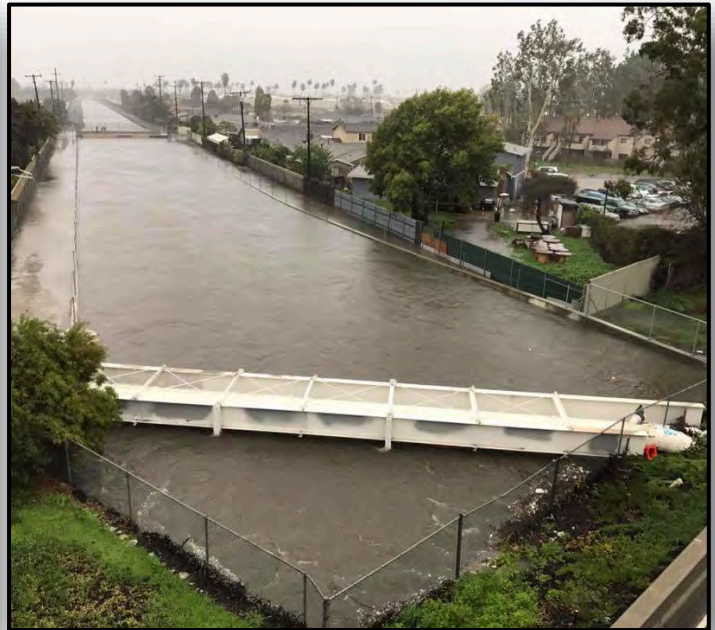

APPENDIX N - COASTAL CONSISTENCY DETERMINATION
For
WESTMINSTER, EAST GARDEN GROVE FLOOD RISK
MANAGEMENT STUDY



April 2020



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for double-sided printing*



DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
231 SOUTH LA SALLE STREET, SUITE 1500
CHICAGO IL 60604

April 13, 2020

Planning Branch

Mr. Larry Simon, Manager
Energy, Ocean Resources, and Federal Consistency
California Coastal Commission
North Central Coastal District
45 Fremont Street #2000
San Francisco, California 94105

Dear Mr. Simon:

The U.S. Army Corps of Engineers (USACE), Chicago District, would like to thank you for your continued coordination with regard to the Westminster, East Garden Grove Flood Risk Management Study, Orange County, California. The Federal Consistency Determination for the above project is currently under review (CD-0008-19). The USACE would like to submit the following list of commitments that will be added in an addendum to CD-0008-19. These commitments are activities that the USACE would conduct during the next phase of the project, the preconstruction engineering and design (PED) phase. During the PED phase, detailed designs and additional studies would be carried out to confirm assumptions that were made during the feasibility phase of the project. The commitments to be included in the addendum to CD-0008-19 are the following:

- (1) Coastal Act Wetland Delineation. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, a wetland delineation report identifying Coastal Act wetlands located in the project area, including but not limited to, the Bolsa Chica Channel, East Garden Grove Wintersburg Channel, Outer Bolsa Bay, and the Warner Avenue Bridge area. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (2) Final Impact Calculations. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, a report providing the final calculations for the estimated temporary and permanent project-related impacts to wetland habitat, mudflats, eelgrass, and environmentally sensitive upland habitat adjacent to the Warner Avenue Bridge and/or bluff edges east of Outer Bolsa Bay. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (3) Final Mitigation and Monitoring Plans. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final mitigation and monitoring plans for unavoidable project impacts to coastal resources, including wetlands, mudflats, eelgrass, and environmentally sensitive upland habitat. Plans will include, but not be limited to, a revised eelgrass mitigation plan consistent with the California Eelgrass Mitigation Policy, revised mitigation plans for impacts to California least tern foraging, and plans for fish habitat improvements in Reach 1 of the East Garden Grove Wintersburg Channel. Mitigation and monitoring plans will include provisions for adaptive management measures (refer to Appendix M – Conceptual Mitigation Strategy of the main report) given the length of time that will exist between

Coastal Commission action on CD-0008-19 and project implementation, the length of the construction time period, and the length of time between completion of construction and significant flood/stormflow events that hold the potential to adversely affect coastal resources and trigger mitigation requirements. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.

- (4) Final Plans for Trash and Debris Collection. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final plans for trash and debris collection systems in the modified flood control channels to minimize the amount of trash and debris entering Anaheim Bay, Outer Bolsa Bay, the Muted Tidal Pocket, and the Bolsa Chica Ecological Reserve. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (5) Final Mitigation Plans for Public Access Impacts. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final mitigation plans for temporary and permanent impacts to public access at the Warner Avenue Bridge, the pedestrian walk bridge parallel to the Warner Avenue Bridge, and the bridge over the culverts between Outer and Inner Bolsa Bays and over the tide gates at the terminus of the East Garden Grove Wintersburg Channel. The submittal will include final plans for improvements to and/or replacement of structures that currently provide public access in this area. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.

We understand that in the event the Coastal Commission staff identify shortcomings in the content of any of these plans regarding protection of coastal resources and environmentally sensitive habitats, and if the Corps and the Coastal Commission staff are unable to resolve any disagreements over the plans, Coastal Commission staff may bring the matter back to the Commission for a public hearing on the question of whether the project is likely to have an effect on coastal resources that is substantially different from what was originally described and anticipated and, as a result, the project no longer appears consistent with the California Coastal Management Program.

As stated before, please include the above list of commitments to CD-0008-19 as an addendum to the document you currently have. The USACE will also add the above list of commitments as an addendum to the Consistency Determination that will be released in the upcoming months for the State and Agency review as well as the public review of the Final Report under the National Environmental Policy Act. Please direct any questions regarding this letter to Ms. Shawna Herleth-King at (312) 560-3285 or Shawna.S.Herleth-King@usace.army.mil.

Sincerely,



Susanne J. Davis, P.E.
Chief, Planning Branch
USACE, Chicago District

**Coastal Consistency Determination
Westminster-East Garden Grove
Flood Risk Management Project
Orange County, California**



Prepared for:

US Army Corps of Engineers
Lakes and Rivers Division
Chicago District

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April 2020

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Acronyms and Abbreviations

ACE	annual chance of exceedance
BA	Biological Assessment
BCER	Bolsa Chica Ecological Reserve
BO	Biological Opinion
CCA	California Coastal Act of 1976, as amended
CCC	California Coastal Commission
CCMP	California Coastal Management Program
CCD	Coastal Consistency Determination
CDFW	California Department of Fish and Wildlife
C.F.R.	Code of Federal Regulations
CY	cubic yards
CZMA	Coastal Zone Management Act of 1972, as amended
DO	dissolved oxygen
EA	Environmental Assessment
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
LPP	Locally Preferred Plan
LUP	Land Use Plan
MLLW	Mean Lower-Low Water
MSCMA	Magnuson-Stevens Conservation and Management Act
NED	National Economic Development
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NRHP	National Register of Historic Places

O&M	Operations and Maintenance
RWQCB	Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
USFWS	United States Fish and Wildlife Service
USACE	United States Army Corps of Engineers

SECTION 1.0 – AUTHORITY

The United States Army Corps of Engineers (USACE), Chicago District, has prepared this Coastal Consistency Determination (CCD) in accordance with the Federal Coastal Zone Management Act of 1972, as amended, (CZMA) (Title 16 United States Code [U.S.C.] § 1451 et seq.) and its implementing regulations, Federal Consistency with Approved Coastal Management Programs (Title 15 Code of Federal Regulations [C.F.R.] Part 930). The environmental impact statement, in conjunction with the 40 C.F.R. Part 230 - Section 404(b)(1) guidelines and public notice coordination process, can be used as a guide in formulating environmentally acceptable alternatives.

The Westminster feasibility study is being conducted in accordance with the study resolution adopted by the Committee on Public Works, House of Representatives Committee on Public Works on May 8, 1964 (Flood Control Act of 1938), which reads:

"Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports on (a) San Gabriel River and Tributaries, published as House Document No. 838, 76th Congress, 3d Session; (b) Santa Ana River and Tributaries, published as House Document No. 135, 81st Congress, 1st Session; and (c) the project authorized by the Flood Control Act of 1936 for the protection of the metropolitan area in Orange County, with a view to determining the advisability of modification of the authorized projects in the interest of flood control and related purposes."

SECTION 2.0 – DETERMINATION

USACE has evaluated the Recommended Plan and has found it is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA), and the California Coastal Act of 1976, as amended (CCA). The Project (i.e., Recommended Plan), for purposes of this Coastal Consistency Determination (CCD), is defined as the Locally Preferred Plan (LPP). The environmental consideration and consistency sections below provide the basis for the finding. USACE requests that the California Coastal Commission (CCC) concur with this CCD.

SECTION 3.0 – STANDARD OF REVIEW

Under Section 307 (c)(1) of the CZMA, 16 USC Section 1456 (c) (1), federal activities that affect any land or water use or natural resource of the coastal zone are required to be consistent with the affected state's coastal management program to the "maximum extent practicable." Section 930.32 of the National Oceanic and Atmospheric Administration's regulations implementing the CZMA (15 CFR part 930) defines "consistent to the maximum extent practicable" as follows:

(a)(1) The term "consistent to the maximum extent practicable" means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.

The standard of review for federal consistency determinations consists primarily of the principal components of the California Coastal Management Program (CCMP), namely the policies of Chapter 3 of the Coastal Act. Section A(6) of the Introduction to the CCMP also states that once incorporated into the CCMP, certified Local Coastal Programs (LCPs) "will be used in making federal consistency

determinations". If an LCP that the Commission has certified and incorporated into the CCMP provides development standards that are applicable to the project site, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information.

SECTION 4.0 – PROJECT DESCRIPTION

4.1 PROJECT BACKGROUND

The Westminster East Garden Grove Flood Risk Management Project (Proposed Project) evaluates the flood risk associated with the primary drainage channels in the Westminster Watershed and will examine opportunities to improve the function of the constructed flood control channels or storm drains of the East Garden Grove-Wintersburg (EGGW/C05), Oceanview (OV/C06), Westminster (W/C04), and Bolsa Chica (BCFC/C02) Channel Systems (Figure 1). The Westminster Watershed is designated with the letter “C” by Orange County. As such, these channels are numbered C05, C06, C04, and C02, as identified above. The Proposed Project would allow the modification of the C05, C06, C04, and C02 channels to provide 100-year flood conveyance of stormwater.



