Appendix D1

Biological Resources Assessment

BIOLOGICAL RESOURCES ASSESSMENT TO SUPPORT THE WATERFRONT PROJECT

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TABLE OF CONTENTS

Introduction 1
Proposed Project 5
Northern Portion of Project Site 12
Southern Portion of Project Site 14
Basin 3 16
Other Improvements 17
Project Phasing and Construction Scheduling 20
Construction Scheduling 28
Landside Construction 28
Waterside Construction 31
Purpose of Technical Report 34
Methods and Materials 34
Terrestrial Resources 34
Marine Resources 34
Existing Conditions 35
Regional Overview 35
Terrestrial Resources 35
Marine Resources 36
Physical Site Conditions 40
Terrestrial Resources 40
Marine Resources 40
Seaside Lagoon 40
Site-Specific Habitat Survey Results 42
Marine Resources 45
Subtidal Unvegetated Habitat 45
Subtidal Vegetated Habitat 46
Intertidal/Shallow Subtidal Riprap Revetments 47
Pier Piles 49
Sandy Beach 49
Open Water 51
Sensitive Species 51
Essential Fish Habitat 53
Regulatory Setting 54
Federal Regulations 54
Clean Water Act 54
Rivers and Harbors Appropriation Act 55
Endangered Species Act 55
Magnuson-Stevens Fishery Conservation and Management Act 55
Marine Mammal Protection Act 56
Migratory Bird Treaty Act 56
State Regulations 56
California Coastal Act 56
California Endangered Species Act 56
California Fish and Game Code 56
Local Plans and Regulations 57
Redondo Beach Local Coastal Program 57

Impact Analysis 58
Thresholds of Significance 58
Landside Construction 58
Less Than Significant Impacts 58
Significant Impacts 59
Landside Operations 59
Less Than Significant Impacts 59
Significant Impacts 59
Waterside Construction 59
Marine Habitat Conversions 59
Pile Driving Hydroacoustic Noise Impacts 61
Undesirable Human-Pinniped Interactions 63
Small Craft Boat Launch Ramp 64
Sportfishing Pier – Removal and Replace 67
Summary of Net Habitat and Jurisdictional Impacts 80
Waterside Operations 81
Less Than Significant Impacts 81
Significant Impacts 82
Mitigation Measures 82
Subtidal Communities 82
Open Water 82
Grunion 83
Marine Mammals 83
References 85

LIST OF TABLES

Table 1. Existing CEQA Baseline and Proposed Development Square Footage. 5
Table 2. Elements of Proposed Project. 6
Table 3: Anticipated Project Construction Schedule. 29
Table 4. Habitats Within and Adjacent to the Project Boundary. 43
Table 5. Protected Species Expected to Occur Within the Study Area. 52
Table 6. Managed Species Observed in King Harbor. 54
Table 7. Summary of Habitat Impacts from Small Craft Boat Launch Ramp. 65
Table 8. Summary of Habitat Impacts from Sportfishing Pier Element. 67
Table 9. Summary of Habitat Impacts from Seaside Lagoon Element. 69
Table 10. Summary of Habitat Impacts from Basin 3 Element. 73
Table 11. Summary of Habitat Impacts from Horseshoe Pier Element. 75
Table 12. Summary of Habitat Impacts from Pedestrian Bridge Element. 78
Table 13. Summary of Surface Cover Impacts for Each Project Element. 80
Table 14. Summary of Habitat Loss/Creation. 81

LIST OF FIGURES

Figure 1. Regional Location Map. 2
Figure 2. Local Vicinity Map. 3
Figure 3. Proposed Project Boundary. 4
Figure 4. Conceptual Site Plan. 11
Figure 5. Seaside Lagoon Conceptual Plan. 21
Figure 6. Proposed Rubble-Mound Breakwater and Ramp. 22
Figure 7. Pedestrian/Bicycle Bridge Conceptual Plan. 23
Figure 8. Harbor Drive Reconnection Conceptual Cross Section. 24
Figure 9. Bicycle Circulation Conceptual Plan. 25
Figure 10. Pedestrian Circulation Conceptual Plan. 26
Figure 11. Open Space Conceptual Plan. 27
Figure 12. Hourly surface water temperatures (^{o}F) at NOAA Station 9410840 at Santa Monica Pier, California from January through December 2014. 38
Figure 13. AES Redondo Beach Generating Station Intake Locations (from TetraTech 2006). 41
Figure 14. Marine Habitat Map. 44
Figure 15. Debris or rocks on soft substrate supported species characteristic of hard substrate. 45
Figure 16. Giant kelp community. 47
Figure 17. Rip rap shoreline. 48
Figure 18. Intertidal and shallow subtidal rip rap. 48
Figure 19. Pier pilings. 49
Figure 20. Pier with sandy beach in background. 51
Figure 21. Small craft boat launch ramp benthic habitat impact footprint. 66
Figure 22. Seaside Lagoon benthic habitat impact footprint. 70
Figure 23. Basin 3 existing habitat map. 72
Figure 24. Basin 3 dock realignment Alternative 2 (top) and Alternative 3 (bottom). 74
Figure 25. Horseshoe Pier piling replacement, ... 76
Figure 26. Pedestrian bridge habitat impact footprint. 79

LIST OF APPENDICES

Appendix A - Alternative 8 Boat Ramp Options Impact Analysis
Appendix B - Filling of Seaside Lagoon Alternative Impact Analysis

INTRODUCTION

The project site is located in the City of Redondo Beach (City), and certain portions are located westward of the mean high tide line. The project is located along the waterfront, west of Catalina Avenue and high density residential development commonly referred to as "The Village" or "Sea Scape". The project is located south of Portofino Way, and north of Torrance Boulevard. The Torrance Boulevard Traffic Circle is included in the project site. The northern portion of the project site is currently accessed from Harbor Drive including feeder arterials of Herondo Street and Pacific Avenue and the southern portion is accessed from Torrance Boulevard (Figure 1).

The project site is an approximately 36-acre portion of the waterfront (approximately 31.2 acres is land, including Seaside Lagoon, and 4.8 acres is water area made up of Basin 3 [3.5 acres] and the proposed boat ramp area near Mole D [1.3 acres]). The project site is located along the Pacific Ocean within the Santa Monica Bay, west of Catalina Avenue and high density residential development commonly referred to as "The Village" or "Seascape," south of Portofino Way, and north of Torrance Boulevard. The Torrance Boulevard Traffic Circle (Torrance Circle) is included in the project site. The project site is entirely within the City's Coastal Zone, and certain portions are seaward of the mean high tide line (Tidelands). The land portion of the project site is generally divided into two areas: northern and southern areas. The northern portion of the project site is accessed from Harbor Drive including feeder arterials of Herondo Street, Pacific Avenue, and Beryl Street, and the southern portion is accessed from Torrance Boulevard. See Figure 2, Local Vicinity and Existing Conditions Map.

As shown in Figure 2, the project site is in a developed area, surrounded by a variety of land uses to the north, south, and east, and the King Harbor (Outer) Breakwater and Santa Monica Bay to the west. To the north, the surrounding uses are Basin 2 (including Basin 2 improvements such as a hotel, yacht club, apartments, fueling facility, conference facility and restaurant), marinas, and surface parking lots. The AES power plant is located approximately 0.09 mile to the northeast. To the east are a hotel, commercial uses, Czuleger Park, and high density multi-family residential development. To the south are Veterans Park, the Redondo Landing commercial development, and the Monstad Pier.

The project site is currently developed with approximately 219,881 square feet (ft^2) of existing buildings (not including the parking structures), consisting primarily of restaurants, retail, and office use. Recreation uses include an enclosed and contained public swimming and recreational facility known as the "Seaside Lagoon." Other existing uses include the Plaza Parking Structure and the Pier Parking Structure (which collectively provide 1,350 parking stalls), surface parking lots, the Horseshoe Pier, and Basin 3 of King Harbor (the Redondo Beach Marina) which provides recreational and visitor-serving uses such as watercraft rentals, sightseeing, and slip rentals. The types of water-related recreation activities available within and surrounding the project site include: fishing, sailing, and power boating, and non-motorized water activities such as kayaking, outrigger canoeing, stand up paddling and swimming. The peak boating season occurs between Memorial Day and Labor Day weekends.

As shown on Figure 3 and described further below, the project site is defined in terms of three geographic areas, the northern portion (approximately 19.5 acres [including approximately 1.3 acres of water area for the proposed boat ramp area near Mole D]), the southern portion (approximately 13 acres), and Basin 3 (approximately 3.5 acres of water area). Approximately one acre of the southern portion of the site is comprised of the International Boardwalk and the elevated walkway above the Boardwalk which connects to the northern portion of the site.

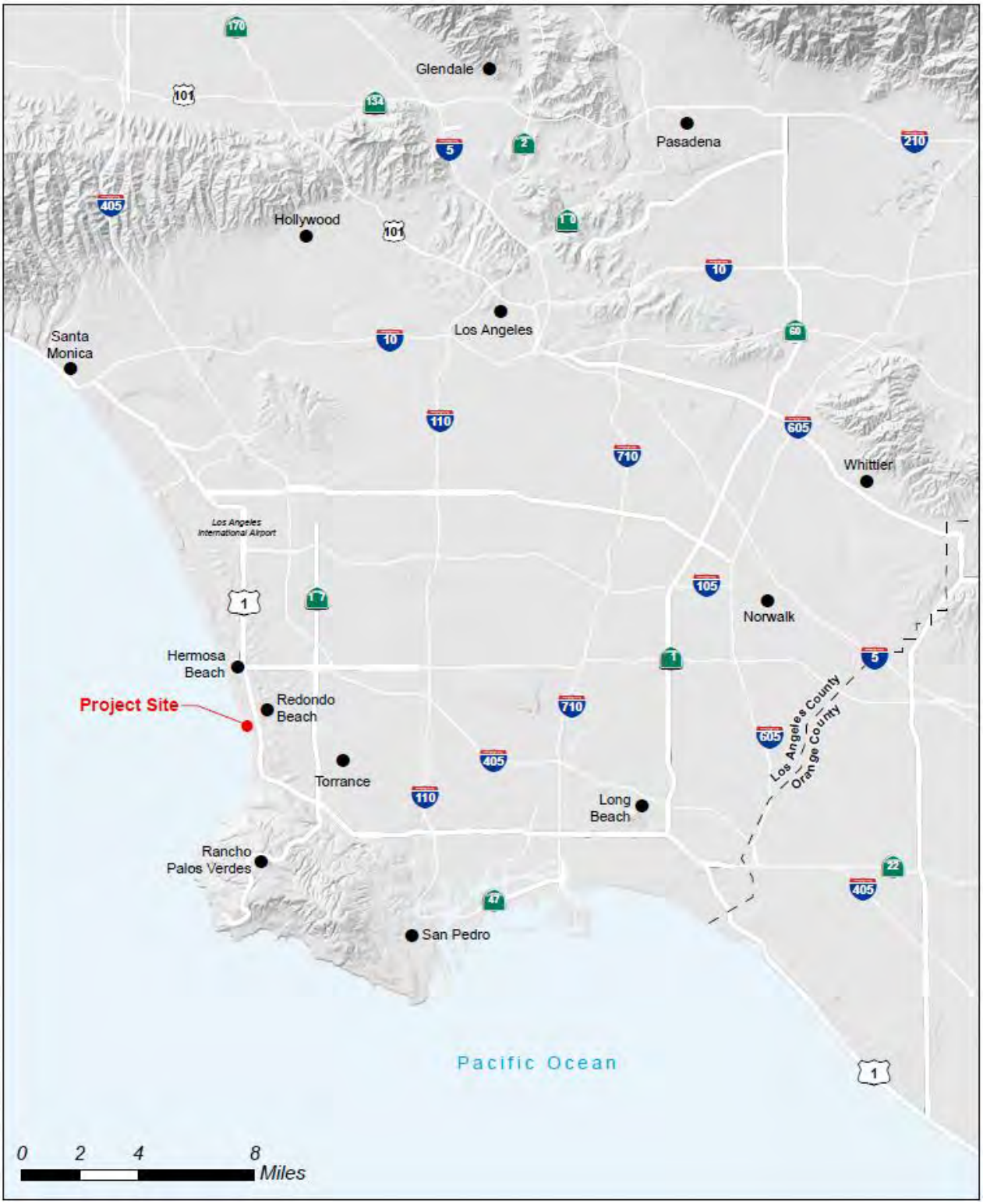


Figure 1. Regional Location Map.

Figure 2. Local Vicinity Map.

Figure 3. Proposed Project Boundary.

PROPOSED PROJECT

The proposed project is intended to revitalize approximately 36 acres of land and water by redeveloping and expanding local and visitor serving commercial uses, enhancing public access and recreational opportunities and facilities, and improving the aging support infrastructure and parking facilities. The proposed project also proposes substantial improvements in site connectivity, enhanced public open space, and public access to and along the waterfront. The main components of the proposed project include the proposed demolition of approximately 207,402 ft^2 of existing structures, replacement of the existing Pier Parking Structure, and construction of up to approximately 511,460 ft^2 resulting in approximately 304,058 ft^2 of net new development (the proposed project includes renovation/retention of approximately 12,479 ft^2 of existing structures, which consists of Kincaid's restaurant and the restroom facility at the Seaside Lagoon) , to include retail, restaurant, creative office, specialty cinema, a public market hall, and a boutique hotel. Enhancements to public recreation and open space include a new small craft boat launch ramp, the opening of Seaside Lagoon to King Harbor as a protected beach (currently the lagoon is not open to the ocean), new and expanded pedestrian and bicycle pathways, as well as new and enhanced public open spaces. Site connectivity and coastal access would be increased by the establishment of a new pedestrian bridge across the Redondo Beach Marina Basin 3 entrance, a new contiguous pedestrian promenade along the water's edge from the base of the pier to Seaside Lagoon, and the Pacific Avenue Reconnection. Project elements also include water quality benefits, measures to accommodate sea level rise projections, and replacement or upgrades to aging infrastructure. Table 1 provides a summary of the existing and proposed development square footage and Table 2 provides a summary of the key project elements. The components are described in greater detail below and shown on Figure 4, Conceptual Site Plan.

Table 1. Existing CEQA Baseline and Proposed Development Square Footage.

	Existing CEQA Baseline Development	**Existing Development to be Demolished**	**Existing Development to Remain**	**New Construction**	**Total Square Footage** (Existing to Remain plus New Construction)	**Net New Square Footage** (Overall increase in square footage as compared to existing development)
North	48,399	46,286	2,113	288,184	290,297	241,898
South	171,482	161,116	10,366	223,276	233,642	62,160
Total	**219,881**	**207,402**	**12,479**	**511,460**	**523,939**	**304,058**
Note: Existing CEQA Baseline square footage consists of the building square footage existing when the NOP/IS was prepared in June 2014.						

Table 2. Elements of Proposed Project.

Proposed Project Elements	Existing Conditions	Proposed Project
Northern Portion of Project Site		
Development	Approximately six stand-alone restaurants (totaling approximately 38,000 square feet) generally located on the edges of the project site, and restaurant and sportfishing charter business located on the Sportfishing Pier. [a]	241,898 net new square feet of new development to include retail, restaurant, creative office, approximately 700 seat specialty cinema, and accessory recreational uses.
Sportfishing Pier	243-foot long and 30-foot wide wooden (timber) pier with a building (approximately 2,704 square feet) that includes a restaurant, sportfishing charter business and restroom.	If replaced, a new pier (concrete or timber) and building would be constructed with 3,415 square feet of structure in a similar configuration as currently exists. If the pier were not replaced, the 3,415 square feet of development would be relocated into the northern landside development.
Seaside Lagoon	Non-tidal chlorinated saltwater, sand-bottom swimming facility with beach, picnic area, concession building and other recreational amenities open only during summer months.	Opening of lagoon to waters of King Harbor to provide sheltered natural beach open year-round (eliminates the use of chlorine) with access for small boats, kayaks and paddle boards and accessory uses/concessions.
Boat Launch Facilities	Hand launch ramp located along Mole D and a private boat launch facility in Basin 3 consisting of two 5-ton boat hoists.	Removal of the private boat launch/hoist facility. Relocation of the hand launch ramp uses to within the modified Seaside Lagoon (stand-up paddle boards, kayaks, outriggers, canoes, etc. would be launched from inside the lagoon, once the lagoon has been open tidally to the harbor). Relocation of the dinghy dock within or adjacent to Basin 3. Construction and operation of a small craft boat launch ramp at the Turning Basin.

Proposed Project Elements	Existing Conditions	Proposed Project
Parking	Approximately 332-stall Plaza Parking Structure (which is a three-level structure with the lower two levels being available for parking and the top plaza level only open to pedestrians) and surface parking lots with 782 single stalls and 67 double length (trailer) stalls.	New four-level approximately 757-stall parking garage at the northeast corner. Provision of approximately 109 parking stalls along the new main street (a roadway that transects through the center of the northern portion of the site approximately parallel to Harbor Drive) and surface lot. Surface parking lot for boat trailer and single car parking adjacent to the boat launch ramp. Reconfiguration of Plaza Parking Structure stairwell and elevator shaft, resulting in an approximately 30-stall parking reduction (from approximately 332 stalls to 300 stalls). Minor refurbishment of the structure, which may include repaving, restriping, and new lighting.
Southern Portion of Project Site		
Development	Shops and restaurants along Horseshoe Pier and Basin 3 (approximately 81,300 square feet), the International Boardwalk (including Paddle House) (approximately 22,464 square feet), Pier Plaza (approximately 70,000 square feet) and miscellaneous space such as storage, basement, restroom, and maintenance offices within the Pier Parking Structure (approximately 20,000 square feet of the approximately 495,000 square foot parking structure.)	62,160 net new square feet of commercial development to include replacement of most of the existing and former retail and restaurant buildings on the Horseshoe Pier and new 120-room boutique hotel with retail uses on the ground floor.
Pier Plaza	Approximately 70,000 square foot office complex, located on top of the Pier Parking Structure and approximately 20,000 of associated square feet (storage, basement, restroom, and maintenance offices) within the Pier Parking Structure.	Removal of Pier Plaza Development.

Proposed Project Elements	Existing Conditions	Proposed Project
International Boardwalk	Narrow strip of small shops and restaurants (approximately 22,464 square feet) located along a paved access road (accessible to pedestrians, delivery, service, and emergency vehicles only), subject to flooding and deteriorating condition.	Removal of the International Boardwalk and establishment of a new throughway that would accommodate vehicular, bicycle, and pedestrian traffic. Improvements would address the existing flooding and accommodate sea level rise concerns.
Horseshoe Pier	1,550-foot long horseshoe-shaped pier with restaurants and shops and two currently empty building pads. The pier has a concrete deck, except for a portion of the southern leg, which retains a wooden deck constructed in approximately 1930.	On the northern leg, Kincaids would be retained and a new building would be constructed on a currently vacant building pad (Pad 2). On the southern leg, the wooden portion of the pier and existing buildings would be reconstructed.
Parking	1,018-stall Pier Parking Structure (which is a three-level approximately 495,000 square foot structure with approximately 70,000 square feet of commercial development [Pier Plaza] and parking on the roof), portions of which are in poor condition.	Replace existing Pier Parking Structure with a new five-level approximately 1,157-stall parking structure.
Torrance Circle	Terminus of Torrance Boulevard used to access Pier Parking Structure and for taxi and bus layover, service vehicle loading/unloading zone, and passenger drop off/pick up.	Minor modifications near the entrance to the new parking structure and Pacific Avenue Reconnection.
Basin 3		
Marina Reconstruction/Redevelopment and Bulkhead Rehabilitation	Approximate 61-slip marina (with slips that range in size from 15 to 68 feet) used by recreational, commercial, and excursion vessels.	Reconstruction/redevelopment of the entire floating dock complex and appurtenant facilities within the marina. The number of slips being considered range within the marina range from 33-slips and eight side-ties to a maximum of approximately 60-slips and eight side-ties of various sizes. Timber docks would be replaced with concrete docks. In addition, additional gangways would be constructed within the marina and entrance to Basin 3 for side ties for transient mooring of vessels, including dinghy docking. Complete replacement of the concrete bulkhead cap and minor repair of bulkhead.

Proposed Project Elements	Existing Conditions	Proposed Project
Pedestrian/Bicycle Bridge	None. Access road and elevated walkway between the International Boardwalk and Basin 3 provides only pedestrian access from the northern and southern portion of the site.	New pedestrian/bicycle moveable bridge spanning the mouth of Basin 3. Two supporting piers would be placed within the basin entrance.
Other Improvements		
Circulation	Vehicles must use Catalina Avenue to travel between northern and southern portions of the site. Access road between the International Boardwalk and Basin 3 provides pedestrian, and emergency and service vehicle access. Pedestrian and bicycle paths are located throughout site, including an elevated walkway, bicycle paths pass through the Pier Parking Structure.	Replacement of the International Boardwalk with the Pacific Avenue Reconnection including separated roadway, walkway, and bicycle path, and a new retaining wall located in front of the existing retaining wall. A bicycle path that would improve connection within the project site (including elimination of pathway through the Pier Parking Structure) and to bicycle paths to the north and south of the project site. New/upgraded pedestrian walkways throughout the site, including a promenade along the water's edge.
On-site Security	A police sub-station is located within the Pier Plaza office complex.	A new/replacement police sub-station would be established on-site in one of the proposed new buildings in either the northern or southern portion of the site (the precise location has not yet been determined). The proposed project also includes private security in addition to City police services.
Infrastructure	Developed site with existing aging infrastructure and utilities.	Upgrade/relocate on-site utilities (which exclusively serve the project site) as required, including lift stations.
Open Space	Open space includes pedestrian /bicycle pathways, public plazas (e.g. pier entry plaza), landscaped areas, piers, and Seaside Lagoon.	New high-quality public open space throughout the project area, including public seating, gathering spaces, pathways, and a modified Seaside Lagoon.

Proposed Project Elements	Existing Conditions	Proposed Project
Service and Loading Areas	Torrance Circle is used for loading/unloading for southern portion of the project site.	Two loading and service bays located along roadways in the northern portion of the site, and one enclosed loading and service bay in the southern portion of the site.
Tidelands Property Exchange	Tidelands are lands seaward of the MHTL designated in 1935, and Uplands are lands east of the MHTL (including Basin 3).	Exchange of an approximately 86,000 square feet portion of the unsubmerged Tidelands between Basin 3 and Seaside Lagoon for a submerged portion of Uplands within Basin 3.

a. Paddle House is considered part of the International Boardwalk and therefore the square footage is included in the southern portion of the site.

Figure 4. Conceptual Site Plan.

Northern Portion of Project Site

The northern portion of the site would include new commercial development (including a specialty cinema and a public market hall, creative office development, alterations to Seaside Lagoon (to create a tidally-influenced lagoon), a new small craft boat launch ramp, parking structure, and enhanced pedestrian and bicycle paths and open space. A new main street parallel to Harbor Drive (through the center of the northern portion of the site) flanked by commercial uses and public walkways would traverse the northern portion of the project site from north to south. Additionally, new public open spaces would be established. Each of the proposed elements is described below.

Development

Of the 48,399 ft^2 of existing development in the northern portion, 46,286 ft^2 would be demolished, and the 2,113 ft^2 restroom/shower at Seaside Lagoon would be retained. An existing open pavilion at Seaside Lagoon (not considered as existing building square feet) would be converted into an enclosed building (included as 2,233 ft^2 of new construction). A maximum of 288,184 ft^2 of new development would be constructed for a total of net new 241,898 ft^2. The proposed uses that would be established include retail, restaurants, creative office, approximately 700 seat specialty cinema, and accessory/recreational uses (such as recreational sales/rentals, beach club, maintenance, public safety, concessions, etc.). The precise mix of retail, restaurant, and office cannot be determined at this time and may change over time, depending on the mix of tenants occupying the building space. However, the buildings within Seaside Lagoon would only be occupied by recreational/accessory/concession uses.

The new development would include approximately 14 new buildings of various sizes and heights primarily located along the new main street that is parallel to Harbor Drive and traverses the northern portion of the site from generally a north to south direction. If the Sportfishing Pier were replaced, the existing building on the pier would be replaced with a new building of similar configuration. If the pier were not replaced, the 3,415 ft^2 of development would be relocated into the northern landside development.

