation	Sand, gravel with small amount of Clay	200
Silverado			Coarse sand and gravel	500
Sunnyside				350
Unnamed			Coarse sand and gravel/silt and Clay	500 to700

The semi-perched aquifer of both Holocene and Pleistocene age is unconfined. The water in underlying aquifers is confined throughout most of the Basin, though the Gage and Gardena aquifers are unconfined where water levels have dropped below the Bellflower aquiclude (DWR 1961). These aquifers merge in places with adjacent aquifers, particularly near Redondo Beach (DWR 1961).

The Silverado aquifer, underlying most of the West Coast basin, is the most productive aquifer in the basin.

2.6 REGIONAL GROUNDWATER QUALITY

The majority of the West Coast and Central sub-basin groundwater is of high quality and requires little to no treatment before being pumped out of wells and used as potable water for the public. As presented in Table 3, the sub-basins' underlying gravel, sand, silt, and clay formations provide for slow fluid movement, which improves groundwater quality through a process known as geopurification. A few pollutants are present that exceed their regulatory maximum contaminant levels (MCLs) from natural causes or human activities. As a result, the impacted groundwater requires treatment before being served to the public or requires the wells to be shut off. (WRD, Technical Bulletin, 2008.)

Both sub-basins have been rigorously analyzed in a regional effort to present overall groundwater conditions. The results confirmed that the vast majority of groundwater samples do not exceed their MCLs, indicating good water quality. Less than 0.5% of the samples exceeded their primary maximum contaminant levels (PMCLs), and only 2% exceeded their secondary maximum contaminant levels (SMCLs). Of the compounds that were found to exceed their MCLs, the most commonly detected ones are, in order of findings: arsenic, perchloroethylene (PCE), trichloroethylene (TCE), total dissolved solids (TDS), manganese, and odor.

Seawater intrusion is another issue found along the lower portions of both sub-basins. The character of water in the Gaspur zone of the sub-basin is variable. Seawater intrusion has produced deterioration of water quality over time. Early tests indicated that the water was sodium bicarbonate in character. It is questionable whether this is representative of the entire zone, because the higher quality water residing outside the sub-basin is calcium bicarbonate in nature (DPW 1952).

The Gardena water-bearing zone exhibits a calcium-sodium bicarbonate character and is of good quality. In the Silverado zone, the character of water varies considerably. Water is characterized by calcium chloride in the coastal region of this zone and transitions to sodium bicarbonate moving inland. The Pico formation is sodium bicarbonate in nature and is of good quality (DPW 1952). Data from 45 public supply wells shows an average TDS content of 720 mg/L and a range of 170 to 5,510 mg/L.

Two seawater barrier projects are in operation: 1) the West Coast Basin Barrier Project, which runs from the Los Angeles Airport to the Palos Verde Hills and 2) the Dominguez Gap Barrier Project, which covers the area of the West Coast Basin bordering the San Pedro Bay. Injection wells along these barriers create a groundwater ridge, which inhibits the inland flow of salt water into the sub-basin to protect and maintain groundwater elevations (DWR 1999).

2.7 I-710 FACILITY

The existing watershed boundaries maps depicting the boundaries and area designations for the I-710 Corridor Project are presented in Appendix A. The I-710 Corridor Project was analyzed by dividing the alignment into sub-watershed boundaries. The sub-watershed boundaries are defined based on the tributary area to the existing outlets into the Los Angeles River with the stormwater runoff collected with one or more drainage systems. The existing onsite drainage systems consist of series of drainage inlets along the median and shoulders, cross culverts, asphaltic concrete dikes, overside drains, concrete and earthen channels and pump stations. The NB and SB I-710 mainline lanes generally sheet flow to the outside edge of the shoulder and is then concentrated by inlets into the underground drainage system. In the superelevation portion of I-710 Corridor Project, the stormwater runoff drains to the median, where drainage inlets convey the runoff to the cross drainage facilities. Additional detail pertaining to the stormwater outlets and tributary drainage areas can be found in the I-710 Corridor Project Preliminary Hydrology Report (URS, 2011).

The Dominguez Gap Recharge Basin located between the I-710 freeway and the Los Angeles River just north of the I-405 interchange, is one of three interconnected basins used to provide recharge to the local groundwater table. The two remaining basins are located on the east side of the Los Angeles River and are not affected by the proposed improvements. The west basin is operated by the County of Los Angeles and infiltrates peak flows from storm events into the ground through a pervious surface layer. The basins also provide habitat for local species.

3.0 REGULATORY SETTING

3.1 DEVELOPMENT OF WATER QUALITY STANDARDS

Section 404 of the Federal Water Pollution Control Act of 1972, also referred to as the Clean Water Act (CWA) of 1972 (33 U.S.C. Section 1251 *et. seq.*), was passed to restore and maintain the chemical, physical, and biological integrity of the U.S.'s waters. Specific sections of the Act control the discharge of pollutants and wastes into the aquatic and marine environment.

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB) are responsible for protecting water quality in California. The State Water Board sets Statewide policies and develops regulations for the implementation of water quality control programs mandated by State and Federal regulations. Each Regional Water Board is responsible for developing and assigning standards for surface waters, publishing informal reports, providing water quality education, and implementing programs that address surface water quality. The Los Angeles Water Board retains jurisdiction over the I-710 Corridor Project study area.

Regional Water Boards develop and implement Water Quality Control Plans, also known as Basin Plans. Water quality objectives defined in the basin plan serve as guidelines for all point source and nonpoint source discharges to California receiving waters. On June 13, 1994, the Los Angeles Water Board adopted a Basin Plan for the Los Angeles Region that includes water quality objectives and designates beneficial uses for surface and groundwater resources within the Los Angeles Basin, including coastal water resources. Section 401 of the CWA requires certification that a permitted project complies with State water quality standards for proposed actions within State waters. The Los Angeles Water Board administers the Water Quality Certification program.

The CWA and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code [U.S.C.] 403) establishes a program to regulate the discharge of dredge and fill materials into the navigable Waters of the U.S. Under this provision, the USACE must issue permits for deposit of fill in waterways and wetland areas in both private and public lands. Other Federal agencies, such as the U.S. Fish and Wildlife Service (USFWS) and the U.S. Environmental Protection Agency (USEPA), provide recommendations concerning whether permits should be issued and identify any conditions with the issuance of the permit.

Water Quality standards are built in layers. First the beneficial uses are determined for a waterbody. These beneficial uses force regulatory agencies to require specific criteria to prevent backsliding and/or pollutant loading impacts. As focus and funding are available, a waterbody is analyzed for specific pollutant impairments. These parameters can be either explained numerically (objective laboratory testing) or in text (subjective visual indicators). The numerical values are called Water Quality Objectives or Total Maximum Daily Loads; the text "values" are also Water Quality Objectives.

3.2 REGULATION OF STORMWATER DISCHARGES

Federal Requirements

In 1972, the CWA was amended to prohibit the discharge of pollutants to U.S. waters from any point source unless the discharge is in compliance with an NPDES permit. The 1987 amendments to CWA added Section 402(p), which directs that stormwater discharges are point source discharges and establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program.

On November 16, 1999, the Federal regulations for controlling pollutants in stormwater discharges were promulgated by USEPA into the Code of Federal Regulations (CFR) (40 CFR Parts 122, 123 and 124). Pursuant to these regulations, Municipal Separate Storm Sewer Systems (MS4) stormwater permits are required for discharges from municipal separate stormwater sewer systems serving a population of 100,000 or more. The USEPA defined MS4 to include state-owned road systems; and, in California, the MS4s were issued individual NPDES permits by the Regional Water Boards. Caltrans is permitted in all of the State areas where a MS4 permit is required.