Figure 1: Project Location

The evaluation of flood risk will include the identifying measure to reduce flood hazards associated with the Westminster Channels, such as risks to life safety, damages to residential and commercial structures, and public infrastructure. The evaluation will also consider measures to reduce flood impacts downstream of the channels in the vicinity of Outer Bolsa Bay.

Engineering Regulation (ER) 1105-2-100 and ER 11165-2-21 set minimum drainage requirements to qualify for federal interest consideration under the flood risk management authority. The requirements are as follows:

- Flows within the channel must be greater than 800 cubic feet per second (cfs) (22.7 cubic meters/second [cms]) for the 0.1 annual chance of exceedance (ACE) storm event, except in areas of hydraulic disparity where flows do not exceed 800 cfs (22.7 cms) for the 0.1 ACE storm event, but exceed 1,800 cfs (51.0 cms) for the 0.01 ACE storm event.

4.1.1 Project Area

The Proposed Project lies in the area referred to as the Westminster watershed, a sub-watershed of the Anaheim Bay-Huntington Harbour Watershed (identified by the U.S. Environmental Protection Agency [USEPA] as # 18070201) located between the lower reaches of the San Gabriel River watershed and the Santa Ana River watershed in Orange County, California. The study area is approximately 25 miles southeast of downtown Los Angeles, California.

The Westminster watershed lies on a flat coastal plain, approximately 90 square miles in area and is almost entirely urbanized with residential and commercial development. The Santa Ana River historically meandered widely over this coastal plain. Channelization occurred throughout the mid-20th century with containment in concrete channels and earthen berm channels from Anaheim Bay to the north, and southward to Newport Bay. Urbanization within the Westminster watershed generally followed historic alignments of the former Santa Ana River drainage system. C05 and C02 systems collect runoff from the urbanized areas in the cities of Anaheim, Cypress, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Santa Ana, Seal Beach, Stanton, and Westminster in the County of Orange. Typical flow in the Anaheim Bay-Huntington Harbour watershed is almost completely dry weather runoff. There is no dominant river for the watershed that drains a substantial portion of the watershed. Channels that drain the watershed include Stanton Storm Channel; C02; Anaheim Harbor City Channel; C04; C05; and C06.

The channels within the Westminster watershed collect local storm water runoff and vary in size, geometry, and lining material. Typical channel configurations are described below and vary by reach throughout the channel systems.

- Concrete rectangular channels: Vertical channel walls with concrete lined sides and bottom.
- Riprap-lined trapezoidal channels: Sloped channels that are lined with riprap; soft or unpaved bottom.
- Concrete-lined trapezoidal channels: Sloped channels with concrete-lined sides and bottoms.
- Enclosed culverts: Rectangular or box conduits that are not exposed at the surface.
- Levees: Earthen berms (3H:1V TYP.) are located along channels in the flattest downstream extents of the watershed.
- Steel Sheet Pile: Rectangular channels comprised of vertical sheet pile walls with soft channel bottom in between.

Current data for C05 are from a sampling station at Gothard Street. C05 terminates with one-way flap gates at the south end of Outer Bolsa Bay. From Outer Bolsa Bay, runoff is conveyed under the Warner Avenue Bridge through Huntington Harbour, Anaheim Bay and ultimately to the Pacific Ocean. Tidal waters flow between Outer and Inner Bolsa Bay through culverts that partly restrict tidal exchange. The tidal range in Inner Bolsa Bay is muted to about 22 percent of that of Outer Bolsa Bay (CSLC et al. 2001).

The downstream receiving waters are comprised of the following four regions (Figure 2):

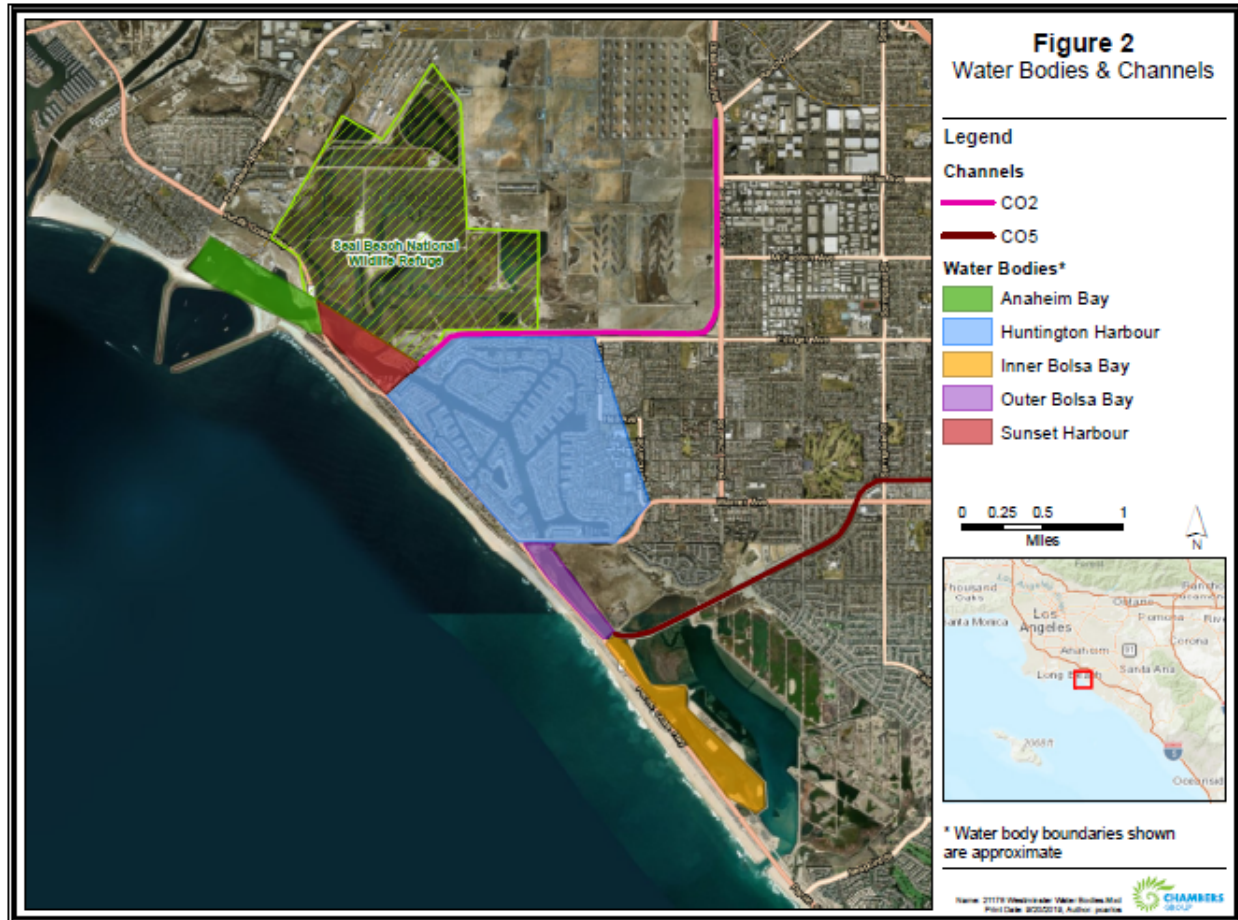


Figure 2: Project Area Waterbodies

Huntington Harbour – Sunset Harbour

The City of Huntington Beach is a residential community that includes five man-made islands and waterways used for boating. FEMA maps from a detailed floodplain study dated 2010 show the channels within Huntington Harbour contain up to the 0.01 ACE storm event.

Seal Beach National Wildlife Refuge

Seal Beach National Wildlife Refuge (NWR) was developed through a collaboration of the U.S. Fish and Wildlife Service (USFWS) and the Department of the Navy. The refuge is part of the Seal Beach Naval Weapons Station located to the northwest of the C02/C04 channel confluence.

Anaheim Bay

Anaheim Bay serves as the outlet to the Pacific Ocean for the wildlife refuge and the C02/C04 channel system. The Navy is currently investigating ways to modify navigation in Anaheim Bay to redirect civilian

ships in Huntington Harbour away from the facilities at the Seal Beach Naval Weapons Station. These changes would neither affect nor conflict with the project alternatives.

Bolsa Chica Ecological Reserve (BCER)

This nature reserve is designed to protect a significant coastal wetland and provide habitat for endemic plant and animal species, including federally listed endangered species, and includes Inner and Outer Bolsa Bay.

4.1.2 Project Channels and Reaches

The study will focus only on channel reaches C02, C04, C05, and C06. The study will not include reaches of C02 upstream of the C02/C04 confluence, or the C03 channel, Anaheim Harbor City Channel.

C02 – Bolsa Chica Channel

For the C02 channel, this study focuses only on the portion that extends from the confluence with the C04 channel, near the southeastern corner of the Seal Beach Naval Weapons Station, to where the channel discharges into Huntington Harbour. This channel segment is approximately 1.5 miles long and provides flood risk management for the Huntington Beach, Huntington Harbour, and the Seal Beach Naval Weapons Station.

C04 - Westminster Channel

The C04 channel is approximately 7.8 miles in length and provides flood risk management for the cities of Garden Grove, Westminster, and Huntington Beach. The channel begins south of Highway 22 and flows westward past Westminster Memorial Park Cemetery, Interstate 405, and Westminster Mall, joining with the C02 channel near the southeastern corner of the Seal Beach Naval Weapons station.

C05 – East Garden Grove/Wintersburg Channel

The C05 channel is approximately 11.6 miles in length and provides flood risk management for the cities of Santa Ana, Garden Grove, Westminster, and Huntington Beach. The channel begins west of the intersection of Highway 5, Highway 57, and Highway 22 in the City of Santa Ana and flows southwest through Haster Basin, under Interstate 405, and through the Bolsa Chica Ecological Reserve, ultimately discharging into Outer Bolsa Bay. Haster Basin is a detention basin that controls flows entering the C05 channel with a pump system.