Sportfishing Pier

The proposed project includes two options related to the Sportfishing Pier: 1) replacement of the pier and building; and, 2) not replacing the pier and relocating the building square footage into the northern landside development. If replaced, a new pier of similar dimensions would be built in the footprint of the existing pier. This would include complete demolition of the existing pier, which is a timber-framed structure approximately 243 ft long and 30 ft wide, supported by twelve three-pile timber bents. If the pier were to be reconstructed/replaced, a new timber or concrete deck and approximately 46 timber or concrete piles would be constructed. Features that would be included at the reconstructed pier are boat mooring and passenger loading ramps/gangways on each side of the pier to allow berthing of sportfishing and sightseeing boats. The existing building located on the Sportfishing Pier would be removed and replaced with a new approximately 3,415 ft^2 building (Building Y). The new building would be approximately 700 square feet larger, and have a similar configuration as the existing structure. The new building would include commercial/retail and/or restaurant uses. If the pier were not replaced/reconstructed, the 3,415 ft^2 of building area would become part of the northern landside development.

Seaside Lagoon

Under the proposed project, Seaside Lagoon would be converted from the existing enclosed interior swimming lagoon into a small embayment directly connected to King Harbor. By opening the lagoon to the waters of King Harbor, a tidally-influenced lagoon would be created. This would establish a sheltered natural beach that is open year-round. The open lagoon would provide access from the lagoon's new public beach to King Harbor for canoes, kayaks, and paddle boards. As shown in Figure 5, Seaside Lagoon Conceptual Plan, a portion of the existing revetment and uplands would be excavated to create an approximately 150-ft wide bottom inlet opening to the harbor. In order to create the new lagoon outlet, the existing hand launch dock (including approximately 640 ft^2 of gangways and five guide piles) would be removed. The dinghy dock (an approximately 540 square-foot timber floating dock) located at the end of the existing hand launch dock would also be removed and the dinghy dock tie downs relocated to the entrance of Basin 3 or within the redeveloped Redondo Beach Marina. Approximately two acres of interior area would be graded into a semi-circular sandy beach backed by new development, site amenities, and landscape improvements that support the lagoon site's recreational use. The interior area of the lagoon would be graded to a beach profile of 10 horizontal to one vertical slope and the basin bottom would be graded to -5 ft MLLW to connect with the existing depths of the Outer Harbor. Slope protection for the lagoon inlet opening would be provided by placing new quarry stone and addressing the existing revetment slope. Other improvements include minor utility work and provision of new site furnishings and landscape. As described previously, the proposed revisions of the public park space includes the addition of new accessory uses, such as marine recreation products and rentals (e.g., kayaks, paddle boards, wetsuits), beach club, maintenance, public safety, and concessions designed to serve and cater to the recreational uses in Seaside Lagoon. Other proposed modifications include the enclosure of an existing pavilion, outdoor seating/tables, lawn area, landscaping and hardscaping. A new boardwalk (parallel to the new main street) would extend through the park and connect with the boardwalk extending along the water's edge and along the project boundary.

In summary, existing features to be eliminated include:

- Chlorine tanks, pump equipment, electric transformer, and miscellaneous equipment within the fenced enclosure.
- Existing concrete diving platform structure and associated piping and equipment.
- Drainage overflow inlet boxes.
- 14-foot high water fountain.
- 45-foot long drainage culvert that empties into King Harbor.
- Hand launch gangways, floats, and guide piles.
- The existing 18-inch diameter drain pipes would be plugged and abandoned.

The water quality in the modified lagoon would be maintained by the constant and natural exchange of water in and out of the lagoon. The tidal range of the lagoon would be approximately six feet, similar to the ocean tide levels. It is expected that a typical tide cycle would replace two thirds of the water volume within the lagoon, resulting in water residing in the lagoon for less than two days before it is exchanged.

Boat Launch Facilities

As part of the Seaside Lagoon modifications, the existing hand launch ramp would be removed. Human-powered watercraft (i.e., stand-up paddle boards, kayaks, outriggers, canoes, etc.) could be launched from Seaside Lagoon as discussed above. The dinghy dock would be relocated within or adjacent to the Redondo Beach Marina/Basin 3.

A recreational small craft boat launch ramp has long been considered for the harbor and has been included as a requirement in the LCP, which states, "A public boat launch ramp shall be constructed in association with future development projects within the harbor area."

As shown on Figure 6, Small Craft Boat Launch Ramp Conceptual Plan, a small craft boat launch ramp is proposed in the south Turning Basin (at the current site of Joe's Crab Shack). In order for the new small craft boat launch to be constructed, the Joe's Crab Shack building would be demolished. The proposed small craft boat launch ramp would be approximately 50 ft wide and consist of a two-lane concrete boat ramp (15 ft each lane) with two 10 ft wide boarding floats (one on each side of the ramp) restrained by guide piles. At a proposed ramp slope of 15 percent, the concrete launch ramp is estimated to be 133 feet in length and the boarding floats are estimated to be 150 ft in length. The ramp would be protected from wind and storm waves by a 420-ft long rubble-mound breakwater. Other improvements include a paved parking area for 20 vehicle/trailers (pull-through) and 20 single vehicles (total of 40 parking stalls); a paved parking lot, utilities, landscaping, and other miscellaneous site furnishings and improvements.

Parking

A four-level 757-stall parking garage is proposed at the northeast corner of the site. The parking garage would not exceed 45 ft in height as measured from the existing sidewalk elevation at Harbor Drive at the point nearest to the building or structure consistent with Zoning Code Section 10-5.814. Entrances and exits to the garage would be located on Harbor Drive and via a driveway accessible from Portofino Way and the new main street.

Approximately 109 surface stalls would be provided within the site along the new main street and in a surface lot east of the proposed public market hall. A surface parking lot at the northwestern corner of the project site would provide parking specifically for the proposed small craft boat launch ramp (operation and parking of the small craft boat launch ramp is described above).

Southern Portion of Project Site

The southern portion of the site would include demolition of existing commercial uses (including Pier Plaza, International Boardwalk, and some of the buildings on the Horseshoe Pier) and the Pier Parking Structure. A new boutique hotel, replacement parking structure, and retail and restaurant uses would be constructed. Additionally, new walkways and public open spaces would be created.

Development

The proposed development includes replacement of some of the existing and former retail and restaurant buildings on the Horseshoe Pier and development of a new three level boutique hotel with commercial uses, lobby, and hotel entry on the ground floor. Of the 171,482 ft^2 of existing development in the southern portion, 161,116 ft^2 would be demolished, and the 10,366 ft^2 restaurant, Kincaids, would be retained. A maximum of 223,276 ft^2 of new development would be constructed for a total of net new 62,160 ft^2. The proposed uses that would be established include hotel, office, retail and restaurants. The precise mix of retail, restaurant, and office uses may change over time, depending on the mix of tenants occupying the building space.

The new development includes a proposed three-level boutique hotel with 120 rooms. The hotel lobby and retail would be located on the ground level with the hotel rooms and meeting rooms

located on the second and third levels. A swimming pool would be located on the second level. The hotel rooms would be configured so each has a view of the Santa Monica Bay and/or Basin 3 marina. As described below, a new parking structure would provide parking for hotel guests and the public. The height of the hotel building would not exceed 30 ft above the existing sidewalk grade of Pier Plaza (top deck of the existing Pier parking structure) consistent with Zoning Code Section 10-5.813.

The existing structures located along the southern leg of the Horseshoe Pier would be demolished and replaced with new structures. The footprints and square footage of the new buildings (Building T and Building U) would be similar to the existing conditions (approximately 14,720 ft^2).

The existing building located on the northern leg of the pier (Kincaid's Restaurant) would remain. A new approximately 8,400 ft^2 building would be constructed on the empty building pad (Pad 2) located on the northern leg of the pier, seaward of Kincaid's. The building height would be consistent with Zoning Code Section 10-5.812, which allows buildings on the pier and the southern edge of Basin 3 to have a maximum height of 30 ft, as measured from the top of the pier deck or sidewalk grade.

Horseshoe Pier

As described above, a new building would be constructed at Pad 2 on the northern leg of the pier. The northern leg of the pier was reconstructed and the wooden deck was replaced with a concrete deck following the 1988 storms and fire. No reinforcement of the northern leg is required to support the new structure on Pad 2. The existing structures located along the southern leg of the Horseshoe Pier (which are located on the timber portion of the pier) would be demolished and replaced with new structures. To adequately support the new structures on the southern leg of the pier, the remaining timber/wooden portion of the pier would be entirely replaced. This entails removing the existing pier deck and pier piles, and replacing with a new concrete and steel structure (including concrete deck and coated pipe piles). The footprint of the pier would remain the same.

International Boardwalk

The existing International Boardwalk would be demolished and replaced with the new Pacific Avenue Reconnection that would accommodate vehicular, bicycle, and pedestrian traffic. The Pacific Avenue Reconnection is discussed under Basin 3 below.

Parking

The existing approximately 495,000 ft^2 Pier Parking Structure would be demolished and replaced with a new 1,157 stall parking structure. The parking structure would have five levels of parking and be approximately 404,015 ft^2 in size. The parking stalls would be available for both public parking and hotel patrons.

Ingress and egress to the structure would be available from Torrance Circle via the existing entrance to the lowest level of the Pier Plaza Parking structure, and via the Pacific Avenue Reconnection at the southern end of the parking structure. A hotel arrival plaza and entrance to the parking garage is proposed on the northern end of the structure.

Torrance Circle

Minor modifications to the Torrance Circle would occur to facilitate the Pacific Avenue Reconnection (described below) and access into the new parking structure. This would include some demolition and minor grading at the parking structure and roadway entrances, followed by repaving and restriping. New directional signage would also be provided. The proposed bicycle path would be routed around the end of the circle and tie-in with the existing bicycle trail and California Coastal Trail along the beachfront to the south of the project site. Under the proposed project, Torrance Circle would continue to serve as a transit stop/bus waiting area.

Basin 3

The proposed project elements within the waterside of Basin 3 are the rehabilitation of the dock complex and bulkhead (e.g., minor bulkhead repairs and replacement of the cap), and the construction of a pedestrian/bicycle bridge spanning the Basin 3 entrance.

Marina Reconstruction/Redevelopment and Bulkhead Rehabilitation

The existing floating dock complex within the Redondo Beach Marina/Basin 3, including slips made up of timber docks and pontoons, gangway landings and concrete guide piles, would be removed. Demolition would remove approximately 18,500 ft^2 of timber docks, with foam filled pontoons, utilities, and locker boxes. Approximately 57 concrete guide piles (assumed to consist of thirty-six 12-inch diameter round and twenty-one 16-inch octagonal size piles) would be removed during demolition, as well as gangway landings and foundation piles.

The proposed project includes the replacement of the entire floating dock complex and appurtenant facilities within the marina. The number of slips being considered range within the marina range from 33-slips with eight side-ties (approximately 1,740 linear feet of space) to a maximum of 60-slips with eight side-ties (approximately 2,200 linear feet of space). Slip sizes would vary. The option with fewer slips would accommodate a greater number of larger vessels (30 feet in length and above). The number of vessel slips would be based on market demand at the time the proposed project has gone through final design. The replacement facilities would be in a similar layout/configuration. Timber docks would be replaced with concrete docks. The new facilities would include concrete docks, concrete guide piles (approximately forty 16-inch diameter concrete piles), dock utilities and furnishings, aluminum gangways and concrete gangway landings, and aluminum security gate enclosures. Additional gangways would be constructed within the marina and entrance to Basin 3 for side ties for transient mooring of vessels, including dinghy docking.

Rehabilitation work for the bulkhead would include minor repairs and complete removal and replacement of the existing deteriorated concrete cap. The replacement of the cap would consist of the excavation of a 1-ft wide by 2-ft deep trench immediately behind the bulkhead to expose the landward portion of the cap. A temporary netting system would be placed within the marina/Basin 3 during the rehabilitation and repair of the bulkhead and replacement of the cap to prevent demolition debris from falling into the water. The existing cap would be completely removed, new formwork erected, the new concrete cap poured, and the trenched area backfilled and restored.

Pedestrian/Bicycle Bridge

As shown on Figure 7, Pedestrian/Bicycle Bridge Conceptual Plan, a proposed pedestrian/bicycle bridge would be constructed to span the approximately 250-foot Basin 3 entrance. The pedestrian/bicycle bridge would provide a shorter direct connection between the northern and southern portions of the project site than what currently exists with the more circuitous route along the eastern edge of the site. From the northern portion of the site, the bridge would be accessed via the waterfront promenade south of the proposed public market hall and from southern portion of the project site, the bridge would be accessed via the waterfront promenade north of the pier. A public plaza would provide a gateway to the bridge. The bridge would be designed to meet Americans with Disabilities Act (ADA) accessibility requirements. The bridge would be a movable steel structure that is 12-ft wide and approximately 248 ft in length. It would be a bascule bridge (commonly referred to as a drawbridge) with two approximately 79-ft lift (or bascule) sections with two fixed approaches (see Figure 7). On the landside, the two bridge sections would be supported by concrete abutments on each end and two interior piers. The free (movable) end of the bascule sections would be suspended from steel cable pendants that radiate from 45-foot columns (or towers) on opposite bridge piers. The bridge sections and the supporting towers would rotate together on each side of the bridge to clear a 120-foot width in the entrance of Basin 3. The bridge would have a steel frame and lightweight concrete deck with guard rails on each side. It would have a symmetrical design with four wire rope pendants to support the bascule span radiating from the top of bridge tower at spaced increments over the length of the span. The "tower" at each end of the bridge would consist of a 45-ft tall steel column connected with a cross beam near the top. The towers are laid back 20-degrees from vertical to act as a counterbalance for the wire rope pendants that support the bascule space of the bridge. Mechanical equipment for the bridge would be located in an underground equipment vault landward of each abutment. A control booth, approximately 600 ft^2 in size, would be stationed on land at one or both ends of the bridge.

Other Improvements

Additional improvements that would occur include the removal of the International Boardwalk to provide for the reconnection of Pacific Avenue, other circulation enhancements, new public open space and landscape, and infrastructure upgrades.

Public Access and Circulation

As described below, the proposed project includes elements that are designed to improve both vehicular and non-vehicular access and circulation between the northern and southern portions of the project site, as well as the waterfront as a whole.

Pacific Avenue Reconnection

The International Boardwalk and elevated walkway would be demolished to accommodate the reconnection of Pacific Avenue. The Pacific Avenue Reconnection would be a new throughway that would provide vehicular, bicycle, and pedestrian traffic connectivity between the northern and southern portion of the project site, providing a direct link between Pacific Avenue/Harbor Drive and Torrance Circle. Operation of the modified intersection at Pacific Avenue/Harbor Drive and new intersection at Torrance Circle and the Pacific Avenue Reconnection would be via stop signs.

The Pacific Avenue Reconnection would consist of a two-lane roadway, an 8-ft walkway to the west of the roadway, and a 12-ft bicycle path east of the roadway. Along Basin 3, the walkway typically

would be approximately four feet lower than the roadway elevation, and the bicycle path would be seven feet above the roadway elevation. The walkway and bicycle path elevations would gradually level off to match the roadway elevations at the parking structure on the southern portion of the project site (Figure 8). At locations where the elevations of the three travel-ways vary, decorative railing and low walls would separate the travel modes. A new retaining wall would be constructed in front of the existing retaining wall that spans the existing elevated walkway.

Bicycle Path

As shown on Figure 9, Bicycle Circulation Conceptual Plan, the bicycle path located along the Pacific Avenue Reconnection would be an extension of the Herondo-Harbor Gateway cycle track that has recently been completed as a component of the Harbor/Herondo Gateway Improvement Project. The bicycle path would connect to the cycle track located on the west side of the Harbor Drive. At the existing Pacific Avenue, the bicycle path would cross to the east, and extend along the east side of the reconnected Pacific Avenue as discussed above. To the north of the Pacific Avenue Reconnection/Torrance Circle intersection, the bicycle path would cross to the west and extend to the west of Torrance Circle to connect with the existing bicycle path along the beachfront to the south of the project site, as shown on Figure 10.

Two enclosed bicycle locker facilities (bicycle depots) would be established, that provide bicycle lockers intended for secure temporary bicycle storage and other self-service amenities such as a drinking fountains and air stations. One bicycle depot would be located at the northern portion of the site and one would be located on the southern portion. Each bicycle depot would be located adjacent to the bicycle path, to the south of the northern and southern parking structures. There would also be bicycle racks located throughout the site; however, the exact number and location of bicycles racks and the bicycle parking depot capacity has not yet been determined.

Pedestrian Pathways

As shown on Figure 10, Pedestrian Circulation Conceptual Plan, the proposed project includes new bicycle and pedestrian pathways throughout the project site, including a promenade along the water's edge on the rock breakwater and marina bulkheads. The promenade would extend from the base of the pier, across the pedestrian/bicycle bridge to Seaside Lagoon and the Pacific Avenue Reconnection. The enhanced boardwalk would have a paved surface, meet ADA accessibility requirements, and vary in width from 12 ft to 20 ft in order to accommodate pedestrians/bicyclist along with areas to sit and view the harbor. The existing walkway above Horseshoe Beach would be widened and existing rocks may be re-arranged.

On-site Security

The proposed project includes the demolition of the existing Pier Police Sub-Station, located at Pier Plaza, and construction and operation of a new/replacement police sub-station on the project site. The new/replacement sub-station would be accommodated in one of the proposed buildings. It has not yet been determined if the sub-station would be located in the northern or southern portion of the project site. In addition to City police services, the proposed project includes private security that would serve the commercial development and hotel and would contribute to on-site safety on an around-the-clock basis. As with the new/replacement police sub-station, the new development proposed under the proposed project would accommodate on-site private security.

Infrastructure Upgrades

The proposed project includes essential updates to aging infrastructure on-site, including construction of a new on-site stormwater drainage system associated with the proposed project throughout the site that incorporates Best Management Practices (BMPs) and Low Impact Development (LID) BMPs in order to address on-site stormwater quality requirements. The conceptual plan for stormwater management entails collecting stormwater in catch basins and other drain inlets and directing low-flow volumes into one or more underground storage chambers. The stormwater would then infiltrate into the ground, be reused as on-site irrigation water, or combination of both depending on site-specific geologic conditions. Infiltration would be used to the extent feasible as determined by future geotechnical studies. A segment of two existing Los Angeles County storm drains that route off-site flows through the site would be rerouted within the project site around the proposed buildings. The rerouted portions of the storm drain would reconnect upstream of the existing discharge location into the harbor.

Similarly, other utilities would be relocated and rerouted throughout the site, as necessary and appropriate.

The existing wastewater lift station on the northern portion of the project site would be upgraded to handle increased flow from the proposed project. The existing lift station in the southern portion of the project site would be replaced at a new location near the Pacific Avenue Reconnection between Basin 3 and the new parking structure. The proposed project would also be required to update and resize water mains and ensure that the locations of fire hydrants conform to current fire suppression requirements.

Adjacent Roadway Connections/Improvements

The following work would be required on roadways immediately adjacent to the project site:

Portofino Way - as discussed above, the existing sewer lift station would be upgraded and located underground within Portofino Way. Additionally work on Portofino Way includes minor grading to match the elevation of the new entrance into the project site, and re-slurrying and restriping of the street along the boundary with the project site. This work may require a temporary detour for vehicle and pedestrian access (for approximately six months).

Harbor Drive - re-slurrying and restriping of street adjacent to the project site.

Harbor Drive/Pacific Avenue intersection- regrading of the curved intersection would occur. A new curb and gutter and handicapped accessible ramp would be installed. This improved area would also be re-slurried and restriped. This work may require a temporary detour for vehicle and pedestrian access (periodically for approximately six to nine months).

Open Space

As shown on Figure 11, new high-quality public open space would be located throughout the project area to provide public seating, gathering spaces for passive and active public recreation. This includes walkways and promenades described above, and landscaping and seating areas located throughout the site. Such areas include, but are not limited to, landscaped public spaces along the promenade adjacent to Horseshoe Beach, to the south of the proposed public market hall (Building F), and the utility easement that extends from Harbor Drive to the waterfront on the northern portion of the project site, south of the proposed parking structure. The modified Seaside Lagoon would include public beach and lagoon area, as well as landscaped area for seating and picnicking. While

overall the amount of open space within the site boundaries would remain similar to the existing conditions, the quality of the open space would be enhanced by the addition of features such as new landscaping, lighting, benches, decorative fountain and centrally located public gathering spaces. Further, the new open spaces are integrated into the overall site design to provide more useable and visually pleasing spaces to promoting high quality design to enhance enjoyment of the outdoor environment and complement the natural beauty of the harbor and Santa Monica Bay.

PROJECT PHASING AND CONSTRUCTION SCHEDULING

Construction of the proposed project would commence in 2017 and is anticipated to extend for approximately 27 to 30 months (2.25 to 2.5 years), from January 2017 through June 2019. In order to prepare a conservative daily/peak analysis, many of the construction activities were assumed to occur simultaneously.[1] As detailed below, the proposed project would be implemented within two general areas within the project site: landside (including the northern and southern portions of the project site) and waterside. Each area has distinct construction assumptions associated with the proposed project elements.

Typically, construction work would be performed during normal workdays and hours (Monday through Friday from 7:00 AM to 6:00 PM). Although not proposed on a regular basis, in accordance with the RBMC (Section 4-24.503), construction could occur on Saturday between 9:00 AM to 5:00 PM. Should construction be required (e.g. to perform utility connections) during nighttime hours, Sunday, or on holidays, in accordance with the RBMC (Section 4-24.701), an afterhours construction permit would be required.

The number of construction workers on the site on any given day would vary up to a maximum of approximately 620 workers during the peak sequences of development. The number of vehicles, transporting workers and materials to and from the project site, would vary up to approximately 1,625 trips per day. The types and number of equipment would vary throughout the construction period, depending on the types of activities occurring. Portions of the project site would be used for construction staging areas and parking of construction workers' personal vehicles. No off-site construction employee parking or staging areas are anticipated.

Haul trucks would access the project site from the Interstate (I)-405 freeway via Torrance Boulevard and Hawthorne Boulevard. Heavy loads would be prohibited from using 190th/Anita/Herondo Street between Pacific Coast Highway and Beryl Street and would need to use Artesia Boulevard to Pacific Coast Highway or Hawthorne Boulevard to Torrance Boulevard.

Construction staging and laydown is anticipated to occur within the project site. On the northern portion of the project site during the first phases of the proposed project (approximately the first 10 months), the construction staging area would be located on the utility easement between proposed parking structure and Building C. Following construction of the parking structure, the top level of the structure would be used for laydown/staging (approximately month 10 – project completion). On the southern portion of the site, the plaza north of Torrance Circle would be used for laydown/staging in the first phases of project construction (approximately the first 16 months). After construction of the proposed parking structure, the top level would be used for laydown/staging (approximately month 16 to completion).

[1] Project phasing may vary based on the following factors: market conditions, community priorities, regulatory framework, and infrastructure development. For the purposes of this Draft EIR, the environmental analyses are based on conservative assumptions, which are described as appropriate within the individual resource areas.