State Requirements

Caltrans has coverage under an individual NPDES Permit and Statewide Stormwater Permit and Waste Discharge Requirements, which reference and incorporate by reference the current NPDES General Permit for discharges of stormwater runoff associated with construction activities. These permits directly regulate construction and stormwater discharges from Caltrans-owned and -operated facilities.[2] The Caltrans Storm Water Discharge permit is issued by the State Water Resources Control Board (Order No. 99-06-DWQ, NPDES No. CAS 000003).

The Statewide Construction General Permit is issued by the State Water Resources Control Board (Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002). The provisions of the Construction General Permit are enforced by each Regional Water Quality Control Board. The Construction General Permit requires development, implementation, and compliance monitoring of a Storm Water Pollution Prevention Plan (SWPPP), which prescribes BMPs to control erosion and discharge of wastes at the construction site.

In addition, Caltrans shall comply with the “Stipulation and Order” that was signed by Judge Edward Rafeedie, US District Court, Central District of California on January 17, 2008. Two Corridor Stormwater Management Studies covering the portion of the 710 from PM 6.9 to 26.5 have been completed. Upon selection of a preferred alternative and prior to final design, it is recommended that a new Corridor Stormwater Management Study be prepared for the project to comply with the mentioned ‘Stipulation and Order”.

Under Sections 301 and 402 of the CWA, the regulations require those who discharge stormwater to surface waters associated with construction activity resulting in land disturbance of more than one acre to perform the following to reduce or eliminate stormwater pollution:

- Obtain a Statewide Construction General Permit
- Implement best available technology (BAT) that is economically achievable
- Implement best conventional pollutant control technology (BCT)

[2] The Caltrans permit is expected to be revised in 2011, and additional requirements are expected to be included.

Local Requirements

The California Environmental Protection Agency, Los Angeles Regional Water Quality Control Board (LARWQCB), oversees and regulates water quality issues in the Los Angeles region. They conduct a broad range of activities to protect groundwater and surface waters in the region and include the following:

- Address region-wide and specific water quality concerns through updates of the Water Quality Control Plan (Basin Plan)
- Prepare, monitor compliance with, and enforce waste discharge requirements, including NPDES permits
- Implement and enforce local stormwater control efforts
- Regulate the cleanup of contaminated sites, which have already polluted or have the potential to pollute groundwater or surface water
- Enforce water quality laws, regulations, and waste discharge requirements
- Coordinate with other public agencies and groups that are concerned with water quality
- Inform and involve the public on water quality issues

The City of Los Angeles, City of Long Beach, and California Coastal Commission have put forth requirements for stormwater quality control during and following construction, which also must be incorporated into the I-710 Corridor Project for the build alternative to be chosen

The City of Los Angeles maintains a pollution abatement program, which would be followed in the construction of a build alternative. This program follows NPDES guidelines and deals with ensuring that public agencies are abiding by SWPPP requirements. Additionally, the program seeks to optimize beneficial uses of receiving waters by reduction of pollutant loads. BMPs that have been established in the past by the City of Los Angeles include catch basins, oil and grease separators, and sediment separators.

POLB retains additional requirements that would be followed during the construction of a build alternative. The Port works with the Los Angeles Water Board to implement the Long Beach Storm Water Management Program (LBSWMP), which consists of several elements, including the following:

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

Additionally, and as required under the City of Long Beach's Municipal Storm Water and Urban Runoff Discharge Permit (LARWQCB Order No. 99-060, NPDES No. CAS004003), the permittee must adhere to a Long Beach Monitoring Program, which requires mass emissions monitoring, multispecies toxicity testing, toxicity identification evaluations, BMP effectiveness evaluation, and cooperative monitoring of the Cerritos Channel. The City of Long Beach's Municipal Storm Water and Urban Runoff Discharge Permit requirements include receiving water limitations, discharge prohibitions, stormwater management, monitoring and reporting, and special provisions (LARWQCB, 1999c). Prior to construction of an I-710 Corridor Project alternative and acquisition of the stormwater permit, it shall be determined which monitoring requirements are applicable to the I-710 Corridor Project.

Portions of the Project are located within the boundary of the Coastal Zone. Local planning documents that cover the proposed improvement areas include the Port of Long Beach Master Plan and the City of Long Beach Local Coastal Program (LCP). The California Coastal Commission also has requirements contained in its *Plan for Controlling Polluted Runoff* (California Coastal Commission, 2000), which outlines strategies for addressing polluted runoff and identifies actions that would achieve the objectives of the Commission. A listing of strategies and background is available in the *Procedural Guidance Manual*. Coastal act policies include the following:

- Maintain, enhance, and, where feasible, restore marine resources
- Protect against spillage
- Control impacts of dredging in specified port areas

3.3 BENEFICIAL USES

Beneficial uses form the cornerstone of water quality protection under the Basin Plan. Appropriate water quality objectives are identified in the Basin Plan in relation to the designated beneficial uses to ensure the protection of these uses. The designated beneficial uses, together with water quality objectives, form the water quality standards. Existing beneficial uses for the Los Angeles River, Compton Creek, and the estuarine portion of Dominguez Channel, Rio Hondo, Los Cerritos Channel, and Los Angeles/Long Beach Harbor are presented in Table 4. To preserve the beneficial uses at their current level, water quality objectives have been developed and published in the basin plans.

Table 4. Beneficial Uses of Inland Surface Waters and Coastal Waters
Los Angeles Region Water Quality Control Plan

Surface Water Feature	Existing Beneficial Uses	Intermittent Beneficial Uses	Potential Beneficial Uses
Compton Creek	• Groundwater Recharge • Contact Water Recreation • Non-contact Water Recreation • Warm Freshwater Habitat • Wildlife Habitat • Wetland Habitat		• Municipal & Domestic Supply
Dominguez Channel (in estuary)	• Contact and Noncontact water Recreation • Preservation of Rare, Threatened or Endangered Species • Commercial and Sportfishing • Marine, Estuarine, and Wildlife Habitat • Migratory and Spawning habitat		• Navigation
Los Cerritos Channel (Los Angeles – Long Beach Harbor)	• Wildlife Habitat • Wetland Habitat	• Non-contact Water Recreation • Warm Freshwater Habitat	• Municipal & Domestic Supply • Contact Water Recreation
Los Angeles River	• Groundwater Recharge • Contact Water Recreation • Non-contact Water Recreation • Warm Freshwater Habitat • Wildlife Habitat • Wetland Habitat		• Municipal & Domestic Supply • Industrial Process Supply
Inner Los Angeles – Long Beach Harbor	• Industrial Service Supply • Navigation • Noncontact Water Recreation • Commercial and Sport Fishing • Marine Habitat • Rare, Threatened or Endangered Species		• Water Contact Recreation • Shellfish Harvesting
Rio Hondo	• Non-contact Water Recreation • Rare, Threatened, or Endangered Species	• Groundwater Recharge • Contact Water Recreation • Wildlife Habitat	• Municipal & Domestic Supply • Warm Freshwater Habitat

Source: Los Angeles Regional Water Quality Control Board Basin Plan, 1994.

3.4 WATER QUALITY OBJECTIVES

The Basin Plan contains both narrative and numeric surface-water quality objectives. The discharge of waste into surface waters must not violate either of these objectives. Table 5 lists the various narrative water quality objectives applicable to all inland surface waters and enclosed bays and estuaries (Los Angeles Regional Water Quality Control Board Basin Plan, 1994).