C06 - Ocean View Channel

The C06 channel is approximately 4.1 miles in length and provides flood risk management for the cities of Fountain Valley and Huntington Beach. The channel begins 0.5 miles east of Mile Square Regional Park in the City of Fountain Valley and flows westward through Mile Square Regional Park and under Interstate 405, ultimately discharging into the C05 channel at the confluence near Gothard Street in Huntington Beach, CA. Mile Square Regional Park is a 640 acre park that is home to multiple golf courses, a 55 acre recreation center, and two lakes. This park is located in the City of Fountain Valley but is a key recreation resource for communities throughout the watershed.

4.1.3 Bolsa Chica Ecological Reserve

The lower segment of the C05 channel bisects the reserve and discharges into Outer Bolsa Bay, a body of water that is contained within the Bolsa Chica Ecological Reserve (BCER). The BCER is owned by California State Lands Commission and is home to a variety of local wildlife and habitat types. The BCER is comprised of the following areas:

Full Tidal Basin

The Full Tidal Basin is located along the eastern edge of the C05 channel and is considered an environmentally sensitive area. The Full Tidal basin is separated from the C05 channel, the Muted Tidal Basin, and Inner Bolsa Bay by levees. Water exchange between the Muted Tidal Basin and the Full Tidal Basin is permitted by a series of culverts and is controlled by flap gates that respond to changes in tide. Water exchange between the Seasonal Pond Area and the basin is controlled by flap gates that respond to changes in tide. The basin is connected to the Pacific Ocean by an ocean outlet that passes under Pacific Coast Highway at the southern tip of the Full Tidal Basin.

Muted Tidal Basin

The Muted Tidal Basin is located northeast of the Full Tidal Basin. The Muted Tidal Basin is divided into three cells that only allow water to move between them through overflow weirs during larger storm events. Each cell is separated from the Full Tidal Basin and the C05 channel by a levee. Culverts permit water exchange between the Muted Tidal Basin and the Full Tidal Basin, and flap gates allow regular, but muted tidal influence.

Inner Bolsa Bay

Inner Bolsa Bay is located between Pacific Coast Highway and the Full Tidal Basin. The bay is isolated from the Full Tidal Basin by a levee and is separated from Outer Bolsa Bay by tide gates. The tide gates permit water from Outer Bolsa Bay to enter Inner Bolsa Bay and maintain a tidal influence within Inner Bolsa Bay. There is no water exchanged between the Full Tidal Basin and Inner Bolsa Bay.

Muted Tidal Pocket

The Muted Tidal Pocket is separated from the Full Tidal Basin by the C05 channel. The Muted Tidal Pocket is isolated from the C05 channel by a levee and a tide gate. A culvert permits water from Outer Bolsa Bay to enter the Muted Tidal Pocket, maintaining a muted tidal influence.

Seasonal Ponds

The Seasonal Ponds are located along the eastern edge of the Full Tidal Basin and are separated from the Full Tidal Basin by a levee system. A single culvert controls discharge from the Seasonal Ponds into the Full Tidal Basin. This area is subject to runoff from surrounding developments.

Outer Bolsa Bay

Outer Bolsa Bay is located at the mouth of the C05 channel. Water exchange between the C05 channel and the bay is controlled by tide gates. Outer Bolsa Bay is connected to Inner Bolsa Bay by different tide gates, and a culvert connects Outer Bolsa Bay to the Muted Tidal Pocket just north of the C05 outfall.

Water is discharged from Outer Bolsa Bay under the Warner Avenue Bridge into Huntington Harbour. Outer Bolsa Bay is separated from the Pacific Ocean by Pacific Coast Highway and Bolsa Chica State Beach.

4.1.4 Essential Fish Habitat

Essential Fish Habitat (EFH) means those waters and substrate necessary to fish for spawning, breeding, feedings, or growth to maturity. For interpreting the definition of EFH, “waters” includes aquatic areas and their associated physical, chemical, and biological properties used by fish, and may include areas historically used by fish where appropriate. “Substrate” includes sediment, hard bottom, structures underlying the water, and associated biological communities. The term “necessary” means the habitat required to support a sustainable fishery and a healthy ecosystem. The term “spawning, breeding, feeding, or growth to maturity” covers a species full life cycle.

EFH potentially present within the study area was queried using GIS data made available by the National Oceanic and Atmospheric Administration’s (NOAA) National Marine Fisheries Service. It was found that EFH for groundfish, coastal pelagic species, and finfish, and market squid is present within Anaheim Bay, Huntington Harbour, and Outer and Inner Bolsa Bay. EFH for these species also extends upstream into reaches of channels C02 and C05. Outside of the project area, but within Anaheim Bay and along the coastline, EFH also exists for krill (i.e., *Euphausia pacifica*, *Thysanoessa spinifera*, and other krill species) as well as for the aforementioned species.

Coastal pelagic species that may be found in the area include Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), northern anchovy (*Engraulis mordax*), and jacksmelt (*Atherinopsis californiensis*). Coastal pelagic species tend to be most common in the upper mixed layer of the ocean (above the thermocline) in a broad band (up to hundreds of miles wide) along the coast. Coastal pelagic species may occur in shallow embayments and brackish water, but do not depend on these habitats to any significant degree.

No Pacific salmon EFH, Habitat Areas of Particular Concern (HAPC), or EFH Areas Protected from Fishing (EFHA) were identified within the vicinity of the Proposed Project area. Additionally, EFH for Pacific Highly Migratory Species (PHMS) — thresher shark (*Alopias* spp.), bluefin tuna (*Thunnus thynnus*), dolphinfish (*Coryphaena hippurus*), and swordfish (*Xiphias gladius*) — is located approximately 1 mile off the coast; therefore, these species are not anticipated to be within the vicinity of the Proposed Project area.

4.2 PURPOSE AND NEED

The purpose of this study is to evaluate flood risk within the Westminster watershed following the completion of channel modifications for the Santa Ana River and the removal of the Westminster watershed from the Santa Ana River floodplain. Flood risk within the watershed can be attributed to drainage channels that collect surface runoff and convey it to the Pacific Ocean. Portions of the Westminster watershed are the only areas left in Orange County that are still within the Federal Emergency Management Agency (FEMA) 1% Floodplain. Preliminary analysis shows that flooding overtops the existing drainage channel infrastructure in the study area between the 20% and 10% ACE storm events (5 and 10 year recurrence intervals, respectively), putting approximately 400,000 area residents and 44,000 structures at risk of inundation during a 0.2% ACE event (“500-year storm”). Overbank flooding also impacts traffic in the project area, causing closures on local roads as well as major routes, including the Pacific Coast Highway (PCH) and Interstate-405. In total, the study area experiences approximately

\$72,000,000 (Fiscal Year 2020 price levels, 2035 base year, 2.75% federal discount rate) in average annual equivalent direct damages as a result of overbank flooding.

Hydraulic analysis shows that the following channel segments may not meet the drainage requirements criteria for with project conditions.

- C04 – Portions of the channel that are approximately 0.25 miles upstream of the Ward Street crossing. Flows upstream of the crossing do not exceed 770 cfs (21.8 cms) for the 0.1 ACE storm event.
- C05 – Portions of the channel that are upstream of the Garden Grove Freeway. Flows in the channel between Westminster Avenue and Haster Basin do not exceed 460 cfs (13.0 cms) for the 0.1 ACE storm event.
- C06 – Portions of the channel that are approximately 900 feet upstream of Brookhurst Street. Flows in the channel upstream of Brookhurst Street do not exceed 800 cfs (22.7 cms) for the 0.1 ACE storm event.

4.3 PROJECT OBJECTIVES AND CONSTRAINTS

The goal of the study is to identify a sustainable flood risk management solution within the Westminster watershed to reduce flooding caused by overtopping of the C05/C06 and C02/C04 channel systems. Detailed descriptions of the Objectives and Constraints are discussed in the EIS/EIR.

4.3.1 Objectives

- Reduce the risk of flood damages to structures and infrastructure;
- Reduce life-safety risk associated with overbank flooding;
- Reduce the risk of downstream flood damages; and,
- Promote compatible recreation.

4.3.2 Constraints

- Limit extensive changes to local land use designations and zoning by limiting channel modifications to within the existing channel right of way, when feasible.
- Minimize impacts to culturally sensitive areas.
- Limited change in elevation across the watershed reduces opportunities for lowering the invert of the existing channel systems.
- Alternatives should avoid induced adverse hydraulic impacts relative to existing conditions and comply with floodplain management requirements.
- Do not impact the contaminated soil containment sites adjacent to Reaches 1 & 2 of the C05 channel and Bolsa Chica Ecological Reserve.

4.4 ALTERNATIVES

The following strategies were used for developing study alternatives.

- Focus on Improving Channel Conveyance – This strategy aims to reduce the risk and impacts of flooding by transporting flood waters more efficiently, especially in upstream channel reaches where the watershed has more slope.

- Focus on Increasing Channel Capacity – This strategy aims to reduce the risk and impacts of flooding by increasing the volume of flood water storage within the existing drainage channels.
- Focus on Improving Downstream Conveyance – This strategy aims to reduce the risk and impacts of flooding downstream by improving flow in the receiving waters of the study channels. While downstream conveyance modifications are unlikely to provide significant flood damage risk reduction alone, it is recognized that any modifications to improve conveyance and capacity upstream would exacerbate existing flow restrictions downstream.

Based on the measures and the strategies developed for alternative development, several action and one no action alternative plans were originally developed for project consideration. Appendix H of the EIS/EIR for this project provides the details of the measures considered during alternative development. Alternatives carried forward are described in further detail below.

Water Diversion

Water diversion methods would be the same for each of the action alternatives. In the reaches where sheet pile is being placed (e.g., downstream reaches of C02 and C05) full dewatering will not occur. Cofferdams will be used to block off one side of the channel where work is being conducted, but the other side will be left open for water to flow through in the channel. In the reaches where concrete is being placed, water will be completely diverted around the work area. Cofferdams will be used at the upstream and downstream areas to completely block off from flow the section where work is occurring. Water from upstream will be completely diverted around the site through a pipe to the downstream area.