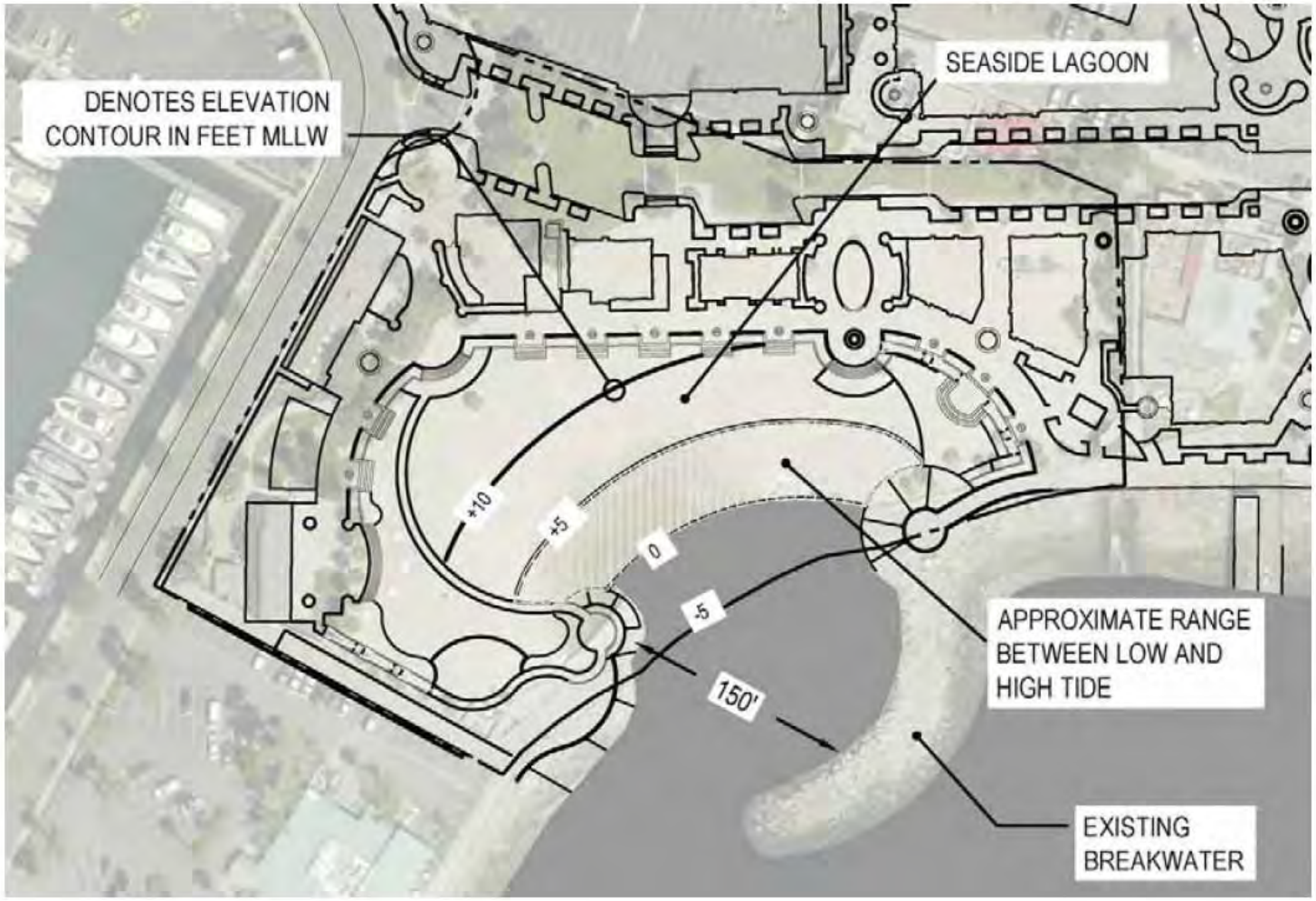


Figure 5. Seaside Lagoon Conceptual Plan.

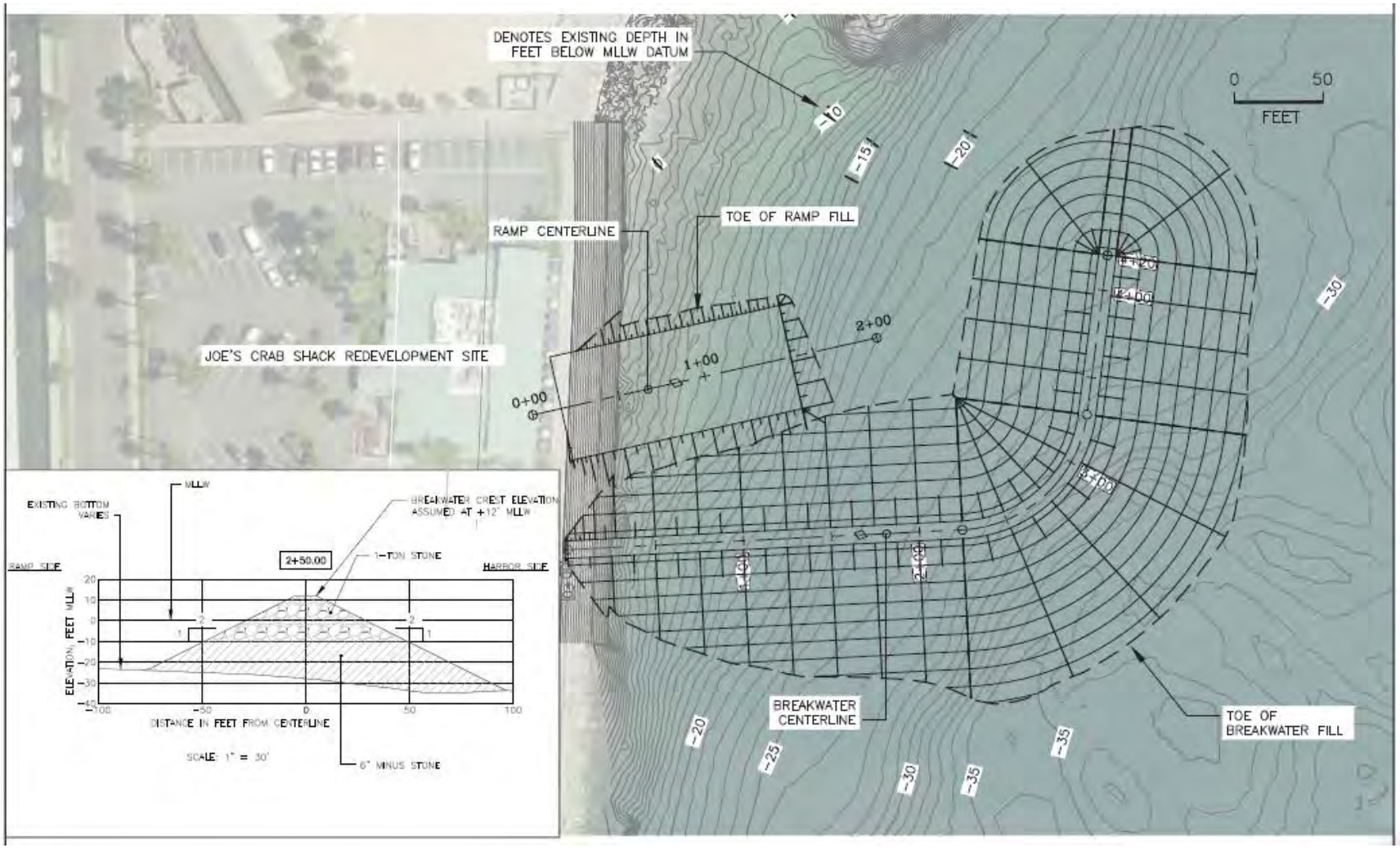


Figure 6. Proposed Rubble-Mound Breakwater and Ramp.

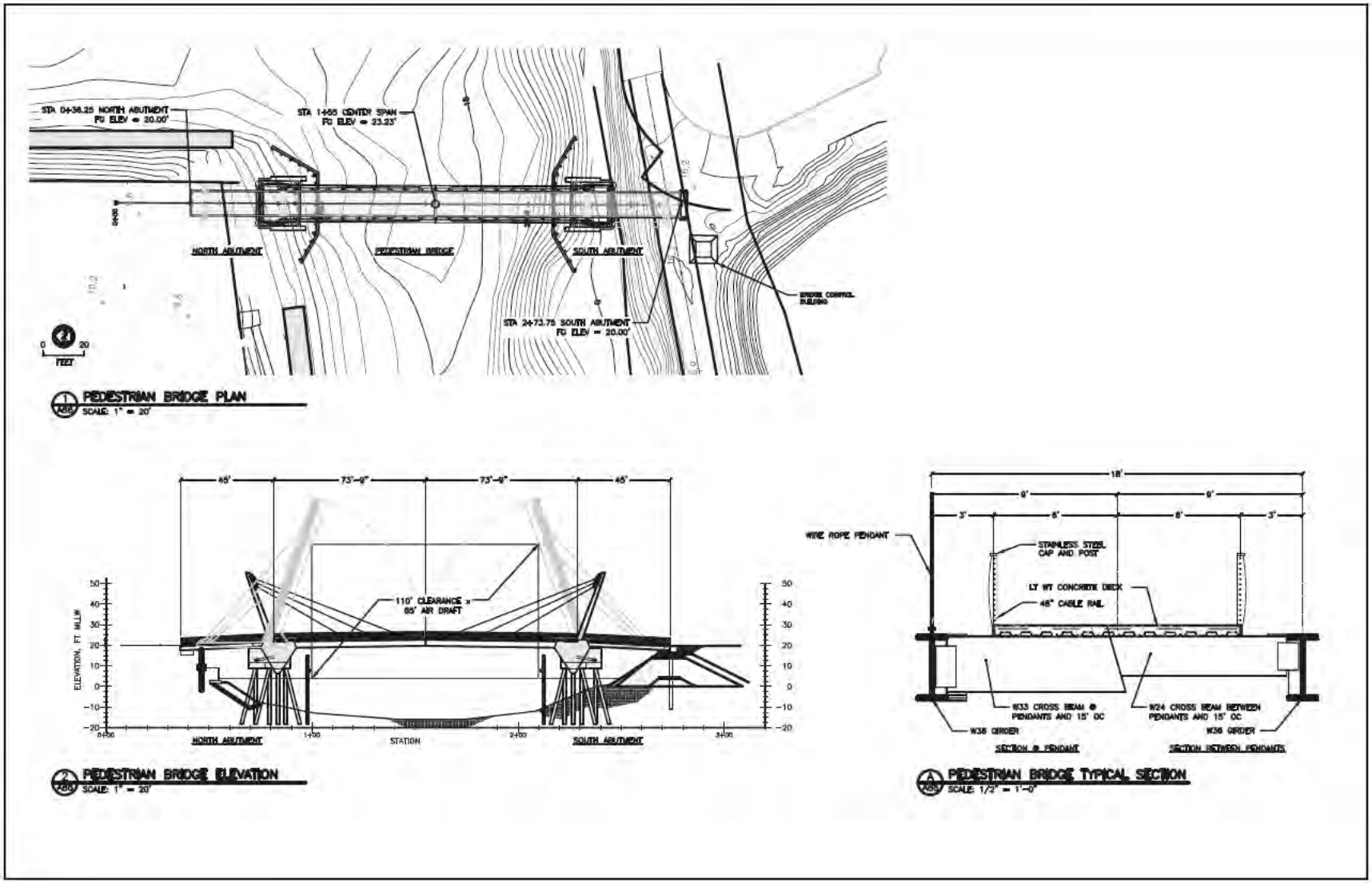


Figure 7. Pedestrian/Bicycle Bridge Conceptual Plan.

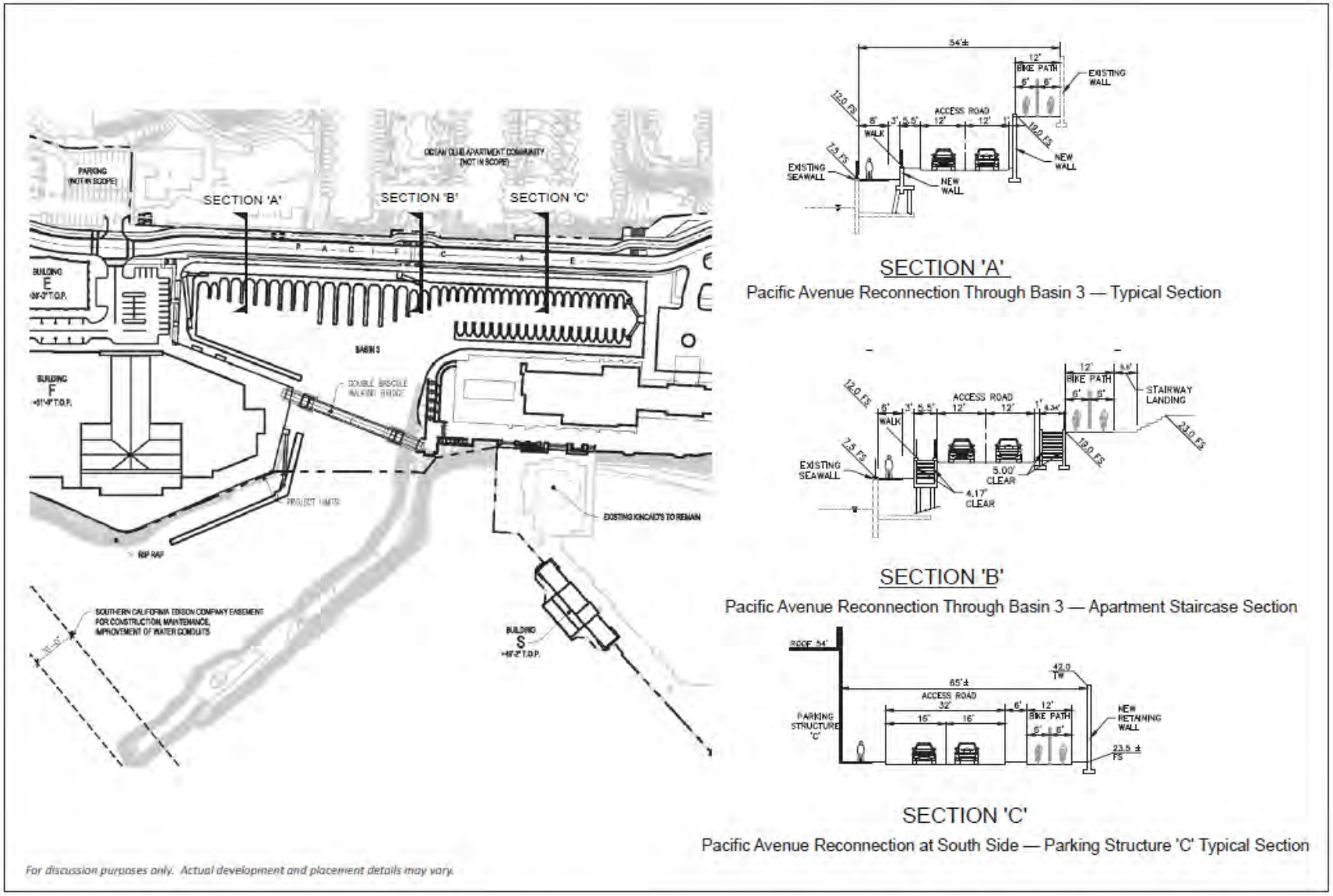


Figure 8. Harbor Drive Reconnection Conceptual Cross Section.

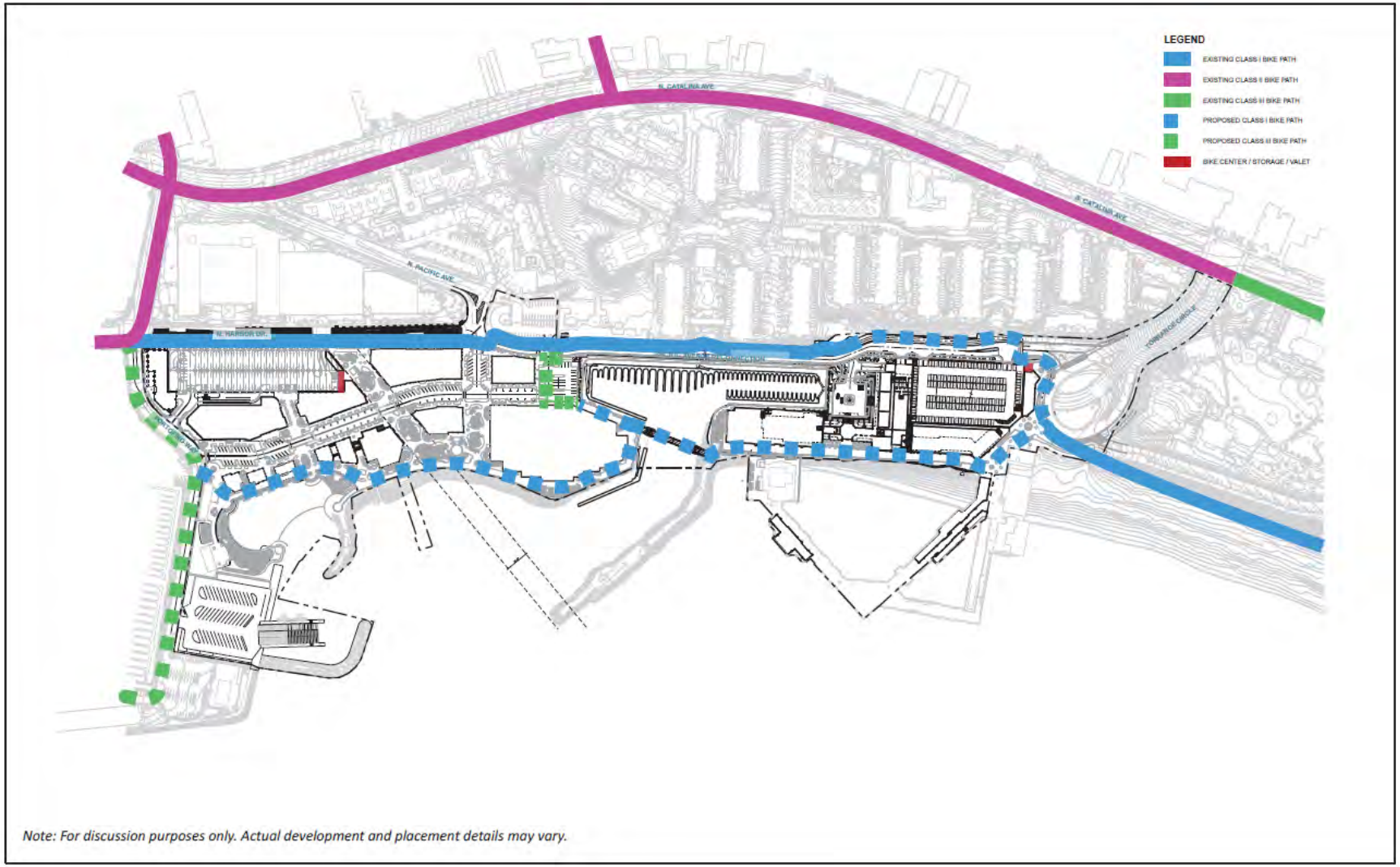


Figure 9. Bicycle Circulation Conceptual Plan.

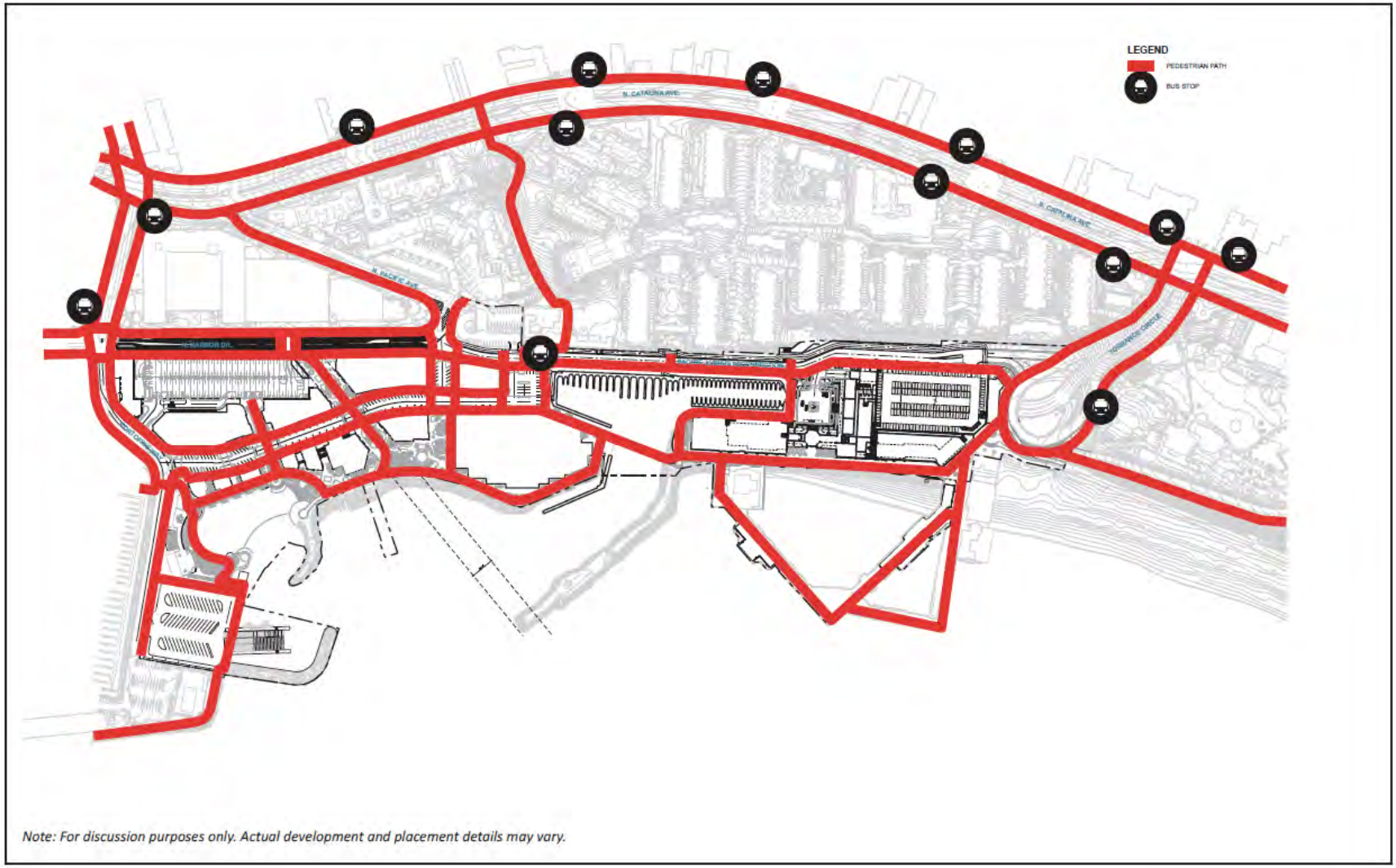


Figure 10. Pedestrian Circulation Conceptual Plan.

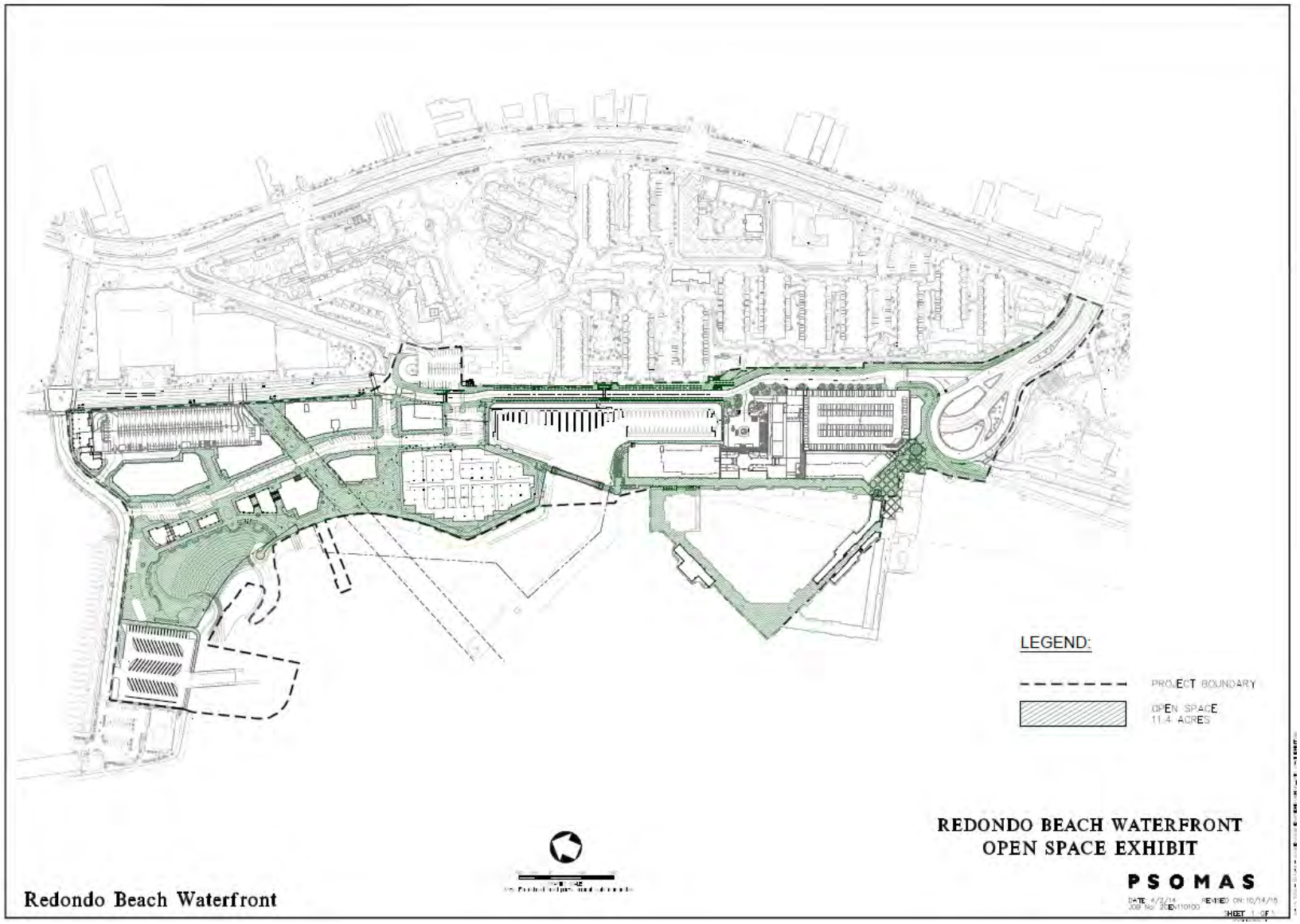


Figure 11. Open Space Conceptual Plan.