Table 5. Narrative Water Quality Objectives for Surface Waters, Los Angeles Region Water Quality Control Plan

Parameter	Objective
Ammonia	Ammonia concentrations in receiving waters shall not exceed values listed in the Basin Plan (Tables 3-1 to 3-4, calculated for specific pH and temperature).
Bacteria	In waters designated for noncontact water recreation (REC-2), the fecal coliform concentration shall not exceed 200/100 mL, based on a minimum of not fewer than four samples for any 30-day period, nor shall more than 10 percent of total samples during any 30-day period exceed 4000/10 mL.
Bioaccumulation	Toxic pollutants shall not be present at levels that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.
Biostimulatory Substances	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.
Biochemical Oxygen Demand (BOD)	Waters shall be free of substances that result in increases in BOD that adversely affect beneficial uses.
Chemical Constituents	Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
Chlorine, total residual	Chlorine residual shall not be present in surface water discharges at concentrations that exceed 0.1 mg/L and shall not persist in receiving waters at a concentration that causes impairment of beneficial uses.
Color	Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.
Exotic Vegetation	Exotic vegetation shall not be introduced around stream courses to the extent that such growth causes nuisance or adversely affects beneficial uses.
Floating Material	Waters shall be free of floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.
Dissolved Oxygen	At a minimum, the mean annual dissolved oxygen concentration of all waters shall be greater than 7 mg/L, and no single determination shall be less than 5.0 mg/L, except when natural conditions cause lesser concentrations. Dissolved oxygen content of surface waters designated as WARM shall not be depressed below 5 mg/L as a result of waste discharge. Los Angeles-Long Beach Harbors - The mean annual dissolved oxygen concentrations shall be 6.0 mg/L or greater, provided that no single determination shall be less than 5.0 mg/L.
MBAs	Waters shall not have methylene blue activated substances (MBAs) in concentrations greater than 0.5 mg/L in waters designated for municipal water use (MUN). Note: Municipal and domestic use is identified as a 'potential' use for the identified receiving surface waters.
Mineral Quality	There are no waterbody specific mineral quality objectives identified for any of the identified receiving surface waters in the Basin Plan.
Nitrogen	Nitrogen levels shall not exceed 10 mg/L (nitrate-nitrogen plus nitrite-nitrogen), 45 mg/L (as nitrate), 10 mg/L (as nitrate-nitrogen), or 1 mg/L (as nitrite-nitrogen).

Table 5. Narrative Water Quality Objectives for Surface Waters, Los Angeles Region Water Quality Control Plan

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

Source: Los Angeles Regional Water Quality Control Board Basin Plan, 1994.

The Los Angeles Water Board has developed numeric water quality objectives for various constituents in inland surface waters of California, including TDS, sulfate, chloride, boron, and nitrogen. However, no specific objectives are listed for the Compton Creek, Dominguez Channel, Los Cerritos Channel, Los Angeles River, Los Angeles-Long Beach Harbor, or Rio Hondo and at this time. The water quality components presented in the Basin Plan for other watersheds are of importance in the surface runoff analysis for the I-710 Corridor Project because they represent regulated constituents of concern from surface waters adjacent to and are received by the estuarine waters within the I-710 Corridor Project study area.

Harbors usually contain a limited amount of potential for mixing and dispersion of contaminants with the open ocean; thus, the contamination that is input into the water is likely to concentrate over time. The water quality in the Los Angeles and Long Beach Harbors can be impacted by climate changes, seasonal overturns in the water, biological activity, effluent discharges, and surface runoff, all of which will influence the Los Angeles Water Board's water quality objectives and standards.

Additionally, these events can impact other water quality indexes such as the temperature and pH of the receiving water. The specific water quality indexes historically linked to the contents of surface runoff include TSS, TDS, and salinity.

Total dissolved solids can also increase when poor quality surface runoff reaches the receiving water, as fine particulate matter can be easily transmitted off roadways and through sheet flow into receiving waters. Dissolved solids can also increase the salinity of the surface water. Los Angeles Harbor salinities usually range between 30.0 and 34.2 parts per thousand (Los Angeles Harbor Department). Salinity, however, has been noted to be lower in the Inner Harbor.

Other contaminants that can be carried into receiving waters in surface runoff include heavy metals, oil and grease, and chlorinated hydrocarbons. The heavy metals (mostly cadmium, chromium, copper, mercury, lead, nickel, silver, and zinc) as well as the oil and grease are most likely to result from runoff from a roadway or bridge structure. Historically, the main concern with respect to these contaminants is their tendency to become suspended in the harbor sediments, where they can smother bottom-dwelling animals and promote anaerobic conditions in the water column. These types of contaminants tend to be most prevalent during construction activities associated with roadways and bridges. Typical highway stormwater constituents and concentrations are summarized in Table 6 (Caltrans, 2003d).

Table 6. Statewide Highway Facilities Stormwater Runoff Characterization Studies Data for Monitoring Years 2000/2001 and 2002/2003

Pollutant Category	Parameter	Units	Number of Samples	Number of Sites	Mean Concentration
Conventional	DOC	mg/L	635	46	18.7
	EC	µS/cm	634	46	96.1
	Hardness	mg/L	635	46	36.5
	pH	S.U.	633	46	7.1
	TDS	mg/L	635	46	87.3
	Temperature	deg C	183	30	12.5
	TOC	mg/L	635	46	21.8
	TSS	mg/L	634	46	112.7
	Turbidity	NTU	n/m	n/m	n/m
Hydrocarbons	Oil and Grease	mg/L	49	10	4.95
	TPH (diesel)	mg/L	32	4	3.72
	TPH (gasoline)	mg/L	32	4	IDD
	TPH (heavy oil)	mg/L	20	4	2.71
Metals	Arsenic (dissolved)	µg/L	635	46	1
	Arsenic (total)	µg/L	635	46	2.7
	Cadmium (dissolved)	µg/L	635	46	0.24
	Cadmium (total)	µg/L	635	46	0.73
	Chromium (dissolved)	µg/L	635	46	3.3
	Chromium (total)	µg/L	635	46	8.6

Table 6. Statewide Highway Facilities Stormwater Runoff Characterization Studies Data for Monitoring Years 2000/2001 and 2002/2003

Pollutant Category	Parameter	Units	Number of Samples	Number of Sites	Mean Concentration
Metals (cont.)	Copper (dissolved)	µg/L	635	46	14.9
	Copper (total)	µg/L	635	46	33.5
	Mercury (dissolved)	ng/L	19	4	IDD
	Mercury (total)	ng/L	23	4	36.7
	Nickel (dissolved)	µg/L	635	46	4.9
	Nickel (total)	µg/L	635	46	11.2
	Lead (dissolved)	µg/L	635	46	7.6
	Lead (total)	µg/L	635	46	47.8
	Zinc (dissolved)	µg/L	635	46	68.8
	Zinc (total)	µg/L	635	46	187.1
Microbiological	Fecal Coli.	MPN/100 mL	32	5	1132
	Total Coli.	MPN/100 mL	32	5	13438
Nutrients	NH3-N	mg/L	8	1	1.08
	NO3-N	mg/L	634	46	1.07
	Ortho-P, dissolved	mg/L	630	46	0.11
	Phosphorus, total	mg/L	631	46	0.29
	Total KN	mg/L	626	46	2.06
Pesticides and Herbicides	Chlorpyrifos	µg/L	n/m	n/m	n/m
	Diazinon	µg/L	34	5	0.29
	Diuron	µg/L	367	30	18.24
	Glyphosate	µg/L	541	30	26.97
	Oryzalin	µg/L	361	30	IDD
	Oxadiazon	µg/L	365	30	IDD
	Trichopyr	µg/L	367	30	IDD
Semi-Volatile Organics	Acenaphthene	µg/L	32	6	IDD
	Acenaphthylene	µg/L	32	6	IDD
	Anthracene	µg/L	32	6	IDD
	Benzo(a)Anthracene	µg/L	32	6	IDD
	Benzo(a)Pyrene	µg/L	32	6	IDD
	Benzo(b)Fluoranthene	µg/L	32	6	IDD
	Benzo(ghi)Perylene	µg/L	32	6	IDD
	Benzo(k)Fluoranthene	µg/L	32	6	IDD
	Chrysene	µg/L	32	6	IDD
	Dibenzo(a,h)Anthracene	µg/L	32	6	IDD
	Fluoranthene	µg/L	32	6	IDD
	Fluorene	µg/L	32	6	IDD
	Indeno(1,2,3-c,d)Pyrene	µg/L	32	6	IDD
	Naphthalene	µg/L	32	6	IDD
	Phenanthrene	µg/L	32	6	IDD
	Pyrene	µg/L	32	6	0.03