Non-Structural Measures

Retained nonstructural measures are included in every action alternative listed (i.e., all alternatives except No Action) and include removal of impediments to flow. These measures are the same for each action alternative.

Removal of Impediments to Flow: Removal of impediments to flow is a nonstructural maintenance measure that involves the removal of vegetation, sediment, and other debris that can accumulate in the channel and interfere with the conveyance of flood flows. Removing impediments to flow would be implemented on a priority-basis, increasing maintenance investments in locations that are known to require greater capacity during flood events.

4.4.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, no management measures would be implemented to reduce the current risk of flood damage in the project area. Flooding will continue throughout the Westminster watershed due to the insufficient capacity of the existing channel systems. This will continue to cause damages to structures as well as road closures in the project area as a result of channel overtopping. Outer Bolsa Bay will continue to flood during frequent storm events, impacting traffic on the Pacific Coast Highway. The oil wells in the Bolsa Chica Ecological Reserve will remain at risk of inundation by flows that overtop the C05 channel upstream of the reserve and travel overland into the Muted Tidal Basin and Seasonal Pond area. Under the No Action Alternative, bluff erosion in Outer Bolsa Bay is anticipated to continue, as well as erosion along the Pacific Coast Highway and at Warner Avenue (i.e., where it crosses Outer Bolsa Bay).

4.4.2 Alternative 2 –Minimum Channel Modifications

The Minimum Channel Modifications Plan is the National Economic Development (NED) Plan. Consistent with the formulation strategy to “focus on improving channel conveyance,” this alternative would reduce flood risk within the watershed by improving conveyance efficiency of existing channels. Trapezoidal channels within C02, C04, C05, and C06 that currently have an earthen bottom and either earthen or riprap banks would be lined with concrete. There would be no alteration to reaches that are rectangular in shape or lined with concrete, nor to reaches of in-channel box and pipe structures. The leveed areas in the downstream reaches of C02 and C05 (reaches 23 and 1, respectively) would be improved to reduce the risk of levee failure. Modifications in these reaches would include installation of steel sheet pile channel walls and preservation of existing soft bottom, tidally-influenced habitat.

Additional downstream measures would be combined with the in-channel measures to address existing flooding in Outer Bolsa Bay and to account for increased flow volumes that result from increased conveyance capacity in the channels. The tide gates on C05 would be removed to improve the flow conditions through the lower reaches of the C05 channel. The current tide gates leak and therefore, allow saltwater to intrude upstream in C05. This saltwater influence extends upstream of Outer Bolsa Bay for approximately 2.5 miles. A bridge will replace the tide gates and allow emergency vehicle access similar to the current tide gate structure. This alternative allows for continued tidal influence in the lower reaches of C05, thus lessening impacts to the existing ecological conditions. This alternative also includes the widening of the Outer Bolsa Bay Channel just upstream of the Warner Avenue Bridge. Widening of the channel would require that the Warner Avenue Bridge and the pedestrian bridge at the Bolsa Chica Conservancy be increased in span. Widening of the Outer Bolsa Bay Channel would improve conveyance as well as the hydraulic efficiency of the lower reaches of C05.

Compatible nonstructural measures would be incorporated to lessen the life safety risk associated with flooding in the project area. Compatible nonstructural measures that were considered in the development of this alternative include removal of impediments to flow.

The NED Plan preconstruction engineering and design (PED) and construction schedules begin at the lower reaches of C02 and C05 and progress upstream. Additional studies may be conducted during the PED phase for each reach to refine and provide greater detail of project area conditions prior to construction. The PED schedule for C02 and C04 is expected to begin in January 2021 and be completed by October 2027; construction is expected to occur between May 2022 and November 2029. The PED schedule for C05 and C06 is expected to begin in January 2020 and be completed by June 2028; construction is expected to occur between May 2022 and July 2031. The table below provides a summary of the project dates by channel and reach for the NED Plan.

Table 1: Westminster NED Construction Schedule

Channel	Reach	Location	Anticipated Preliminary Engineering Design (PED) Dates		Anticipated Construction Dates	
C02	REACH 23	Huntington Harbour to C04	1/1/21	2/11/21	5/20/22	12/22/22

Channel	Reach	Location	Anticipated Preliminary Engineering Design (PED) Dates		Anticipated Construction Dates	
C04	REACH 20	Bolsa Chica to McFadden Ave	10/1/21	11/11/21	2/17/23	1/15/26
		McFadden Ave to D/S Bolsa Ave	10/25/24	12/5/24	3/13/26	3/18/27
		D/S Bolsa Ave to U/S Edwards	12/26/25	2/5/26	5/14/27	12/2/27
	REACH 22	D/S Brookhurst to U/S Ward	9/11/26	10/22/26	1/28/28	12/5/28
		U/S Ward to U/S Westminster	9/14/27	10/26/27	1/30/29	11/22/29
C05	REACH 1a	Warner Ave Bridge and Huntington Harbour Armoring	1/1/20	2/11/21	5/20/22	8/3/23
		Tidegates to 2600' D/S Graham	1/1/20	2/11/21	5/20/22	8/3/23
	REACH 1b	U/S Warner to D/S Goldenwest	1/1/20	2/11/21	5/20/22	8/3/23
	REACH 2	U/S Goldenwest to D/S Gothard	5/13/22	6/23/22	9/29/23	8/8/24
	REACH 3	C06 Confluence to U/S Beach	5/19/23	6/29/23	10/4/24	8/28/25
		U/S Beach to 405	6/7/24	7/18/24	10/24/25	7/16/26
	REACH 4	U/S Quartz to D/S Brookhurst	4/25/25	6/5/25	9/11/26	11/23/28
	REACH 5	U/S McFadden/Brookhurst to U/S Ward	9/3/27	10/14/27	1/19/29	7/12/29
		U/S Ward to U/S 1st (Bolsa)	4/21/28	6/1/28	9/7/29	7/31/31
	C06	REACH 13	U/S Beach to D/S Ross	5/13/22	6/23/22	9/29/23
REACH 17		D/S Bushard to D/S Brookhurst	12/8/23	1/18/24	4/25/25	2/19/26
REACH 19		U/S Euclid to D/S Newhope	11/29/24	1/9/25	4/17/26	1/21/27

4.4.3 Alternative 3 –Maximum Channel Modifications

The Maximum Channel Modifications Plan has been identified as the Locally Preferred Plan (LPP). Consistent with the formulation strategies to “focus on improving channel conveyance” and “focus on improving channel capacity,” this alternative will reduce flood risk within the watershed by improving both conveyance efficiency and capacity of existing channels. Trapezoidal channels within C02, C04, C05, and C06 will be replaced with rectangular concrete (or steel sheet pile) channels to contain a 100-year storm event. Additionally, floodwalls would be constructed in the existing channel right of way where necessary. Soft channel bottoms would be preserved in the tidally-influenced downstream reaches of C02 and C05 to avoid impacts to marine habitat.

Additional downstream measures would be combined with the in-channel measures to address existing flooding in Outer Bolsa Bay and to account for increased flow volumes that result from the improved conveyance capacity in the channels. The tide gates on C05 would be replaced with an access bridge to improve the flow conditions through the lower reaches of the C05 channel. The current tide gates leak and therefore, allow saltwater to intrude upstream in C05. This saltwater influence extends upstream of Outer Bolsa Bay for approximately 2.5 miles. A bridge will replace the tide gates and allow emergency vehicle access similar to the current tide gate structure. This alternative allows for continued tidal influence in the lower reaches of C05, thus lessening impacts to the existing ecological conditions. This alternative also includes the widening of the Outer Bolsa Bay Channel just upstream of the Warner Avenue Bridge. Widening of the channel would require that the Warner Avenue Bridge and the pedestrian bridge at the Bolsa Chica Conservancy be increased in span. Widening of the Outer Bolsa Bay Channel would improve conveyance as well as the hydraulic efficiency of the lower reaches of C05.

To address flooding caused by a restriction where flows in C04 are directed into a long reach of covered conduit that runs under I-405 and the Westminster Mall, a bypass channel would be constructed to direct flows around this existing bottleneck. This diversion would span two reaches in C04 (reaches 20 and 21) and be a combination of open channel and reinforced concrete box (RCB). It would split off of reach 21 at the intersection of Hoover and Hazard streets, run west along an abandoned Navy railroad line to the north of Westminster Mall, and then turn south underneath Edwards Street until it reconnects with reach 20 (where reach 20 goes underground) near the intersection of Edwards Street and Bolsa Avenue.

Compatible nonstructural measures would be incorporated to lessen the life safety risk associated with flooding in the project area. Compatible nonstructural measures that were considered in the development of this alternative include removal of impediments to flow.

The LPP PED and construction schedules begin at the lower reaches of C02 and C05 and progress upstream. Additional studies may be conducted during the PED phase for each reach to refine and provide greater detail of project area conditions prior to construction. The PED schedule for C02 and C04 is expected to begin in January 2021 and be completed by March 2031; construction is expected to occur between May 2022 and January 2033. The PED schedule for C05 and C06 is expected to begin in January 2020 and be completed by April 2032; construction is expected to occur between May 2022 and March 2034. The table below provides a summary of the project dates by channel and reach for the LPP.