As described in detail below, construction of waterside elements would involve a combination of land-based and marine-based activities and equipment. For some waterside elements, barges would be used to transport and stage equipment and materials. The waterfront activities have not been officially scheduled; however, they are anticipated to occur within the 27 to 30 month period. As a worst-case scenario, it is assumed that up to five of the seven waterside project elements would occur during at the same time and would overlap with the construction occurring within the northern and southern portions of the site.

Activities within each construction area within the project site are described below. Typical construction activities include servicing construction equipment at designated areas; transporting construction workers, supervisors, and inspectors onsite in light-duty trucks; and controlling dust, track-out, and erosion by complying with a Construction Storm Water Pollution Prevention Plan (SWPPP) that would require stormwater BMPs such as wetting, wheel washing, erosion barriers, hazardous materials containment, and site inspections.

Construction Scheduling

With the exception of Kincaid's and the restroom building at Seaside Lagoon, all the buildings within the project site would be demolished. During construction, access during business hours would be maintained for Kincaid's and the adjacent Monstad Pier. At the beginning of construction, a relocation plan for the vessels leasing slips within the Redondo Beach Marina would be prepared, that includes relocation options for both private and commercial vessels. Relocation of some existing landside business to other locations within or near the harbor may also occur. Construction would require demolition of the existing on-site structures and hardscape, followed by the construction of new buildings and facilities. Heavy equipment such as backhoes, cranes, crawler tractors, excavators, graders, loaders, rollers, pavers, and haul trucks would be used at the project site throughout the construction period.

Project construction would occur throughout the entire site during the 27-30 month construction period. It is anticipated that the various construction sequences within each general area (northern and southern portions of the landside and waterside), would have the potential to overlap with each other. The construction sequences and their estimated duration are shown in Table 3. Following is a detailed description of the assumptions associated with the construction sequences by area.

Landside Construction

In general, construction activities associated with the landside construction would occur simultaneously within the northern and southern portions of the site and includes four main construction sequences: demolition, site preparation, building construction, and landscaping/hardscape improvements. Following is a summary of activities associated with each construction sequence:

Demolition

Construction activities associated with the northern portion of the project site would include the demolition of approximately 46,286 ft^2 of existing buildings. In the southern portion of the project site, construction activities would include the demolition of approximately 161,116 ft^2 of existing buildings.

Table 3: Anticipated Project Construction Schedule.

Phase	Start Date	End Date	Total Days
Landside - Northern Portion of Site			
Mobilization	2017/01/03	2017/02/20	35
Demolition	2017/02/07	2017/04/03	40
Site Utility Demolition	2017/03/21	2017/05/22	45
Earthwork	2017/04/25	2017/05/30	26
Site Utilities North	2017/05/02	2017/08/23	82
Structural Concrete North	2017/05/31	2017/09/21	82
Parking Structure North	2017/06/28	2018/06/28	262
Core and Shell North	2017/08/10	2018/11/14	330
Parking Structure North	2018/01/01	2018/06/28	129
Site Work	2018/04/27	2018/12/14	165
Interior Construction North	2018/04/27	2019/04/09	248
Landside - Southern Portion of Site			
Demolition	2017/02/07	2017/06/26	100
Site Utility Demolition	2017/07/13	2017/09/07	41
Retaining Wall	2017/07/13	2017/11/17	92
Earthwork	2017/08/10	2017/11/17	72
Site Utilities South	2017/08/24	2017/12/19	84
Structural Concrete South	2017/11/20	2018/02/01	54
Parking Structure South	2017/11/20	2018/10/16	237
Core and Shell South	2018/01/05	2019/02/26	298
Parking Structure South	2018/05/01	2018/10/16	121
Site Work	2018/10/17	2019/05/07	145
Interior Construction South	2018/02/02	2019/06/05	349
Offsite Improvements	2018/04/13	2018/12/31	187
Waterside Elements			
Bulkhead Repair	2017/01/03	2017/01/28	26
Small Craft Boat Launch Ramp	2017/01/03	2017/07/01	180
Sportfishing Pier	2017/01/03	2017/03/21	78
Seaside Lagoon	2017/01/03	2017/06/16	165
Redondo Beach Marina in Basin 3	2017/01/03	2017/05/18	136
Horseshoe Pier	2017/01/03	2017/05/8	126
Pedestrian Bridge	2017/01/03	2017/05/3	121

Demolition activities associated with the landside construction involve removal of existing structures, asphalt pavement, concrete sidewalks, parking lots/structures, and associated infrastructure. Minor utilities would be abandoned in place or removed if they would interfere with

installation of new infrastructure. Wood frame and other small structures would be demolished and delivered to an off-site waste handing (i.e., construction and demolition waste recycling) facility, possibly a facility in Glendora. Concrete would be mechanically crushed on-site using a concrete crusher and the material used as fill on-site. Demolition would commence on the northern portion of the site first. Once concrete crushing is completed on the northern portion of the site, the concrete crusher would be moved to the southern portion of the site. The loads of concrete debris would be hauled within the project site depending on the structural integrity of the International Boardwalk; alternatively, Catalina Avenue would be used. A portion of the concrete debris generated from the southern portion of the site would be used as fill on the southern portion of the site.

The moving of crushed concrete on-site is anticipated to result in an average of 145 trucks per day over a 10-day period within the project site. Construction equipment expected to be used during this phase includes breakers, concrete crushers, excavators, loaders, and dump trucks.

Site Preparation

Site preparation consists of earthwork and grading activities required to develop the project's infrastructure, including streets and sidewalks, storm drains, collection and conveyance systems for water, sewer, and stormwater, and distribution systems for gas, electricity, and telephones. Site earthwork and grading activities would typically be performed using standard construction equipment, such as excavators, loaders, scrapers, graders, and dump trucks. Import fills and export material would be loaded and transported using loaders and standard size haul trucks.

Approximately 130,000 cubic yards (cy) of fill would be required (50,000 cy in the northern portion of the site and 80,000 cy in the southern portion of the site). As discussed above, it is estimated that 45,000 cy of fill would come from on-site concrete debris (20,000 cy would be used in the northern portion of the site, and 25,000 cy would be used in the southern portion of the site). The remaining 85,000 cy of fill required would be imported to the project site (30,000 cy to the northern portion of the site and 55,000 cy to the southern portion). Earthwork in the northern portion of the project site is scheduled to take approximately 26 days, with the southern site earthwork estimated at approximately 72 days. Assuming 30,000 cy for the northern portion of the site (assuming 14 cy per truck) and a 26-day grading phase, up to 83 trucks per day are estimated over the 26 days of earthwork. Assuming 55,000 cy for the southern portion of the site and a 72-day grading phase, up to 55 trucks per day are estimated over the 72 days of earthwork.

Building Construction

Building construction would include development of new core/shell structures and coincide with the completion of the utilities and walkways. The existing shoreline along the project boundary, consisting of a variety of edge conditions (e.g., piers, wharves, rock bulkheads, and sandy beaches), would also be repaired and improved to reduce erosion, provide public access, protect against present and future coastal flooding due to rising sea levels, and to extend the life of the structural edges. Cast-in-place construction would utilize heavier equipment such as cranes and concrete pumps. Construction deliveries of exceptional size equipment and material would be scheduled during off-peak traffic hours.

The northern portion of the project site includes the construction of approximately 290,297 ft^2 of new retail, cinema, restaurant and office buildings as outlined above. The northern portion would also include a new main street parallel to Harbor Drive, a 757 stall parking structure (with elevator), a

surface parking lot and parking on the new main street, which includes 109 stalls, as well as new public walkways and open space. This phase is anticipated to begin in February of 2017 and continue until April 2019. As seen in Table 3, sequences for the northern portion construction would overlap not only with other northern portion sequences, but also with southern portion and waterside construction.

The southern portion of the project site includes the construction of approximately 225,519 ft^2 of retail, restaurant, office, and boutique hotel buildings as outlined above. The southern portion also includes a 1,157-stall parking structure with an elevator. Additionally, the Pacific Avenue Reconnection and new walkways and public open spaces would be established. This phase is anticipated to begin in February of 2017 and continue through June of 2019. As shown in Table 3, sequences for the southern portion construction would overlap with other southern portion construction sequences as well as with northern portion and waterside construction activities.

Landscaping/Hardscape Improvements

The final phase consists primarily of planting of new landscaping, the installation of hardscape paving, and the application of architectural coatings on buildings. Existing landscaping would be removed or stored and replanted on-site. As required by Article 7 Landscaping Regulations of the RBMC, the applicant of the proposed project would prepare and submit a landscape and irrigation plan. It would identify the type and number of trees to be removed or retained. Hardscape features would identify pedestrian paths on-site and accent the main commercial facilities. The exterior colors and materials would be subject to Harbor Commission Design Review.

Waterside Construction

The waterside construction activities consist of seven individual elements. Each of these is summarized below. The waterside construction activities would occur during the 2017 through 2019 construction schedule, overlapping with northern and southern portion construction. The exact timing of construction of the waterside elements is currently unknown; therefore, assumptions have been made on construction sequencing that present a worst-case scenario. As shown in Table 3, for modeling purposes it is assumed that all construction would occur in 2017. This is highly unlikely; however, this assumption would result in the highest (i.e., worst-case) equipment emissions because the assumed fleet mix would be older, and thus, would have higher emissions. While all phases are modeled as if they would occur in early 2017, due to site constraints, the construction overlap (for determining daily emissions estimates) assumes that five of the seven waterside construction elements would occur at the same time, and overlaps with the northern and southern portion construction sequences that have the greatest overlapping emissions. This presents a worst-case emissions estimate and any other waterside construction schedule would be anticipated to result in fewer emissions.

Construction schedules for each of the sections are listed in Table 3 by number of active on-site days of construction. Construction of the individual waterside elements is not anticipated to occur on consecutive days and therefore schedule lengths identified in the more detailed summary of each waterside element presented below may differ slightly from Table 3. The schedule lengths in the summary presented below also account for project mobilization, off-site materials fabrication, material procurement, and sequencing of work that may not be associated with any on-site construction activities.

Below is a summary of the construction associated with the seven waterside elements:

Bulkhead Repair: The Bulkhead Repair project element is the repair and replacement of the existing deteriorated concrete cap. The Bulkhead Repair project element is anticipated to be completed within six to eight weeks and would occur in two distinct construction sequences: Bulkhead Cap Demolition and Bulkhead Cap Replacement.

All work is assumed to be completed using conventional land based equipment. Most of the demolition work would be accomplished using a backhoe with recyclable material being disposed of at a facility in Gardena. All non-recyclable material would be disposed of at an appropriate off-site location. Construction activities would be performed using a skid steer loader and framing crew. The new cap would be formed with pour in place concrete methods.

Small Craft Boat Launch Ramp: The Small Craft Boat Launch Ramp project element would consist of the development of a two-lane concrete boat ramp, boarding floats, and associated parking. The entire proposed project is anticipated to be completed within eight months and would consist of four distinct construction sequences: Demolition Work; Breakwater Construction; Launch Ramp Construction; Parking Lot Construction.

Demolition activities would be accomplished using conventional land based construction equipment with recyclable materials disposed of at a facility in Gardena. Non-recyclable materials would be disposed of at an appropriate facility.

Construction activities would consist of a combination of marine and conventional land based equipment. All revetment stone to construct the breakwater and launch ramp is anticipated to be delivered via barge from the Pebbly Beach Quarry on Catalina Island. The launch ramp would be finished with a pour-in-place concrete section above the tide level and pre-cast sections for underwater. Asphalt for the parking lot would be delivered from a batch plant in Inglewood. The support boarding float dock would be held in position by approximately 8 small diameter (12-18 inch) pre-stressed concrete piles that would be jetted into position and set to final depth by impact hammer.

Sportfishing Pier: The Sportfishing Pier project element consists of the demolition of the existing pier and possible replacement with a new timber or concrete pier with similar dimensions and footprint. Should the pier be replaced, construction would be completed within nine months. The Sportfishing Pier project element would be completed in two sequences: Demolition Work and Pier Construction.

Demolition activities would be accomplished using a derrick crane and barges for the disposal of debris. Debris would be taken by barge to a site in the Port of Long Beach/Los Angeles area. Recyclable material would be hauled from the barge to a facility in Gardena while non-recyclable material would be disposed of at appropriate facility. Creosote timber would be trucked to an approved landfill in Rialto.

Construction activities would be accomplished using a derrick barge as well as conventional land based equipment. Construction materials would be delivered by barge and truck. An estimated total of 46 polyurea treated 11-inch wood or concrete piles would be hammer driven from the barge and a land based crane. Construction of the deck would be completed using a hydraulic crane.

Seaside Lagoon: The Seaside Lagoon project element consists of the conversion of the existing interior swimming lagoon into an embayment directly connected to King Harbor. The element is estimated to be completed within four months. The Seaside Lagoon project element would be completed in two phases: Demolition Work and Lagoon Construction.
The existing hand launch and dinghy dock would be removed and excavated to form the lagoon inlet to the Outer Harbor. A two-acre interior area would then be graded to support a semi-circular sandy beach with landscape improvements. Demolition would be completed using conventional land based earth moving equipment. Recyclable material would be hauled to a site in Gardena and non-recyclable debris would be properly disposed of off-site.

With the exception of the lagoon's entrance basin, most of the construction activities would use conventional land based equipment. The lagoon's entrance basin would be constructed using a derrick barge. Dredge material would be placed as new beach fill or disposed of off-site as appropriate. Asphalt paving would be delivered from a plant in Inglewood. Stone for slope protection is assumed to be delivered by truck from a quarry in Corona.

Redondo Beach Marina in Basin 3: The marina project element consists of the demolition of the existing slips, docks, facilities and reconstruction/redevelopment of the entire floating dock complex and appurtenant facilities within the marina. The marina project element is anticipated to be completed within seven or eight months and accomplished in two distinct sequences: Demolition Work and New Dock Construction.

All construction activities would be completed using a combination of land based and marine equipment. Demolition of floating docks would be accomplished in sections by towing them to shore and removing them by use of a hydraulic crane. Piles would be removed by crane from a floating barge. All construction debris would be trucked to a processing facility in Gardena.

Approximately 7 pre-stressed concrete piles would be delivered by truck from Fontana and placed from a floating barge using a combination of initial setting by jetting followed by final embedment using an impact hammer. New floating docks would be delivered partially assembled and would be placed by hydraulic crane and outboards. New gangway landings would be constructed by placing piles from floating crane and concrete decks would be completed using conventional framework and concrete placement methods.

Horseshoe Pier: The Horseshoe Pier project element consists of the demolition of the existing timber pier (which is constructed of timber piles and pile caps, closely spaced timber stringers, and a thin concrete deck slab) and replacement of the timber constructed portion of the pier with new bents consisting of concrete or HDPE coated steel pipe piles and concrete pile caps and a thick reinforced concrete deck slab. This project is anticipated to be completed within seven months. The Horseshoe Pier project element is anticipated to be constructed in two sequences: Building and Partial Pier Demolition, and Pier Construction.

All work is estimated to be completed using typical landside construction equipment. Concrete, wood, metal, and other recyclable materials would be hauled to a processing facility in Gardena. All non-recyclable debris would be disposed of off-site. Creosote timber debris would be hauled to an approved landfill in Rialto.

Materials would be delivered by truck. A 45-ton land based crane and vibratory hammer would be used to drive the 18-inch steel pipe piles. Front end loaders, skid steer loaders, and smaller equipment would be used to ferry equipment and materials to the crew and assist in work tasks.

Pedestrian Bridge: The pedestrian bridge element consists of construction of a 16-ft wide, 248-ft long fabricated steel movable bridge crossing the entrance to Basin 3. Construction is projected to be completed within six months and accomplished as a single construction sequence. All construction activities are assumed to use a combination of marine and conventional land based equipment. Pier foundations would be built using a floating derrick barge. Bridge sections are assumed to be erected from the land using a 225-ton truck crane. Construction of smaller bridge abutments and underground machinery vaults would be constructed using smaller excavators and loader equipment. All materials are anticipated to be delivered by truck.

PURPOSE OF TECHNICAL REPORT

In support of existing and future development, Merkel & Associates, Inc. (M&A) was retained to conduct an assessment of the biological resources for the Waterfront Project. The results of this assessment will be utilized to prepare the biological resource sections of a California Environmental Quality Act (CEQA) environmental review document. This document provides the factual basis for project impact assessments supporting CEQA analyses and project permitting. The data and analyses provided in this document were developed by numerous sources. The project description information and conceptual drawings utilized for this analysis have been provided by CDM and their project engineers. M&A completed an on-site biological investigation of the project area and reviewed relevant literature.

METHODS AND MATERIALS

TERRESTRIAL RESOURCES

The primary data source for this section was the City of Redondo Beach, Heart of the City Draft Environmental Impact Report (2001), recent aerial images, and the California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB).

MARINE RESOURCES

An interferometric sidescan sonar survey was completed at the Redondo Beach Waterfront Revitalization project area in April 2014 and March 2015 to map benthic marine habitat types. Data were collected using an interferometric wide-swath sonar system operating at 468 kHz. The sonar was set to scan out to 35 meters (m) on both the starboard and port channels for a 70-m wide swath. Digital pixel resolution was 6.4 centimeters (cm). Parallel survey tracklines were navigated through the project survey area until the entire survey footprint was covered. Adjacent tracklines were spaced to allow overlap such that the area directly beneath the sonar head (Nadir gap) was filled with valid data to allow for preparation of a full-coverage mosaic during post-processing. The interferometric sidescan sonar was field calibrated by running patch tests to adjust sonar head settings. Geographic positioning was provided via a dual-antenna DGPS/compass receiver with better than 60-cm accuracy. The collected data were spatially corrected for vessel heave, pitch, and roll via an integrated vessel's motion sensor. All data were collected in latitude and longitude using the North American Datum of 1983 (NAD 83), converted to the Universal Transverse Mercator system in meters (UTM), and plotted on a geo-rectified aerial image of the project area.

The data from the sonar included bathymetry and backscatter data. The bathymetric data result from the timing of the return of a sound pulse reflected off the bottom as it is received at multiple locations on the transducer array. The difference in return time to different sensors allows for triangulation of the position of the acoustically reflective surface. The backscatter data were used to determine the distribution of seafloor habitats. The backscatter data are the visual representation of the intensity of the acoustic energy reflected back to the sonar unit from the bottom. Hard objects (e.g., rock) or soft objects containing air filled voids (e.g., kelp pneumatocysts) reflect sound waves with a greater intensity relative to soft bottom (e.g., mud and sand). The angle of the surveyed object also determines the intensity of the returned sound signal. Rocky outcroppings with greater complexity (e.g., increased relief) and sand waves have greater variation in terms of high signal intensity mixed with low signal return in the areas that lie in the shadows of the reef or sand wave. The backscatter data were interpreted through inspection of the spatially registered imagery.

In conjunction with collection of interferometric sidescan sonar data, a video camera with a 270-degree wide dynamic range (WDR) color camera onboard a Seabotix LBV 150 with an ultra-short baseline (USBL) positioning system was deployed to acquire high-resolution video groundtruthing data to further habitat characterization from sidescan sonar data. The survey vessel's DGPS system was integrated with video data to provide real-space camera positioning of video tracklines.

Following completion of the field survey, the digital sonar traces (backscatter data) were joined together into a single mosaic and geographically registered using the recorded navigational data. The registered sonar mosaic was then overlaid on an aerial image of the survey area and reviewed for accuracy. Surficial features and marine benthic habitat types were then digitized by a geographic information systems (GIS) specialist who inspected the sonar mosaic and delineated habitats and features using ESRI ArcView GIS software. Habitats were classified, where possible according to the U.S. Fish and Wildlife's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Collected video imagery was used to inspect habitat breaks and characterize habitats defined by backscatter data. Still photos were "grabbed" from the video to support habitat characterizations for reporting purposes.

EXISTING CONDITIONS

Biological resources include plants, animals, and the habitats in which they occur. This section discusses the existing biological resources in the vicinity of the Waterfront Project. Understanding the existing physical and biological conditions at the project site is critical to determining the potential impacts of the proposed project. Knowledge of these parameters allows calculation of mitigation requirements, determination of impacts to biological resources, and increases the probability of designing a low biological impact construction plan within the project's environmental regime.

REGIONAL OVERVIEW

Terrestrial Resources

The project area lies within a densely developed urban area that is highly disturbed and has been developed and redeveloped several times over during the last 130 years. The majority of the project area has been developed with structures for at least the last 40 years, with some structures dating over 70 years. The area does not contain any terrestrial plant or animal species listed in local or regional

plans, policies, or regulations, or as state or federally threatened or endangered as determined by the CDFW's CNDDB. Within an urban environment, biological resources are often limited to ornamental plants, common songbirds, and feral and domestic animals. The City's Coastal Land Use Plan (LUP) and Coastal Zoning Ordinance includes a tree trimming/tree removal ordinance specific to the harbor area relative to bird species of special concern and wading birds (RBMC 10-5.1900 (h)).

Marine Resources

The following regional overview information was obtained from City of Los Angeles 2007.

Santa Monica Bay is located within a large and gradual bend in the coastline, regionally called the Southern California Bight (SCB). The SCB is bounded on the west by the California Current and extends from Point Conception to Cabo Colnett, Baja California, Mexico. The marine life of the SCB is abundant and diverse because of the various habitats, environmental conditions, and persistent upwelling events. Interactions between the physiography, currents, wind, and anthropogenic inputs contribute to the richness of this body of water. The continental shelf within the SCB contains relatively deep nearshore waters and a complex bottom topography resulting in habitats of rapidly changing depths, many hard- and soft-bottom regimes, multiple island outcrops, and deep basins.

Additionally, the SCB is located in a transitional area between Pacific subarctic, Pacific equatorial, and North Pacific central water masses; consequently, the fauna contains representatives from each of these sources. For example, of the 554 species and 144 families of California marine fishes, 481 species (87%) and 129 families (90%) occur in the SCB. Likewise, the marine benthic invertebrates in the SCB exhibit great diversity, including representatives of nearly all invertebrate phyla. Although, the total number of species in the region is unknown, some researchers estimate there may be more than 5,000 species of invertebrates (infaunal and megabenthic invertebrates) found in the SCB.

Santa Monica Bay bathymetry is primarily composed of soft-bottom shelf, punctuated with substantial deep rocky reef (e.g., Short Bank). Two submarine canyons, Redondo and Santa Monica, are prominent features of this otherwise homogeneous setting. Specifically, Santa Monica Bay soft-bottom habitats are a mixture of silt, sand, clay, and gravel. The combination of diverse sediment types and complex bottom topography creates a heterogeneous benthic environment throughout the Bay. The composition of demersal fish and benthic invertebrate populations varies along these heterogeneous gradients.

Water Quality

Water quality within the project area reflects natural seasonal patterns. During late spring through fall, solar heating preferentially warms the ocean surface, resulting in depth-related gradients in water temperature (thermocline). A strong density gradient (pycnocline), related primarily to the water temperature changes with depth, restricts vertical mixing of the water column which affects the depth distribution of most water quality parameters (Daley et al. 1993). During winter and early spring, the strength of the vertical stratification decreases in response to weaker solar heating, mixing by winter storms, and upwelling.

Upwelling of cold water occurs during periods of equatorward winds when warmer surface waters are moved offshore and replaced by deep water. Local upwelling events are only observed in winter and early spring when nearshore winds within the SCB are comparable in magnitude to those offshore (Dailey et al. 1993). These colder waters have lower dissolved oxygen, but they have higher salinity and, most importantly, are richer in nutrients. Upwelling of nutrient rich, deeper waters is critical to primary production and the productivity of coastal waters. In summer and fall, winds are weak and local upwelling is rarely observed.