ND = not detected.
IDD = insufficient data collected to calculate statistics.
DOC – Dissolved Organic Carbon
EC - Electrical Conductivity
TDS – total dissolved solids
TOC – total
TSS – total soluble solids
TPH – total petroleum hydrocarbon
NH3-N – Ammonia Nitrogen
NO3-N – Nitrate Nitrogen

Section 303(d) of the CWA requires that states make a list of waters that are not attaining established water quality standards after technology-based limits are initiated. The regulation requires states to develop total maximum daily loads (TMDLs) for all sources of the pollutants that caused the water to be listed. Table 7 presents pollutants within the affected water bodies that are identified on the 2010 303(d) list and that require additional controls to maintain their established water quality standards. Anticipated approval dates are also noted in Table 7.

Table 7. 2010 303(d) Pollutant Listing and Schedule for Affected Waterbodies

Pollutant	TMDL Requirement Status[1]	Expected TMDL Completion Date	Date USEPA Approved TMDL
Bacteria	A	1/1/2007	
Copper	B		12/22/2005
Coliforms	A		12/22/2005
Lead	B		7/24/2008
Zinc	A		12/22/2005
Benthic- Mactoinvertebrate	A	1/1/2021	
Bioassessments	B	1/1/2009	
Trash	B		7/24/2008
pH	B		3/18/2004
Chlordane (sediment)	A	1/1/2019	
DDT (sediment)	A	1/1/2019	
PCBs (Polychlorinated biphenyls) (sediment)	A	1/1/2019	
Sediment Toxicity	A	1/1/2021	
Cyanide	A	1/1/2019	
Cadmium	B		12/22/2005
Diazinon	A	1/1/2019	
Ammonia	B		3/18/2004
Nutrients (Algae)	B		3/18/2004
Oil	A	1/1/2019	
Benzo(a)pyrene (PAHs)	A	1/1/2019	
Benzo[a]anthracene	A	1/1/2019	
Dieldrin (tissue)	A	1/1/2019	
PCBs (Polychlorinated biphenyls)	A	1/1/2019	
Phenanthrene	A	1/1/2019	
Pyrene	A	1/1/2019	
Chrysene (C1-C4)	A	1/1/2019	

1) A = Required TMDL; B = being addressed by USEPA approved TMDLs

Comparison of the Highway Facilities Stormwater Runoff Characterization Studies Data to the approved TMDLs for the listed receiving water bodies for this project area yields the following list of pollutants. This list comprises the Target Design Constituents (TDC) as identified in the Storm Water Design Report (SWDR) prepared for the I-710. At a minimum, these are the pollutants that will specifically need to be addressed through the BMPs that are ultimately selected for long term operations:

- Ammonia
- Copper
- Copper, Dissolved
- Lead
- Dissolved Lead
- Nutrients (Algae)
- Sediments (Long Beach Harbor)
- Trash
- Zinc (sediment)
- Zinc, Dissolved

It is important to note that this list of pollutants may continue to be modified based on on-going revisions within the TMDL requirements and updating of the Basin Plan. In this case the BMPs identified for the project and described in Section 5 of this report would need to be revised and updated as appropriate in the SWDR.

3.5 REGULATORY REQUIREMENTS

Requirements during Planning and Design

There are certain requirements to be met during the planning and early development stages of a build alternative for the I-710 Corridor Project. Per the guidance found in the Project Planning and Design Guide, a Storm Water Data Report (SWDR) should be prepared for each phase of the project. The SWDR prepared for the PA/ED phase of the I-710 Corridor project covers but is not limited to the following topics:

- Determination of potential stormwater quality impacts of the proposed project and options to avoid or reduce the impacts.
- Need for stormwater controls.
- Preliminary locations and costs of treatment control devices and BMPs.
- Documentation of findings in the SWDR.

During the project design phase, a SWDR will be prepared for the project as required and will incorporate additional detail and analysis. The design phase SWDR will cover but not be limited to the following:

- Delineate drainage areas and define total disturbed area
- Analyze and present the specific receiving water bodies for each hydrologic subarea and the respective water quality objectives and total maximum daily loads (TMDLs)
- Outline design pollution prevention BMPs, construction site BMPs, and treatment BMPs.

Construction Phase Requirements

In the construction phase of the project, the following steps are taken to ensure that the project meets the water quality objectives and requirements.

- Preparation of a Storm Water Pollution Prevention Plan (SWPPP).
- Preparation of a Rain Event Action Plan (REAP).
- Preparation and Submittal Waste Discharge.
- Preparation and submittal of a Notice of Intent (NOI).
- Construction site monitoring and testing as required by the permitting agencies.

Regulatory and Permitting Requirements

When the final SWDR is completed, at a minimum, the current list of approved TMDLs (as designated at that time for each receiving water body) will need to be updated for the project and utilized for final post-construction BMP selection.

4.0 ENVIRONMENTAL CONSEQUENCES

The potential impacts to water resources attributable to Alternative 5A and to Alternative 6A/B/C fall into two major categories: (1) Impacts associated with storm water runoff, sediment, and groundwater that would occur as a result of the construction activities and (2) potential impacts to water quality that would occur once the project is in operation. The discussion in Section 4.0 is presented in two parts. Section 4.1 describes the major construction activities and related risk to water quality due to project construction. Section 4.2 addresses how the new freeway improvements featured in the build alternatives may increase or alter surface runoff flows and related effects to water quality due to an increase in contaminants contained in highway runoff.

While potential project impacts are discussed in Section 4.0 it is important to note that proposed BMPs that are intended to manage and treat stormwater runoff are also considered to be permanent features of the project. These preliminary BMPs are introduced and described in Section 5 of this report, along with other proposed mitigation measures to minimize impacts to water quality to the Maximum Extent Practicable (MEP).

4.1 CONSTRUCTION IMPACTS

Surface Runoff Construction Impacts

Evaluation of construction impacts of the build alternatives focus on the effects to existing water quality associated with the stormwater runoff from the construction site. This construction work involves the removal of the existing structures and construction of the new highway alignments and related improvements. The construction phase of the Project has the potential to impact the present and future water quality of the receiving waters through the transport of pollutants. The primary impact locations having the greatest risk to water quality are areas at or adjacent to the receiving waters and stormwater discharge points. This includes working on structures that are located within the Los Angeles River channel.