Table 2: Westminster LPP Construction Schedule

Channel	Reach	Location	Anticipated Preliminary Engineering Design (PED) Dates		Anticipated Construction Dates		
CO2	REACH 23	Huntington Harbour to C04	1/1/21	2/11/21	5/20/22	12/22/22	
CO4	REACH 20	Bolsa Chica to Springdale/Edinger	10/1/21	11/11/21	2/17/23	8/29/24	
		Springdale/Edinger to D/S Bolsa Ave	6/9/23	7/20/23	10/25/24	4/16/26	
		D/S Bolsa Ave to U/S Edwards	1/24/25	3/6/25	6/12/26	11/19/26	
	REACH 21	DIVERSION: U/S Edwards St. to D/S Hoover St.	8/29/25	10/9/25	1/15/27	12/14/28	
	REACH 22	D/S Beach Blvd. to U/S Magnolia	9/24/27	11/4/27	2/9/29	8/8/30	
		D/S Brookhurst to U/S Ward	5/18/29	6/28/29	10/4/30	6/26/31	
		U/S Ward to U/S Westminster	4/5/30	5/16/30	8/22/31	4/22/32	
		U/S Westminster to SR-22	1/31/31	3/13/31	6/18/32	1/13/33	
	CO5	REACH 1a_	Warner Ave Bridge and Huntington Harbour Armoring	1/1/20	2/11/21	5/20/22	8/3/23
			Tidegates to 2600' D/S Graham	1/1/20	2/11/21	5/20/22	8/3/23
REACH 1b		U/S Warner to D/S Goldenwest	1/1/20	2/11/21	5/20/22	8/3/23	
REACH 2		U/S Goldenwest to D/S Gothard	5/13/22 Thu	6/23/22	9/29/23 Thu	8/8/24	
REACH 3		C06 Confluence to U/S Beach	5/19/23	6/29/23	10/4/24	7/31/25	
		U/S Beach to Woodruff	5/10/24	6/20/24	9/26/25	5/7/26	

Channel	Reach	Location	Anticipated Preliminary Engineering Design (PED) Dates		Anticipated Construction Dates		
	REACH 4	U/S Quartz to D/S Brookhurst	2/14/25	3/27/25	7/3/26	3/16/28	
	REACH 5	U/S McFadden/Brookhurst to U/S Ward	12/25/26	2/4/27	5/12/28	1/18/29	
		U/S Ward to U/S 1st (Bolsa)	10/29/27	12/9/27	3/16/29	8/8/30	
	REACH 6	U/S 1st to 900' D/S Hazard	5/18/29	6/28/29	10/4/30	2/13/31	
	REACH 8	D/S Hazard/Newhope to U/S Westminster	11/23/29	1/3/30	4/11/31	1/15/32	
		U/S Westminster to OCTA	10/25/30	12/5/30	3/12/32	6/17/32	
	REACH 9	OCTA to U/S Trask	3/28/31	5/8/31	8/13/32	5/19/33	
		U/S Trask to U/S Aspenwood Ln.	2/27/32	4/8/32	7/15/33	3/2/34	
	CO6	REACH 13	U/S Beach to D/S Ross	5/19/23	6/29/23	10/4/24	10/30/25
		REACH 14	U/S Asari to R15	8/9/24	9/19/24	12/26/25	1/8/26
REACH 15		U/S Asari to I-405	10/18/24	11/28/24	3/6/26	9/17/26	
REACH 16		U/S I-405 to D/S Bushard	6/27/25	8/7/25	11/13/26	4/15/27	
REACH 17		D/S Bushard to D/S Brookhurst	1/23/26	3/5/26	6/11/27	1/27/28	
REACH 19		U/S Euclid to D/S Newhope	11/6/26	12/17/26	3/24/28	10/26/28	

4.4.4 Construction Phases Schedule

Each phase generally involves dust control, clearing/site preparation, demolition, excavation/grading, utility relocation, and building/construction. The anticipated schedule for construction phases are shown in Table 3 through Table 7. Phases are dated to overlap where possible to meet the project construction schedule.

Table 3: Construction Phases for Warner Avenue Bridge Expansion

Phase Name	Phase Type	Start	End	Work Days*
Demolish existing bridge	Demolition	5/20/2022	2/19/2023	196
Relocate utilities throughout	Trenching	5/20/2022	8/3/2023	315
Traffic control	Building Construction	5/20/2022	8/3/2023	315
Harbor wall armoring	Building Construction	5/20/2022	12/19/2022	152
Channel excavation and haul	Grading	6/20/2022	4/19/2023	218
New bridge structure	Building Construction	8/20/2022	8/3/2023	249
Road and parking raise	Paving	11/1/2022	8/3/2023	198

*Assume 5 working days a week.

Table 4: Construction Phases for Tide Gate Removal and Replacement

Phase Name	Phase Type	Start	End	Work Days*
Relocate utilities	Trenching	5/20/2022	12/19/2022	152
Erosion control and turbidity curtain	Trenching	5/20/2022	6/3/2022	11
Dewatering	Building Construction	6/4/2022	7/9/2022	25
Demolition and removal	Demolition	7/10/2022	9/1/2022	39
Earthwork and regrading	Grading	9/2/2022	9/17/2022	11
Bridge and roadway work	Building Construction	9/18/2022	12/19/2022	66

*Assume 5 working days a week.

Table 5: Construction Phases for Reach 1

Phase Name	Phase Type	Start	End	Work Days*
Clear site and remove obstructions	Site Preparation	5/20/2022	12/3/2022	141
Dust control	Grading	5/20/2022	8/3/2023	315
Relocate utilities	Trenching	5/20/2022	8/3/2023	315
Road crossings	Building Construction	5/20/2022	8/3/2023	315
Dewatering	Building Construction	5/20/2022	8/3/2023	315
Concrete removal	Demolition	5/27/2022	12/30/2022	156
Sheet pile removal	Demolition	5/27/2022	12/30/2022	156

Sheet pile and soil cement mixing columns	Building Construction	6/1/2022	7/3/2023	284
Excavation	Grading	6/27/2022	7/19/2023	278
Temporary shoring	Building Construction	6/27/2022	7/19/2023	278
Aggregate base layer	Grading	7/15/2022	1/3/2023	123
Subsurface drain	Trenching	7/15/2022	12/3/2022	101
Concrete volume	Building Construction	7/20/2022	6/3/2023	228
Compacted fill	Grading	4/10/2023	8/3/2023	84

*Assume 5 working days a week.

Table 6: Construction Phases for Reach 23

Phase Name	Phase Type	Start	End	Work Days*
Clear site and remove obstructions	Site Preparation	5/20/2022	9/1/2022	75
Dust control	Grading	5/20/2022	12/22/2022	155
Dewatering	Building Construction	5/20/2022	12/22/2022	155
North levee slope protection	Grading	5/27/2022	12/22/2022	150
Sheet pile and anchor column system	Building Construction	5/27/2022	12/22/2022	150
Excavation	Grading	6/1/2022	12/22/2022	147

*Assume 5 working days a week.

Table 7: Construction Phases for Reach 21 (LPP).

Phase Name	Phase Type	Start *	End*	Work Days**
Dust control	Grading	2/17/2023	1/16/2025	500
Dewatering	Building Construction	2/17/2023	1/16/2025	500
Clear site and remove obstructions	Site Preparation	2/24/2023	6/12/2023	77
Concrete removal	Demolition	3/4/2023	2/16/2024	250
Gravel base removal	Grading	3/4/2023	2/16/2024	250
Excavation	Grading	3/20/2023	5/17/2024	305
Temporary shoring	Building Construction	3/20/2023	12/17/2024	457
Aggregate base layer	Grading	4/3/2023	8/2/2023	88
Concrete volume	Building Construction	4/17/2023	1/16/2025	459
Compacted fill	Grading	12/18/2023	1/16/2025	284
Paving	Paving	2/17/2024	1/16/2025	239

*Reach 21 dates are shifted up to earliest possible upstream start date for conservatism (all other inputs based on original data). **Assume 5 working days a week.

SECTION 5.0 – CONSISTENCY WITH THE CALIFORNIA COASTAL ACT

This section of the federal consistency determination analyzes the consistency between this Proposed Project and the policies set forth in Chapter 3 (Coastal Resources Planning and Management Policies) (Section 30200 et. seq.) of the California Coastal Act (Division 20, California Public Resources Code Section 30000 et. seq.; California Code of Regulations, Title 14, Section 13000 et. seq.). The evaluation of the LPP (Proposed Project) with respect to the California Coastal Act is described in the subsections below.

5.1 ARTICLE 1 – GENERAL (SECTION 30200)

The potential effects of the Proposed Project that could have a direct impact on resources within the coastal zone have been considered as well as the effects of such actions on coastal zone resources, which are further detailed in the following subsections.

5.2 ARTICLE 2 – PUBLIC ACCESS (SECTIONS 30210 – 30214)

Several neighborhood and regional parks exist within the Proposed Project area that are adjacent to the channel system, as well as other recreational opportunities at Bolsa Chica Ecological Reserve, Huntington Harbour, Anaheim Bay, and the Seal Beach National Wildlife Refuge. These recreational opportunities include no-to-low cost options, including but, not limited to walking, jogging, bird watching, and bicycle riding. Maintenance roads occur alongside several reaches of the channels; however, public access currently is not allowed on these maintenance roads. The Proposed Project purpose is to improve the subject channels and does not propose to make direct changes, or changes in access, to any of the existing adjacent and/or nearby recreational opportunities. No new recreational facilities will be built. Signage and temporary detour pathways will be employed during the construction period in areas accessible to the public and utilized by recreational users.

For purpose of this assessment, the maximum channel modifications alternative will be considered as the maximum potential for impacts; any other alternative option would involve less impacts. The Proposed Project consists of nonstructural measures (e.g., removal of impediments to flow), improving earthen/riprap trapezoidal channels by lining them with concrete, increasing the span of Warner Avenue Bridge, and replacing the tide gates on Reach 1 of C05. Removal of impediments to flow could include removal of vegetation, sediment and other debris from the channels that could be restricting flow. The nonstructural measure would result in no impacts to existing neighborhood and regional parks or other recreational facilities.

There would be no change in access to use of the channels for recreation as the channel maintenance roads currently do not serve a dual purpose for recreation. Unauthorized public access is not permitted. During construction, access from perpendicular and/or adjacent roadways may temporarily block sidewalks used by joggers, walkers, and others including roadway use by bicyclists. Since roadway bridges over channels are not included when channel geometry is not being changed, there would be no impact to recreational use of roadway bridges. Where public access is possible along the channels for recreation use, the impacts would be temporary for individual reaches during construction as the channel is being modified.