El Niño Southern Oscillation (ENSO) is a major source of inter-annual climate variability in the SCB, characterized by a warming of the tropical east Pacific and a rise in sea level that propagates northward into the SCB. The high sea level anomalies in the SCB produce warmer surface water temperatures and a deeper thermocline, while the opposite conditions accompany a cold La Niña event. The ENSO cycle in the Pacific is not regular because of the complex feedback mechanisms between the tropical ocean and the atmosphere, but it occurs on average about every four years and can last a year or more. Major El Niño events can have severe climatic and ecological effects in the SCB.

Additionally, stormwater runoff from coastal rivers and streams adds large volumes of freshwater that can cause turbidity plumes and reductions in near-surface salinity up to many miles from shore. River and stream discharges also add suspended sediments, nutrients, bacteria and other pathogens, and chemical contaminants to nearshore waters. Publicly-owned treatment works (POTWs) discharge treated sewage effluent to the ocean through subsurface wastewater outfalls, which introduces a low-salinity plume containing suspended solids and pollutants to the marine environment. Historically, municipal wastewaters were the largest source of pollutants to southern California coastal waters. However, more stringent effluent limits have reduced the mass emissions of contaminants from POTWs to the extent that non-point source inputs presently are recognized as the primary source of contaminants to coastal waters of the SCB (Schiff et al. 2000). Wastewater from the City of Los Angeles has been discharged into the waters of Santa Monica Bay since 1894 from the Hyperion Treatment Plant. As the population of Los Angeles grew, so did the flow of sewage, and as a result, treatment practices at Hyperion changed to cope with population growth and the resultant increased sewage flows to the plant. In late 1951, Hyperion initiated full secondary treatment, and by 1957, treatment volume increased to where Hyperion was discharging only partial secondary effluent into Santa Monica Bay through the 5-Mile Outfall. On November 23, 1998, following plant reconstruction and upgrades to the treatment process, Hyperion once again began discharging full secondary-treated effluent into Santa Monica Bay. The plant has a dry weather capacity of 450 million gallons per day (MGD) for full secondary treatment and an 850 MGD wet weather capacity.

Temperature and Salinity

The salinity in the surface waters of the SCB is relatively constant (isohaline) with salinities in the nearshore peaking in July at approximately 33.6 parts per thousand (ppt) and decreasing in late winter and early spring to 33.4 -33.5 ppt (Dailey et al. 1993). Tide and temperature data are recorded at the National Oceanic and Atmospheric Administration (NOAA) station (Station ID: 9410840) located on the Santa Monica Pier. In 2014, the sea temperatures ranged from a low of 55.8°F in April to a high of 76.1°F in July, with an annual average of 65.3°F (Figure 12.)

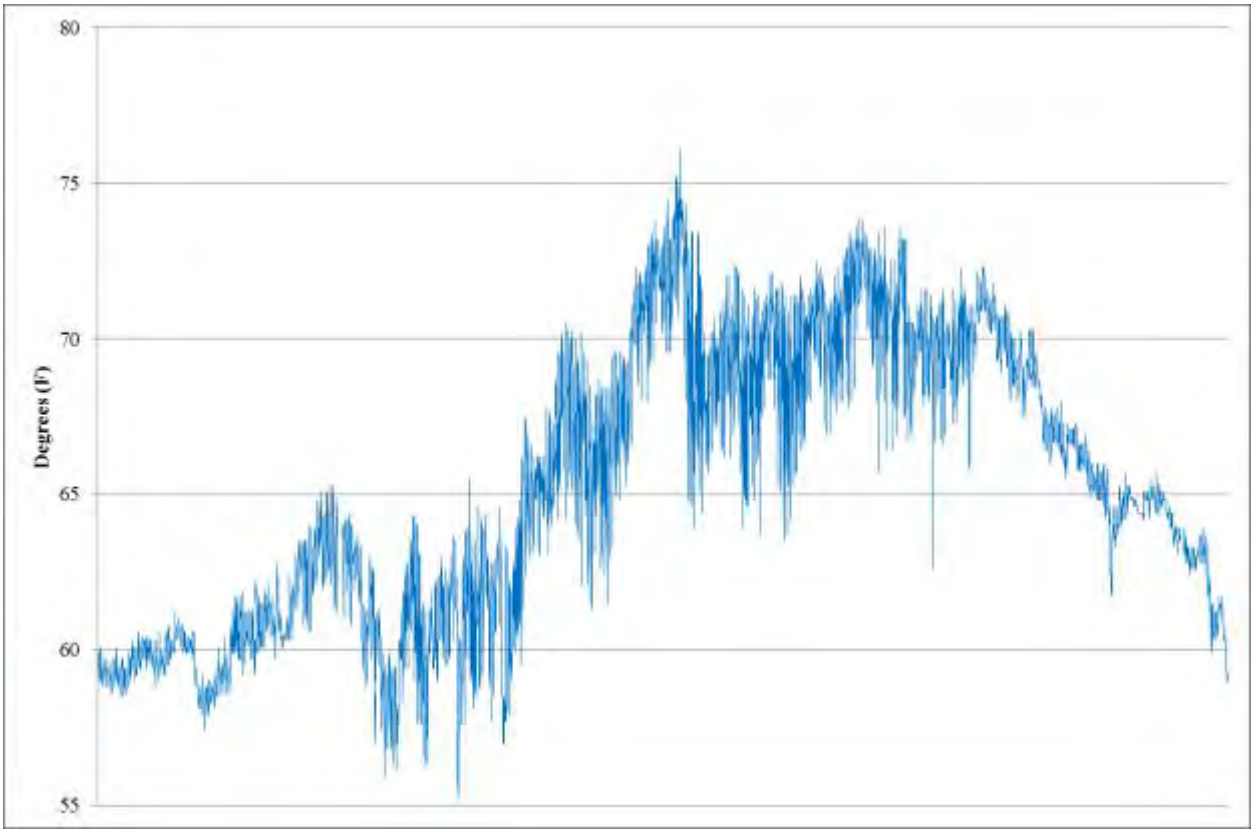


Figure 12. Hourly surface water temperatures (^{o}F) at NOAA Station 9410840 at Santa Monica Pier, California from January through December 2014.

Beneficial Uses

The existing beneficial uses of Los Angeles County beaches and nearshore areas, as identified in the Basin Plan (RWQCB 2011) include:

- COMM: includes the uses of water for commercial or recreational collection of fish, shellfish, or other organisms;
- REC-1: includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible;
- REC-2: includes the uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible;
- WILD: includes uses of water that support terrestrial ecosystems;
- MAR: includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds);
- MIGR: includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish;

- SPAWN: includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish. This use is applicable only for the protection of anadromous fish;
- SHELL: Includes uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters and mussels) for human consumption, commercial, or sport purposes; and
- NAV: includes uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

It should also be noted that in 1998, Santa Monica Bay was listed on the 303(d) for coliform bacteria, preventing beaches from attaining REC-1 beneficial use status, and in 2003 the Santa Monica Bay Beaches Bacteria Total Maximum Daily Load (TMDL) for wet and dry weather became effective. In addition, a Nearshore and Offshore Debris TMDL is also in effect, and permittees shall comply with the final water quality-based effluent limitation of zero trash discharged into water bodies within the Santa Monica Bay Watershed Management Area and then into Santa Monica Bay or on the shoreline of Santa Monica Bay no later than March 20, 2020, and every year thereafter.

Sediment Quality

Sediment quality typically varies in relation to grain size and proximity to input sources. Trace metal and organic contaminants in coastal waters typically have strong affinities for suspended particulates that eventually settle to the bottom where they become incorporated into the bottom sediment. Because of their high surface-to-volume ratio, finer sediments (silts and clays) generally have higher contaminant concentrations than coarser sediments (sands). Once incorporated into bottom sediments, contaminants may be remobilized through current- or storm induced resuspension, bioturbation, or mechanical disturbance such as dredging.

Within Santa Monica Bay, historic discharges of DDT and PCBs have accumulated in bay sediments and caused contamination of some seafood species. In addition, the Hyperion Treatment Plant, which has been in operation since 1894, discharged raw sewage into the Santa Monica Bay. Prior to 1987, sludge was disposed into Santa Monica Bay from the plant; however, since 1988, full secondary treatment has been used and has resulted in a dramatic reduction in the discharge of solids to the bay.

As part of the National Pollutant Discharge Elimination System (NPDES) permit for the operation of the Hyperion Treatment Plant and for the discharge of stormwater and urban runoff, sediment samples are collected at 44 offshore stations in Santa Monica Bay. Sediment quality was evaluated using two statistical thresholds. The ERL (Effects Range - Low) test identifies the threshold – or concentration – of metals or organic compounds below which adverse impacts are rarely found. The ERM (Effects Range - Median) identifies the concentration above which adverse impacts are frequently found. Based on their concentrations with respect to ER-L and ER-M, metals were expected to have low biological impact on benthic organisms at the 5-Mile Outfall and other locations sampled in the bay, but total DDT and PCBs were expected to have some biological impacts (City of Los Angeles 2007).

While these findings are important to note, it is unlikely that similar sediment conditions would exist in the project area. As part of the biennial surveys conducted by Southern California Edison for the Redondo Beach Generating Station, data on sediment chemistry (metals), benthic community structure, and bioaccumulation are collected. Sediment chemistry concentrations were relatively

low, as well as tissue concentrations with the exception of slightly elevated zinc levels. Infaunal and nekton communities were found to be undegraded (SWRCB 1998).

PHYSICAL SITE CONDITIONS

Terrestrial Resources

As noted previously, the project area lies within a densely developed urban area that is highly disturbed and has been developed and redeveloped several times over during the last 130 years. The area does not contain any terrestrial plant or animal species listed in local or regional plans, policies, or regulations, or as state or federally threatened or endangered as determined by the CDFW's CNDDB. Within the project boundaries, the terrestrial biological resources include approximately 26.1 acres of disturbed urban habitat that's limited to ornamental plants, common songbirds, and feral and domestic animals (Table 4).

Marine Resources

The Waterfront Project survey area is within a working recreational and commercial harbor, and located within the project area is an intake to supply once-through cooling water to the AES Redondo Beach Generating Station Units 7 and 8 (Figure 13). Approximately 468,000 gallons per minute (gpm) of seawater are supplied to Units 7 and 8 through a 14-foot inside diameter concrete conduit that originates approximately 1,000 feet offshore and draws water from the mouth of the harbor at an approximate depth of 20 feet MLLW. After passing through the condensers, the temperature of the water is elevated 12.0° C (21.6° F) when the units are operating at full load. The temperature increase is less when operating at lower loads. The warmed water is discharged back to the harbor under authorization of NPDES permit CA0001201. Cooling water is discharged through Discharge Serial No. 002, which consists of a 14-foot inside diameter concrete conduit that terminates about 300 feet off the beach in King Harbor at a depth of approximately 20 feet below MLLW. Because of this discharge, the waters in the harbor are generally warmer than the offshore waters of Santa Monica Bay. Warmed effluent can usually be detected in the vicinity of the discharge; however, warm waters rarely extend more than a few hundred feet or out of the harbor into Santa Monica Bay (MBC 2001).

Seaside Lagoon

Seaside Lagoon is an excavated and enclosed lagoon located inside King Harbor and was originally built in the 1950's as a recreational amenity. The lagoon is a non-tidal saltwater facility is fed by a diversion of cooling water from the Redondo Beach Generating Station. Seaside Lagoon is operated seasonally from approximately Memorial Day through Labor Day each year. The lagoon has a storage capacity of approximately 1.5 million gallons of water and a flow-through rate of approximately 200,000 gallons per hour when operating. The lagoon is equipped with both chlorination and de-chlorination facilities. The treatment system consists of adding sodium hypochlorite solution to the influent to maintain a residual chlorine level of approximately 1.0 parts per million in the lagoon. Effluent is dechlorinated with sodium bisulfite to reduce the residual chlorine below 10 parts per billion. The lagoon discharges approximately 3,200 gpm of water through engineered outlet drains to King Harbor when the lagoon is in use and the power plant is operating. The water is discharged through three overflow structures along the northwest edge of the lagoon. From the discharge structures, the water flows by gravity to a vault, then into a conduit that empties into King Harbor at the shoreline embankment. The City of Redondo Beach is required to

monitor the water quality at the lagoon discharge point within King Harbor as part of the requirements identified in the specified NPDES Permit.

The determination as to whether Seaside Lagoon as a regulated water of the United State (WOUS) is unclear at the present time and needs to be resolved as a part of the environmental permitting for this project. Specifically, the lagoon is situated in an area that was historically open water and beach face prior to the construction of King Harbor that commenced in 1956. When the Seaside Lagoon and other facilities in the harbor area were originally constructed, fills were placed in Traditionally Navigable Waters (TNW). Historic photographs that have been located and portions of construction

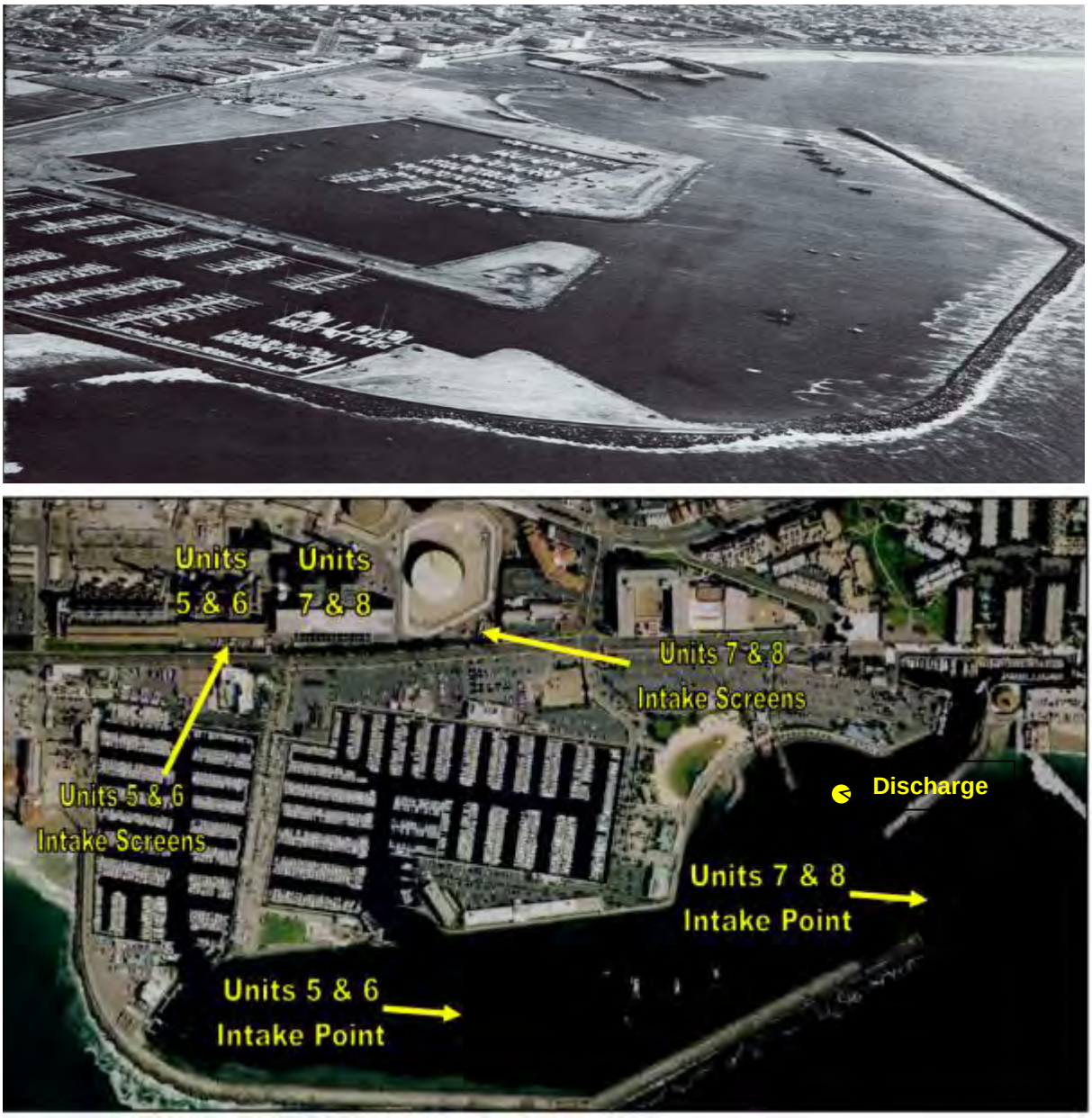


Figure 13. 1962 Aerial Photograph of King Harbor Under Construction (Redondo Beach Harbor Department) and AES Redondo Beach Generating Station Intake Locations (TetraTech 2006).

plans that have been obtained fail to identify whether the area where Seaside Lagoon is located was ever completely filled (to the point of being terrestrial as opposed to water or wetland) prior to it being put into the present condition as a drain and fill controlled and seasonally operated sand bottom pool. These sources are not conclusive as to whether, in the 1950s, the area where the Seaside Lagoon is located was entirely filled, and then excavated to construct the lagoon. It is possible that entire area was filled and then subsequently excavated and tied into the cooling water system of the AES power plant for drain and fill purposes; these circumstances may be factors in a jurisdictional determination. The fact that the lagoon is operated seasonally and only by controlled inlet and discharge plumbing, garners its water supply from industrial supply (cooling water), and has been subject to an NPDES permit with a designated receiving water compliance point being within King Harbor, may indicate that the lagoon has been historically managed as a non-jurisdictional recreational resource. For purposes of this analysis, the Seaside Lagoon area is considered potentially jurisdictional.

Because the information relating to the early development of the lagoon is not yet definitive and the final determination as to jurisdictional status of Seaside Lagoon rests with the U.S. Army Corps of Engineers, this document evaluates the project work under both potential jurisdictional circumstances. Because water levels within the lagoon are controlled by drain and fill plumbing and operational environment, the potential jurisdictional boundary, assuming jurisdiction was never removed during construction has been adopted as the open coastal annual highest tide line (Clean Water Act, Section 404) and the mean high tide line (Rivers & Harbors Act Section 10). Within the hydrologically controlled recreational lagoon, these lines have no present physical meaning.

SITE-SPECIFIC HABITAT SURVEY RESULTS

The interferometric sidescan sonar survey area encompassed approximately 110 acres of King Harbor, including the marine project site. The habitat types and bathymetric conditions are summarized in Table 4 and depicted in Figure 14. Within the habitat types are subclasses including vegetated and non-vegetated habitat, as well as, artificial hard substrate (e.g., rip-rap revetment, piers, and docks). Man-made habitat consisting of rip-rap revetment extends along the majority of shoreline, while a mixture of rip-rap revetment, docks, and concrete bulkhead walls are present along Moles A, B, C, and D, and within Basin 3 (Figure 14).

The harbor bottom habitat is primarily unvegetated soft bottom comprised of both mud and sand dominated conditions (approximately 83.1 acres). Some vegetated habitat (kelp) occurs in areas with debris or rock substrate (approximately 7.6 acres) (Table 4). The slope of the bottom is relatively steep along the rip-rap revetment and reaches depths of approximately -35 feet MLLW within the middle of the basin, and water depths exceeding -60 feet MLLW occur outside of the breakwater (Figure 14).

The following section describes the habitat types and biological resources within and adjacent to the Waterfront Project area.

Table 4. Habitats Within and Adjacent to the Project Boundary.

Classification	Habitat	Within Project Boundary		Marine Survey Area	
		Acres	m^2	Acres	m^2
Upland Habitats	Muted Tidal Lagoon	1.22	4,934.4	1.22	4,934.4
	Pavement	0.34	1,390.6	0.34	1,390.6
	Revetment	0.42	1,700.5	6.16	24,937.4
	Sand Beach	0.93	3,765.3	0.93	3,765.3
	Supratidal Beach	0.11	442.2	1.03	4,174.7
	Urban/Developed	26.13	105,723.8	-	-
Marine: Intertidal: Artificial Substrate	Riprap	0.26	1,051.0	2.80	11,346.6
Marine: Intertidal: Unconsolidated Bottom	Sand Beach	0.16	628.5	3.18	12,877.7
Marine: Subtidal: Unconsolidated Bottom	Soft Bottom	1.97	7,971.7	83.10	336,278.0
Marine: Subtidal: Rock Bottom	Rubble/Cobble	1.14	4,609.0	6.87	27,804.9
	Rubble/Cobble with Kelp	-	-	1.15	4,669.2
	Rubble/Debris	0.02	61.9	0.59	2,389.1
	Scattered Kelp on Rubble and Debris	-	-	6.48	26,233.3
Other: Over Water Structures	Piers and Docks	2.96	11,974.7	4.78	19,362.1

Figure 14. Marine Habitat Map.

MARINE RESOURCES

Subtidal Unvegetated Habitat

Unvegetated soft bottom habitat with evidence of burrowing invertebrates, including a solitary tube-dwelling anemone

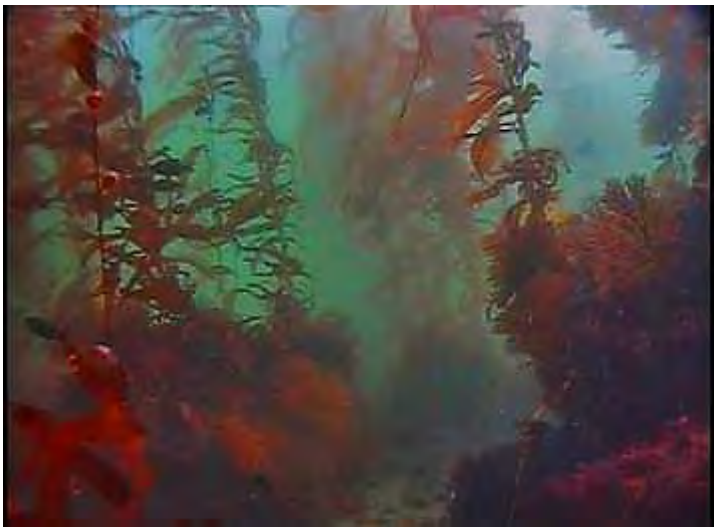
Soft bottom habitat occurs throughout most of the project area, with depths ranging from –10 feet to approximately -35 feet MLLW within the harbor, and reaching -65 feet offshore of the Redondo Beach Pier. The substrate also ranges from soft muds within the harbor to sand near the mouth of the harbor and extending into the exposed nearshore environment.

Round stingrays (*Urobatis halleri*) and barred sand bass (*Paralabrax nebulifer)* were the only fish observed in the subtidal unvegetated habitat. However, other demersal fish species including spotted sand bass (*Paralabrax maculatofasciatus*), specklefin midshipman (*Porichthys myriaster*), black croaker (*Cheilotrema saturnum*), and gobies (Family Gobiidae) are likely to use this habitat, and in the nearshore waters, other species such a speckled sanddab (*Citharichthys stigmaeus*) are common.

Invertebrates were sparse, although the mud showed numerous signs of burrowing invertebrate activities, likely from bivalves (*Chione* spp., *Macoma nasuta*), amphipods (*Grandidierella japonica*), ghost shrimp (*Callianassa californiensis*), burrowing anemones (*Harenactis attenuata*), and tube-dwelling anemones (*Pachycerianthus fimbriatus*). Castings from tube dwelling polychaetes were also common on the mud bottom. Invertebrates occasionally seen were the opisthobranch *Navanax inermis*, slender sea pen (*Stylatula elongata*), and other invertebrates anticipated to utilize this habitat include gastropods and bivalves such as bubble snail (*Bulla* sp.). In sandier areas, purple olive shell (*Olivella biplicata*), Lewis's moon snails (*Neverita lewisii*), and speckled scallop (*Argopecten circularis*) are expected along with Pacific sand dollar (*Dendraster excentricus*). Debris found on the bottom supported species more typical of hard substrates (Figure 15), including sponges (Phylum Porifera), scale worm (Family Polynoidae), golden gorgonians (*Muricea californica*), invasive non-native tunicates (*Styela plicata* and *Botrylloides* spp.), and California spiny lobster *(Panulirus interruptus*). Vegetation on the soft bottom was limited to isolated clumps of the red algae *Gracilariopsis* sp. and drift algal debris. Occasional small pieces of buried hard substrate were colonized by single fronds of juvenile giant kelp (*Macrocystis pyrifera*) and feather boa kelp (*Egregia menziesii*).

