ESSENTIAL FISH HABITAT ASSESSMENT FOR MAINTENANCE OF EIGHT SOFT-BOTTOM CHANNELS LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

This assessment of Essential Fish Habitat (EFH) for the maintenance of eight soft bottom channels (SBC) in Los Angeles County (Figure 1) is provided in conformance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act, which set forth a number of new mandates for the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The councils, with assistance from NOAA Fisheries, are required to delineate essential fish habitat for all managed species. The Act defines EFH as "…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

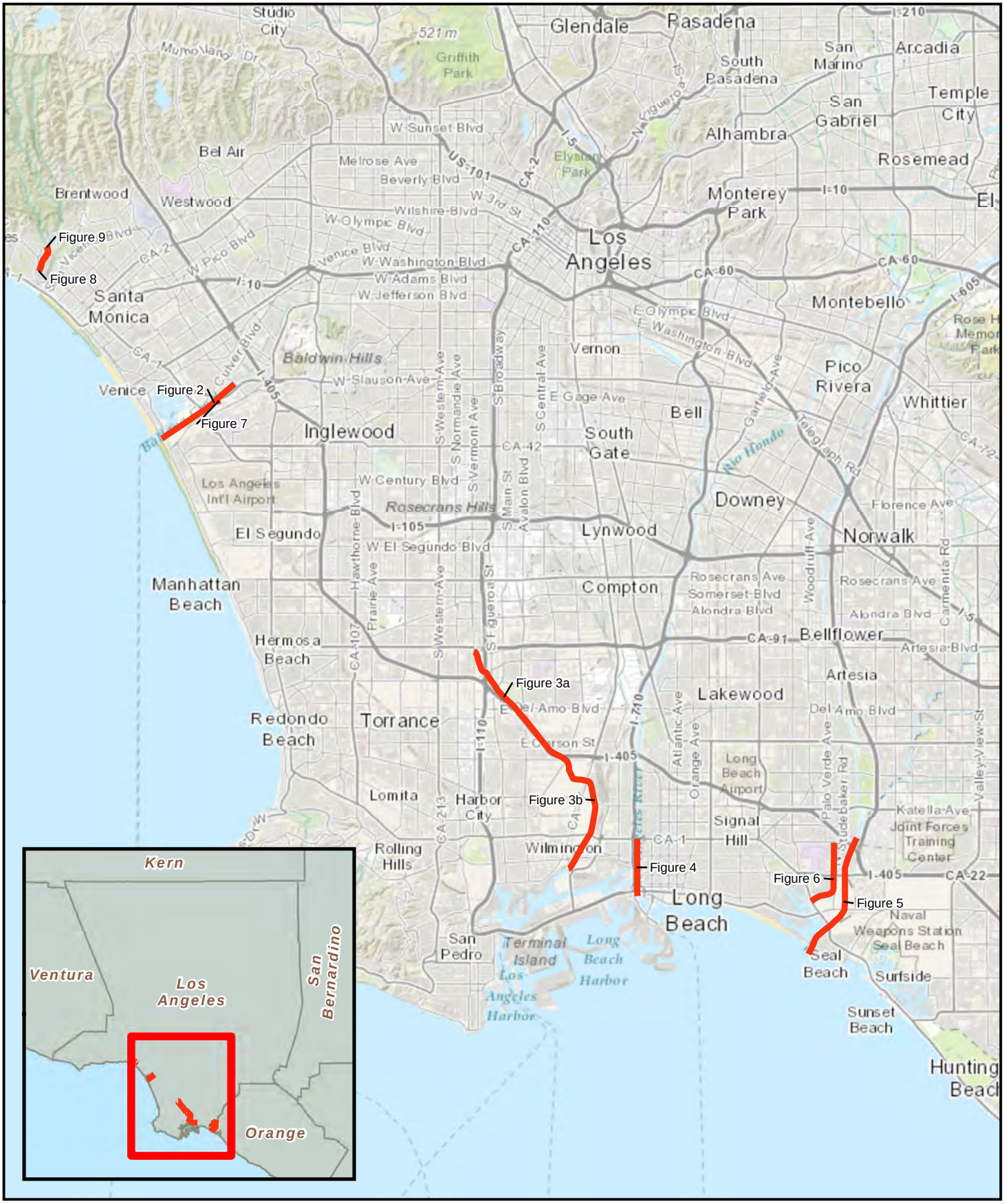
Federal action agencies that fund, permit, or carry out activities that may adversely impact EFH are required to consult with NOAA Fisheries regarding the potential effects of their actions on EFH and respond in writing to NOAA Fisheries' recommendations. This project requires a Clean Water Act Section 404 permit from the United States Army Corps of Engineers (USACE), which is a federal agency and the trigger for this EFH analysis. For the Pacific region, EFH has been identified for species covered by three fishery management plans under the auspices of the Pacific Fishery Management Council (Appendix A). The tidal portions of channels potentially provide habitat and spawning ground for species managed under the Coastal Pelagic Fishery Management Plan and the Pacific Groundfish Fishery Management Plan.

1.1 PROJECT OBJECTIVES AND NEED

The objective of the project is to maintain the SBC reaches in association with concrete-lined segments of the channels and debris basins that primarily function to control flood waters and prevent backup of debris and sediment that moves downstream during heavy rainfall events. High volumes of storm-water-carrying debris and sediment can cause considerable damage to downstream and upstream properties and result in the loss of human life. The dams, barriers, and debris basins also have spillways designed to allow removal of excess runoff water at safe velocities that will not damage the dam or downstream structures. Vegetation within the channels increases the collection of debris and requires periodic maintenance that involves removal of vegetation and debris from these SBC reaches. The Los Angeles County Flood Control District (LACFCD) maintenance activities in the SBC reaches and debris basins are conducted in conformance with permits issued by the CDFW, the USACE, and the RWQCB.

1.2 PROPOSED ACTION

The proposed action is to conduct ongoing maintenance as needed in eight soft bottom flood control channels maintained by the LACFCD. Maintenance activities may include dewatering, water diversion, sediment removal, stockpiling, installing concrete access ramps, geotechnical borings (< 1/10 acre), and minor in-kind repairs, as needed for each channel. Activities may also include clearing vegetation, debris, and brush growing on the channel right-of-way and vegetation growing out of channel weep holes, expansion joints, cold joints, construction joints, cracks, and riprap, as well as trimming and removing riparian vegetation necessary to reduce the impact on flow in the channel as future growth occurs. Where practicable, exotic vegetation may be cleared by using mechanical equipment. Table 1 lists the eight channel reaches that are the subject of this EFH assessment.



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Soft Bottom Channels

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Miles

Figure 1

Regional Vicinity Map

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Table 1: Reaches of Soft Bottom Channels

Channel	Reach	Upstream Limit	Downstream Limit	City	Linear Feet
Ballona Creek	112	Centinela Ave.	Pacific Ave.	Los Angeles	14,363
Dominguez Channel	113	Vermont Ave.	Henry Ford Ave.	Gardena	43,704
Los Angeles River	114	Pacific Coast Hwy.	600 feet downstream of Ocean Blvd.	Long Beach	9,025
San Gabriel River	115	1,750 ft upstream of I-405	Pacific Ocean	Long Beach	20,930
Los Cerritos Channel	116	Atherton St.	Pacific Coast Hwy.	Long Beach	11,525
Centinela Creek Channel	117	Beethoven St.	Ballona Creek confluence	Los Angeles	577
Rustic Channel	118	Rivas Canyon confluence south of Sunset Blvd.	10 ft upstream of Rustic Rd. bridge	Los Angeles	3,553
Rivas Channel	119	Sunset Blvd.	Rustic Canyon confluence south of Sunset Blvd.	Los Angeles	858

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SECTION 2.0 – METHODS

This EFH assessment is based on a review of available literature for the channels and a site inspection of each of the channel reaches.

2.1 LITERATURE REVIEW

The NOAA Fisheries Habitat Conservation Office provides an online interactive EFH map (http://www.habitat.noaa.gov/protection/efh/habitatmapper.html) to provide general data for potential EFH locations. Although this program provides EFH data, NOAA Fisheries requires a location-specific evaluation for EFH by a regional expert. The NOAA Fisheries EFH Mapper v3.0 was used to identify whether areas were considered as potential EFH, Habitat Areas of Particular Concern (HAPC), or EFH Areas Protected from Fishing (EFHA) for each reach discussed in the following sections. NOAA Fisheries EFH polygon data was overlaid onto an aerial background and compared to each of the Project reaches.

The California Department of Fish and Wildlife (CDFW) provides an online interactive marine habitats map (MarineBIOS, https://map.dfg.ca.gov/marine/) that includes general data for the location and extent of estuaries. MarineBIOS was used to identify the potential extent where brackish waters occur. Similar to EFH data, MarineBIOS polygon data was overlaid onto an aerial background and compared to each of the Project reaches. No modifications were made to the agency data for either NOAA Fisheries or CDFW. In addition to agency data mapping, available literature was reviewed for each of the reaches to analyze the potential for each reach to provide EFH.

2.2 FIELD ASSESSMENT

The field assessment was performed by Chambers Group, Inc. (Chambers Group) marine biologist Lisa Louie and project biologist Rebecca Alvidrez on June 8 and 9, 2014, and Lisa Louie and Noel Davis on July 24, 2014. For reaches where the downstream limit was the ocean, the emphasis of the site inspection was to identify the location of the upstream portion of the channel where EFH ended. The downstream end of these reaches at the ocean would provide higher quality EFH. In reaches where the downstream limit was not located at the ocean, the emphasis of the site inspection was on the downstream portion of the channel because the portion closest to ocean waters would be expected to have the highest value to marine fishes. Multiple sections of the channels were surveyed, where pertinent and practicable. Representative photographs were taken of each channel (Appendix B – Site Photographs).