Events such as the accidental discharge of waste products produced during construction are of primary concern. Pollutants can range from trash left on the structures to petroleum hydrocarbons that have spilled in both construction and staging areas. Equipment that is operated in the vicinity of the channels within the construction area may leak petroleum compounds and contaminate areas of the work site. In addition, staging areas utilized for the fueling of equipment also are subject to this risk. Other concerns for discharge of hazardous materials that might degrade water quality include areas set aside for the cleaning of equipment over the course of the construction period. Elevated levels of pH as well as suspended and dissolved solids are water quality parameters of concern for the build alternatives.

Construction sites tend to disturb soil and promote erosion of channel banks. The total disturbed areas for Alternative 5A and 6A/B/C are 1,613 acres and 1,803 acres, respectively. At some locations, the bed/banks of the affected channel structures would be modified during construction of a replacement bridge. Additionally, although the Los Angeles River and related channels are currently concrete lined, soil erosion from nearby areas could allow for the transport of solids material through surface runoff into the channel, increasing TSS levels.

Sediment Construction Impacts

The proposed build alternatives require the partial removal and demolition of some existing structures. All build alternatives would have some construction over and/or adjacent to the LA

River. The disturbance of existing channel bottom sediments would be similar among all alternatives. Any construction work within the channel tidal areas would likely result in a variable amount of sediment resuspension and dispersal into the water column of the channel.

For the entire length of the I-710 Corridor Project, two primary levels of construction would occur: heavy construction that would disturb sediment (such as excavation of the channel bottom or foundation demolition) and light construction with minimal resuspension effects (e.g., as pile driving for the erection of false work).

Anticipated construction activities within the Los Angeles River channel include the following:

- Excavation of existing channel levees
- Demolition of existing bridge structures
- Installation of cofferdams and/or shoring
- Pile driving within the existing channel or tidal waters
- Securing of floating work platforms to the existing channel bottom
- Erection of construction forms
- Placement of structural concrete
- Finishing of bridge structures including painting, sandblasting, cleanup

Regardless of the type of construction activities, some re-suspension of fine-grained bottom sediments would occur.

As required in the SWDR, a Risk Level Determination of was developed for the project using composite factors. The sediment risk was calculated based on a composite Rainfall Erosivity Factor (R Factor) computed from the EPA website[3] using GPS coordinates from locations in downtown Long Beach, at the 91 / 710 interchange, and at the City of Commerce. The Water Boards Storm Water Multiple Application & Report Tracking System 2 (SMARTS) online program[4] was used to calculate the combined project risk level for each Project segment. Although the receiving water risk level is low for the Los Angeles River, Compton Creek and the Rio Hondo River, the risk level is HIGH for the Los Angeles River Estuary and the Los Angeles/Long Beach Inner Harbor. The overall Project risk level is Risk Level 2.

Groundwater Construction Impacts

The construction activity that has the greatest potential to impact groundwater involves the removal and disposal of groundwater during the excavation required for the structural foundations. The construction of support structures may require the use either the cast-in-drilled-hole (CIDH) or cast-in-steel-shell (CISS) methods. In the CIDH method, a hole is drilled, filled with slurry to prevent cave-ins, and then pumped with concrete (which displaces the slurry and is reused). In areas of high groundwater, the hole is expected to passively fill with

3 http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm

4 https://smarts.waterboards.ca.gov/smarts/faces/SwSmartsLogin.jsp

groundwater, which would be removed prior to filling the hole with slurry and concrete (i.e., dewatering). The removed groundwater would then be disposed of according to the selected method. This construction activity is not expected to affect groundwater movement because of the use of slurry to prevent caving and groundwater movement. The amount of dewatering necessary will be determined by the Contractors method of construction and relative groundwater elevation.

4.2 OPERATIONAL IMPACTS

The proposed I-710 Corridor Project onsite drainage systems consist of a series of drainage inlets along the median and shoulders. The NB and SB I-710 mainline lanes generally sheet flow to the outside edge of the shoulder and then concentrated flows enter grated inlets and underground drainage systems. In the superelevation portion of I-710 Corridor Project, the stormwater runoff drains to the median, where drainage inlets convey the runoff to the cross drainage facilities. Cross culverts, concrete dikes, overside drains, concrete and earthen channels then transfer storm flows to pump stations or outlets along the Los Angeles River.

The I-710 Corridor Project would require replacing or extending the existing onsite drainage systems such as drainage inlets along the median and shoulders with new drainage systems that can accommodate the increased Project flows.

As described in Section 1 of this report, Alternative 6A/B/C includes the construction of a freight corridor. The portion of the freight corridor in the vicinity of the I-710/I-105 interchange is located at-grade and will impact one of two existing retention basins that serve to meter the peak flows of the Los Angeles River channel. The primary basin that is impacted by the freight corridor will be removed and relocated as a part of the construction of Alternative 6A/B/C.

The freight corridor construction will also impact the west basin of the Dominguez Gap Spreading Grounds located just north of the I-710/I-405 interchange. This infiltration basin will also be removed and relocated as a part of the Alternative 6A/B/C improvements.

The existing drainage systems that transfer legacy runoff from the adjacent neighborhoods through the I-710 Project corridor will be modified to accommodate the proposed Project improvements while still maintaining the existing hydraulic capacity required to accommodate legacy storm flows. Existing LA River drainage outlets will be maintained in their existing location whenever hydraulically feasible and when not impacted by the proposed improvements.

In terms of the long term effects, the I-710 Corridor Project has the potential to impact water quality because each of the build alternatives would result in an increase in roadway surface area. The increase in impervious area for the project Alternative 5A and Alternative 6A/B/C is 109 acres and 308 acres, respectively. This increase in impervious area brings an increase in pollutant loads that require treatment. The following sections describe how changes proposed in the build alternatives would affect the velocity and volume of project runoff as well as other potential operational impacts. Note that the project does include features (BMPs) to treat and manage stormwater runoff. These BMPs are introduced and described in Section 5.

Surface Runoff Operational Impacts

Hydraulic Conditions of Concern

The I-710 Corridor Project hydrology was analyzed by dividing the project into drainage areas. The drainage areas are defined based on the area that is tributary to each of the existing outlets that drain into the Los Angeles River. The drainage area maps depicting the I-710 Corridor Project drainage areas and outlet designations for segments 1 through 7 in the existing, Alternative 5A, and Alternative 6A/B/C conditions are presented in Appendix A.

Once the drainage areas were established, the 25-year peak discharge was calculated to evaluate any increase in I-710 Corridor Project flows and determine any impact on the existing drainage systems and outlets. The 50-year peak discharge was calculated to determine any impact on existing sump inlet locations and the existing pump stations. (URS 2012). These peak flow events will be used to design the various project drainage features including connections to existing pump stations, outlet works, and proposed BMPs for Alternative 5A and Alternative 6A/B/C. The proposed drainage features will be designed to handle project peak flows as required by the HDM and Los Angeles County Hydraulic Design Manual and work in concert with the proposed treatment BMPs described in Section 5. The increase in the 25-year peak flow for Alternative 5A and Alternative 6A/B/C is 96 cfs and 709 cfs, respectively, for segments 1 through 7.

The design of the on-site drainage facilities and associated treatment BMPs will be performed in the PS&E phase of the Project. The HDM and PPDG guidelines will be used to size the drainage systems and treatment BMPs described in Section 5 of this report.

Hydromodification

The tributary drainage areas were also used to determine the two-year and ten-year storm event peak flows. These two smaller, more frequent, storm events are used to determine the effects of hydromodification, or the increase in flowrate or volume of the project outflow when compared to the pre-project condition. Both rain events are used to quantify flow patterns and pollutant loading. In this preliminary phase of project design, these values are used as an indication of approximate BMP sizing for volume-based BMPs and in the preliminary BMP cost determination.