Figure 15. Debris or Rocks on Soft Substrate Supported Species Characteristic of Hard Substrate.

Subtidal Vegetated Habitat



*Giant kelp (*Macrocystis pyrifera*) located near south breakwater*

The most prominent vegetation within the project area consisted of giant kelp beds (Figure 16). The artificial riprap substrate along the breakwater and in the vicinity of the Redondo Beach Generating Station structures function as a rocky reef, with understory and canopy forming kelp species present on subtidal boulders. Understory algae on riprap was dominated by coralline algae (*Corallina* spp.), sea lettuce (*Ulva* sp.), and brown and red algae such as *Dictyota flabellata*, *Prionitis lanceolata*, and *Rhodymenia* sp. Canopy forming kelps included giant kelp, feather boa kelp, and sargassum (*Sargassum muticum*). The invasive kelp, *Undaria pinnatifida*, was not observed, but is likely to occur within the harbor. This opportunistic seaweed is able to rapidly colonize new or disturbed substrata and artificial floating structures. When established, *U. pinnatifida* occurs in dense, vigorous stands and forms a thick canopy over the native biota (IUCN Invasive Species Specialist Group 2007).

Numerous fish and invertebrate species were associated with the kelp beds located along subtidal riprap. Several species of bryozoans, along with golden gorgonian (*Muricea californica*) colonized subtidal riprap substrate. In addition, the rocky substrate supported common kelp forest invertebrates including sea stars (*Asterina miniata*, *Pisaster giganteus*, *P. ochraceous*), sea cucumber (*Parastichopus parvimensis*), sea urchins (*Strongylocentrotus* spp.), and molluscs such as the wavy turbon topsnail (*Megastrea undosa*). Fishes common in southern California kelp forests observed during the survey included opaleye (*Girella nigricans*), sargo (*Anisotremus davidsonii*), senorita (*Oxyjulis californica*), pile surfperch (*Rhacochiluss vacca*), sheephead (*Semicossyphus pulcher*), kelp bass (*Paralabrax clathratus*), zebra perch (*Hermosilla azurea*), garibaldi (*Hypsypops rubicundus*), blacksmith (*Chromis punctipinnis*), black perch (*Embiotica jacksoni*), and kelp surfperch (*Brachyistius frenatus*). One fish species that is not commonly observed in southern California is the broomtail grouper (*Mycteroperca xenarcha*) and several individuals were observed within the kelp forest areas adjacent to the discharge structures.

Along the outer breakwater, there was scattered hard debris including sunken docks, abandoned mooring anchors, large chain links, railroad track sections, and solitary riprap (M&A 2013). This debris was colonized by giant kelp and an associated assemblage of kelp bed species, particularly in areas where the debris was frequent enough to support a more desne stand of kelp. Though giant kelp was the dominant species, occasional feather boa kelp and *Sargassum* were also present. Common red algae on the debris included *Botryocladia* sp. and *Rhodymenia* sp., and similar fish speceis were observed in and around the kelp.

Figure 16. Giant Kelp Community.

Eelgrass (*Zostera* spp.) is a marine angiosperm that grows on subtidal soft bottom habitats within protected and semiprotected waters. Eelgrass has been reliably recorded in King Harbor at various times over the past decade. This includes mapped observations by M&A in October 2005 of common eelgrass (*Zostera marina*) along the breakwater near the King Harbor Yacht Club (M&A 2008). An additional second hand information has been received on an occurrence reported by the Vantuna Research Group as occurring in waters approximately 30 feet deep between the bait barge and the mouth of the harbor. This occurrence would have certainly been Pacific eelgrass (*Zostera pacifica*) based on habitat characteristics. Eelgrass is also occasionally found in the wrack along the beach within Redondo Beach, suggesting presence of offshore beds. Knowing of the reports of eelgrass in the Harbor, a focused survey for eelgrass was conducted and no beds were located in April 2014 or expanded surveys in March 2015.

Intertidal/Shallow Subtidal Riprap Revetments

Riprap occupies much of the shoreline in the project study area, and is generally comprised of boulders found at the outer breakwaters and along the shoreline of many of the basins and channels (Figure 17). Riprap habitat extends from the upper tidal zone (intertidal) to the shallow subtidal zone, extending down to roughly -12 feet MLLW where it transitions to vegetated and/or unvegetated subtidal habitat.

While no formal quantitative survey was conducted of revetment communities, organisms common to the upper intertidal zone in southern California include periwinkle snails (*Littorina* spp.), and barnacles (*Balanus* spp., *Chthamalus fissus*/*dalli*), and limpets (*Lottia* spp.) The mid and low intertidal zones generally support a greater number of organisms due to their greater periods of inundation by the tides. These zones can also be affected by constant surge and wave action. Mussels (*Mytilus* spp.) and gooseneck barnacles (*Pollicipes polymerus*) can form the dominant biomass, while other organisms can include anemones (*Anthopleura xanthogrammica*), snails (*Acanthina* sp.), chitons (*Mopalia muscosa*, *Nutallina californica*), limpets, and polychaete worms (SAIC 2010).

The subtidal riprap had more diversity of flora and fauna (Figure 18). Algal species observed subtidally included coralline algae, green alga (*Ulva* spp.) and brown algae including *Dictyota flabellata, Colpomenia* spp. and the non-native *Sargassum muticum*. Fish and invertebrate species

similar to those observed in the vegetated habitats were also observed along subtidal portions of the riprap.

Figure 17. Rip Rap Shoreline.

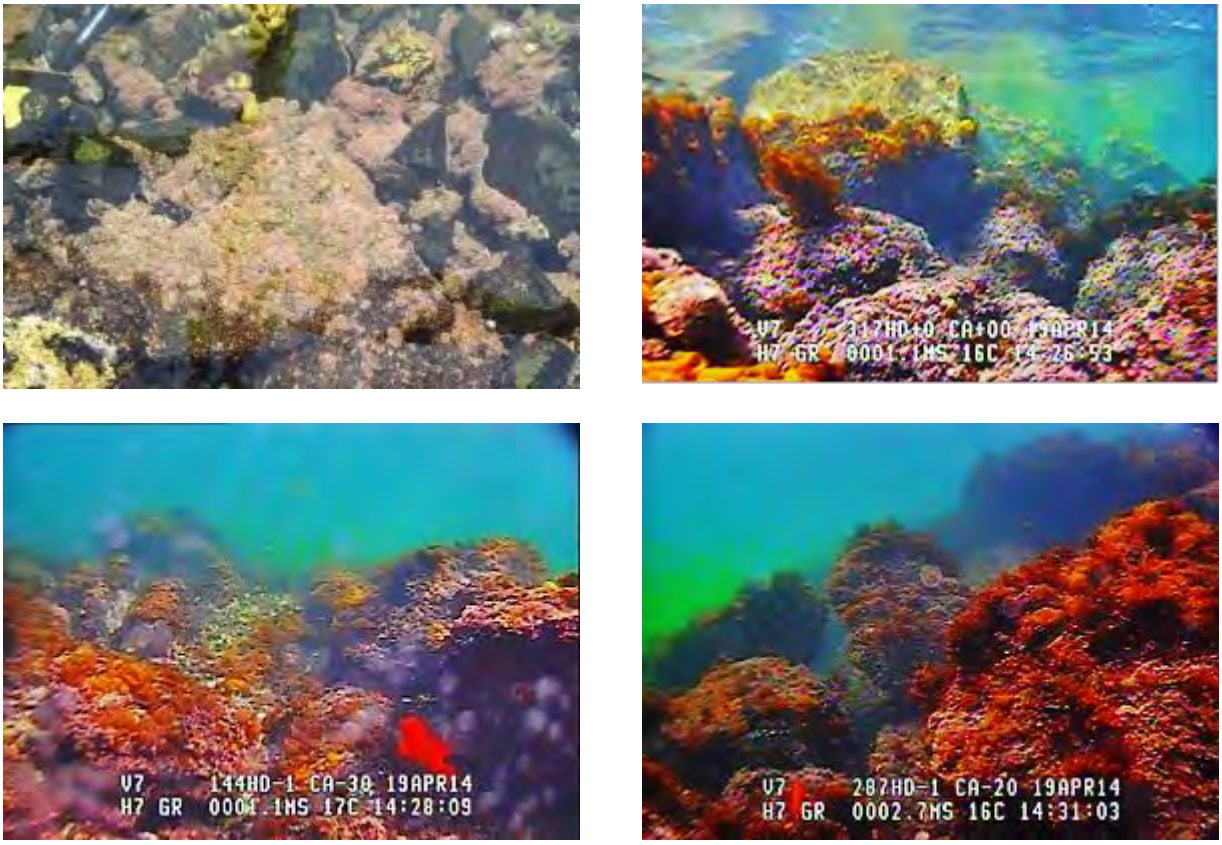


Figure 18. Intertidal and Shallow Subtidal Rip Rap.

Pier Piles

Pier pilings provide habitat for an assemblage of organisms known as the fouling community (Figure 19). This community appears to attract schooling fish, which feed on the attached invertebrates and algae, and obtain refuge from predation (Glasby 1999). The species present and the overall complexity of the fouling community on pier pilings are dependent upon a number of factors including tidal elevation and inundation time, light availability, wave exposure, and size and shape of the pilings themselves (Connell and Glasby 1999, Connell 2001). While several studies indicate that man-made marinas do not support the same complexity of organisms as do natural reefs, it is apparent that pier pilings in coastal marinas do provide habitat value for fouling communities and associated fish assemblages (Clynick 2008). Piles exposed to greater circulation and higher light levels tend to support the most complex and productive communities.

Figure 19. Pier Pilings.

While no formal survey of the pier piles within the Redondo Beach Study Area was conducted, piling can support numerous species of sessile species invertebrates. At the highest tidal elevations, the pilings can support barnacles (*Chthamalus* spp., *Balanus* sp.), while at lower tidal elevations, the molluscs (*Ostrea lurida, Mytilus* sp., *Crassostrea gigas*) may be present. Other invertebrates can include sponges (Phylum Porifera), tunicates (*Styela clava*, *Ciona* spp., and *Botrylloides* sp.), hard and soft bryozoans, and feather duster worms (Family Sabellidae). Mobile invertebrates associated with pilings can include scale worms (Family Polynoidae), and brittle stars (Class Ophiuroidea). Fish species observed around pilings include kelpfish, topsmelt, and barred sand bass. California scorpionfish (*Scorpaena guttata*) are likely to be associated with the pile communities. California scorpionfish is managed by the National Marine Fisheries Service (NMFS) under the Pacific Groundfish Fishery Management Plans (NMFS 2008). Algal species associated with the piling community included green algae (U*lva* sp.), coralline red algae (*Corallina* spp.), and brown algae including *Dictyota flabellata*.

Sandy Beach

This descriptions is in regards to the exposed sandy beach within the project survey area, outside of the breakwater, and adjacent to the Redondo Beach (Municipal) Pier (Figure 20). While no formal sandy beach survey was conducted, numerous studies have characterized the sandy beach habitat in southern California.

Sandy beaches are relatively unstable habitats due to daily sand movement associated with waves and currents and larger-scale seasonal cycles of sand movement. The intertidal zone, also known as the littoral zone in marine aquatic environments is the area of the foreshore and seabed that is exposed to the air at low tide and submerged at high tide (i.e., the area between tide marks).

Most southern California beaches lose sand in the winter and gain sand in the summer. In addition, daily tidal fluctuations affect the distribution of marine organisms. Therefore, marine organisms common in sandy beach habitats are generally mobile and change position with changes in water level and sediment transport (Dailey et al. 1993). Generally higher abundances and species diversity are found on long, gently sloping beaches, while lower abundances and diversity are present on steep, coarse-grained beaches. Common invertebrates observed on southern California sandy beaches include mole crabs (*Emerita analoga*), beach hoppers (*Megalorchestia* spp, *Orchestodea* spp.), amphipods (e.g., *Eohaustorius* spp.), isopods (e.g., *Excirolana* spp.), and other crustaceans; bean clam (e.g., *Donax gouldii*), Pismo clam (*Tivela stultorum*), and olive snail (*Olivella biplicata*); bloodworm (*Euzonus mucronata*) and other polychaete worms (e.g., *Hemipodus borealis*, *Lumbrineris* spp., *Nephtys californiensis*, *Scololepis* spp.); and nemertean ribbon worms (Dailey et al. 1993).

Sandy beach invertebrates are an important prey base for fish and birds. Nearshore fish forage on the invertebrates when high tides cover the beach. A variety of shorebirds probe the sand in search of worms, crustaceans, and small clams. Gulls are opportunistic feeders on invertebrates they pick from the swash zone or on wrack, as well as trash or debris left by humans. Beaches are important resting areas for shorebirds, gulls, and other seabirds such as terns and the California brown pelican. Terrestrial birds also may forage along the back beach shoreline. Terrestrial insects are also an important ecological component of the sandy beach as they break down kelp wrack (i.e., kelp, algae, and marine plants washed on the shore). The wrack may harbor a variety of insects and invertebrates that are important prey items for gulls and shorebirds.

Fishes known to occur in nearshore sandy beach habitat include California corbina (*Menticirrhus undulatus*), California halibut (*Paralichthys californicus*), topsmelt (*Atherinops affinis*), guitarfish (*Rhinobatus productus*), barred sandbass (*Paralabrax nebulifer*), northern anchovy (*Engraulis mordax*), Pacific mackerel (*Scomber japonicus*), round ray (*Urobatis halleri*), kelp bass (*Paralabrax clathratus*), walleye surfperch (*Hyperprosopon argenteum*), leopard shark (*Triakis semifasciata*), barred surfperch (*Amphistichus argenteus*), sheephead (*Semicossyphus pulcher*), scorpionfish (*Scorpaena gutatta*), zebra perch (*Hermosilla azurea*), yellowfin croaker (*Umbrina roncador*), spotfin croaker (*Roncador stearnsii*), and white croaker (*Genyonemus lineatus*).

California grunion (*Leuresthes tenius*) may also utilize the sandy beach habitat during certain times of the year. Grunion travel from their habitat in nearshore waters to specific sandy beaches just after certain full and new moons in conjunction with their distinctive mode of spawning. Spawning takes place during night time high tides between March and August. Eggs are deposited into the sand of the upper intertidal and then hatch 10 days later following exposure during the next high tide. Given the presence of upper intertidal sandy habitat throughout the year, the beaches within Santa Monica Bay appear to be suitable grunion spawning habitat. Grunion are managed as a game species by the CDFW, who post predicted spawning runs on the internet (www.dfg.ca.gov/marine/grunion.asp).

Epibenthic invertebrates common in shallow subtidal sandy habitats include sand dollars (*Dendraster excentricus*), tube-dwelling polychaete worms (*Diopatra ornata*, *Pista pacifca*), sea pens (*Sylatula elongata*), sea pansies (*Renilla koellikeri*), crabs (*Heterocrypta occidentalis*, *Randallia ornata*),

snails (*Olivella biplicata*), clams, burrowing anemones (*Haranactis attenuate*), and sea stars (*Astropectin armatus*).

Figure 20. Monstad Pier with Sandy Beach in Background.

Open Water

Topsmelt were observed in the water column during the survey, and it is likely that Northern and Deepbody Anchovy (*Engraulis mordax* and *Anchoa compressa*) commonly occur in the area. The occurrence of these species in open water is important to several species of piscivorous birds including pelicans, terns, loons, grebes, cormorants, and mergansers, some of which were observed during the survey.

During a 2012 survey conducted in King Harbor, the floating bait barges within the survey area were used for loafing by great blue heron (*Ardea herodias*), double-crested cormorant (*Phalacrocorax auritus*), and western gulls (*Larus occidentalis*). California sea lions also used these structures as haul outs (M&A 2013).

SENSITIVE SPECIES

Species identified as protected, rare, sensitive, threatened or endangered by the U.S. Fish and Wildlife Service (USFWS), NMFS, or CDFW, that may be expected in the project area at various times include three bird species, one reptile, one fish, and four marine mammals (Table 5). Several species were observed during the survey and include California brown pelicans (*Pelecanus occidentalis californicus*) double-crested cormorant, Broomtail Grouper, California sea lion (*Zalophus californianus*), and harbor seal (*Phoca vitulina*). California least terns (*Sternula antillarum browni*) are migratory but may forage within the project area during certain times of the year. These species were either observed within the project work area or are likely to occur within the project site on a regular basis (Table 5). None of the avian species nest within the project area,

and the nearest least tern nesting colony is located at Marina Del Rey, approximately 9 miles north of Redondo Beach. Harbor seals and sea lions also do not breed at this site but forage and loaf in the area year round. Sea lions are much more common within the harbor than are harbor seals.

California sea lions on outer breakwater.

Green sea turtles (*Chelonia mydas*) are commonly found in association with warm water discharges from power plants along the southern California coast. This species is expected to be occasionally encountered within the harbor. The nearest consistent population of sea turtles is found within the San Gabriel River approximately 30 shoreline miles to the south. Bottlenose dolphins (*Tursiops truncates*) are not expected to commonly occur in the project area, although there would be a higher likelihood of encountering dolphins outside of the breakwater, while green sea turtle sightings along the open coast would be considered rare.

Table 5. Protected Species Expected to Occur Within the Study Area.

Common Name	Scientific Name	Status	Occurrence at Study Area
California Brown Pelican	*Pelecanus occidentalis californicus*	CDFW FP	Present
Double-crested Cormorant	*Phalacrocorax auritus*	CDFW WL	Present
California Least Tern	*Sternula antillarum browni*	SE, FE	Likely*
Green Sea Turtle	*Chelonia mydas*	FT	Infrequent
Broomtail Grouper	*Mycteroperca xenarcha*	CDFW FP	Present
Bottlenose Dolphins	*Tursiops truncatus*	MMPA	Not expected
Harbor Seal	*Phoca vitulina*	MMPA	Likely
Northern Elephant Seal	*Mirounga angustirostris*	MMPA	Not expected
California Sea Lion	*Zalophus californianus*	MMPA	Present

SE – State Endangered; **FE**- Federally Endangered; **FT** – Federally Threatened; **CDFW SSC**- CDFW Species of Special Concern; **CDFW-FP** – CDFW Fully Protected Species; **CDFW-WL**- CDFW Watch List; **MMPA** – species protected by the Marine Mammal Protection Act

*Least terns are a migratory species found in the area from approximately April 1 through September 1 of each year.

ESSENTIAL FISH HABITAT

Under the provisions of the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Federal Register 1997), the amendments require the delineation of "essential fish habitat" for all managed species. Essential fish habitat (EFH) has been designated over all tidal marine waters in southern California. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with the NMFS regarding the potential effects of their actions on EFH, and respond in writing to the NMFS's recommendations.

The entire coastal area ranging from the mean high tide line to offshore depths represents EFH, and are managed through two applicable plans, the Pacific Groundfish and Coastal Pelagic fishery management plans (FMPs). The habitat designations associated with those plans are defined below.

EFH for species in the Pacific Groundfish FMP (NMFS 2008), which applies to over 90 fish species (e.g., flatfish, rockfish, sharks) is identified as all waters and substrate within the following areas:

- Depths less than or equal to 3,500 meters (1,914 fathoms) to mean higher high water (MHHW);
- Water level (MHHW) or the upriver extent of saltwater intrusion, defined as upstream and landward to where ocean-derived salts measure less than 0.5 ppt during the period of average annual low flow;
- Seamounts in depths greater than 3,500 m as mapped in the EFH assessment GIS; and
- Areas designated as Habitat Areas of Particular Concern (HAPC) (e.g., seagrass, kelp canopy, estuaries, rocky reef).

EFH for species in the Coastal Pelagic FMP (NMFS 1998), which applies to four fish and one invertebrate species (e.g., anchovy, sardine, Pacific mackerel, jack mackerel, and market squid) is identified as all waters and substrate within the following areas:

- All marine and estuarine waters from the shoreline to the limits of the Exclusive Economic Zone (EEZ), which extends approximately 200 nautical miles offshore; and
- Water surface boundary, which is the water column between the thermoclines where temperatures range from 10 to 26 degrees Centigrade.

The ichthyofauna of King Harbor has been studied intensively and continually since 1974 (Stephens et al. 1994, Pondella et al. 2012), and identified 120 species of fish. Of these species observed in King Harbor, 18 are managed by the NMFS under two Fishery Management Plans (FMPs) – the Coastal Pelagic and Pacific Groundfish Management Plans (Table 6) (NMFS 1998a and b).

To support the EFH consultation process, an assessment of the project effects on EFH is provided. The consultation process is a separate action from the NEPA/CEQA review process; however, impacts and mitigation measures are often times shared or similar between EFH consultation and environmental review and other regulatory permitting requirements.

Table 6. Managed Species Observed in King Harbor.

Coastal Pelagic FMP			
Northern Anchovy	*Engraulis mordax*	Pacific Mackerel	*Scomber japonicus*
Pacific Sardine	*Sardinops sagax*		
Pacific Groundfish FMP			
Kelp Greenling	*Hexagrammos decagrammus*	Calico Rockfish	*Sebastes dallii*
Lingcod	*Ophiodon elongates*	Vermilion Rockfish	*Sebastes miniatus*
English Sole	*Parophrys vetulus*	Blue Rockfish	*Sebastes mystinus*
Curlfin Sole	*Pleuronichthys decurrens*	Bocaccio	*Sebastes paucispinis*
California Scorpionfish	*Scorpaena gutatta*	Rosy Rockfish	*Sebastes rosaceus*
Cabezon	*Scorpaenichthys marmoratus*	Olive Rockfish	*Sebastes serranoides*
Brown Rockfish	*Sebastes auriculatus*	Treefish	*Sebastes serriceps*
Gopher Rockfish	*Sebastes carnatus*		

REGULATORY SETTING

FEDERAL REGULATIONS

Clean Water Act

The federal Water Pollution Control Act Amendments of 1972 (33 United States Code [USC] 1251–1376), as amended by the Water Quality Act of 1987, and better known as the CWA, is the major federal legislation governing water quality. The purpose of the federal CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Discharges into waters of the United States are regulated under CWA Section 404. Waters of the United States include: 1) all navigable waters (including all waters subject to the ebb and flow of the tide); 2) all interstate waters and wetlands; 3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, or natural ponds; 4) all impoundments of waters mentioned above; 5) all tributaries to waters mentioned above; 6) the territorial seas; and 7) all wetlands adjacent to waters mentioned above. Important applicable sections of the CWA are discussed below:

- Section 303 requires states to develop water quality standards for inland surface and ocean waters and submit to the U.S. Environmental Protection Agency (EPA) for approval. Under Section 303(d), the state is required to list waters that do not meet water quality standards and to develop action plans, called total maximum daily loads, to improve water quality.
- Section 304 provides for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal permit that proposes an activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the CWA. Certification is provided by the respective Regional Water Quality Control Board (RWQCB). A Section 401 permit from the RWQCB would be required for the Proposed Project if a Section 404 permit were required.
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into

waters of the United States. The NPDES program is administered by the RWQCB. Conformance with Section 402 is typically addressed in conjunction with water quality certification under Section 401.

- Section 404 provides for issuance of dredge/fill permits by the ACOE. Permits typically include conditions to minimize impacts on water quality. Common conditions include: 1) ACOE review and approval of sediment quality analysis before dredging, 2) a detailed pre- and post-construction monitoring plan that includes disposal site monitoring, and 3) requiring compensation for loss of waters of the United States. The areas of the Project site that occur below mean higher high water (MHHW) would be subject to regulation under Section 404.

Rivers and Harbors Appropriation Act

The Rivers and Harbors Appropriation Act of 1899 (33 USC 403), commonly known as the Rivers & Harbors Act (R&HA), prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without congressional approval. Section 9 of the R&HA addresses construction of any bridge, dam, dike or causeway over or in navigable waterways and falls under the authority of the U.S. Coast Guard. Under Section 10, the ACOE is authorized to permit other structures in navigable waters, including piers, wharves, jetties, etc.

When reviewing applications for Section 9 (USCG) and Section 10 (ACOE) permits, the permitting agency consults with the USFWS and NMFS under the Fish & Wildlife Coordination Act, the ESA when a project may affect a federally listed species, and NMFS the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA).