The modification of the Warner Avenue Bridge would affect bicyclists, joggers, walkers, and other recreational users that may utilize the bridge. Currently, there is a sidewalk on the north side of the bridge and bike lanes on the north and south side of the bridge. During construction, the bridge may be reduced

to single lanes, which would impact bikers trying to use the bike lanes as well as walkers and joggers using the sidewalk, depending on what side of the bridge construction is occurring on at the time. Increasing the span of the Warner Avenue Bridge also includes the removal of the constriction on the south side of the bridge.

Currently, there is a walking trail leading from the north parking lot of the Bolsa Chica Conservancy to a pedestrian footbridge that crosses Outer Bolsa Bay. In addition, there is a second walking trail from the parking lot to the water's edge of Outer Bolsa Bay that cuts through the approximately 0.6 acre of land that would be removed as part of increasing the span of Warner Avenue Bridge. Removal of the constriction would require removal of the existing pedestrian footbridge as well as a disruption in access to these two walking trails while construction is occurring. In order to address short-term impacts due to loss of the pedestrian footbridge, an option would be to construct a sidewalk on the south side of Warner Avenue to access the land side of Outer Bolsa Bay. However, there is limited space on the south side of Warner Avenue Bridge and it would create safety concerns for people using this limited width of space. Additionally, people would be accessing the site from a non-designated footpath. The pedestrian footbridge would be replaced once modification of the bridge and removal of the constriction is complete. There would be no long-term impacts to recreation once construction is complete; however, the two walking trails would be reduced in length due to the permanent removal of the constriction as part of the Proposed Project.

Removal of the tide gates on C05 would prevent bicyclists from accessing and utilizing the bicycle path that crosses over the tide gates during construction. The new access bridge would occupy the same footprint as the former tide gates. Once construction of the new access bridge is complete, bicyclists would be able to use the path again; therefore, there would be no long-term impacts to access once construction is complete.

By reducing the risk of flooding, the Proposed Project would have a beneficial impact by reducing the potential of overtopping events which could threaten access to regional parks and recreational facilities that are adjacent to the channel system. Therefore, the Proposed Project is consistent with Sections 30210 through 30214 and is consistent with Article 2.

5.3 ARTICLE 3 – RECREATION (SECTIONS 30220 – 30224)

Sections 30221 through 30222.5 and 30224 are not applicable to this Proposed Project as it does not directly include any activities involving oceanfront land, private lands or recreational boating. The Proposed Project purpose is to improve the subject channels and does not propose to make direct changes to any of the existing adjacent and/or nearby water-oriented recreational opportunities, such as swimming, fishing, or boating.

Lining the existing earthen and riprap trapezoidal channels with concrete would indirectly increase the flowrate within the channels which in turn would lead to a shorter timeframe for water retention in the channels. However, water retention within the channels under existing conditions is minimal since a majority of the channels (about 75 percent) have already been lined with riprap or concrete. This increase in flowrate may indirectly affect water-oriented opportunities immediately following rain events by increasing the volume over the short-term, but does not substantially increase the resulting total volume of water in Outer Bolsa Bay, Huntington Harbour, and Anaheim Bay, compared to existing conditions. Recreational boating and other water uses may experience a short-term increase in freshwater input closest to the outlet of C02 in Huntington Harbour and Anaheim Bay, as well as C05 into Outer Bolsa Bay;

however, this increase would occur immediately following a rain event and would then exhibit conditions similar to existing conditions. In addition, the improvement of water capacity from flood risk reduction may provide a benefit to water-oriented recreational users that are located downstream of the Proposed Project but will not be directly affected by this Proposed Project. The Proposed Project is consistent with Sections 30220 through 30224 and is consistent with Article 3.

5.4 ARTICLE 4 – MARINE ENVIRONMENT (SECTION 30230 – 30237)

As shown in Appendix H, Plan Formulation, of the EIS/EIR for the Proposed Project, several potential measures were screened out from further consideration. The majority of the existing waters within the project area are channelized. Nonstructural measures that are part of the LPP alternative do not propose the construction of any new structures. No wetland or riparian vegetation are anticipated to be affected by Proposed Project activities. No change to the tidal influence within the channels will occur. The various channel reaches of the existing channels range from earthen trapezoidal with earthen bottom to concrete vertical with concrete bottom and would not be affected by this alternative. No change of species composition or important habitat would result, and the biotic character of the immediate vicinity would be similar to the existing conditions. Nonstructural modifications to the channels would increase the system's flood capacity, which may improve habitat availability for fish and other aquatic invertebrates.

Thirteen federally-listed threatened, endangered, or candidate species are listed as occurring within the study area. Of these species, salt marsh bird's-beak, Ventura marsh milk-vetch, California least tern, light-footed Ridgway's rail, western snowy plover, and the green turtle may be affected either directly or through habitat modifications, such as removal of vegetation, sediment, and other debris that can accumulate in the channel. The green turtle is an infrequent visitor to the area and would not be expected to occur beyond the downstream ends of C02 and C05. The bird species may forage in the area and may be temporarily disturbed by construction noise and/or project-related activities and would forage in other nearby areas and/or return when construction ceases. The listed species' foraging and movement also may be improved. Salt marsh bird's-beak, which occurs in Seal Beach National Wildlife Refuge, is located approximately 4,000 feet north of the Proposed Project's impact area. Ventura marsh milk-vetch has been documented from Bolsa Chica Ecological Reserve, however, the species is presumed extirpated since it has not been collected from there since 1882. Overall, no adverse impacts to listed species movement, presence, or essential fish habitat are anticipated.

Structural measures that are part of the LPP alternative would pave earthen or riprap lined channels with concrete to increase conveyance efficiency. In addition, Warner Avenue Bridge would be increased in span and the tide gates would be replaced. No change to the tidal influence within the channels will occur. No change of species composition or important habitat would result during the improvement construction.

With the conversion of earthen-lined channels to paved concrete, areas where wetland or riparian vegetation currently exist would be removed by Proposed Project activities. In April 2019, a jurisdictional determination for the project area was completed by the USACE Los Angeles District Regulatory Branch. The determination identified approximately 0.15 total acres of wetland habitat adjacent to the Warner Avenue Bridge. No jurisdictional wetland habitat was identified within the C02/C04 or C05/C06 flood control channels. Where present, channel vegetation is dominated by annual, weedy, and ruderal species. Correspondingly, native as well as non-native and invasive vegetation types are found here. While the vegetation within the flood control channels provides some habitat value, the value provided is considered minimal. Ongoing vegetation maintenance activities are taking place throughout the channels, which has had some impacts to extant biological communities. In some areas (e.g., C04 Reach 22) it

appears that habitat is being altered via vegetation management activities, and in other places (e.g., C06 Reach 18) vegetation management is maintaining the existing habitat conditions. In addition, the County of Orange has a vegetation maintenance program which includes pesticide applications to manage, reduce, and control the growth of vegetation within the flood control channels. Although the wetland habitat adjacent to the Warner Avenue Bridge would be directly impacted by the Proposed Project (due to the excavation of the upstream constriction), the project would be designed to result in no net loss of wetlands with the incorporation of compensatory mitigation (refer to *Appendix M – Conceptual Mitigation Plan*). The conceptual mitigation strategy for this project has been designed with input and cooperation with environmental stakeholders, including USFWS, EPA, National Oceanic and Atmospheric Administration, CCC, State Lands Commission, CDFW, and County of Orange.

The Proposed Project would not be increasing the amount of storm flow reaching Outer Bolsa Bay, but a larger volume of freshwater would be reaching Outer Bolsa Bay in a shorter period of time. The Proposed Project includes increasing the span of the Warner Avenue Bridge which allows storm flows that are reaching Outer Bolsa Bay faster to exit the bay quicker, thereby reducing residence time of freshwater within Outer Bolsa Bay from existing conditions. This indicates that there would be no conversion of habitat types within Outer Bolsa Bay, since the Proposed Project would be reducing residence time of freshwater within Outer Bolsa Bay over existing conditions. Modeling of the velocity hydrograph within Outer Bolsa Bay indicates that the Proposed Project does not significantly increase velocities above existing conditions. For example, under the mean higher high water (MHHW) tide condition and 100-year storm event (i.e., the maximum expected increase in velocity that should only occur during hundred year storm events), the existing condition velocity is 1.55 feet/second (ft/sec) whereas the with-project condition velocity is 2.45 ft/sec; an increase of less than 1.0 ft/sec over the existing condition. Similarly, under the mean low water (MLW) tide condition and 100-year storm event, the existing condition velocity is 2.8 ft/sec whereas the with-project condition velocity is 3.65 ft/sec; an increase of less than 1.0 ft/sec over the existing condition. Since the with-project condition velocity does not increase significantly over the existing condition, impacts to existing habitat within Outer Bolsa Bay due to scouring are not expected.

Although construction will occur within EFH, the quality of fish habitat is not consistent along the entire channel. Based on underwater surveys conducted in 2019, no eelgrass was observed within the footprint of project impacts (Anghera and Ecomarine 2019); however, eelgrass is known to occur within the BCER Full Tidal Basin and Huntington Harbour, which may result in the potential for indirect impacts to eelgrass. Based on previous surveys of eelgrass within Huntington Harbour (Merkel and Associates, Inc. 2013 and CRM 2013), it was assumed that approximately 1.7 acres of eelgrass located at the downstream end of C02 Reach 23 could be indirectly impacted by the Proposed Project. Indirect impacts would be due to upstream channel modifications resulting in increased flow velocities downstream that are above existing condition flow velocities. Water velocity plays an important role in determining where eelgrass can grow (Koch 2001, de Boer 2007). However, eelgrass critical velocity threshold are difficult to determine and very few studies have reported these thresholds. Fonseca et al. (1983) found that maximum velocity thresholds for eelgrass appear to range between 3.94 and 4.92 feet per second (ft/sec). Referring to Table 8, existing velocities 800 feet downstream of Edinger Avenue Bridge (i.e., C02 Reach 23) during a 100-year storm event at MHHW and MLW are already at or above maximum velocity thresholds for eelgrass, yet the species has been observed in this area as recently as 2013. The with-project condition would increase velocities 800 feet downstream of Edinger Avenue Bridge during a 100-year storm event at MHHW and MLW significantly above the existing condition velocities and the maximum velocity thresholds for eelgrass. Although the eelgrass habitat located at the downstream end of C02 Reach 23 could potentially be indirectly impacted by the Proposed Project, the project would be designed to result in no net loss of

eelgrass with the incorporation of compensatory mitigation (refer to *Appendix M – Conceptual Mitigation Plan*). The conceptual mitigation strategy for this project has been designed with input and cooperation with environmental stakeholders, including USFWS, EPA, National Oceanic and Atmospheric Administration, CCC, State Lands Commission, CDFW, and County of Orange.