The two-year and ten-year storm event calculations indicate that there are increases in flows (Q) for the two-year and ten-year events in most segments. Because there is a change in both pervious and impervious areas, not all segments have net increases in water quality flows. The 2-year and 10-year peak flows will be recalculated during the final design phase to size the approved BMPs according to the appropriate flows. Treatment BMPs would generally be designed based on the $\mathbf{Q_{WQF}}$ value; however, some treatment structures (basins, infiltration trenches) may need to be designed to accommodate the larger peak storm events depending on the configuration of the BMP. Table 8 presents the delta in flows for each segment for Alternatives 5A and 6A/B. Paved and unpaved areas are separated out in the table.

Table 8. Delta in Segment Flows Compared to Existing Condition

	Alternative 5A			Alternative 6A/B/C		
Paved Areas						
Segment	**Q_2 (cfs)**	**Q_{10} (cfs)**	**Q_{WQF} (cfs)**	**Q_2 (cfs)**	**Q_{10} (cfs)**	**Q_{WQF} (cfs)**
1	2.0	3.7	0.3	40.3	74.7	6.3
2	35.7	65.9	5.2	80.1	147.8	11.8
3	14.0	25.8	2.0	53.4	98.5	7.5
4	32.9	60.7	4.7	92.3	170.3	13.1
5	45.1	83.2	6.7	74.0	136.5	11.1
6	10.4	19.3	1.6	66.5	122.5	9.9
7	9.5	17.5	1.4	13.7	25.2	2.0
Unpaved Areas						
Segment	**Q_2 (cfs)**	**Q_{10} (cfs)**	**Q_{WQF} (cfs)**	**Q_2 (cfs)**	**Q_{10} (cfs)**	**Q_{WQF} (cfs)**
1	-23.5	-43.6	-3.7	-25.5	-47.2	-4.0
2	-25.8	-47.6	-3.8	-23.4	-43.3	-3.4
3	-7.9	-14.6	-1.1	-12.8	-23.7	-1.8
4	-26.5	-48.8	-3.8	-34.4	-63.4	-4.9
5	-3.0	-5.5	-0.4	2.4	4.4	0.4
6	-20.8	-38.3	-3.1	-16.5	-30.4	-2.5
7	-2.1	-3.9	-0.3	-0.6	-1.2	-0.1

$\Delta_{Q\,=}$ Delta in flow

The decreases in flow from the unpaved areas are expected with the total decreases in unpaved areas.

Operational Pollutants

The long-term surface runoff operational effects on water quality stemming from the build alternatives consider only the continuous impact on contaminant runoff throughout the life of the new facility. This typically includes the following potential impacts on receiving water quality:

- Incidental drippings from vehicle and accidental spills that introduce contaminant material or waste discharge from the new bridge and its approach structures.
- Maintenance activities, such as bridge painting, surface treatments and surface cleaning, substructure repair, joint repair, repairing drainage structures and pavement repair, and repaving.

From an operational standpoint, potential impacts to water quality would occur from the loading of various constituents typically associated with highway runoff into the channel. These constituents may include the following:

- Particulates from pavement wear and vehicles
- Metals, such as zinc, lead, iron, copper, cadmium, chromium, nickel, and manganese
- Bromide (from leaded-gasoline exhaust)

- Diesel fuel
- Tire wear
- Auto body rusting
- Metal plating
- Break lining wear
- Greases and lubricating oils from automobiles and trucks
- Trash discarded from vehicles and along the roadside
- Pathogenic bacteria (indicators) from soil, litter, bird droppings, and stockyard waste hauled by vehicles on the new bridge

There potential operational impacts will be addressed through the incorporation of design development BMPs, treatment BMPs, and adherence to the necessary operational maintenance protocols identified in the Caltrans Storm Water Management Plan (SWMP). These proposed BMPs are described in Section 5 of this report. The introduction of treatment BMPs as part of the build alternatives would represent an improvement when compared to the No-Build condition as there currently are no Caltrans-maintained BMPs treating freeway runoff.

Floodplain Impacts

The I-710 Corridor Project includes modifications within the existing floodplain and within the existing floodplain channels but is not expected to have any effect on the existing floodplain areas nor is the project expected to raise the Base Flood Elevation (BFE). All encroachments into the existing flood plain and flood control channels will be accompanied by improvements to effectively mitigate any potential impacts that the proposed improvements have on the base floodplain. No revision to existing floodplain maps is anticipated. The FIRM maps for the I-710 Corridor Project are located in Appendix A.

4.3 SEDIMENT OPERATIONAL IMPACTS

Operation of the I-710 and freight corridor under the build alternatives would not measurably affect sediment loading to the receiving water bodies. Only intermittent and seasonal re-suspensions of sediment (through stormwater flows) may be anticipated. This impact would be identical to the No-Build Alternative and would be minimal.

4.4 GROUNDWATER OPERATIONAL IMPACTS

Permanent impacts to the water quality of the groundwater in the vicinity of the I-710 Corridor Project would be minimal upon completion of the construction because there will not be any increase in the transport of pollutants into the groundwater through infiltration during the operational life of the new improvements. Most adjoining drainage channels are concrete lined with a natural low–flow channel in the bottom. The operation of the I-710 Corridor Project would not change the functionality of these channels. The increase in infiltration related to the incorporation of treatment BMPs is not expected to affect groundwater quality. The BMPs described in Section 5 would provide additional surface infiltration opportunities along the alignment compared to the No-Build condition. This would be a positive influence to the local hydrogeology by providing additional infiltration of treated stormwater runoff. The relocation and reconstruction of the westerly Dominguez Gap infiltration basin will retain the basin's original recharge capacity and introduce additional filtered surface runoff into the groundwater table. The relocation of this basin is not anticipated to adversely impact groundwater quality.

5.0 MITIGATION MEASURES

5.1 CALTRANS GUIDANCE

Stormwater runoff will be controlled along the proposed I-710 Corridor Project alignments to minimize the impact of highway runoff to the adjacent waterbodies. Guidelines for stormwater management shall be followed as prescribed in the latest edition of the Project Planning & Design Guide. Additionally, stormwater mitigation will be achieved through compliance with the Caltrans Statewide NPDES permit for stormwater discharges and implementation of the *Caltrans Statewide Storm Water Management Plan (SWMP)* (Caltrans, 2003a). The SWMP requires stormwater BMPs to be implemented for a project. The proposed BMPs for the project are classified as follows:

- Construction site BMPs (soil stabilization practices, sediment control, erosion control, tracking control).
- Design Pollution Prevention BMPs and Treatment BMPs (consideration of downstream effects, preservation of existing vegetation, concentrated conveyance systems, slope/surface protection systems, and structural treatment devices).
- Maintenance BMPs (potential sources of pollutants, likely pollutants, and BMPs for each type of activity).

The construction of a build alternative will conform with two NPDES permits. These include Caltrans Permit (Order No. 99-06-DWQ) and Construction General Permit (Order No. 2009-0009- DWQ).