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SECTION 3.0 – ESSENTIAL FISH HABITAT

The following subsections present the findings of the EFH assessment conducted for each soft bottom channel reach. Site photos of the eight channels are included in Appendix B.

3.1 BALLONA CREEK (REACH 112)

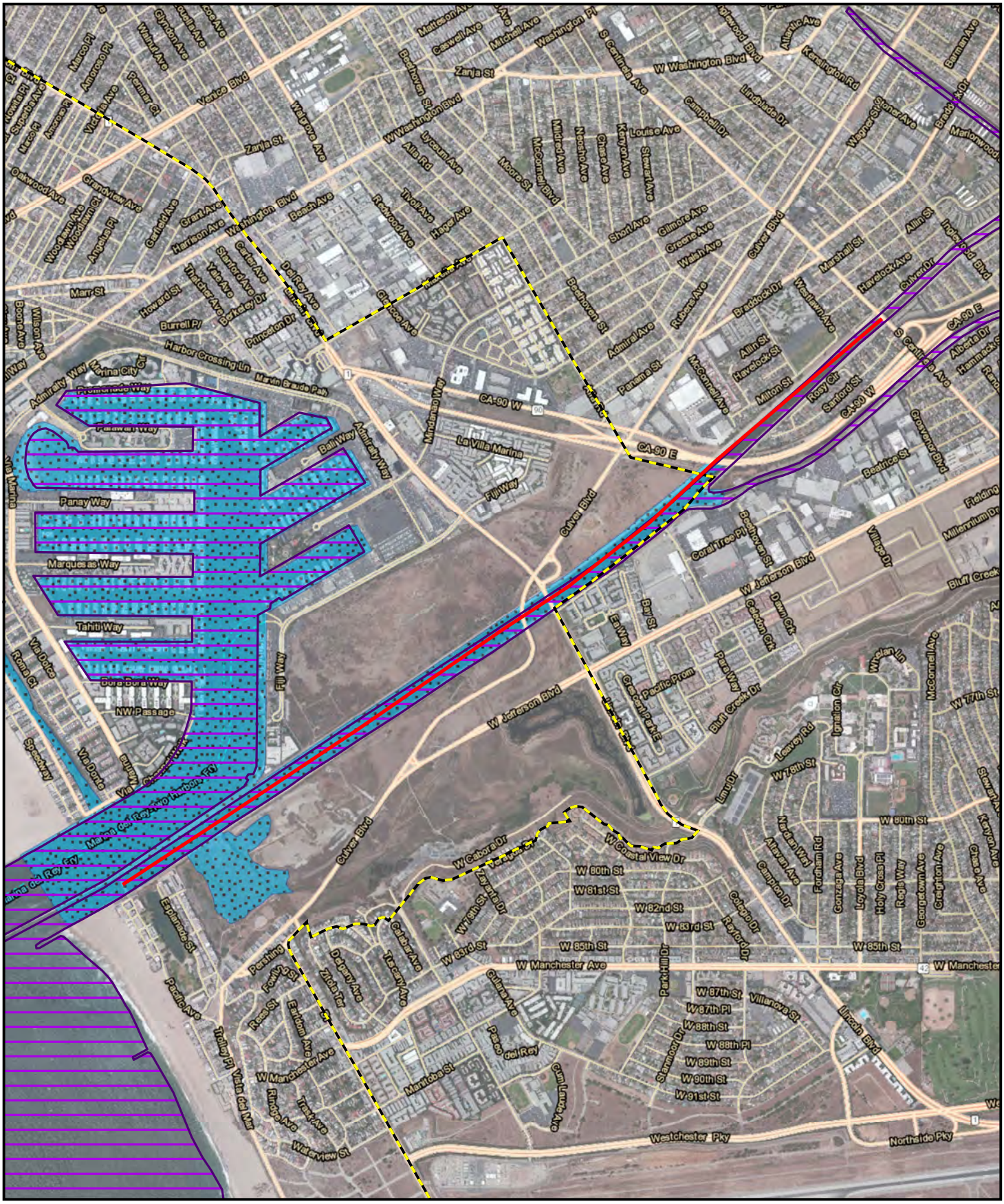
Ballona Creek discharges to the ocean adjacent to the Marina del Rey entrance channel approximately 1,500 feet from the downstream end of the reach. The downstream portion of Reach 112 of Ballona Creek is within the coastal zone boundary. The EFH Mapper v3.0 identified the Ballona Creek Channel upstream to nearly Overland Avenue as EFH for Groundfish for all lifestages and identified the reach as an HAPC (Estuaries). No EFHA was identified for this reach. MarineBIOS identifies the portion of Ballona Creek downstream of the Marina Freeway (CA-90) as marine habitat (Estuaries).

Figure 2 shows the subject reach of Ballona Creek (Reach 112) between Centinela Avenue and the Pacific Avenue Bridge. The United States Army Corps of Engineers (USACE) determined that tidal influence in Ballona Creek extended to approximately the Inglewood Boulevard Bridge (USACE 2003). The Inglewood Boulevard bridge is about 0.3 mile upstream of Centinela Avenue; therefore, the entire subject reach is tidal.

Photo 1 shows Ballona Creek facing downstream from Centinela Avenue. The subject reach of Ballona Creek between Centinela Avenue and Lincoln Boulevard has a soft bottom and concrete slopes with riprap lining the bottom edges. Unidentified fish fry were observed in the upstream portion of the reach. Similar to the findings by Bonterra Psomas (2013), Chambers Group observed a narrow band of disturbed freshwater marsh dominated by nonnative ruderal plants mixed with southern cattail (*Typha dominguez*), southern bulrush (*Schoenoplectus californicus*), and cocklebur (*Xanthium strumarium*) lining the upstream portions of the subject reach. Photo 2 faces the Ballona Creek channel bottom downstream of Centinela Avenue.

Photo 3 shows Ballona Creek near the Marina Freeway, facing downstream toward Lincoln Boulevard. Downstream of Lincoln Boulevard, the channel becomes more marine. The banks are composed of riprap with small stones. Saltwater marsh vegetation occurs along the banks from just downstream of Lincoln Boulevard to just upstream of the Pacific Avenue bridge. The saltwater marsh is dominated by seablite (*Sueda* sp.) and pickleweed (*Salicornia* sp.). Bonterra Psomas (2013) identified the salt marsh habitat in this area as disturbed saltwater marsh vegetation because it is intermixed with relatively high amounts of non-native ruderal (weedy) and exotic (or invasive) ornamental species. The sparse saltmarsh is at or above the ordinary high water mark and only would provide habitat for marine fishes during high water events. However, the riprap, which extends into the channel, provides shelter for marine and estuarine fishes. Photo 4 shows salt water marsh vegetation in the Lower Ballona Channel upstream of Pacific Avenue. Photo 5 shows the downstream end of Reach 112 at the Pacific Avenue Bridge facing towards the ocean.

In 2001, Chambers Group sampled fishes and benthic invertebrates in Ballona Creek between Lincoln Boulevard and the Marina Freeway (Chambers Group 2001), within the upstream portion of the subject reach. Two taxa of invertebrates were collected – oligochaete worm and fly larvae. Chambers Group measured salinity, which was relatively high (10 to 25 parts per thousand [ppt]) during high tide and nearly fresh (3 to 5 ppt) during the low tide. The impoverishment of the benthic community is probably



Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- Marine Habitats: Estuary (CDFW)
  https://map.dfg.ca.gov/marine/
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 800 1,600 3,200

Feet

Figure 2
Ballona Creek (Reach 112)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
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related to the fluctuating salinity. Oligochaete worms occur in both fresh and salt water. Fly larvae, on the other hand, occur only in freshwater; however, the brackishness of the water and the fact that salinity may rise during incoming tides probably prevents a freshwater insect fauna from becoming established.

Five species of fish were collected in 2001. These species were topsmelt (*Atherinops affinis*), California killifish (*Fundulus parvipinnis*), longjaw mudsucker (*Gillichthys mirabilis*), yellowfin goby (*Acanthogobius flavimanus*), and striped mullet (*Mugil cephalis*). The fishes collected were all typical estuarine species that are adapted to fluctuating salinity. These five fish species, as well as other fishes tolerant of fluctuating salinity, would be expected to swim upstream of the Marina Freeway at least as far as the Centinela Avenue Bridge.

The lower portion of the Ballona Channel is connected to channels in the Ballona Wetlands via two culverts. The culverts provide a passageway for marine and estuarine fishes into the wetlands and for fishes to migrate from the wetlands into the channel and the Pacific Ocean. Southern California wetlands are nurseries for fish species such as California halibut (*Paralichthys californicus*) and, because of their high productivity, produce large numbers of forage fishes, such as topsmelt, that constitute a prey base for larger marine species. Photo 6 shows a tidal channel in the Ballona Wetlands; this tidal channel is connected to Reach 112 by a culvert.