Endangered Species Act

The Endangered Species Act (ESA) protects plants and wildlife that are listed as endangered or threatened by the USFWS and NMFS. ESA Section 9 prohibits the taking of endangered wildlife, where taking is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land, as well as removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law. Under ESA Section 7, agencies are required to consult with the USFWS or NMFS if their actions, including permit approvals or funding, could adversely affect an endangered species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion, the USFWS or NMFS may issue an incidental take statement allowing take of the species that is incidental to another authorized activity, provided the action will not jeopardize the continued existence of the species. In cases where the federal agency determines its action may affect, but would be unlikely to adversely affect, a federally listed species, the agency informally consults with the USFWS and/or NMFS. This informal consultation typically involves incorporating measures intended to ensure effects would not be adverse. Concurrence from the USFWS and/or NMFS concludes the informal process. Without such concurrence, the federal agency formally consults to ensure full compliance with the ESA.

Magnuson-Stevens Fishery Conservation and Management Act

Under the provisions of the 1996 amendments to the MSFCMA (Federal Register 1997), the amendments require the delineation of Essential Fish Habitat (EFH) for all managed species. Essential fish habitat has been designated over all tidal marine waters in southern California. Federal

action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with the NMFS regarding the potential effects of their actions on EFH, and respond in writing to the NMFS's recommendations.

Marine Mammal Protection Act

The Marine Mammal Protection Act of 1972 (MMPA) prohibits, with certain exceptions, the take of marine mammals in United States waters and by United States citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The USFWS and NMFS administer the MMPA with a division of responsibilities existing between the agencies.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits take of nearly all native birds. Under the MBTA, take means only to kill, directly harm, or destroy individuals, eggs, or nests, or to otherwise cause failure of an ongoing nesting effort.

STATE REGULATIONS

California Coastal Act

The California Coastal Act (CCA) recognizes California ports, harbors, and coastline beaches as primary economic and coastal resources and as essential elements of the national maritime industry. Decisions to undertake specific development projects, where feasible, are to be based on consideration of alternative locations and designs to minimize any adverse environmental impacts. The CCA is implemented by the California Coastal Commission (CCC). Development within the harbor is subject to permitting through issuance of a Coastal Development Permit (CDP) under the CCA.

California Endangered Species Act

The California Endangered Species Act (CESA) authorizes the California Fish and Game Commission (Commission) to designate endangered, threatened, and rare species and to regulate the taking of these species (California Fish and Game Code [FGC] Sections 2050–2098). The CESA defines endangered species as those whose continued existence in California is jeopardized. State-listed threatened species are those not presently facing extinction, but that may become endangered in the foreseeable future. FGC Section 2080 prohibits the taking of state-listed plants and animals. The CDFW also designates fully protected or protected species as those that may not be taken or possessed without a permit from the Commission and/or CDFW. Species designated as fully protected or protected may or may not be listed as endangered or threatened. When a species is both state- and federally listed, an expedited request for consistency with the USFWS biological opinion may be issued through a request for Section 2080.1 consistency determination.

California Fish and Game Code

The FGC is implemented by the Fish & Game Commission, as authorized by Article IV, Section 20, of the Constitution of the State of California. The Commission is responsible, under the provisions of Sections 200–221, for regulating the take of fish and game, not including the taking, processing, or use of fish, mollusks, crustaceans, kelp, or other aquatic plants for commercial purposes. However,

the Commission does regulate aspects of commercial fishing, including fish reduction; shellfish cultivation; take of herring, lobster, sea urchins, and abalone; kelp leases; lease of state water bottoms for oyster allotments; aquaculture operations; and other activities. These resource protection responsibilities involve the setting of seasons, bag and size limits, and methods and areas of take, as well as prescribing the terms and conditions under which permits or licenses may be issued or revoked by the CDFW. The Commission also oversees the establishment of wildlife areas and ecological reserves, regulates their use, and sets policy for the CDFW.

FGC Sections 3503, 3503.5, 3505, 3800, and 3801.6 protect all native birds, birds of prey, and nongame birds, including their eggs and nests, that are not already listed as fully protected and that occur naturally within the state. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptors (e.g., hawks, owls, eagles, and falcons), including their nests or eggs. The CDFW is the state agency that manages native fish, wildlife, plant species, and natural communities for their ecological value and their benefits to people. The CDFW oversees the management of marine species through several programs, some in coordination with NMFS and other agencies. The CDFW jointly manages (with NMFS) the implementation of the *Caulerpa* Control Policy (CCP), which calls for performance of a survey for *Caulerpa* before any bottom-disturbing activities.

LOCAL PLANS AND REGULATIONS

Redondo Beach Local Coastal Program

The City of Redondo Beach Local Coastal Program (LCP) was certified in 2010, and therefore has jurisdiction to issue a Coastal Development Permit (CDP), although the California Coastal Commission retains jurisdiction (i.e., permit authority) over the immediate shoreline (e.g., submerged lands and tidelands). The City reviews pending development projects for consistency with the City's General Plan, Coastal LUP and Coastal Zoning regulations before an applicant files for a CDP with the California Coastal Commission.

IMPACT ANALYSIS

The analysis of biological resources was based on literature review and a biological resources survey, including an in-water survey. Terrestrial and marine species at risk, including species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, were identified, including species that forage in the harbor or use it as a nursery site. The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants was also reviewed to identify sensitive plant species. Sensitive habitat types, such as wetlands, eelgrass and EFH were identified, as well as resident or migrant species that are dependent upon these habitats. The analysis provides a range of potential impacts and mitigation measures based on conceptual designs. However, it may be necessary to revisit the assumptions regarding project activities and potential impacts when/if detailed plans and specifications become available in order to determine whether impacts and mitigation measures are appropriate.

Lastly, area and volume estimates were based on best available information at the time of the study, and therefore additional surveys may be required prior to project implementation to support final project designs, and actual area and volume values.

THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of project-related impacts on biological resources are based on the resource's relative sensitivity and regional status, including the proportion of the resource that would be affected relative to its occurrence in the project region, the sensitivity of the resource to activities (e.g., noise or disturbance) associated with the proposed project, and the duration or ecological ramifications associated with the effect. The proposed project would result in significant impacts to biological resources if it would result in:

- Have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS, or any species that meets the criteria for endangered, rare, or threatened in CEQA Guidelines 15380.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Have a substantial adverse effect on federally protected waters or wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

LANDSIDE CONSTRUCTION

Less Than Significant Impacts

- Construction would occur in previously developed areas that are void of any sensitive terrestrial biological resources. The project area does not include sensitive biological

resources such as coastal wetlands, native grasslands, wildlife corridors, vernal pool habitat, riparian wetlands, freshwater marshes, natural animal habitat, or any terrestrial plant or animal species listed in local or regional plans, policies, or regulations, or as state or federally threatened or endangered. Therefore, impacts to these resources would be less than significant.

- Construction would result in removal of existing ornamental trees and landscaped areas; however, the City's Coastal LUP includes landscaping policies and a tree trimming/tree removal ordinance specific to the harbor area relative to bird species of special concern and wading birds (RBMC 10-5.1900 (h)). Compliance with the LUP and City ordinances would result in construction impacts with less than significant impacts.

Significant Impacts

- As noted above, construction would occur in previously developed areas that are void of any sensitive terrestrial biological resources and therefore no significant landside construction impacts to biological resources are anticipated.

LANDSIDE OPERATIONS

Less Than Significant Impacts

- Operational impacts are considered less than significant due to the current and proposed land uses and intensities in the project area, and since the project area is void of any sensitive terrestrial biological resources.

Significant Impacts

- No significant landside operations impacts are anticipated.

WATERSIDE CONSTRUCTION

Waterside construction includes several elements, and specific impacts from each element are addressed separately in the following section, and collectively since an assumption is that all elements would occur concurrently (see Table 3 for elements and schedule). Waterside impacts include short-term construction effects as well as long-term habitat modification effects. These effects are generally common across many project elements, although the scales and specifics may differ between elements in a manner that may result in falling above or below significance thresholds. In order to facilitate ease of reading, the nature of short-term and long-term waterside impacts is discussed here to establish context of the analysis but the summary of the specific effects is incorporated within the discussion of the individual project elements that follow.

Marine Habitat Conversions

Intertidal and subtidal marine habitats found within the project area are converted from one habitat to another habitat type through some of the project elements. In some cases, the conversions change the nature of the habitat conditions and functions, but may not result in deleterious long term effects. In the case of conversion of unvegetated soft harbor bottom to hard harbor bottom within outer portions of King Harbor, the expected short-term effect would be loss of benthic marine organisms in the

work footprint, with the rapid recolonization of the area by new organisms adapted to the replacement hard bottom. In general, unvegetated shallow water marine habitats are very dynamic and disturbance adapted. This means that when impacted, the rate of resource recovery is very rapid. A study conducted in San Diego Bay to evaluate the effects of dredging and rates of recovery for demersal fish, epibenthic invertebrates, and benthic infaunal invertebrates demonstrated that demersal fish took between 14 and 22 months to recover. Benthic infauna recovered within 5 months relative to density and biomass but examination of community indices indicated that full recovery may have taken 17 to 24 months. Epibenthic invertebrates recovered within 29 to 35 months in terms of density and biomass. However, the epibenthic invertebrate community composition was still changing or had achieved an alternate stable state near the end of the three-year study (M&A 2010). Because of the rapid recovery of these marine habitats, disturbance such as that associated with maintenance dredging is not considered significant. Where the complete loss of soft bottom habitats occurs the determination of impact significance is based on the degree of ecosystem function provided by the habitat that replaces it. The King Harbor soft bottom marine communities do not support sensitive species and are not considered rare as a habitat type. However, these habitats do support primary and secondary production, provide a trophic resource, and play low to moderate functional roles in nutrient sequestration and transformation, carbon uptake, and production export relative to other marine habitats. As such, the conversion of non-rare rapidly recovering habitat to another habitat type would typically not be considered a significant impact unless the habitat were fully removed from marine influence (i.e., filled to supratidal elevations) or functions were substantially reduced with respect to productivity or contribution to supporting marine ecosystem functions (e.g., covered by structures, substantially isolated from tidal circulation). For these reasons, marine habitat conversions are generally evaluated on the basis of scale and net change in the resource or functional support. In the case of King Harbor habitats, the typical conversion of marine habitat under the proposed project relate to replacement of unvegetated soft harbor bottom with hard bottom consisting of large rock jetty stone, small rock revetment stone, and a limited extent of concrete ramp. In the case of the soft bottom to hard bottom conversion, the change is expected to result in an increase in primary productivity as a result of expansion of attached macroalgae. The rock also would result in increased structural complexity, enhanced fish utilization and benthic community stability. These changes on a whole would not be considered a significant impact to marine environments.

In some instances, the habitat changes that would occur would remove marine habitat all together by raising the area above the highest tides. In these cases, marine functions are lost rather than substituted with another functioning habitat and impacts are considered to be significant. In the case of marine habitat that is altered covering the surface of the water with docks, piers, or wharves, productivity of the water column and bottom are diminished and habitats are somewhat altered. In addition, the water becomes less available to use by foraging birds. In many instances small structures promote increases functioning due to the generation of edge conditions that favor higher diversity and abundance of fish and invertebrates due to many factors including the blending of water column hard substrate such as piles and docks, with benthic soft bottom substrates. An enriched rain of food and hard substrate (e.g., mollusk shell, stony bryozoans, calcareous worm tubes, sponges) from the structures enhances the diversity of the sediment, resulting in increased complexity of the benthos and epibenthic communities. Conversely, larger structures and those with significant pile densities can result in altering circulation and creating zones of high sediment deposition and poor water quality. Large overwater structures can generate a reversal of the increased community complexity and resource abundance seen along structure edge environments due to a reduction of productivity and trophic complexity beneath large wide structures, especially where circulation is diminished. Under structures with poor circulation, organismal rain from the structure to the bottom

can result in the development of an elevated biological oxygen demand and localized anaerobic conditions. Hard structures of piles, docks and piers can provide substrate for recruitment of large numbers of exotic species and can contribute to increased representation of exotic species in the marine environments. However, there is no indication that the presence of such substrate contributes to introduction or dispersal of exotic organisms. In many ways the role of overwater structures can sometimes influence marine communities in a positive or negative manner, depending much on the scale and context of the structures and environments within which they are placed. From a resource management perspective, resource and regulatory agencies of NMFS, USFWS, and CDFW have generally taken a conservative view with respect to the effects of overwater structures, assuming them to be a negative feature unless otherwise demonstrated on a case-by-case basis. For this reason, this conservative approach has been taken in this document.

Pile Driving Hydroacoustic Noise Impacts

Sound transmission in the underwater environment can be affected by local bathymetry, substrates, currents, and stratification of the water column. At high intensity, short-term increases in hydroacoustic energy (noise in the water) during construction could affect the behavior and physiology of some species in the immediate vicinity of work. Specific concerns relate to concussive energies associated with impact pile-driving. Fish kills have been reported in association with very large diameter steel pile driving operations such as the San Francisco-Oakland Bay Bridge Project and the Benicia–Martinez Bridge (Caltrans 2007). The large bridge projects involve the placement of enormous steel piles driven with tremendous hammer energy generating pressure waves comparable to submerged high explosive detonations. For small piles, there is no evidence that would suggest that the equipment and energy necessary to drive the smaller piles results in substantial adverse effects to marine biota. This creates the need to consider whether driving of piles of particular intermediate size or material type, or using a particular methodology would result in the release of hydroacoustic energy at a scale necessary to result in impacts to sensitive marine species receptors. It is additionally required that a determination be made as to whether or not impacts that do occur would be considered significant in the context of CEQA thresholds of significance.

For non-sensitive, non-listed or protected species, non-lethal or non-maiming effects would not be considered significant. This includes effects that lead to behavior responses such as avoidance or startle. Mobile organisms such as fish would be expected to move away from concussive energy sources where energy was below a level required to result in stunning or killing the fish. Similarly highly mobile invertebrates would also be expected to move away. Fish with swim bladders are more susceptible to percussive sound pressure than fish without swim bladders or invertebrates. As such, these fish should be considered in assessing potential injury to non-sensitive marine life. Within the project area there are no listed fish species and no piles of a size and type that have been known to result in fish kills or stunning. For this reason, non-sensitive marine resources are not discussed further in this analysis.

For listed and protected species, take is defined in a manner that includes harassment of animals, even if the harassment does not result in harm or injury. In order to address the potential effects of pile driving on protected resources, Caltrans in coordination with the Federal Highways Administration (FHWA) and the departments of transportation in Oregon and Washington, established a Fisheries Hydroacoustic Working Group (FHWG) to improve and coordinate information on fishery impacts due to underwater sound pressure from pile driving. In addition to the above transportation agencies, the FHWG included representatives from NOAA Fisheries, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and the U.S. Army Corps of

Engineers (Caltrans 2007). The FHWG, supported by a panel of hydroacoustic and fisheries experts developed interim guidelines for assessing impacts to aquatic resources that may result from pile driving sound pressures.

Based on previous cetacean behavioral research on the gray whale, a disturbance threshold (Level B harassment) of 160 dB_{RMS} (decibels Root Mean Square) has been identified broadly for marine mammals (Federal Register 2005). Exposure to sound at this level would likely cause avoidance, but not injury, for marine mammals. The current Level A harassment (injury) threshold for non-explosive sounds has been set at 180 dB_{RMS} for cetaceans and 190 dB_{RMS} for pinnipeds. In order to use these threshold levels for the current project, it is necessary to determine the anticipated sound generated from pile driving for the present project and evaluate these levels against the Level A (injury) and Level B (avoidance) harassment levels. Caltrans has accumulated a broad compendium of hydroacoustic data on impact hammer driven piles and summarized sound pressure levels by pile size and type (Caltrans 2007, updated 2012). As would be anticipated the type of pile and hammer play a major role in the sound pressure generation from driven piles. In addition the density of the sediment into which the pile is driven, the distance from the pile, and the water temperature and salinity also affect sound pressures. Pressures can further be affected by implementation of impact dampening measures or measures taken to minimize pressure propagation through the water. Prior to examining means to substantively soften acoustic impact, the first step is to determine the unattenuated sound levels and distances to sensitive receptors.

For the present work piles are proposed to be set at a number of locations using a number of driving methodologies (i.e., vibratory hammer or impact hammer pile driving methods). The current Caltrans 2012 sound compendium was reviewed to determine the anticipated noise level at a near-source receiver (10-meters). From this information, the distance from the driven pile to the Level A and Level B harassment distance from piles was calculated for water depths of 5-meters (sound drops off more rapidly in shallow water).

Project Element Pile Type	**Pile Driving Methods**	**Average Sound Level (dB_{RMS}) at 10-meters[1]**	**Level A (190 dB_{RMS}) Distance (meters)**	**Level B (160 dB_{RMS}) Distance (meters)[5]**
Horseshoe Pier 18”-dia. coated steel piles	Vibratory hammer	>163 and <169[2]	Not expected to be achieved (>185 dB_{RMS})	>12 and <16
Pedestrian Bridge ≥18”-dia. coated steel piles	Vibratory hammer	>155 and <169[3]	Not expected to be achieved (>185 dB_{RMS})	>3 and <16
Sportfishing Pier ~11” dia. treated timber piles	Impact hammer	~160[4]	Not expected to be achieved (~176 dB_{RMS})	10 meters
Small Craft Boat Ramp >18” dia. prestressed concrete pile	Jetted and impact hammer to set	>166	Not expected to be achieved (>182 dB_{RMS})	>14 meters
Basin 3 Marina 16” square prestressed concrete pile	Jetted and impact hammer to set	165-173	Not expected to be achieved (≥189 dB_{RMS})	13-18 meters

[1] Reference sound data from Caltrans (2007 updated 2012)
[2] sound data are from bracketing pile sizes of 16-inch and 20-inch steel piles. RMS calculated by L_{eq} 1-sec for vibratory noise sources
[3] sound data are from bracketing pile sizes of 13-inch and 20-inch steel piles. RMS calculated by L_{eq} 1-sec for vibratory noise sources
[4] sound data is for 12-14” dia. piles
[5] distances are calculated assuming water depth of 5 meters

Because there are no listed species of fish in the project area and there is no expectation of hammer energies adequate to result in kill or stun of non-sensitive fish species, the principal resource of concern relative to pile driving is marine mammals and most specifically pinnipeds. The calculated distances from hammer driven piles at which Level B harassment take may occur is very short for all piles being driven. However, take could occur if marine mammals are within the immediate area 10-18 meters from piles being driven (depending upon the piles) at the time full hammer energy is released. This harassment take is anticipated to result in avoidance behavior rather than injury to the animals. Where such take is expected, impacts are deemed significant and measures should be taken to reduce sound pressures and/or avoid pile driving when animals are present within the potential limits within which take may occur.

Undesirable Human-Pinniped Interactions

Within King Harbor, damage to boats and docks from hauling out sea lions has occurred and some animals have become aggressive and territorial. The April 2015 placement of a sea lion haul-out float to draw animals from the docks and boats in the marinas is expected to provide some temporary relief from excessive hauling out in marina and boat locations. However, there is no indication that the factors leading to expanding occurrence of sea lions within the harbor are changing and it is anticipated that the sea lion float will be overwhelmed by animals that continue to grow in numbers within the harbor. The result is expected to be expanding numbers of human habituated sea lions moving into available haul out locations. Increasing habituated animals results in increasing aggression, damage to structures, and accumulation of animal wastes in water and haul out areas that may be expected to promote disease transfer and water quality degradation.

The Waterfront Project includes a number of actions to expand connectivity of land and water facilities for the public. Some of these actions will bring the visiting public into greater contact with the growing coastal populations of pinnipeds, particular California sea lions. The growing sea lion population and reduction in offshore forage conditions is expected to continue to expand undesirable human-pinniped interactions within King Harbor. This increasing negative condition is likely to occur with or without the Waterfront Project. However, some of the elements of the waterfront project may support the expansion of sea lion populations and conflicts within the harbor. These include the provision of expanded sheltered haul-out locations within outer portions of the harbor that are generally more attractive to sea lions for hauling out than inner harbor areas (e.g. addition of launch ramp boarding floats, construction of a low protective jetty for the ramp, and the connection of Seaside Lagoon to create a protected cove).

King Harbor has a growing population of sea lions but not harbor seals. In southern California, harbor seals are more likely to haul-out on soft shorelines such as beaches, sand bars, and mudflats than sea lions and sea lions are more likely to haul out on hard structures such as rocks, docks, and boats. However, on island rookeries, sea lions do make extensive use of beach environments. Because of the preference of low elevation hard surfaces for haul-outs, mainland sandy beach environments typically do not support substantial sea lion haul out activity until the nearby hard structures are already occupied by sea lions. The use of beach haul outs typically begins with subordinate male sea lions that are ejected from more desirable locations by dominant bulls. Once occupied, beach haul outs will generally begin to accumulate additional animals comprised of other immature animals.

Examples of sea lion populations overflowing from docks and rocky areas on to beaches are beginning to emerge more commonly with the most recent well known example in southern

California being at La Jolla Cove where the popular swimming beach has become a regular use area by hauling out sea lions as they have spread from adjacent rocky bluffs and now also utilize the sand beach as a haul out location. Other examples of smaller sea lion haul-out on public beaches include a berm at the end of a slip fill site on Terminal Island in Los Angeles Harbor, the launch ramp beach within the Del Mar Boat Basin at Oceanside, and Kellogg Beach in San Diego Bay. Conversely, there are also many examples of similar protected recreational beaches that do not have a history of sea lions habitually hauling out on the sand. These include Mothers Beach in Newport Harbor, Mothers Beach in Marina del Rey, Kiddie Beach at Channel Islands, Baby Beach in Dana Point, an even a number of beaches with very low pedestrian traffic such as beaches within the Bolsa Chica Wetlands and Batiquitos Lagoon, State Ecological Reserves.

It is not anticipated that the Waterfront Project will result in a significant impact associated with project implementation. While the project poses no significant impacts with respect to this issue, it is suggested that measures be considered to reverse the building conflicts. It is appropriate to monitor sea lion activities and respond early with deterrents prior to the development of more serious problems. A management plan to address the building concern of human-pinniped interactions within King Harbor has been prepared to support this recommendation as it will assist in deconflicting the harbor to the commercial and recreational benefit of the using public and ecological benefit of sea lions.

Small Craft Boat Launch Ramp

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Alteration of approximately 68,898.2 ft^2 (6,400.9 m^2) of jurisdictional waters would occur (Table 7). The specific habitat losses would include 61,896.6 ft^2 (5,750.4 m^2) of unvegetated soft bottom habitat, 5,772.7 ft^2 (536.3 m^2) of rubble/cobble habitat, and 972.2 ft^2 (90.3 m^2) of riprap habitat. These habitat areas would be converted to hard substrate/rocky intertidal and subtidal habitat associated with the placement of riprap breakwater and boat ramp (Figure 21). Within the project footprint, the entire soft bottom invertebrate and algal community would be lost; however, this loss would not be considered significant due to the ephemeral and opportunistic nature of the common organisms present in soft bottom habitat in the harbor. The placement of riprap would be expected to provide an increase in site structure over the bare bottom conditions and would result in increased productivity and diversity compared to mud bottom habitat. It is estimated that approximately 67,669.2 ft^2 (6,286.7 m^2) of rocky intertidal and subtidal habitat will be created (Table 7).
- Construction will result in temporary impacts to water quality. Temporary effects may include localized increases in turbidity and sedimentation, along with lowered dissolved oxygen levels associated with disturbance of anoxic sulfidic sediments. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion.
- Approximately 8 prestressed concrete pile with a less than 18-inch diameter or square section will be driven to position the ramp boarding floats. Piles will be jetted to near full depth and seated to final elevation by impact driver. The impact driving of piles has the potential to generate in water noise levels capable of non-lethal impacts and behavioral response to non-

sensitive marine species. Impacts to non-sensitive marine species are not considered to be significant.

- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area) is approximately 9 miles from the project area, construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Construction would not interfere with the movement of any native resident or migratory fish or wildlife species. This is based on the fact that no substantial changes in harbor configuration or barriers would be constructed in a manner as to affect fish and wildlife movement patterns. In addition, larval and planktonic species that are dependent upon dispersal through water circulation are not expected to be substantially affected by the proposed work since no change in water circulation due to construction are anticipated (Noble Consultants 2015).

Significant Impacts

- Construction would result in net increase of approximately 2,734.7 ft^2 (254.1 m^2) of surface coverage over open waters of King Harbor as a result of the placement of new boarding docks. In addition, approximately 15,315 ft^2 (1,422.8m^2) of marine habitat loss would occur due to fill/construction of the breakwater as the crest area of the breakwater extends above the high tide line (Table 7). This impact is considered significant due to the overall increase in surface coverage and net loss of marine habitat through fill placement to supratidal levels.