5.2 CONSTRUCTION BMPS

Surface Runoff Mitigation

Construction mitigation involves the adoption of BMPs at the construction site. The following are recommended BMP improvements for maintenance of water quality of the receiving water during construction of a build alternative:

- To reduce sediment tracking, a tire wash BMP will be used for construction equipment leaving a contaminated work area.
- Within a contaminated work area construction equipment will be cleaned only as necessary (e.g., when moved to a non-contaminated area) to minimize the volume of decontamination wash water and prevent transport of contaminates from work site areas.
- Designated locations shall be provided for servicing, washing, and refueling of equipment, away from temporary channels or swales that would quickly convey runoff to the drainage system and into the Los Angeles River.
- Contaminated material (e.g., oil, lubricants) shall be kept at a safe distance (a minimum of 30.5 m [100 ft]) from an entry into a receiving water body. Temporary barriers and containers shall be used to confine any contaminated materials. Upon completion of construction, all contaminated material on the construction site must be removed and disposed of in accordance with federal, regional, and local regulations.

- A temporary spill containment system shall be installed and maintained on either side of the receiving water crossing. The contractor shall be responsible for the containment plan and the execution of spill containment during the course of construction. The containment plan shall be reviewed and approved by a resident engineer.

- To prevent potential introduction of any lead-based paint into receiving waters, the contractor will take appropriate measures on-site to eliminate lead-based paint from reaching the receiving waters. If paint removal is necessary during the dismantling process, the contractor shall comply with all applicable laws and regulations relative to this process to protect receiving waters.

- Procedures for monitoring and reporting of BMP performance during the completion of work will be specified in the SWPPP and will be outlined prior to the start of construction as a part of the permit process.

Sediment Construction Mitigation

Additional mitigation measures are necessary when working within an existing water body. Sediment and pollutant concentrations are expected to increase with increasing initial width of the resuspended sediment plume. Every effort should be made during construction of a build alternative to limit the initial width of any sediment plume and minimize the volume of resuspended sediment.

Construction activities that would produce sediment transport of pollutants through the affected channels would constitute potential adverse environmental impacts but will be mitigated to less than significant levels through strict adherence to construction site BMPs. Additional BMPs to address sediment dispersal and contamination include the following:

- Channel bank work shall include bank protection (riprap, concrete walls, and sheet piling) to eliminate the possibility of enhanced bank erosion.

- The use of cofferdams during bank or sediment disturbing construction activities.

- Use of other construction BMPs outlined in Appendix C of the Project Planning & Design Guide.

Groundwater Construction Mitigation

This section provides a summary of disposal alternatives for groundwater that might be generated during dewatering operations associated with any build alternative construction activities. The results of the general groundwater assessment described in Sections 2.5 and 2.6 of this report indicate that a potential exists for encountering impacted groundwater during a dewatering operation. Impacted groundwater refers to groundwater containing concentrations of pollutants of concern that exceed NPDES permit limits.

There are typically three options for disposing groundwater from the proposed dewatering operation:

- Treatment onsite

- Treatment and disposal offsite

- Disposal into local sewer system

The results of any required groundwater sampling and analysis performed in the final design phase of the project development would be used to determine the most appropriate treatment method. The method chosen would be based on the results of the groundwater assessment and recommendations of the LARWQCB.

Construction across the affected channels would likely use either the CISS method or CIDH method for the support structures.

In the CISS method, a steel sleeve is driven into the ground, the soil is excavated from the inside of the sleeve, and the shell is then filled with concrete. There would be minimal groundwater extraction if this construction method is employed, and no additional permits would be required.

In the CIDH method, a hole is drilled, filled with slurry to prevent cave-ins, and then pumped with concrete, which displaces the slurry and is reused. Depending on the location of the excavation, the hole could become filled with groundwater. This groundwater will be removed prior to filling the hole with slurry and concrete. The removed groundwater will then be disposed of properly, according to the selected method. The dewatering operation required by the CIDH method is not expected to affect groundwater movement because the slurry would tend to stabilize the groundwater. There will not be any active dewatering aside from emptying the hole prior to filling with slurry.

Onsite Treatment

This disposal option would entail designing and constructing a temporary water treatment plant for treating water generated from dewatering operations to reduce the concentrations of pollutants of concern below NPDES limits prior to incorporation into the construction site.

Treatment and Disposal Offsite

Based on the results of the proposed groundwater investigation described above, the groundwater could be profiled as hazardous waste or as nonhazardous waste. This treatment and disposal option entails temporary storage of water on the I-710 Corridor Project site, waste profiling, and then transporting the water offsite to a regulated facility for treatment and disposal.

Disposal into the Local Sewer System

This disposal option entails disposal of the groundwater into the City or County sewage system. This option will require a discharge permits from the utility owner and RWQCB. The groundwater would be disposed by connecting the dewatering operation to a local sewer line adjacent to the I-710 Corridor Project site. The type of sewer line connection depends on the rate of flow of the groundwater from the dewatering operation and would be determined by the permitting agency.

As an example, to dispose of groundwater into the City of Los Angeles sewer system, an Industrial Wastewater Discharge Permit is required, which is issued by the City of Los Angeles, Department of Public Works, Bureau of Sanitation, Industrial Waste Management Division (IWMD). To satisfy permit conditions, treatment of discharge water may be required.

5.3 DESIGN POLLUTION PREVENTION BMPS AND TREATMENT BMPS

The SWDR prepared for the I-710 Corridor Project describes the process used to identify proposed BMPs to manage and treat stormwater runoff for build alternatives. These BMPs were selected using the currently identified Target Design Constituent (TDC) pollutants, described in Section 3 of this report. The target pollutants are subject to change based on updates in the receiving water TMDLs and changes to the Basin Plan. The following BMPs are preliminary and will be updated and refined during the final design phase of the project when the SWDR is finalized.

Design Pollution Prevention Measures

These design BMPs have been incorporated into the Project's conceptual design to reduce the downstream effects of runoff and minimize the impacts to water quality by allowing maximum capture of pollutants within the drainage system prior to entering the receiving water.

Consideration of Downstream Effects Related to Potentially Increased Flow

The proposed drainage systems for Alternative 5A and Alternative 6A/B/C will incorporate measures that include; flared end sections at storm drain outlets, velocity dissipation devices at outlets entering vegetated areas, and channel lining for locations where infiltration is not feasible.

Slope and Surface Protection Systems

Rock slope protection will be provided on slopes greater than 4:1.Filter fabric will be utilized on slope locations until such time as vegetation can be established. Slopes will also be protected by providing sufficient plant establishment periods for proper growth of slope protection vegetation.

Concentrated Flow Conveyance Systems

Concrete lined channels and rip-rap lined swales will be used to convey and divert concentrated flows with a minimum of soil erosion. These types of drainage improvements will be used to accomplish the transfer of offsite flows through the Caltrans ROW to an appropriate outlet in the LA River.

Preservation of Existing Vegetation

As a part of the construction documents, certain areas that contain established existing landscaping will be identified as off-limits to the Contractor during the construction phase of the Project. The intent is to protect as much of the existing vegetation as feasible during the Project construction phase.

Treatment BMPs

The following treatment BMPs have been selected from an approved list of 9 BMPs used statewide on all Caltrans projects. These permanent BMPs are selected to mitigate the Target Design Constituents (TDC) from the proposed Project effluent and reduce their concentrations to acceptable levels.

Biofiltration Strips and Swales

The Project proposes to construct biofiltration strips or swales at 24 locations. These BMPs are used wherever sufficient space and grade are available. The swales and strips serve to filter and infiltrate Project pollutants. These BMPs require minimal maintenance and provide aesthetic enhancements by providing additional landscaping adjacent to roadways.

Infiltration Basins

The Project proposes 8 infiltration basins. This BMP provides mitigation for all Project TDCs and is the preferred treatment device among the Caltrans-approved BMPs because it sequesters and treats the project runoff. These BMPs also serve to mitigate peak flows and attenuate hydrographs when they can be sized to operate in-line with drainage systems.