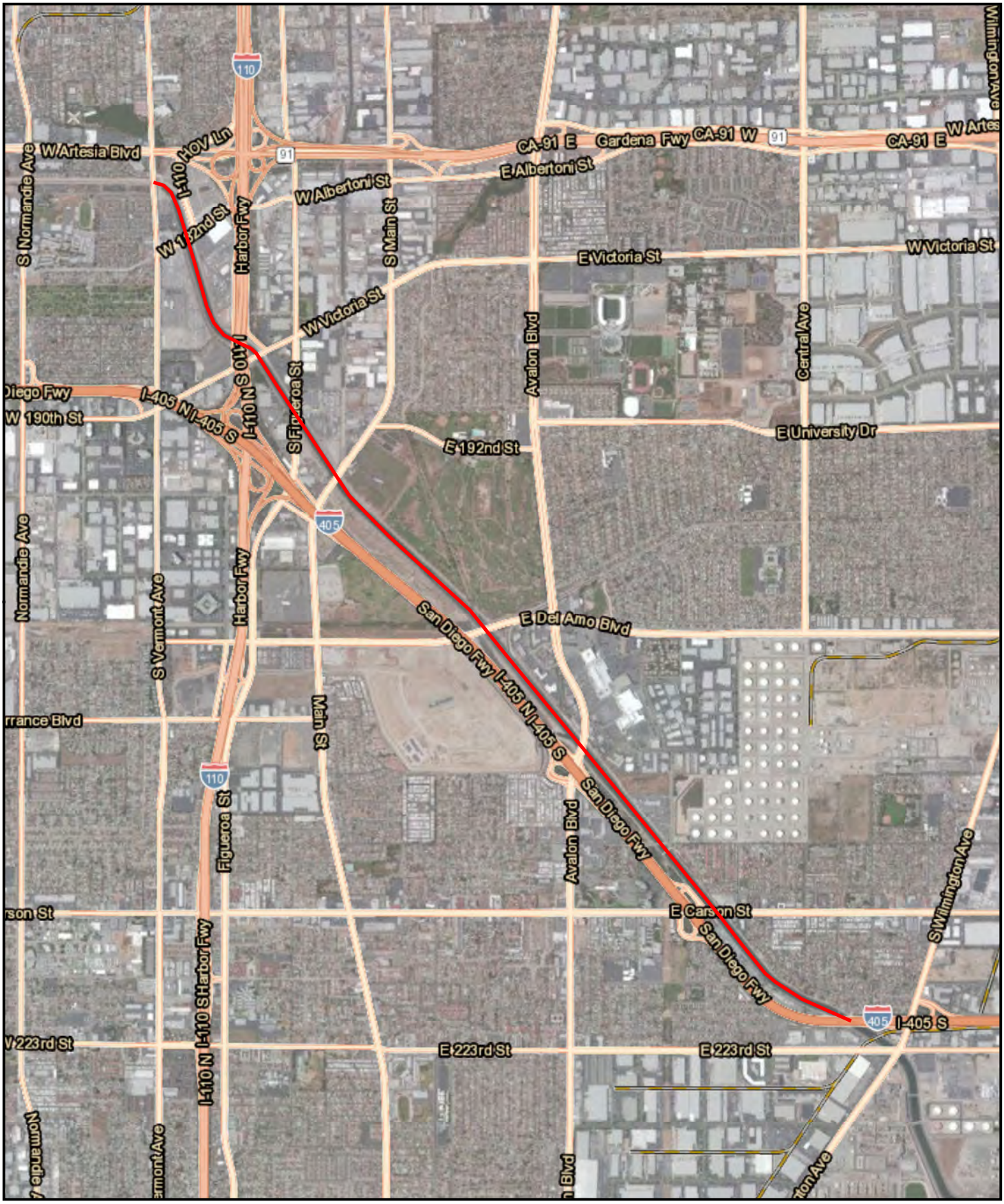
A study of fishes in the downstream end of the Ballona Channel by otter trawl in July and October of 1990 and January of 1991 (Allen 1991) identified 14 taxa of marine and estuarine fishes in these surveys. The most abundant species collected by Allen (1991) in the Ballona Channel was the cheekspot goby (*Ilypnuis gilberti*) followed by California halibut, barred sand bass (*Paralabrax nebulifer*), and arrow goby (*Clevelandia ios*).

The riprap at the bottom of the banks of Ballona Creek is comprised of small rocks and provides potential shelter for fishes. The freshwater and saltmarsh wetlands along the sides of the channel mostly are at or above the ordinary high water mark and only would provide habitat for fishes during high water events. Furthermore, the presence of freshwater plants indicates an increasing freshwater influence in relation to distance from the ocean. Because of the fluctuating and predominately low salinity and the low diversity of invertebrate prey, the upstream portions of the subject reach would be considered to provide low quality habitat for marine fishes.

3.2 DOMINGUEZ CHANNEL (REACH 113)

The Dominguez Channel discharges to the East Basin of the Los Angeles Harbor. The downstream portion of Reach 113 is within the coastal zone boundary. The EFH Mapper v3.0 identified only the downstream end of the Dominguez Channel surrounding the Henry Ford Avenue bridge as EFH for Groundfish for all lifestages and identified the reach as an HAPC (Estuaries). No EFHA was identified for this reach. MarineBIOS does not identify any marine habitat within this reach.

Figure 3a and 3b shows the extent of the soft bottom reach of the Dominguez Channel (Reach 113). The reach has a soft bottom (compacted clay) in the lower approximately 8.6 miles from the project reach. The tidal portion of the Dominguez Channel extends to approximately Vermont Avenue (Lyons and Birosik 2007). The entire project reach is tidal.



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Soft Bottom Channels

EFH (NOAA)
http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

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0 1,000 2,000 4,000
Feet

Figure 3a
Dominguez Channel - Upstream
(Reach 113)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
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- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- Marine Habitats: Estuary (CDFW)
  https://map.dfg.ca.gov/marine/
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 875 1,750 3,500
Feet

Figure 3b

Dominguez Channel - Downstream (Reach 113)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
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Photos 7 and 8 show the upstream limit of the reach where the concrete-lined channel converts to soft bottom with reinforced riprap side slopes within the Dominguez Channel (Reach 113). Unidentified fish fry were observed within this portion of the reach. Birds, including great blue heron, great egret, and seagulls, also were observed to forage (stand and wait) in this portion of the subject reach. Biofouling species were observed on bridge pilings and riprap along the waterline along the entire subject reach.

Sparse to no vegetation was observed in the upper portions of the reach (Photo 9) with vegetation patches occurring occasionally along the reach, including disturbed pickleweed mats near the Del Amo and Cason bridges (Photo 10). Pickleweed (*Salicornia depressa*) occurs in coastal salt marshes and alkaline flats, demonstrating at least a partially saline environment in the upstream portions of the reach. At the downstream limit, intertidal invertebrates were observed on the riprap on both banks upstream of the Henry Ford Avenue Bridge (Photos 11 and 12).

A school of silversides was observed within Reach 113 near the Henry Ford Avenue bridge. Previous studies have shown white croaker (*Genyonemus lineatus*), queenfish (*Seriphus politus*), white surfperch (*Phanerodon furcatus*), northern anchovy (*Engraulis mordax*), California tonguefish (*Symphurus atricauda*), speckled sanddab (*Citharichthys stigmaeus*), shiner surfperch (*Cymatoqaster aggregata*), (*Lepidogobis lepidus*), black surfperch (*Embiotica jacksoni*), and walleye surfperch (*Hyperprosopon argenteum*) are common in the Los Angeles and Long Beach harbors (Horn and Allen 1981). Studies in the San Pedro Bay and Los Angeles Harbor identified arrow goby, sand bass, black rockfish (*Sebastes melanops*), California halibut, diamond turbot (*Hypsopsetta guttulata*), jacksmelt, kelp bass (*Paralabrax clathratus*), leopard shark (*Triakis semifasciatis*), northern anchovy, shiner perch (*Cymatogaster aggregata*), topsmelt, white croaker, white seabass (*Atractoscion nobilis*), and white seaperch as common species that may use the bay environment as spawning area, nursery area, and adult habitat (Azzato et al. 2004). Common fish species within the Los Angeles Harbor that potentially may use soft bottom habitat within the lower portion of Reach 113 include white croaker and northern anchovy, as well as juveniles of other bottom dwelling species, such as California halibut.

3.3 LOS ANGELES RIVER (REACH 114)

The Los Angeles River discharges to the ocean at Queensway Bay in Long Beach Harbor approximately 0.5 mile downstream of Reach 114. Reach 114 has a soft bottom with concrete-lined sides. The portion of the reach downstream of Anaheim Street occurs within the coastal zone boundary. The EFH Mapper v3.0 identified the Los Angeles River Channel as EFH for Groundfish for all lifestages downstream of Anaheim Avenue and identified the reach as an HAPC (Estuaries). No EFHA was identified for this reach. MarineBIOS identifies the channel downstream of Pacific Coast Highway as marine habitat (Estuaries).

Figure 4 shows the extent of the soft bottom channel of the Los Angeles River (Reach 114). Reach 114 has a soft bottom with riprap banks. The upstream reach of the tidal prism of the Los Angeles River is approximately at Willow Street. Therefore, the entire subject reach is tidal.

The Los Angeles River transitions from concrete-lined channel to soft bottom at Willow Street. The upstream portion of Reach 114 has vegetation lining the banks (Photo 13), which included disturbed California bulrush marsh, but the subject reach was dominated by nonnative invasive species, particularly giant reed (*Arundo donax*). The downstream portion of the channel has little to no vegetation (Photos 14 and 15). Shorebirds, including brown pelicans (*Pelecanus occidentalis*), snowy egrets (*Egretta thula*), and seagulls, were observed foraging (stand and wait) on the berm located immediately downstream of Anaheim Street (Photo 14). It appears the berm has a low flow cut in it with

a meandering low-flow channel downstream of the berm. Most fish would not be expected to swim past the berm; however, fish may swim past the berm with a rising tide. Barnacles were observed on the rocks at the waterline along the lower portion of the reach (Photo 16). A brown pelican was observed actively foraging in the channel near the Ocean Blvd. bridge.