Ecological values of the BCER would not be directly affected by the Proposed Project and indirect impacts are not expected to be substantial with mitigation measures incorporated. The construction would be temporary and would create channels with a greater capacity, which would improve water circulation and water quality and provide a benefit to fish.

Table 8: Construction Phases for Reach 21 (LPP).

Condition	Tide	Velocity (ft/sec)		
		Location		
		800 ft downstream Edinger Ave. Bridge		
		LDB ^a	Middle ^b	RDB ^c
Existing	MHHW	4.4	5.8	4.4
	MLW	7.0	9.7	5.2
With-Project	MHHW	5.1	6.3	4.7
	MLW	8.0	8.8	4.6

^a refers to left descending bank (LDB)

^b refers to middle of channel

^c refers to right descending bank (RDB)

The furthest coastal extent of C05 Reach 1 is at the Outer Harbor at Bolsa Chica Wetlands and is connected to the Pacific Ocean. The furthest coastal extent of C02 Reach 23 is at the Edinger Avenue/Sunset Bay East Bridge. These two reaches will remain soft bottom with sheet pile walls installed on either side of the channel where there are currently earthen walls. Tidal influence in C05 extends approximately 1.2 miles upstream from Outer Bolsa Bay within the coastal zone and the tidal influence continues upstream and gradually diminishes for approximately 1.3 miles. Tidal influence in C02 extends approximately 2 miles upstream from Huntington Harbour. The Project proposes to dewater sections of the subject channels by having the sectioned work areas temporarily cut off from water flow, cleared, and then water would be pumped around in a pipe for all reaches that will be lined with concrete. For C05 Reach 1 and C02 Reach 23, water will be allowed to flow through the reaches during construction. In these two reaches, coffer dams will block off water flow to one side of the channel at a time and water would continue to flow through on the other side of the channel.

A variety of nearshore fishes are known to swim into Bolsa Chica Wetlands and are expected in the lower reaches of the C05 and C02 channels. Existing channel reaches that are concrete lined are considered low quality habitat and the Proposed Project would not result in a substantial, adverse impact to EFH in these reaches. Modifications of the concrete-lined reaches of the tidal portions of the channels would have minimal impact to EFH. Because the subject channel reaches have concrete sides and bottoms, they typically do not support wetlands habitat to provide substantial sources of food and/or cover for marine fishes. Only marine species that are tolerant of freshwater would be expected in areas at the farther upstream reach of the tidal influence. Channel reaches beyond the tidal influence in these channels would not be expected to support marine fishes at all. The concrete-lined reaches are expected to experience fluctuating salinity, provide no shelter and few food resources, and a low-quality habitat.

No Pacific Salmon EFH, Habitat Areas of Particular Concern (HAPC), or EFH Areas (EFHA) Protected from Fishing were identified within the vicinity of the Proposed Project area. Additionally, EFH for Pacific Highly Migratory Species (PHMS) is located approximately 1 mile off the coast; therefore, these species are not anticipated to be within the vicinity of the Proposed Project area and would not be impacted by this alternative.

The only potential substantial adverse impact to EFH would be in the event an accident occurred from equipment working in one of these concrete channel reaches, and that accident led to a major fuel spill that polluted quality EFH habitat downstream of these reaches. Standard Best Management Practices (BMP) accepted by the Santa Ana Regional Water Quality Control Board would be implemented to avoid degrading water quality. These BMPs include procedures to avoid leaks and spills and to contain and clean up contaminants in the unlikely event that a spill does occur. Impacts to EFH also would be minimized because the channel would be dewatered during maintenance activities or water would be routed around equipment. Because the equipment will not be working in the wet, the chances of contaminants from a spill or leak entering channel waters is remote. During dewatering, a biologist shall monitor activities to avoid and/or minimize impacts to any fish that may occur on site during construction by relocating native fish, as practicable. With implementation of standard BMPs and biological monitoring, impacts to fish and degradation of higher quality EFH downstream of the concrete channels will be avoided and/or minimized.

Feasible mitigation measures developed for the potential project impacts are identified in Appendix M – Conceptual Mitigation Plan, of the EIS/EIR for the Proposed Project. The Conceptual Mitigation Plan includes mitigation measures for unavoidable losses of and adverse effects on environmentally sensitive habitat, including Coastal Act-defined wetlands, riparian habitat, and sensitive upland habitat.

Sections 30234, 30234.5, 30235 and 30237 are not applicable to this Proposed Project as it does not include any activities involving or affecting commercial fishing, recreational boating, or altering the natural shoreline. The Proposed Project is consistent with Sections 30230 through 30233 and 30236 and is consistent with Article 4.

5.5 ARTICLE 5 – LAND RESOURCES (SECTIONS 30240 – 30244)

This Proposed Project consists of nonstructural measures, improving earthen/riprap trapezoidal channels by lining them with concrete, increasing the span of Warner Avenue Bridge, and replacing the tide gates on Reach 1 of C05. Removal of impediments to flow could include removal of vegetation, sediment and other debris from the channels that could be restricting flow. The nonstructural measure would have no impact to cultural resources since no construction would occur.

There are four sensitive vegetation communities with the potential to occur within the Proposed Project site - Southern Coastal Marsh, Southern Dune Scrub, Southern Foredunes, and Southern Cottonwood Willow Riparian Forest. None of these sensitive vegetation communities are present within the impact footprints where construction would occur; therefore, there are no anticipated impacts to sensitive vegetation communities. The Bolsa Chica Ecological Reserve may have Southern Coastal Marsh present, but increasing the span of Warner Avenue Bridge and the replacement of the tide gates on C05 with an access bridge would not disturb this habitat.

Modifications to the channels and the replacement of the tide gates on C05 with an access bridge are not expected to have any impacts to cultural resources. Results of the 2006 records and literature search showed no previously recorded National Register of Historic Places (NRHP) listed or eligible properties

within one-half mile of C02 or C04. This was also true for the majority of C05 and C06, except for Reach 18 of C06 and Reach 1 of C05. For Reach 18 of C06, there is an historical site within the Golf Course at Mile Square Park (CA-ORA-1151H). For Reach 1 of C05 there is one historical site (CA-ORA-78/H) and two prehistoric sites (CA-ORA-83 and CA-ORA-84/289). For these two reaches, Reach 18 is not included in the Proposed Project and construction activities for Reach 1 of C05 would occur within the channel rights-of-way and would not occur on the Bolsa Chica Mesa where the historical and prehistoric sites are located. Therefore, no impacts to cultural resources are expected due to channel improvement construction or tide gate reconstruction. However, formal consultation with the State Historic Preservation Officer under Section 106 still needs to occur.

Modification of the flood control channels within the C02/C04 system would involve a resource fifty years of age, and therefore requires compliance with Section 106 of the National Historic Preservation Act, and the obligation to consider effects to properties eligible for listing in the National Register of Historic Places.

In terms of its public benefit and economic infusion, the Westminster Flood Control Channels have been no less impactful than other regional water management systems such as the Los Angeles River, a property identified as eligible for listing in the National Register of Historic Places. Existing evaluation guidelines in fact confirm the channels are a potentially eligible type of historic water conveyance infrastructure. Under the area of significance conservation, the series of canals embody the themes of flood control and water management supporting vital agricultural and industrial economies, as well as residential infrastructure. When completed by the Orange County Flood Control District, the channels were a successful government remedy that fully realized the county's public water service and conservation goals. Potential National Register of Historic Places eligibility under this criterion is therefore supported during the period of significance 1953-1963.

The Westminster Flood Control channels have not been shown to represent the important life work of a recognized individual and is therefore ineligible under this criterion. From the perspective of engineering, the trapezoidal earthen and concrete lined ditches are ubiquitous and undistinguished structures, and are nearly as prevalent on the southern California landscape as highways and roads. Because the form and engineering design of channels have changed little throughout the past century, the Westminster system does not project an outward temporal association with a particular era and therefore lacks National Register of Historic Places eligibility under this criterion.

Notwithstanding clear historical association with the area of significance, conservation, the system does not meet the majority of essential aspects of integrity. Although the general design (i.e., trapezoidal or rectangular profile) remains, materials and workmanship have been altered in places with the application of concrete to previously earthen ditches, and the installation of sheet pile fortifications. The heavily urbanized area through which the channels pass has also dramatically changed the channel's historic backdrop (i.e., setting, feeling, and association), as the majority of buildings and structures are contemporary and no longer evoke the period of significance.

This non-eligibility assessment of the C02/C04 and C05/C06 channels is consistent with the findings of a 2010 National Register evaluation of one section of the Westminster Flood Control Channels, the C05 Channel. The assessment for which the California SHPO concurred, found the C05 portion of the overall system not eligible for listing in the National Register of Historic Places. Overall, due to the ineligibility of the C02/C04 and C05/C06 channels for listing in the National Register of Historic Places, the modification of the channels would have no direct impact to a historical resource.

Increasing the span of the Warner Avenue Bridge is not expected to have any impacts to cultural resources. The Warner Avenue Bridge is not eligible for listing in the National Register of Historic Places; therefore, the modification of the bridge would not cause a substantial direct or indirect adverse change to a historical resource.

Prior to the initiation of Proposed Project related ground disturbing activities, USACE would have a fully executed Memorandum of Agreement (MOA) with the SHPO in place. The MOA would address the development and implementation of processes for identification and evaluation of cultural resources. Specific mitigation measures would be developed to address any adverse effects on historic properties in coordination with the SHPO.