Detention Basins

The Project proposes 1 detention basin. These basins detain or slow down the project-generated peak flows up to 48 hours to more closely mimic pre-project hydrology. These basins are often designed to be in-line with the project storm drain system and contain outlet structures to safely convey the larger storm events to the regional storm drains and Los Angeles River outlets. These BMPs can also provide pollutant treatment through infiltration and biologic absorption of the runoff pollutants.

Wet Basin

One wet basin is proposed for the project. This BMP is located on the east side of Shoemaker Bridge and would be installed contingent upon the City's park improvement plans incorporating this BMP into the park design. It is also anticipated that the City would maintain this BMP.

Media Filters

The Project proposed to use 22 media filter treatment BMPs in the form of Austin Sand Filters. These devices are used where space constraints or existing invert elevations preclude the implementation of other infiltration devices. These BMPs uses a settling chamber and filtration media to remove sediments and metals from the Project runoff.

Gross Solids Removal Device (GSRD)

Because the Los Angeles River has an existing TMDL for trash, the incorporation of GSRDs in to the Project will help reduce trash from the Project runoff and meet TMDL requirements. The Project includes 7 GSRD units. These BMPs are incorporated to remove gross solids and floating trash from the Project runoff.

All of the above treatment BMPs would improve the water quality of highway runoff compared to the No-Build condition.

5.4 MAINTENANCE BMPS

To address potential impacts to water quality that would occur during Caltran's maintenance activities needed to maintain and operate the freeway and freight corridor, the following BMPs are proposed:

- Remove excess grease from moving parts of bridges manually and collecting it for disposal.
- Degrease prior to painting and hydro-blasting to remove old paint with additive-free (i.e. Chemical free) water, where possible.
- Erect shrouds around working areas and suspending nets and tarps below bridges to catch debris from abrasive removal of old paint and over-spray from painting, where wind conditions permit.
- Anchor tarps to enclose the bridge above to confine debris, where the bridge deck is not too far above water level.
- Use booms to capture fugitive floating paint chips and custom-built enclosures to confine and capture the abrasives, old paint chips, and paint.
- Use vacuum or suction shrouds on blast heads to capture grit and old paint.
- Carry out storing, mixing, and cleaning operations on land.
- Keep all materials securely locked up to avoid vandalism and accidental spills into the watercourse.
- Schedule bridge maintenance to avoid egg incubation, juvenile rearing, and downstream migration periods of fish.

5.5 PROJECT IMPACTS POST MITIGATION

Statewide NPDES permitting requirements would be met for the construction and operational phases of the I-710 Corridor Project. Temporary water quality impacts will be managed through compliance with the Statewide Construction General permit.

Potential impacts during the construction and operational phases of the build alternatives will be addressed through the incorporation of design development BMPs, construction phase BMPs, treatment BMPs, and adherence to the necessary operational maintenance protocols identified in the Caltrans Stormwater Management Plan (SWMP).

During the construction phase of the I-710 Corridor Project, all applicable construction site BMPs will be incorporated into the construction documents including temporary soil stabilization, sediment and tracking control, and waste management. Groundwater removed during dewatering operations will be disposed of offsite at approved locations or treated on-site and incorporated into the grading operations.

Operational BMPs will include design development, treatment BMPs, and maintenance BMPs. Design development BMPs incorporated on this project will include preserving existing vegetation wherever feasible, incorporation of concentrated flow conveyance systems with velocity reducing outlet structures, and providing slope protection with vegetation. Treatment BMPs as outlined in the SWDR include 24 biofiltration swales and stripes, 22 Austin Vault media filters, 7 gross solids removal devices, one wet basin, and 8 infiltration basins. All permanent treatment BMPS will have maintenance requirements associated with their implementation. Operational maintenance BMPs will include storm drain cleaning, normal roadway and bridge maintenance, in addition to maintaining all vegetated slopes.

With the incorporation of the proposed site specific BMPs during the construction and operational phases of the I-710 Corridor Project, along with adherence to BMP and operational maintenance protocols, no significant adverse impacts to water quality due to the construction and operation of the proposed improvements are anticipated.

5.6 CUMULATIVE IMPACTS

Due to the extensive geographic reach of the proposed I-710 Corridor Project in additional to the numerous public and private-sector projects that are on-going within the overall project area, there is the potential for cumulative water quality impacts during the construction and operational phases of the project.

For instance, there is the potential for storm erosion from wind and stormwater runoff, especially during the construction phase of the project. Through careful BMP implementation and adherence to established maintenance protocols for the selected site-specific BMPs during the construction and operational phases of the proposed build alternatives, there should be minimal if any adverse impacts to the existing water quality of the LA River and other receiving water bodies. The existing BMPs in operation on the freeway will be removed and replaced by the BMPs proposed for this Project. There will be a net reduction in runoff pollutant loads due to the increased paved area treated through the implementation of the BMPs outlined in the SWDR. These BMPs have been designed to specifically target the freeway’s primary pollutants.

In addition, I-710 Corridor Project is required to implement mitigation measures in compliance with its respective permit requirements and to adequately manage hydrologic subarea flows. Therefore, cumulatively, I-710 Corridor Project impacts to water quality are anticipated to be less than substantial.

6.0 UNAVOIDABLE ADVERSE WATER QUALITY IMPACTS

Spills of materials used during construction and the disturbance of existing channel sediments have the potential to cause some temporary degradation of the Los Angeles River water quality. However, implementation of the proposed construction BMPs and construction practices outlined in the required SWPPP during the construction phase of the project is expected to reduce or eliminate these potential impacts to water quality.

7.0 AGENCY PERMITS AND REVIEWS

Due to the length of the I-710 Corridor Project, it is likely that agency permits will be applied for based on segment or section locations. As each segment or section is completed, the related permits may be closed or terminated. This would allow for focused management of the active construction areas.

All terms of the Caltrans Statewide NPDES stormwater permit, including existing and new permits required for the I-710 Corridor Project, would be complied with during all phases of planning, construction, and operation the I-710 Corridor Project.

Any dewatering permit required during the construction phase of the project will be obtained from the appropriate permitting agency based on the nature of the affected groundwater and the disposal option selected by the Contractor.

7.1 NPDES GENERAL CONSTRUCTION PERMIT

Any construction contract bid by a sponsoring agency as a part of the I-710 Corridor Project will require an individual NPDES construction permit.

7.2 SECTION 404 DREDGE AND FILL PERMIT

The I-710 Corridor Project will likely qualify for Nationwide Permit 14 (Linear Transportation Crossing). The Section 404 permit would be obtained from the Regulatory Branch of the Los Angeles District USACE. A pre-application consultation with USACE is recommended.

7.3 SECTION 401 WATER QUALITY CERTIFICATION

The I-710 Corridor Project will require multiple Section 401 Water Quality Certifications from the LARWQCB. A pre-application consultation is recommended. It is further recommended that a joint pre-application meeting with USACE and the Los Angeles Water Board staff be conducted. The following information should be provided to regulatory agencies to facilitate the permitting process:

- Bridge alignments overlays on aerial photographs of the I-710 Corridor Project site.
- Relevant photographs of the I-710 Corridor Project site (depicting water resources, surrounding land use, etc.).
- Engineering drawings of the alternatives.
- Engineering drawings and designs depicting potential construction impacts (cut and fill, construction staging areas, etc.).
- A copy of the SWPPP, with drawings will be made available after approval by Caltrans showing locations of BMPs. An approved copy will be forwarded to the Regional Board.
- Copy of the I-710 Corridor Project Final EIR/EIS.

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