Abundant fishes that have been collected at the mouth of the Los Angeles River include northern anchovy, cheekspot goby, and arrow goby (MBC 1994). Previous studies have shown white croaker, queenfish, white surfperch, northern anchovy, California tonguefish, speckled sanddab, shiner surfperch, bay goby, black surfperch, and walleye surfperch (*Hyperprosopon argenteum*) are common in the Los Angeles and Long Beach harbors (Horn and Allen 1981). Common fish species within the Los Angeles Harbor that potentially use soft bottom habitat within the lower portion of the subject reach include white croaker and northern anchovy, as well as juveniles of other bottom dwelling species, such as Pacific sanddab (*Citharichthys sordidus*) and California halibut.

3.4 SAN GABRIEL RIVER (REACH 115)

The San Gabriel River discharges to the Pacific Ocean adjacent to Alamitos Bay. The downstream portion of Reach 115 is within the coastal zone boundary. The EFH Mapper v3.0 identified approximately 1.9 miles of the downstream portion of this reach of the Los Angeles River Channel as EFH for Groundfish for all lifestages and identified the reach as an HAPC (Estuaries). No EFHA was identified for this reach. MarineBIOS also identifies approximately 1.9 miles of the downstream portion of this reach as marine habitat (Estuaries).

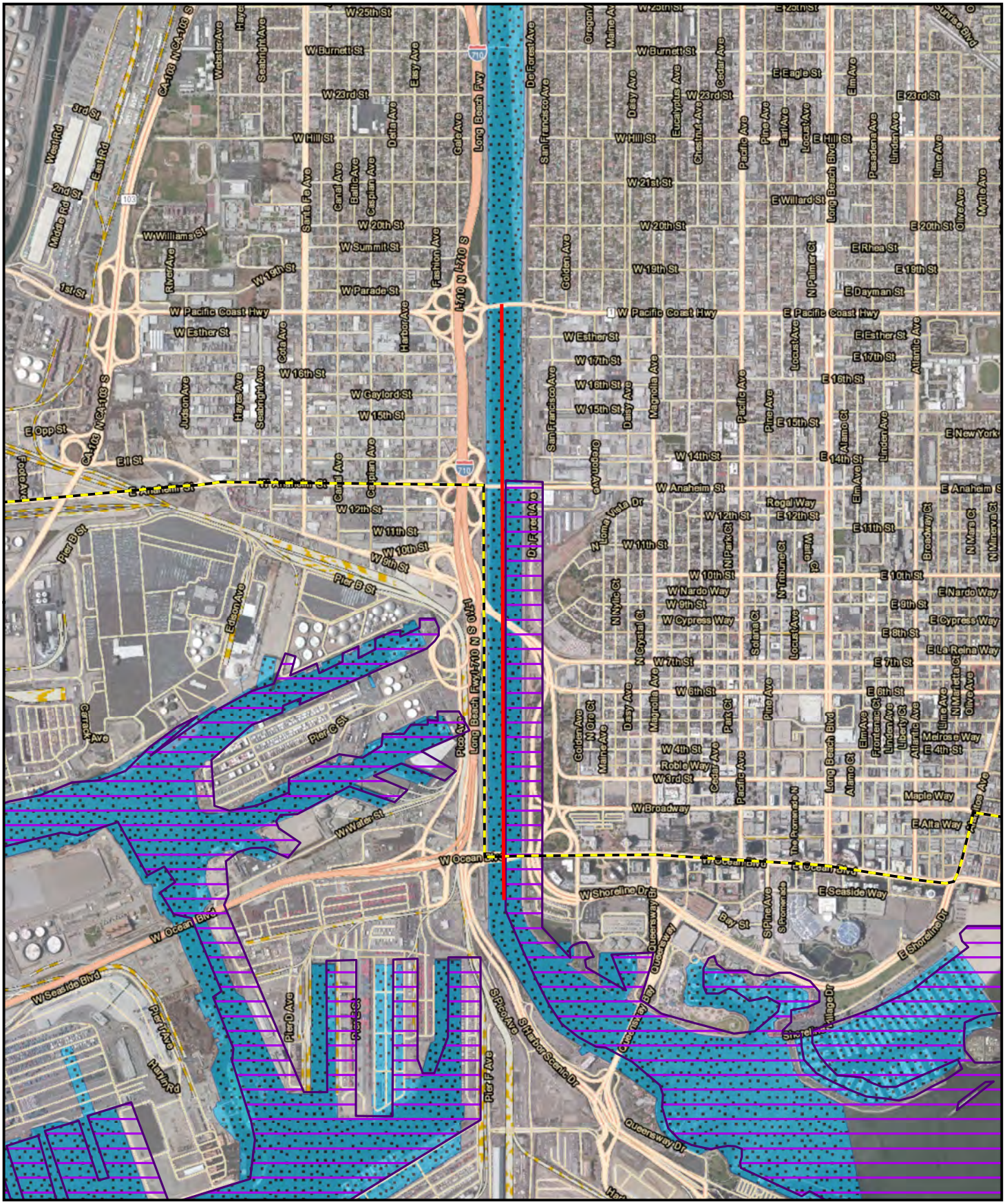
Figure 5 shows the extent of soft bottom channel of the San Gabriel River (Reach 115). The San Gabriel river transitions from a concrete-lined channel to a soft bottom with riprap side slopes at the upstream limit of Reach 115 (Photo 17). The tidal portion of the San Gabriel River extends to just below the confluence with Coyote Creek (LARWQCB 2013). The entire subject reach is tidal.

Photo 18 shows patches of vegetation along Reach 115 below the 7th Street bridge. The San Gabriel River has patches of wetlands vegetation on its banks, including disturbed California bulrush marsh and escaped ornamental species. Multiple stormwater drainages occur within the subject reach between the 7th Street and 2nd Street bridges. Fish, presumably mullet, were observed jumping out of the water in the subject reach upstream and downstream of the 7th Street bridge. Little to no vegetation occurs on the banks downstream of the 2nd Street bridge (Photo 19).

At the mouth of the San Gabriel River, wave action and coarse sediment result in an infaunal community with low abundance and low species richness. The riprap banks of the lower reach support an impoverished rocky intertidal community. Common fish species in the reach between the 7th Street bridge and the river mouth include topsmelt, anchovies (*Engraulis mordax* and *Anchoa* spp.), California killifish, and tilapia (*Tilapia* spp.) (MBC 2000). Fish species common in San Pedro Bay downstream of the subject reach are white croaker, queenfish, northern anchovy, California halibut, spotted turbot (*Pleuronichthys ritteri*), and speckled sanddab (MBC 2000).

3.5 LOS CERRITOS CHANNEL (REACH 116)

The Los Cerritos Channel (Reach 116) is located in a highly urbanized area of east Long Beach and discharges to ocean waters in Alamitos Bay just upstream from Pacific Coast Highway. The downstream



Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- Marine Habitats: Estuary (CDFW)
  https://map.dfg.ca.gov/marine/
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 800 1,600 3,200

Feet

Figure 4

Los Angeles River
(Reach 114)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
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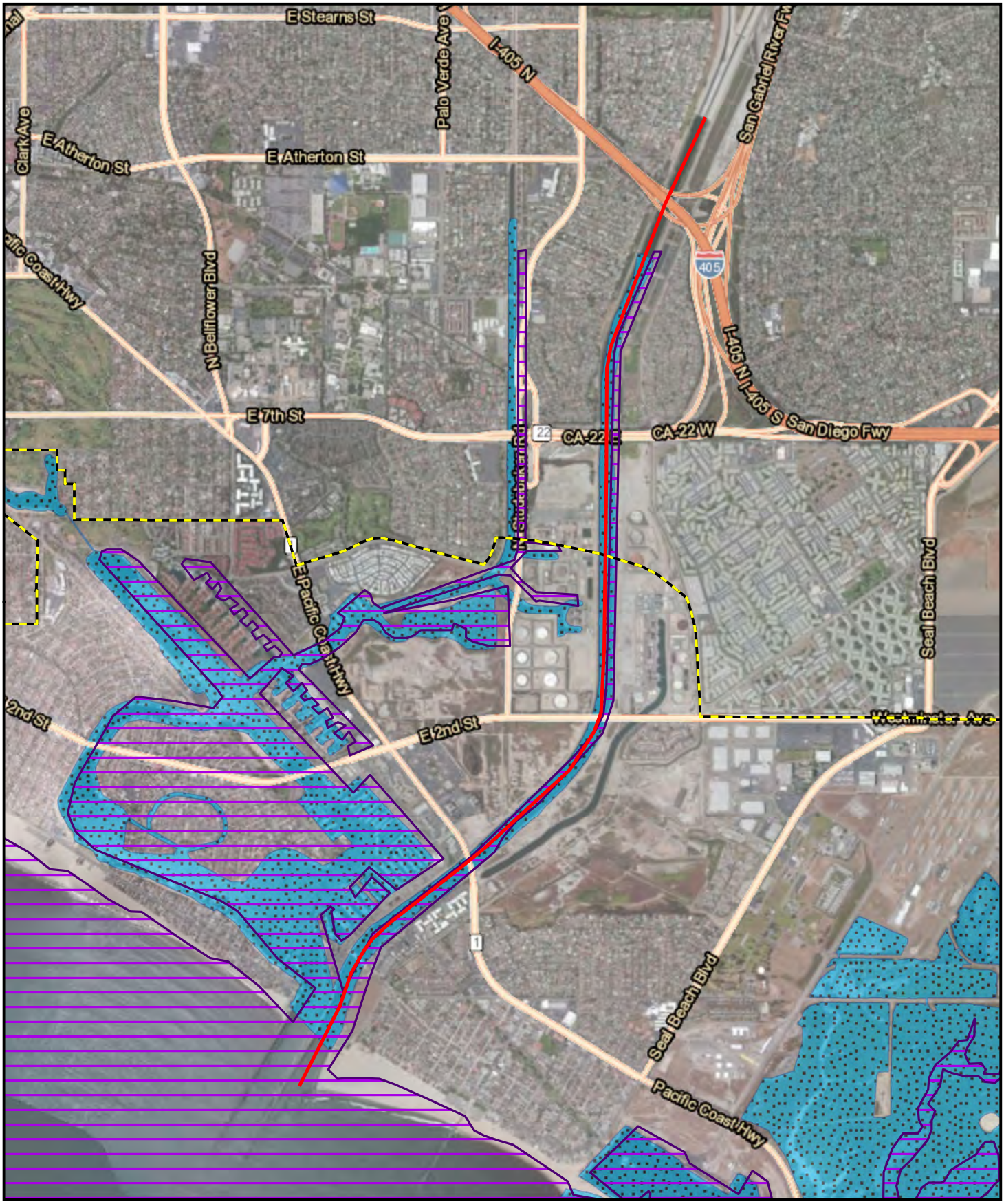

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- Marine Habitats: Estuary (CDFW) https://map.dfg.ca.gov/marine/
- EFH (NOAA) http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 1,000 2,000 4,000

Feet

Figure 5

San Gabriel River (Reach 115)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
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portion of the reach occurs within the coastal zone boundary. The NOAA Fisheries EFH Mapper v3.0 identified the downstream 1.8 miles of the Los Cerritos Channel as EFH for Groundfish for all lifestages and identified the reach as an HAPC (Estuaries). No EFHA was identified for this reach. MarineBIOS identifies the downstream 1.9 miles of this reach as marine habitat (Estuaries).