Although the Proposed Project is located adjacent to existing lands used for farming by the Naval Weapons Station near C02 Reach 23, this land use is not designated as agricultural farmland. Sections 30241 through 30243 are not applicable to this Proposed Project as it does not include any activities involving any agricultural land or timberlands. The Proposed Project is consistent with Sections 302240 and 30244 and is consistent with Article 5.

5.6 ARTICLE 6 – DEVELOPMENT (SECTIONS 30250 – 30255)

The reaches closest to the Pacific Ocean provide scenic coastal views that would be maintained and protected at the completion of the Proposed Project. Removal of impediments to flow could include removal of vegetation, sediment and other debris from the channels that could be restricting flow and that may be considered a visual nuisance to some members of the public. The removal of debris from the channel would improve the existing visual character of the site, thereby having a beneficial impact. Debris removal would not affect a scenic vista, substantially damage scenic resources, or create any new sources of light or glare. The removal of vegetation from the channels is not expected to substantially degrade the existing visual character of the site. The channels are characterized by riprap/earthen or concrete structures, algae growths, and tufts of vegetation growing from sedimentation deposits. Vegetation growing within the channels are considered seasonal wetlands that are scoured away during the rainy season. The removal of vegetation from the channels would not affect a scenic vista, substantially damage scenic resources, or create any new sources of light or glare.

Construction activities associated with the flood control channel modifications would not be expected to substantially impact a scenic vista. Scenic vistas provide visual access or panoramic views to a large geographic area. The field of view from a vista location can be wide and extend into the distance. The Huntington Beach (City of Huntington Beach 2017), Westminster (PlaceWorks and Fehr & Peers Transportation Consultants 2016), Garden Grove (City of Garden Grove 2008) and County of Orange (OCPW 2005) General Plans were reviewed for the presence of scenic vistas within the vicinity of the Proposed Project. No scenic vistas were specifically mentioned in any of the general plans. Therefore, neither the removal of vegetation from the channels nor the modification of the channels would affect a scenic vista, substantially damage scenic resources, or create any new sources of light or glare.

Increasing the span of Warner Avenue Bridge and removal of the constriction upstream of the bridge would not be expected to substantially impact a scenic vista. Both the Huntington Beach (City of Huntington Beach 2017) and County of Orange (OCPW 2005) General Plans were reviewed for the presence of scenic vistas within the vicinity of the Proposed Project. Although no scenic vistas were specifically mentioned in either general plan, Huntington Harbour to the north, Bolsa Chica Ecological Reserve to the south, and the Pacific Ocean to the west may all be considered open spaces with scenic

views. Visitors to the Bolsa Chica Ecological Reserve that utilize the north parking lot by the Bolsa Chica Conservancy, at the southeast corner of the intersection of Warner Avenue with the Pacific Coast Highway, would be within 100 feet of the construction activities occurring at Warner Avenue Bridge. However, visitors at the north parking lot viewing the Bolsa Chica Ecological Reserve would be looking south and not at the bridge which is located northeast from the parking lot. Visitors at the north parking lot looking east towards the Bolsa Chica Mesa could have their view impaired during construction activities if they are looking directly east; however, views looking south east towards the mesa would not be impaired during construction. Visitors at scenic overlook #1 (Figure 3) would be more than approximately 600 feet away from the construction activities at Warner Avenue Bridge. If visitors were to look north towards the bridge, their view of Huntington Harbour may be slightly impacted, although the distance of the scenic overlook from Huntington Harbour would already limit views. Views of the Bolsa Chica Ecological Reserve south of scenic overlook #1 and west towards the Pacific Ocean would not be impaired during construction. The remaining scenic overlooks (Figure 3) are more than approximately 1,500 feet away from the construction activities at Warner Avenue Bridge, therefore, due to the distance it is unlikely views would be impaired.



Figure 3: Location of Scenic Overlooks within the Bolsa Chica Ecological Reserve

The Proposed Project is a flood risk management project designed to reduce flooding caused by overtopping of the C05/C06 and C02/C04 channel systems. Specifically, it aims to reduce the risk of flood damages to structures and infrastructure; reduce life-safety risk associated with overbank flooding; reduce the risk of downstream flood damages; and incorporate recreation features where compatible with flood risk management alternatives in the Westminster watershed.

Sections 30250, 20252, and 302254.5 are not applicable to this Proposed Project as it does not include any new residential, commercial, or industrial development, mass transit, or sewage plant. The Proposed Project is consistent with Sections 30251, 30253, 30254 and 30255 and is consistent with Article 6.

5.7 ARTICLE 7 – INDUSTRIAL DEVELOPMENT (SECTIONS 30260 – 30265.5)

This article is not applicable to the Proposed Project.

SECTION 6.0 – COMMITMENTS

The Corps' Planning Modernization initiative resulted in the development of SMART Planning Processes. The streamlined process utilizes risk informed decision making to make decisions earlier in the study process, using best available information and professional judgment.

The engineering work completed for this report is at a conceptual or feasibility level. Therefore, significant uncertainties remain in the plans as currently outlined in the main report. Due to schedule and budget constraints, minimal field data were obtained during the feasibility phase, and minimal engineering analysis of the recommended measures was completed. Instead, technical experts were called upon to determine whether recommended measures were viable features that could be designed and constructed. The following commitments are activities that the USACE would conduct if the project proceeds to the USACE's Preconstruction Engineering and Design (PED) phase. During the PED phase, detailed designs and additional studies would be carried out to confirm assumptions that were made during the feasibility phase of the project.

- (1) Coastal Act Wetland Delineation. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, a wetland delineation report identifying Coastal Act wetlands located in the project area, including but not limited to, the Bolsa Chica Channel, East Garden Grove Wintersburg Channel, Outer Bolsa Bay, and the Warner Avenue Bridge area. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (2) Final Impact Calculations. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, a report providing the final calculations for the estimated temporary and permanent project-related impacts to wetland habitat, mudflats, eelgrass, and environmentally sensitive upland habitat adjacent to the Warner Avenue Bridge and/or bluff edges east of Outer Bolsa Bay. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (3) Final Mitigation and Monitoring Plans. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final mitigation and monitoring plans for unavoidable project impacts to coastal resources, including wetlands, mudflats, eelgrass, and environmentally sensitive upland habitat. Plans will include, but not be limited to, a revised eelgrass mitigation plan consistent with the California Eelgrass Mitigation Policy, revised mitigation plans for impacts to California least tern foraging, and plans for fish habitat improvements in Reach 1 of the East Garden Grove Wintersburg Channel. Mitigation and monitoring plans will include provisions for adaptive management measures (refer to Appendix M – Conceptual Mitigation Strategy of the main report) given the length of time that will exist between Coastal Commission action on CD-0008-19 and project implementation, the length of the construction time period, and the length of time between completion of construction and significant flood/stormflow events that hold the potential to adversely affect coastal resources and trigger mitigation requirements. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.
- (4) Final Plans for Trash and Debris Collection. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final plans for trash and debris collection

systems in the modified control channels to minimize the amount of trash and debris entering Anaheim Bay, Outer Bolsa Bay, the Muted Tidal Pocket, and the Bolsa Chica Ecological Reserve. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.

- (5) Final Mitigation Plans for Public Access Impacts. Prior to the start of project construction, the USACE will submit to the Coastal Commission, for its review, final mitigation plans for temporary and permanent impacts to public access at the Warner Avenue Bridge, the pedestrian walk bridge parallel to the Warner Avenue Bridge, and the bridge over the culverts between Outer and Inner Bolsa Bay and over the tide gates at the terminus of the East Garden Grove Wintersburg Channel. The submittal will include final plans for improvements to and/or replacement of structures that currently provide public access in this area. The USACE will carefully consider all comments by the Coastal Commission and will make all reasonable efforts to ensure that the concerns expressed are resolved and any necessary revisions incorporated prior to construction of a functional feature.

SECTION 7.0 – REFERENCES

- California State Lands Commission (CSLC), U. S. Fish and Wildlife Service, U. S. Army Corps of Engineers 2001 Final EIR/EIS for the Bolsa Chica Lowlands Restoration Project, Prepared by Chambers Group, Inc. April 2001.
- City of Garden Grove, 2008, Garden Grove General Plan. City of Garden Grove, Garden Grove, California. Available at: <https://ggcity.org/planning/general-plan>
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- Merkel & Associates, Inc., 2014, 2013 Southern California Bight Regional Eelgrass Surveys: Alamitos Bay, San Gabriel River, Anaheim Bay/Huntington Harbour, Agua Hedionda Lagoon, Batiquitos Lagoon, and San Dieguito Lagoon, Prepared for NOAA/National Marine Fisheries Resources Division.
- Orange County Public Works, 2005, County of Orange General Plan. Orange County, California. Available at: <http://www.ocpublicworks.com/ds/planning/generalplan>
- PlaceWorks and Fehr & Peers Transportation Consultants, 2016, Westminster General Plan Update. PlaceWorks and Fehr & Peers Transportation Consultants prepared for City of Westminster, Westminster, California. 205 pp. Available at: https://www.westminster-ca.gov/our_city/depts/cd/planning/general_plan/default.asp

APPENDIX A – SITE PHOTOGRAPHS



ATTACHMENT A – SITE PHOTOGRAPHS



Photo 1: Facing upstream on C05 Reach 1 from pedestrian bridge on the northeast end of the adjacent pocket marsh.



Photo 2: Facing downstream on C05 Reach 1 from pedestrian bridge on the northeast end of the adjacent pocket marsh (right) towards Bolsa Bay.



Photo 3: Facing downstream on C05 Reach 1 at the one-way tide gates towards Outer Bolsa Bay.



Photo 4: Facing towards Inner Bolsa Bay at culvert between Inner and Outer Bolsa Bay.



Photo 5: Facing southeast at bridge crossing to Marina High School toward Edinger Avenue across C04 Reach 20.



Photo 6: Facing upstream at diversion from C02 Reach 23 toward C02 (left fork) and C04 (right fork).