Figure 6 shows the soft bottom portion of Los Cerritos Channel from Pacific Coast Highway to Atherton Street, where the channel continues upstream as a concrete-lined channel. Downstream of Atherton Street, the Los Cerritos Channel has riprap-embedded earthen banks and soft bottom occasionally covered with green algae (Photo 20). According to the Los Angeles Regional Water Quality Control Board (LARWQCB), the tidal portion of Los Cerritos Channel extends to approximately Anaheim Street, a little less than 0.5 mile downstream from Atherton Street (LARWQCB 2013). Side channels with freshwater input along this reach include Bouton Creek on the west bank above 7th Street, two channels on the east bank surrounding the intersection of Studebaker Road and Loynes Drive (Photo 21), and the Los Cerritos Wetlands on the southeast bank upstream of Pacific Coast Highway.

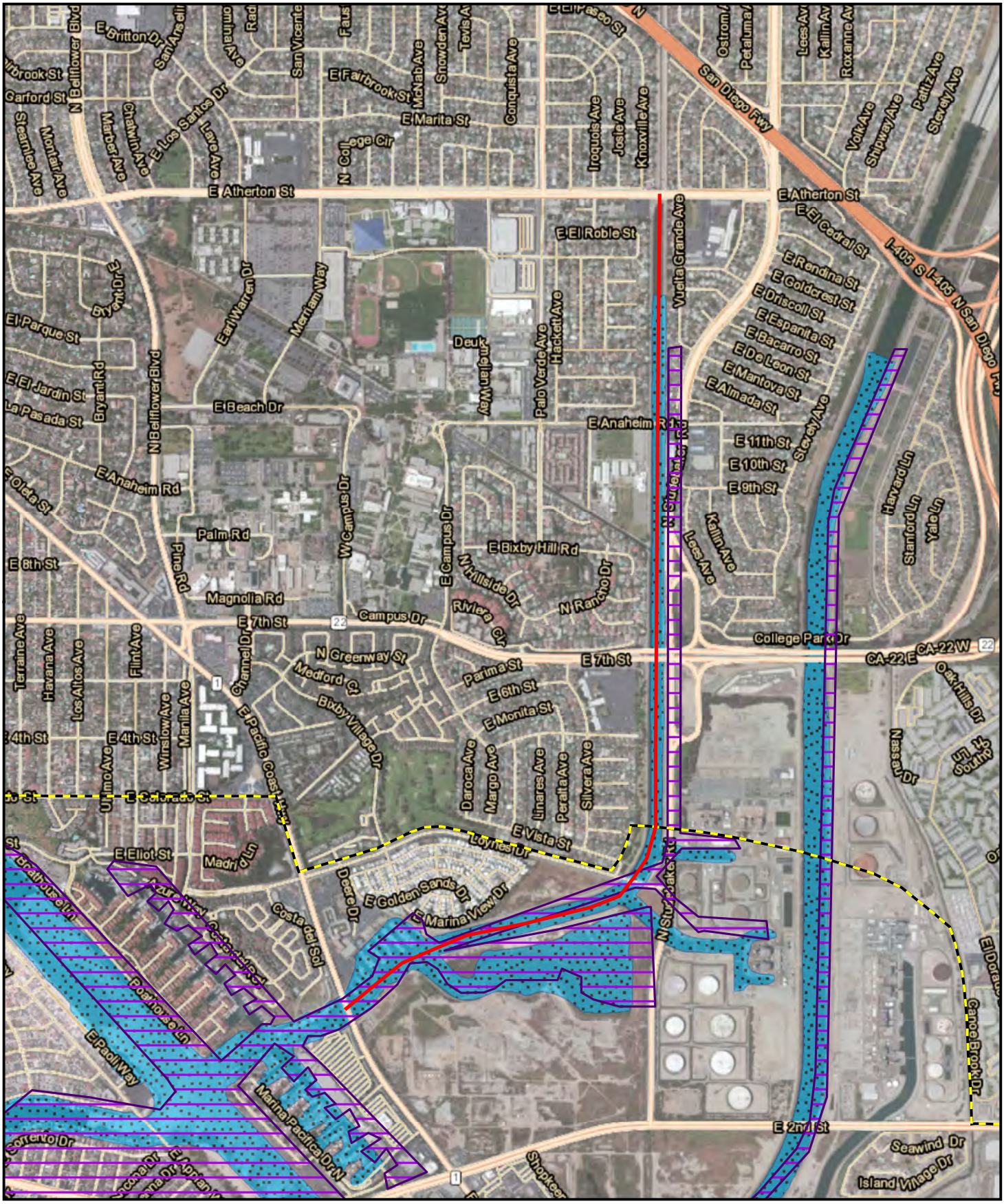
Mussels, barnacles, clams, and an occasional unidentified crab or fish fry were observed throughout the reach on or near the rocks at the waterline downstream of Anaheim Road (Photo 22) as well as on the pilings of the bridges crossing the subject reach. Because the mouth of the Los Cerritos Wetlands channel occurs within the lower portion of Reach 116, juvenile fish species that may use the wetland as a nursery ground would likely pass through the subject reach from Alamitos Bay. Fish species observed in the Los Cerritos Wetlands in August 2012 included arrow goby, bay pipe fish (*Syngnathus griseolineatus*), California killifish, round sting ray (*Urobatis haleri*), staghorn sculpin (*Leptocottus armatus*), striped mullet, and topsmelt (Tidal Influence 2012).

The downstream limit of the reach occurs at the Pacific Coast Highway bridge (Photo 23), which connects to the Marine Stadium and Alamitos Bay. Some fish found within these bay environments may be found within the lower portion of the subject reach. In addition to the fish species listed above, fish species found during a dive survey in the Marina basins and the main channels of Alamitos Bay and the Los Cerritos Channel in September 2007 included black perch, unidentified flatfish, and sand dabs.

Bottom-dwelling species may occur in the subject reach near the Pacific Coast Highway bridge, including various gobies (*Gobiidae*), California halibut, and diamond turbot. Other common fish species in Alamitos Bay, including sand bass, spotted sand bass (*P. maculatofasciatus*), northern anchovy, queenfish, white croaker, black croaker (*Cheilotrema saturnum*), yellowfin croaker (*Umbrina roncador*), shiner surfperch, black perch, white surf perch, sargo (*Anisotremus davidsoni*), halfmoon (*Medialuna californiensis*), and cryptic species (blennies and sculpins) (Coastal Resources Management, Inc. 2009), are less likely to be found in Reach 116, but also may be present within the downstream portion of the reach near the Pacific Coast Highway bridge. Of the three Pacific Groundfish FMP species reported within Alamitos Bay, the leopard shark, California sculpin, and *Sebastes* spp., only the leopard shark and sculpin would be expected to occur within the soft bottom habitat of the subject reach.

3.6 CENTINELA CREEK CHANNEL (REACH 117)

The Centinela Creek Channel (Reach 117) is a tributary to Ballona Creek and occurs at the confluence with Ballona Creek downstream of CA-90 and downstream of Reach 112. The Centinela Creek Channel (Reach 117) does not occur within the coastal zone boundary, but abuts the coastal zone. The EFH Mapper v3.0 identified the entire portion of this reach of Centinela Creek Channel as EFH for Groundfish



Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- Marine Habitats: Estuary (CDFW)
  https://map.dfg.ca.gov/marine/
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 600 1,200 2,400
Feet

Figure 6
Los Cerritos Channel (Reach 116)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
Print Date: 8/4/2014, Author: stondre

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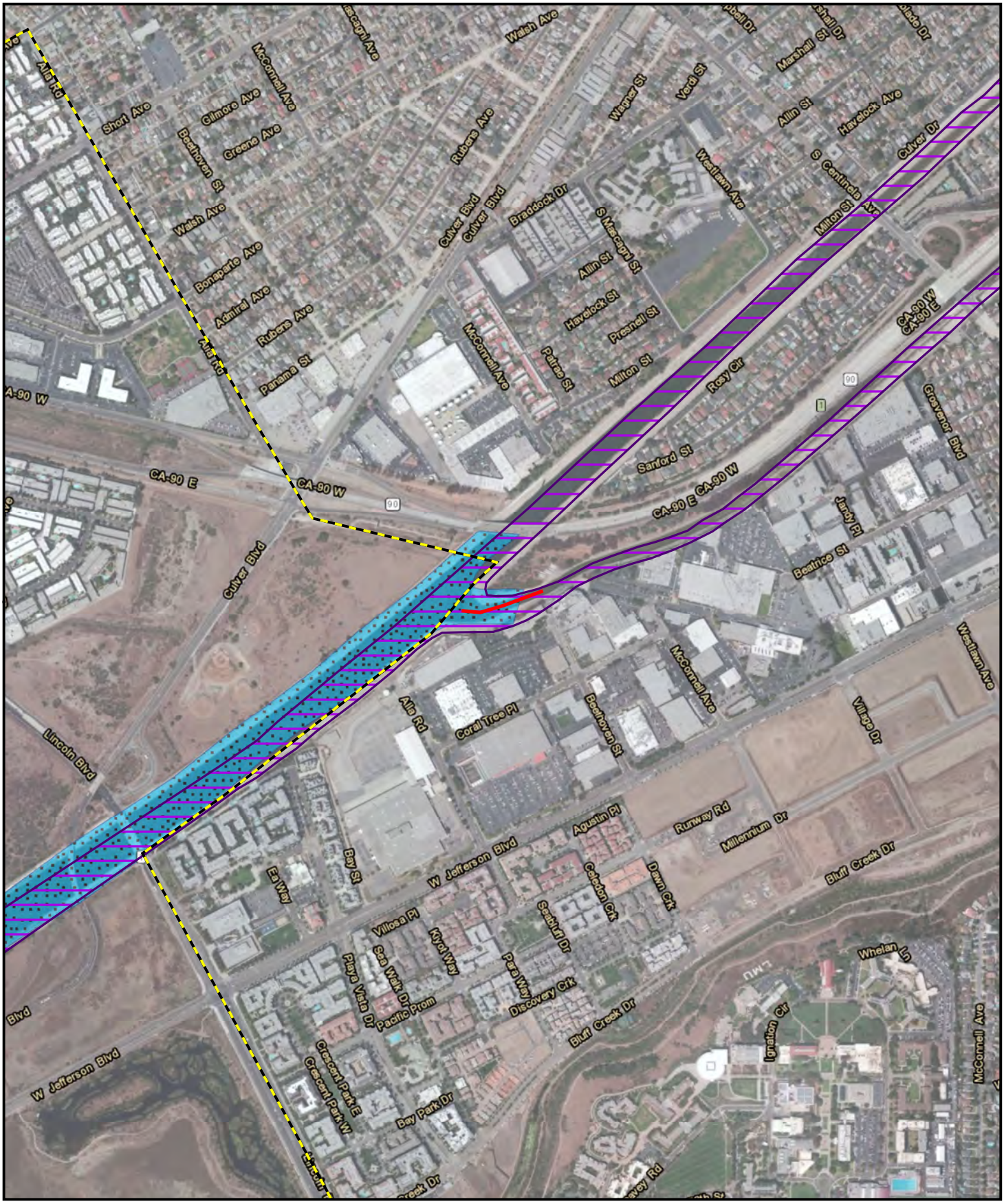

Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- Marine Habitats: Estuary (CDFW) https://map.dfg.ca.gov/marine/
- EFH (NOAA) http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 360 720 1,440

Feet

Figure 7

Centinela Creek Channel (Reach 117)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
Print Date: 8/4/2014, Author: stondre

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for all lifestages. No HAPCs or EFHA was identified for this reach. MarineBIOS identifies the majority of the downstream portion of this reach as marine habitat (Estuaries). The entire subject reach is tidal.

Photo 24 shows the Centinela Creek Channel upstream portion of the reach, and Photo 25 shows the downstream portion of the reach at the confluence with Ballona Creek. Green algae was observed on the channel bottom. Although Photo 25 shows the top of the water being pushed upstream by strong winds, the flow was heading downstream based on the observed movement of algae on the channel bottom. Reach 117 is dominated by nonnative ruderal vegetation. The nonnative mounding grass, seashore paspalum (*Paspalum vaginatum*), dominates the ruderal vegetation at this site. The mounding grass extends to an area greater than half the width of the channel at the confluence with Ballona Creek, narrowing the area of tidal flow into the channel. Upstream of Reach 117, Centinela Creek is a flood-control channel with a concrete-lined bottom and minimal vegetation.

As discussed above, the Ballona Creek Channel immediately downstream of Reach 117 was surveyed in 2001 (Chambers Group 2001), resulting in the collection of five species of fish: topsmelt, California killifish, longjaw mudsucker, yellowfin goby, and striped mullet. The salinity ranged from 10 to 25 ppt during high tide and 3 to 5 ppt during the low tide. The fishes collected were all typical estuarine species that are adapted to fluctuating salinity. The benthic community was impoverished, probably in relation to the fluctuating salinity. The rise in salinity during incoming tides probably prevents a freshwater insect fauna from becoming established.

The five fish species listed above, as well as other fishes tolerant of fluctuating salinity, would be expected to occur within the portion of the subject reach at the confluence with Ballona Creek (Photo 26). The freshwater wetlands along the sides of the channel may provide food and shelter for them. The presence of freshwater plants, however, indicates an increasing freshwater influence. Because of the fluctuating and predominately low salinity and the low diversity of invertebrate prey, the subject reach would be considered to provide low quality habitat for marine fishes.

3.7 RUSTIC CANYON CHANNEL (REACH 118)

Rustic Canyon Channel is a tributary to the Santa Monica Canyon Channel. The downstream end of this reach occurs approximately 0.6 mile upstream of Pacific Coast Highway. Approximately 235 feet of the downstream portion of Reach 118 occurs within the coastal zone boundary. The EFH Mapper v3.0 did not identify Rustic Canyon Channel as EFH, and identified HAPCs and no EFHA are identified. MarineBIOS did not identify Rustic Canyon Channel as marine habitat. The Santa Monica Canyon Channel experiences tidal flow up to approximately 93 feet upstream of Pacific Coast Highway, where it stops at a concrete lip. Rustic Canyon (Reach 118) lies upstream of this location and, therefore, is not considered tidal.

Figure 8 shows the soft bottom channel reach of the Rustic Canyon Channel (Reach 118) where it confluences with Rivas Canyon Channel (Reach 119). The project reach is located in a suburban area surrounded by private residences. The channel bottom was primarily dry with occasional pools and covered with leaf litter(Photo 27). Habitat in the Project area is composed primarily of Arroyo Willow Thickets and Disturbed Riparian Species with Escaped Ornamental Species. There is a steep concrete apron at the downstream end of the reach (Photo 28) with several concrete steps occurring throughout the reach (Photo 29). Due to its location outside of tidal influence, Rustic Canyon does not have the potential to provide EFH.

Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 400 800 1,600
Feet

Figure 8
Rustic Canyon Channel (Reach 118)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
Print Date: 8/4/2014, Author: stondre

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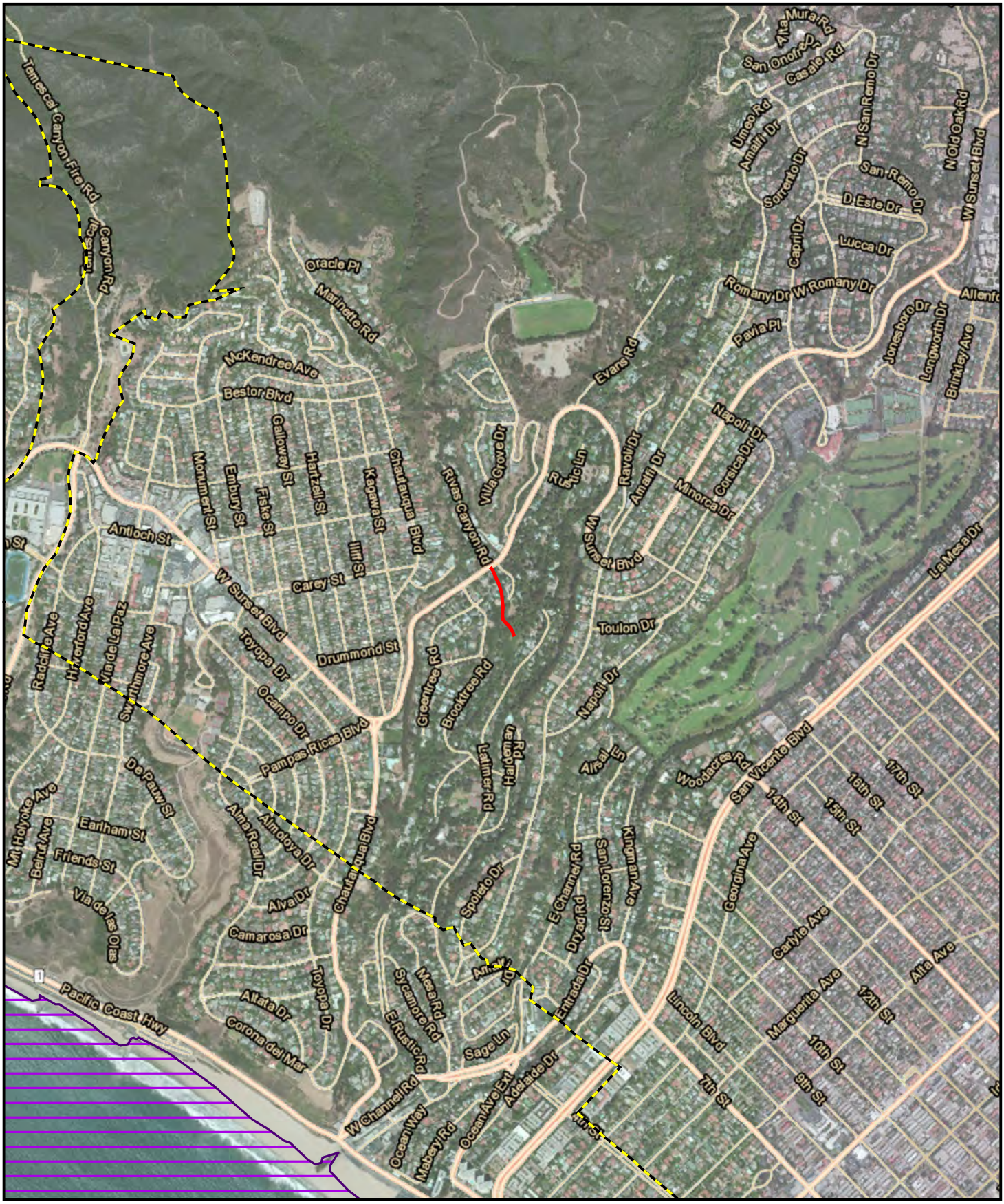
3.8 RIVAS CANYON CHANNEL (REACH 119)

Rivas Canyon Channel is a tributary to Rustic Canyon Channel. The downstream end of this reach occurs approximately 1.25 miles upstream of Pacific Coast Highway. It does not occur within the coastal zone boundary. The EFH Mapper v3.0 did not identify Rivas Canyon Channel as EFH, and no HAPCs and no EFHA are identified. MarineBIOS did not identify Rivas Canyon Channel as marine habitat. The Santa Monica Canyon Channel experiences tidal flow up to approximately 93 feet upstream of Pacific Coast Highway, where it stops at a concrete lip. Rivas Canyon (Reach 119) lies upstream of this location and, therefore, is not considered tidal.

Figure 9 shows the soft bottom channel reach of the Rivas Canyon Channel (Reach 119) where it confluences with Rustic Canyon Channel (Reach 118). The project reach is located in a highly developed area surrounded by private residences. The channel bottom is primarily dry with a small trickle of water observed at the confluence with Rustic Canyon. Habitat in the reach is composed primarily of red willow thickets, escaped ornamental species, ornamental landscaping, and developed vegetation communities (Photo 30). Due to its location outside of tidal influence, Rivas Canyon Channel does not have the potential to provide EFH.

3.9 ESSENTIAL FISH HABITAT SUMMARY

The six tidal channels are considered estuarine habitat and have soft bottom habitat with either concrete, riprap or reinforced riprap side slopes. Each of these six tidal reaches have sparse to no vegetation on the banks, except for an occasional small pocket of vegetation or small pools that may provide some cover or refuge. Each reach has freshwater input from stormwater drains or side channels, which would cause fluctuations in salinity, especially with increased distance from the ocean, as well as water quality. Each reach had varying levels of a biofouling community, with higher abundance in the downstream portions of each reach and in reaches with more hard structures in the water, such as bridge pilings, concrete walls, and riprap. Overall, habitat in these six tidal reaches is poor to low quality, except for the downstream limits of the reaches that occur at the ocean interface.



Legend

- Soft Bottom Channels
- Coastal Commission Zones (CAL TRANS)
- EFH (NOAA)
  http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

N

0 600 1,200 2,400
Feet

Figure 9
Rivas Canyon Channel (Reach 119)

20757 EFH SBC Fig2-9 Reach 112-119 Location Maps.Mxd
Print Date: 8/4/2014, Author: stondre

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SECTION 4.0 – MANAGED FISH SPECIES

A total of eight soft bottom channel reaches were reviewed for potential for EFH. The soft bottom channel portions of Rustic Canyon (Reach 118) and Rivas Canyon (Reach 119) are entirely above the tidal prism and are not expected to support any managed fish species. The remaining six soft bottom channels are tidal and provide potential estuarine habitat that may be used for spawning, breeding, feeding, or growth to maturity by managed fish species.

Centinela Creek (Reach 117) is tidal and provides estuarine habitat for various fishes. Because the downstream portion of this project reaches does not extend all the way to the ocean and the habitat for managed species is of poor quality (including fluctuating salinity, marginal availability of shelter, and marginal food resources), the only managed species that would be likely to occur are the northern anchovy and Pacific sardine (*Sardinops sagax*), which are managed under the Coastal Pelagic FMP. These fishes are often collected in estuarine waters and potentially could swim up to these reaches. Other species from the Coastal Pelagic and Pacific Groundfish FMPs either occur in deeper water, are associated with kelp or reef habitat, or their range does not extend as far south as southern California and are not expected to be affected by the proposed project.

Ballona Creek (Reach 112), Dominguez Channel (Reach 113), Los Angeles River (Reach 114), San Gabriel River (Reach 115) and Los Cerritos Channel (Reach 116) are tidal and may provide estuarine habitat to various fishes. The downstream portions of these project reaches extend all the way to the ocean into bay or ocean environments. The habitat within these reaches for managed species generally is of poor to low quality (including fluctuating salinity, marginal availability of shelter, and marginal food resources); however, the downstream limit of these reaches may exhibit characteristics of the bay environment, which would provide habitat for a greater number of species. The managed species under the Coastal Pelagic FMP that would be likely to occur within these three reaches are the northern anchovy and Pacific sardine. Additional managed species that could swim into the channels during high tides include Pacific mackerel (*Scomber japonicas*) and jack mackerel (*Trachurus symmetricus*), species managed under the Coastal Pelagic FMP that are common in nearshore ocean waters, but would not be expected to have a common occurrence within these estuarine habitats. Additionally, managed species under the Pacific Groundfish FMP at the downstream limits of these reaches may include leopard shark, spiny dogfish (*Squalus acanthias*), and California scorpionfish (*Scorpaena gutatta*). Because of a lack of quality habitat, the occurrence of any of these managed species in the channel would be transitory, and they would be expected to return to the ocean. Other species from the Coastal Pelagic and Pacific Groundfish FMPs either occur in deeper water, are associated with kelp or reef habitat, or their range does not extend as far south as southern California and are not expected to be affected by the proposed project.

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SECTION 5.0 – ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

5.1 POTENTIAL IMPACTS

Maintenance within Rustic Canyon (Reach 118) and Rivas Canyon (Reach 119) would not occur in tidal waters and would not affect marine fishes. Maintenance of the soft bottom reaches of tidal channels may have impacts to EFH in Ballona Creek (Reach 112), Dominguez Channel (Reach 113), Los Angeles River (Reach 114), San Gabriel River (Reach 115), Los Cerritos Channel (Reach 116), and Centinela Creek (Reach 117). Each reach provides a varying degree of food and cover for marine fishes, depending on the bank type and vegetation growth on the banks. However, since these channels have a strong freshwater influence, only marine species that are tolerant of freshwater would be able to live in them.

Potential impacts to EFH may include removal of potential cover or refuge utilized by juvenile and adult fish species through the removal of vegetation. Although the majority of vegetation present within the reaches is invasive and non-native and would not be considered high quality habitat, the vegetation provides the minimal cover available within these reaches.

If sediment is removed from any of the tidal reaches, disturbance of sediment may create temporary turbidity plumes, depending on the method of removal. Because a greater number of fish would be expected in the downstream portions of these reaches than upstream, turbidity would have a greater effect on the downstream portions than upstream portions. Turbidity in these reaches may have a temporary adverse effect on EFH for four species managed under the Coastal Pelagics FMP (northern anchovy, Pacific sardine, Pacific mackerel, jack mackerel) and three species under the Pacific Groundfish FMP (leopard shark, spiny dogfish, California scorpionfish). The turbidity plume would be localized in space and time and fishes would be expected to avoid areas of heavy turbidity. Once the sediment settles and turbidity decreases, fish would be expected to return to these areas. These species experience extensive natural turbidity from river run off during and following storms. Therefore, turbidity impacts to EFH for species managed under the Coastal Pelagics FMP would be adverse, but temporary.

A potential substantial adverse impact to EFH may occur in the event an accident from equipment working in one of these channel reaches were to occur and if that accident led to a major fuel spill that polluted quality EFH habitat downstream of these reaches. That impact can be avoided by the measures described in Section 5.2 below.

5.2 PROPOSED MEASURES TO AVOID, MINIMIZE, OR COMPENSATE FOR IMPACTS TO EFH

Standard Best Management Practices (BMPs) accepted by the LARWQCB 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. With implementation of standard BMPs, degradation of higher quality EFH downstream of these reaches will be avoided.

During vegetation removal, BMPs will be implemented to avoid having cuttings escape downstream. Impacts to EFH also would be minimized by diverting water to one side of the channel to maintain flows through the channel during maintenance activities from land-based equipment before dewatering and sediment removal. Because the equipment will not be working in the wet, the chances of contaminants from a spill or leak entering channel waters is remote. If dredging or land-based removal without water

diversion is proposed for sediment removal, standard BMPs to maintain turbidity levels acceptable to NOAA Fisheries will be implemented.

SECTION 6.0 – CONCLUSIONS

The proposed maintenance of eight soft bottom channels will occur in portions of channels that have no or minimal value to marine fishes. Adverse impacts of the proposed soft bottom channel maintenance projects to EFH for species managed under the Coastal Pelagics Fisheries Management Plan and Pacific Groundfish Fisheries Management Plan would be limited to the non-native vegetation removal and the temporary impacts of localized turbidity from sediment removal. With the implementation of BMPs and minimization measures, maintenance activities would avoid adversely affecting water quality in higher quality EFH downstream of the channels. Therefore, the proposed maintenance activities would not have a substantial adverse effect on EFH or federally managed species.

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APPENDIX A – FISHERY MANAGEMENT PLANS

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Appendix A: Fishery Management Plans and Managed Species or Species Complexes for the Pacific Region

PACIFIC FISHERY MANAGEMENT COUNCIL

COASTAL PELAGICS FISHERY MANAGEMENT PLAN

northern anchovy - *Engraulis mordax*
Pacific sardine - *Sardinops sagax*
Pacific (chub) mackerel - *Scomber japonicus*
jack mackerel - *Trachurus symmetricus*
market squid - *Loligo opalescens*

PACIFIC SALMON FISHERY MANAGEMENT PLAN

Chinook salmon - *Oncorhynchus tshawytscha*
Coho salmon - *Oncorhynchus kisutch*
pink salmon - *Oncorhynchus gorbuscha*

PACIFIC GROUNDFISH FISHERY MANAGEMENT PLAN

big skate - *Raja binoculata*
California skate - *Raja inornata*
leopard shark - *Triakis semifasciata*
longnose skate - *Raja rhina*
soupfin shark - *Galeorhinus zyopterus*
spiny dogfish - *Squalus acanthias*

ratfish - *Hydrolagus colliei*

finescale codling - *Antimora microlepis*

Pacific rattail - *Coryphaenoides acrolepis*

cabezon - *Scorpaenichthys marmoratus*
kelp greenling - *Hexagrammos decagrammus*
lingcod - *Ophiodon elongatus*
Pacific cod - *Gadus macrocephalus*
Pacific hake - *Merluccius productus*
sablefish - *Anoplopoma fimbria*

aurora rockfish - *Sebastes aurora*
bank rockfish - *Sebastes rufus*
black rockfish - *Sebastes melanops*
black-and-yellow rockfish - *Sebastes chrysomelas*
blackgill rockfish - *Sebastes melanostomus*
blue rockfish - *Sebastes mystinus*
bocaccio - *Sebastes paucispinis*
bronzespotted rockfish - *Sebastes gilli*
brown rockfish - *Sebastes auriculatus*
calico rockfish - *Sebastes dallii*
California scorpionfish - *Scorpaena gutatta*
canary rockfish - *Sebastes pinniger*
chilipepper - *Sebastes goodei*
China rockfish - *Sebastes nebulosus*
copper rockfish - *Sebastes caurinus*
cowcod - *Sebastes levis*
darkblotched rockfish - *Sebastes crameri*
dusky rockfish - *Sebastes ciliatus*
dwarf-red rockfish - *Sebastes rufinanus*
flag rockfish - *Sebastes rubrivinctus*
freckled rockfish - *Sebastes lentiginosus*
gopher rockfish - *Sebastes carnatus*
grass rockfish - *Sebastes rastrelliger*
greenblotched rockfish - *Sebastes rosenblatti*
greenspotted rockfish - *Sebastes chlorostictus*
greenstriped rockfish - *Sebastes elongatus*
halfbanded rockfish - *Sebastes semicinctus*
harlequin rockfish - *Sebastes variegatus*
honeycomb rockfish - *Sebastes umbrosus*
kelp rockfish - *Sebastes atrovirens*
longspine Thornyhead - *Sebastolobus altivelis*
Mexican rockfish - *Sebastes macdonaldi*
olive rockfish - *Sebastes serranoides*
pink rockfish - *Sebastes eos*
pinkrose rockfish - *Sebastes simulator*
pygmy rockfish - *Sebastes wilsoni*
Pacific ocean perch - *Sebastes alutus*
quillback rockfish - *Sebastes maliger*
redbanded rockfish - *Sebastes babcocki*
redstripe rockfish - *Sebastes proriger*
rosethorn rockfish - *Sebastes helvomaculatus*
rosy rockfish - *Sebastes rosaceus*
rougheye rockfish - *Sebastes aleutianus*
sharpchin rockfish - *Sebastes zacentrus*
shortbelly rockfish - *Sebastes jordani*
shortraker rockfish - *Sebastes borealis*
shortspine Thornyhead - *Sebastolobus alascanus*
silvergrey rockfish - *Sebastes brevispinis*
speckled rockfish - *Sebastes ovalis*
splitnose rockfish - *Sebastes diploproa*
squarespot rockfish - *Sebastes hopkinsi*
starry rockfish - *Sebastes constellatus*
stripetail rockfish - *Sebastes saxicola*
swordspine rockfish - *Sebastes ensifer*
tiger rockfish - *Sebastes nigrocinctus*
treefish - *Sebastes serriceps*
vermilion rockfish - *Sebastes miniatus*
widow rockfish - *Sebastes entomelas*
yelloweye rockfish - *Sebastes ruberrimus*
yellowmouth rockfish - *Sebastes reedi*
yellowtail rockfish - *Sebastes flavidus*

arrowtooth flounder - *Atheresthes stomias*
butter sole - *Isopsetta isolepis*
curlfin sole - *Pleuronichthys decurrens*
Dover sole - *Microstomus pacificus*
English sole - *Pleuronectes vetulus*
flathead sole - *Hippoglossoides elassodon*
Pacific sanddab - *Citharichthys sordidus*
Petrale sole - *Eopsetta jordani*
rex sole - *Glyptocephalus zachirus*
rock sole - *Lepidopsetta bilineata*
sand sole - *Psettichthys melanostictus*
starry flounder - *Platichthys stellatus*

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APPENDIX B – SITE PHOTOGRAPHS

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Appendix B: Site Photographs

	**Photo 1:** Ballona Creek (Reach 112) facing downstream from the northwest bank immediately downstream of Centinela Avenue. Riprap is present at the bottom of the concrete slopes.
	**Photo 2:** Facing the channel bottom of Ballona Creek (Reach 112) downstream of Centinela Avenue.

Photo 3: Ballona Creek (Reach 112) facing downstream from the southeast bank toward the Marina Freeway bridge (CA-90, background).

Photo 4: Facing upstream from the southeast bank at the downstream culvert connecting Ballona wetlands, looking at scattered saltmarsh vegetation along rip rap within Ballona Creek Channel (Reach 112).

	**Photo 5:** Ballona Creek Channel (Reach 112) facing downstream toward the Pacific Avenue bike bridge.
	**Photo 6:** Facing east from the top of the concrete culvert between Ballona Creek Channel (Reach 112) and the tidal channel in the adjacent Ballona Wetlands.

	**Photo 7:** Dominguez Channel (Reach 113) facing upstream from the northwest bank at Vermont Avenue (background).
	**Photo 8:** Dominguez Channel (Reach 113) facing downstream from the northwest bank at Vermont Avenue. This portion of the channel has little to no vegetation on both the northwest and southeast banks.

	**Photo 9:** Dominguez Channel (Reach 113) at Del Amo facing downstream at the northwest bank. The channel banks are sparsely vegetated with pickleweed and some salt grass (*Distichlis spicata*).
	**Photo 10:** Dominguez Channel (Reach 113) at Carson Street facing downstream from the west bank. The banks are vegetated with nonnative ruderal vegetation and pickleweed.

	**Photo 11:** Dominguez Channel (Reach 113) at Henry Ford Avenue facing upstream from the west bank with the Union Pacific Railroad in the background. Schooling silversides were present in this portion of the reach.
	**Photo 12:** Dominguez Channel (Reach 113) at Henry Ford Avenue looking at the channel bottom of the east bank showing barnacles, limpets, crabs, and oysters.

	**Photo 13:** Los Angeles River (Reach 114) looking upstream from the east bank facing Pacific Coast Highway (background).
	**Photo 14:** Los Angeles River (Reach 114) looking upstream from the east bank at a berm within the channel immediately downstream of Anaheim Street (background).

Photo 15: Los Angeles River (Reach 114) facing downstream from the east bank looking at Ocean Boulevard. Warning sign prohibits water contact sports north of Ocean Blvd. Speed limit is 5 miles per hour.

Photo 16: Biofouling organisms growing on the rocks at the water's edge in the Los Angeles River (Reach 114) near Ocean Boulevard.

Photo 17: Upper limit of Reach 115 of the San Gabriel River from the east bank looking at the transition zone where the channel converts from concrete-lined upstream to soft bottom downstream.

Photo 18: San Gabriel River (Reach 115) below 7th Street facing downstream from the east bank. Several fish were observed jumping out of the water in this portion of the reach.

	**Photo 19:** San Gabriel River (Reach 115) facing downstream from the east bank from 2nd Street.
	**Photo 20:** Los Cerritos Channel (Reach 116) facing downstream from Atherton Street bridge where the channel converts from concrete-lined upstream to soft bottom downstream.

Photo 21: Los Cerritos Channel (Reach 116) facing east from the west bank upstream of Loynes Drive.

Photo 22: Los Cerritos Channel (Reach 116) facing upstream from the west bank towards the confluence with Bouton Creek (far left) and the Anaheim Road bridge (background).

	**Photo 23:** On the northwestern bank of the Los Cerritos Channel (Reach 116) facing downstream from the Best Western Golden Sails Hotel PCH Club parking lot towards Pacific Coast Highway (background).
	**Photo 24:** Centinela Creek Channel (Reach 117) facing upstream from the west bank at the approximate midpoint of the reach.

	**Photo 25:** Centinela Creek Channel (Reach 117) facing downstream from the west bank. The mounding grass is present on both the east and west banks near the confluence with Ballona Creek.
	**Photo 26:** Centinela Creek Channel (Reach 117) at the confluence with Ballona Creek facing downstream from the west bank.

Photo 27: Standing in Rustic Canyon Channel (Reach 118) facing downstream towards the confluence with Rivas Channel Road (Reach 119, background right).

Photo 28: Rustic Canyon Channel (Reach 118) at the downstream end at the East Rustic Road bridge facing upstream.

Photo 29: Rustic Canyon Channel (Reach 118) facing upstream from the Brooktree Road bridge.

Photo 30: Rivas Canyon Channel (Reach 119) facing downstream at the confluence with Rustic Canyon Channel (Reach 118).

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