Table 7. Summary of Habitat Impacts from Small Craft Boat Launch Ramp.

Habitat	Area ft^2 (m^2)
Marine: Intertidal: Artificial Substrate: Riprap	972.2 (90.3)
Marine: Subtidal: Rock Bottom: Rubble/Cobble	5,772.7 (536.3)
Marine: Subtidal: Unconsolidated Bottom: Soft Bottom	61,896.6 (5,750.4)
Upland Habitats: Revetment	256.7 (23.8)
Total	68,898.2 (6,400.9)
Surface Cover – Boarding Floats only	2,734.7 (254.1)
Fill (Loss of Open Water) – Construction of breakwater[1]	15,315 (1,422.8)
Habitat Creation – Conversion of soft bottom to hard bottom habitat	67,669.2 (6,286.7)

[1]-Based on estimated surface area from creation of breakwater

- The impact driving of dock float piles is expected to generate noise in the water that is potentially above the 160 dB_{RMS} intensity defining Level B harassment effects (avoidance behavior expected) to pinnipeds (primarily California sea lions). The maximum distance from the driven pile that Level B harassment is anticipated is less than 14 meters (>46 feet) and the harassment would only persist during the impact hammer driving activities. Because marine mammals are protected from harassment of this type under the MMPA, this impact is considered to be significant.
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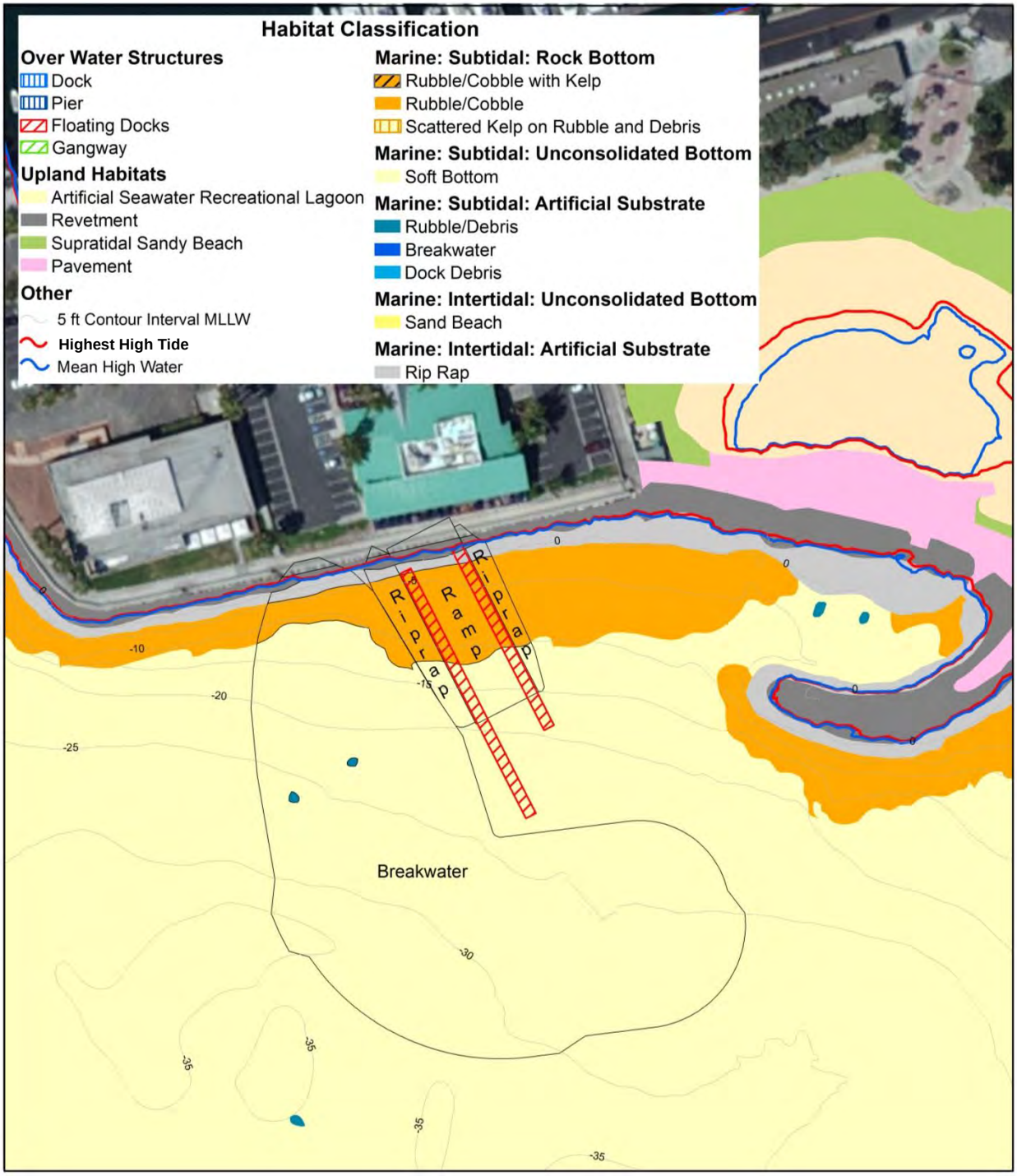


Figure 21. Small Craft Boat Launch Ramp Benthic Habitat Impact Footprint.

Sportfishing Pier – Removal and Replace

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Short-term increases in turbidity during pile removal and installation may lead to reduction of water quality. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion,
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area) is approximately 9 miles from the project area, construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Direct loss/mortality of benthic infauna and epifauna during pile removal and installation of replacement piles. Assuming 46, 12-inch piles will be removed; approximately 36.1 ft^2 (3.4 m^2) of benthic habitat will be disturbed (Table 8). It can also be assumed that a similar amount of area would be affected during pile installation. Therefore, approximately 72.2 ft^2 (6.8 m^2) of benthic habitat would be directly affected from pile removal and installation (Table 8). This impact is considered less than significant given the small impact footprint, the ephemeral and opportunistic nature of the common organisms present in the area, and since rapid recovery of existing marine species composition and diversity is expected within two years or less (Merkel & Associates 2010).

Table 8. Summary of Habitat Impacts from Sportfishing Pier Element.

	Benthic Impact ft^2 (m^2)
Pile Removal Only[1]	36.1 (3.4)
Pile Removal and Replacement	72.2 (6.8)

[1] – 46, 12-inch piles

- Approximately 46 treated wood or concrete piles with an approximate diameter of 11-inches (analyzed as 12-14-inches based on available data) would be driven to support the pier replacement. Piles would be driven by impact hammer. The impact driving of piles has the potential to generate in water noise levels capable of non-lethal impacts and behavioral response to non-sensitive marine species. Impacts to non-sensitive marine species are not considered to be significant.
- No net change in existing surface cover (7290 ft^2 [677.3 m^2]) or location would result from this project.
- No change in water circulation due to construction is anticipated since pier footprint would be the same as what currently exists.

Significant Impacts

- Approximately 46 treated wood or concrete piles with an approximate diameter of 11-inches (analyzed as 12-14-inches based on available data) would be driven to support the pier replacement. Piles would be driven by impact hammer. The impact driving of dock float piles is expected to generate noise in the water that is potentially above the 160 dBRMS

intensity defining Level B harassment effects (avoidance behavior expected) to pinnipeds (primarily California sea lions). The maximum distance from the driven pile that Level B harassment is anticipated is less than 10 meters (>33 feet) and the harassment would only persist during the impact hammer driving activities. Because marine mammals are protected from harassment of this type under the MMPA, this impact is considered to be significant.

Sportfishing Pier – Removal Only

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Short-term increases in turbidity during pile removal may lead to reduction of water quality. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion,
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area) is approximately 9 miles from the project area, construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Direct loss/mortality of benthic infauna and epifauna during pile removal of replacement piles. Assuming 46, 12-inch piles will be removed; approximately 36.1 ft^2 (3.4 m^2) of benthic habitat will be disturbed (Table 8). This impact is considered less than significant given the small impact footprint, the ephemeral and opportunistic nature of the common organisms present in the area, and since rapid recovery of existing marine species composition and diversity is expected within two years or less.
- Short-term increases in noise during construction (e.g., pile removal) could affect the behavior of some species in the immediate vicinity. This impact would not be expected to exceed any established intensity thresholds and is not considered significant.
- Pier removal would result in a net decrease in surface coverage (7,290 ft^2 [677.3 m^2]). This decrease in coverage of open water habitat would be considered a project benefit although other project elements also need to be accounted for (i.e., some project elements result in a net increase in surface water coverage).
- Given small footprint created by supporting piles, there would be no substantial change in water circulation due to pier removal.

Significant Impacts

- No significant impacts are anticipated.

Seaside Lagoon

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Alteration of approximately 13,212.6 ft^2 (1,227.5 m^2) of jurisdictional waters (Table 9), including 6,213.6 ft^2 (577.3 m^2) of unvegetated soft bottom habitat, 1,952.9 ft^2 (181.4 m^2) of

rubble/cobble habitat, and 5,046.1 ft^2 (468.8 m^2) of riprap habitat, and converting to soft bottom intertidal and subtidal habitat (Figure 22). Note that these estimates do not include lagoon habitat.

As previously discussed, there is uncertainty regarding whether Seaside Lagoon is a jurisdictional WOUS, therefore two estimates of potential habitat creation are provided assuming that Seaside Lagoon is 1) a WOUS, or 2) non-jurisdictional. Assuming that Seaside Lagoon is a jurisdictional water, it is estimated that approximately 8,107.6 ft^2 (753.2 m^2) of soft bottom intertidal and subtidal habitat will be created by opening the lagoon to harbor waters, whereas, assuming that Seaside Lagoon is non-jurisdictional, it is estimated that approximately 27,224.3 ft^2 (2,529.2 m^2) of soft bottom intertidal and subtidal habitat will be created by opening the lagoon to harbor waters (Table 9). Biologically, the operational environment of Seaside Lagoon as a chlorine treated saltwater swimming pool limits the existing ecological functions of the lagoon and this condition does not change with the jurisdictional determination. During construction, the entire existing soft bottom invertebrate and algal community within the work footprint in King Harbor at the connection and within Seaside Lagoon would be lost temporarily; however, it is anticipated that recolonization would occur immediately following the completion of construction and an improved benthic community condition would develop within one to two years. This impact is considered less than significant.

- Short-term increases in noise during construction could affect the behavior of some marine species in the immediate vicinity of work. This impact is not considered significant since noise and vibration levels would not be expected to rise above thresholds required to generate take of protected species, or lethality to common marine species which would be expected to avoid the work area.
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area) is approximately 9 miles from the project area, construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- No change in water circulation due to construction is anticipated (Noble Consultants 2015).

Table 9. Summary of Habitat Impacts from Seaside Lagoon Element.

Habitat	Area ft^2 (m^2)
Marine: Intertidal: Artificial Substrate: Riprap	5,046.1 (468.8)
Marine: Subtidal: Rock Bottom: Rubble/Cobble/Debris	1,952.9 (181.4)
Marine: Subtidal: Unconsolidated Bottom	6,213.6 (577.3)
Total	13,212.6 (1,227.5)
Functional Tidal Waters Expansion (Net Change) – For offsetting fills of jurisdictional waters, only the area considered to be non-jurisdictional waters may be applied under a no-net-loss regulatory policy, however, the functional improvements would always total the larger value.	27,224.3 (2,529.2)
Jurisdictional Habitat Creation – Creation of open water habitat, and intertidal and subtidal soft bottom habitat (assuming Seaside Lagoon is jurisdictional)	8,107.6 (753.2)
Jurisdictional Habitat Creation – Creation of open water habitat, and intertidal and subtidal soft bottom habitat (assuming Seaside Lagoon is non-jurisdictional)	27,224.3 (2,529.2)

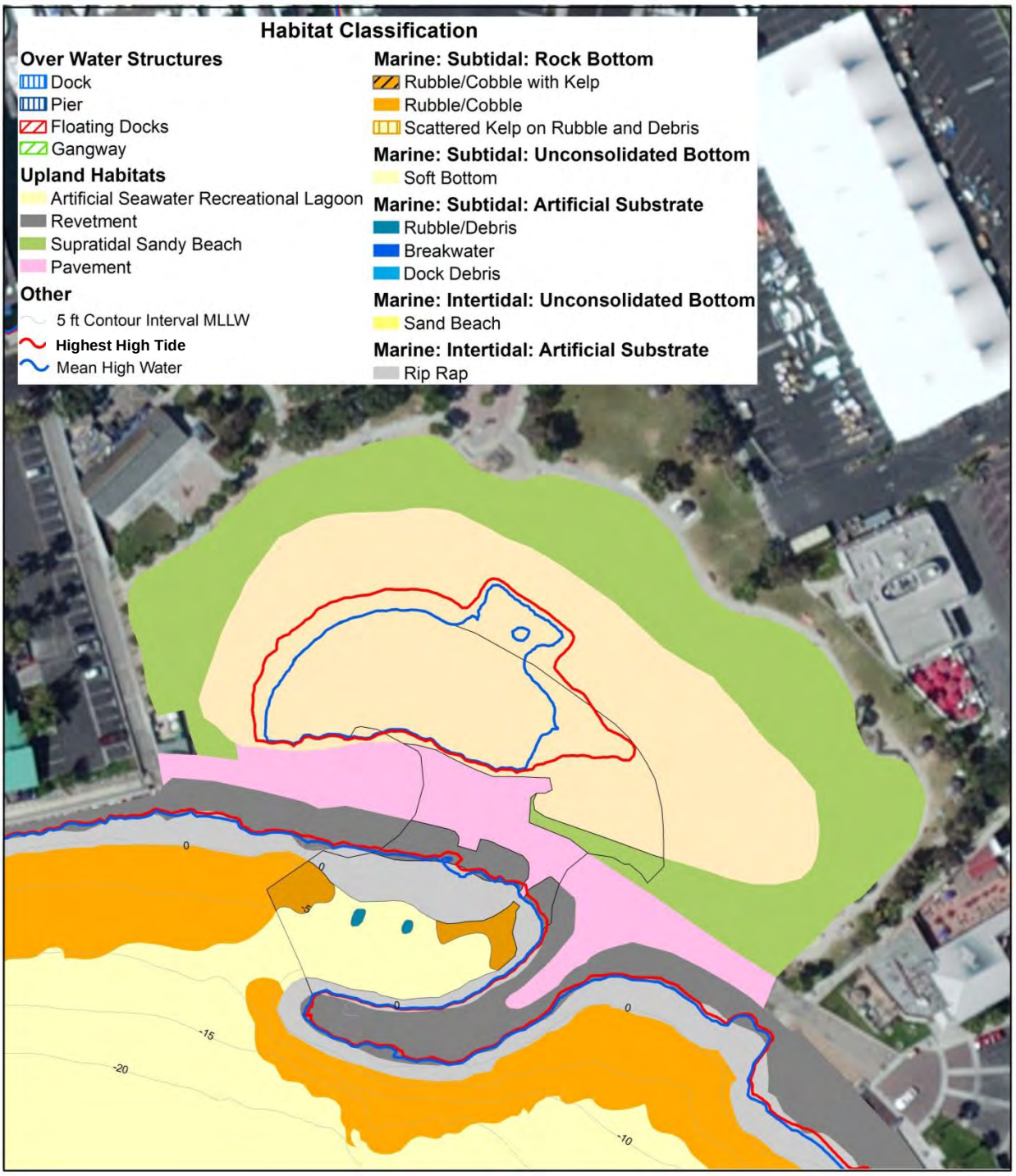


Figure 22. Seaside Lagoon Benthic Habitat Impact Footprint.

Significant Impacts

- Construction will result in temporary impacts to water quality. Temporary effects may include localized increases in turbidity and sedimentation, along with lowered dissolved oxygen levels associated with disturbance of anoxic sulfidic sediments. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion, This elevated turbidity could potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish. These impacts are considered to be potentially significant. However, implementation of BMP's would be used to control the distribution of elevated turbidity in the water column adjacent to the work area during construction and given the short-term nature of construction, and containment of turbidity using BMPs, the temporary impacts to open water could be reduced to less than significant. BMPs and mitigation options for potential impacts to Open Water are described in detail in the "Mitigation" section below.

Bulkhead Repair – Basin 3

Less Than Significant Impacts

- Construction would occur in previously developed areas that are void of any sensitive biological resources. The project area does not include sensitive biological resources such as coastal wetlands, native grasslands, wildlife corridors, vernal pool habitat, riparian wetlands, freshwater marshes, natural animal habitat, or any terrestrial plant or animal species listed in local or regional plans, policies, or regulations, or as state or federally threatened or endangered. Therefore, impacts to these resources would be less than significant.
- Bulkhead repair would not result in a change of bay fill or bay coverage.
- Short-term increases in noise during construction could affect the behavior of some species in the immediate vicinity of work. This impact is not considered significant for mammals, birds, fish, and mobile marine invertebrates.
- Debris from construction may enter harbor waters; however, construction-related Best Management Practices (BMPs) as detailed in the project description includes temporary netting on the harbor side of the wall that would prevent demolition debris from falling into the water.

Significant Impacts

- No significant impacts are anticipated.

Redondo Beach Marina in Basin 3

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources (Figure 23).

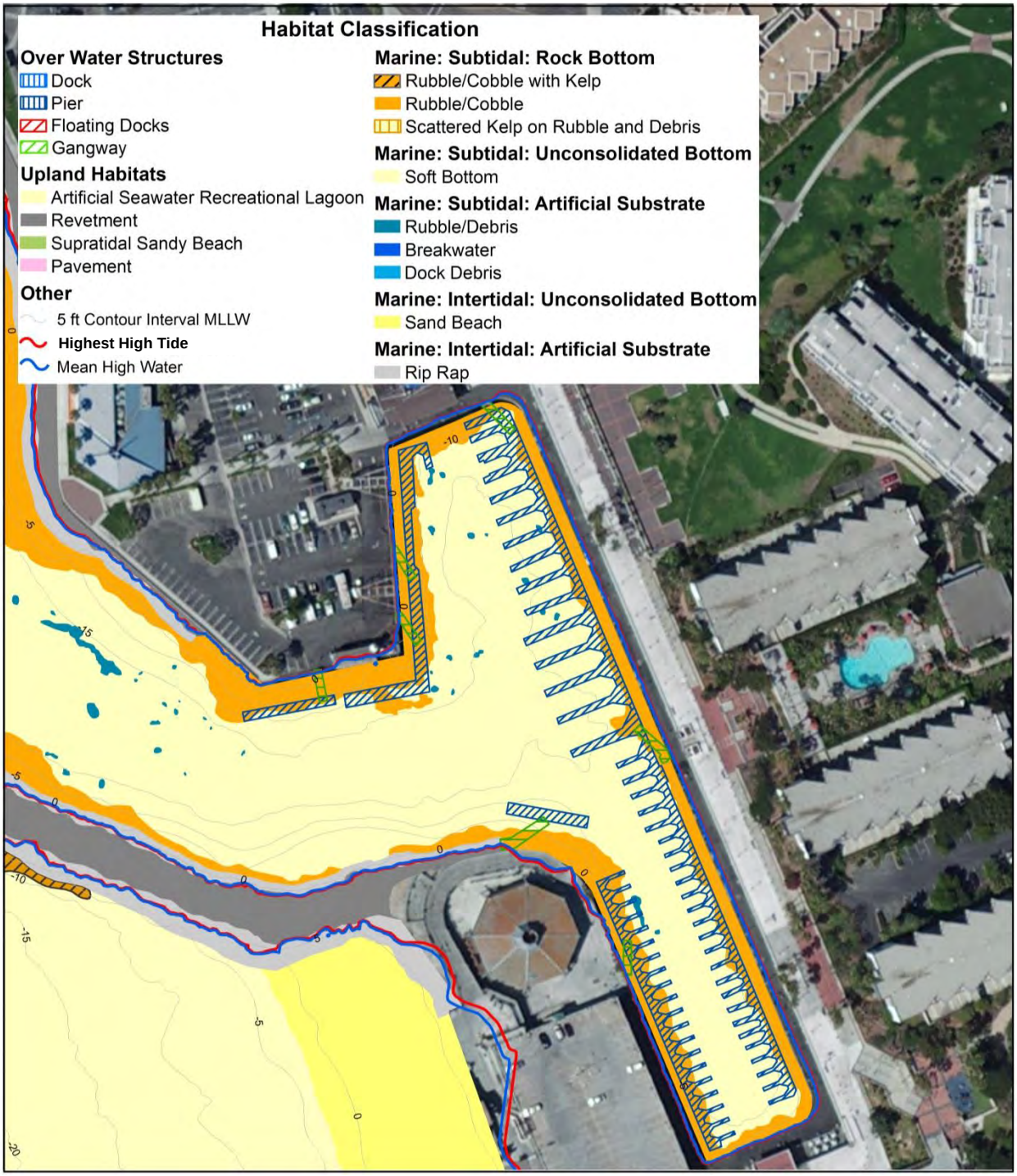


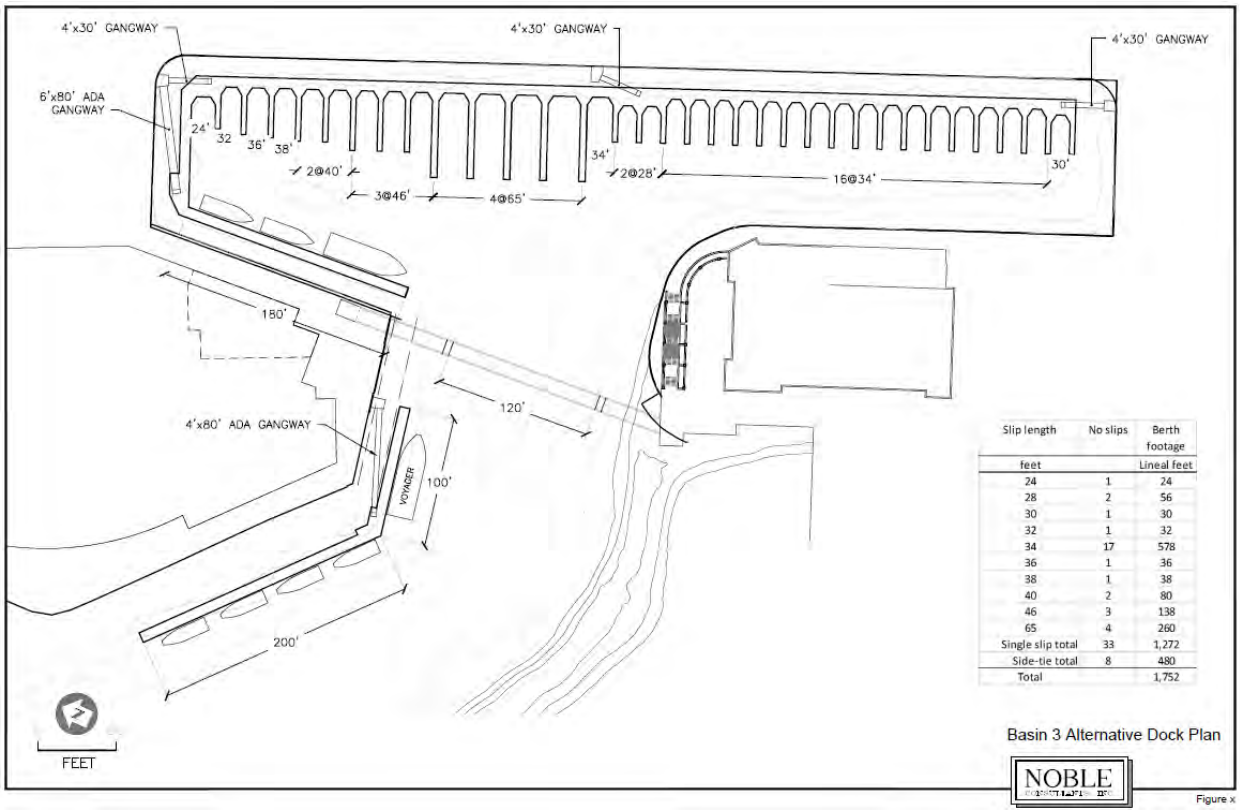
Figure 23. Basin 3 Existing Habitat Map.

- Short-term increases in turbidity during pile removal and installation may lead to reduction of water quality. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion,
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area) is approximately 9 miles from the project area, construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Direct loss/mortality of benthic infauna and epifauna during pile removal and installation. Assuming 57 piles will be removed; approximately 57.6 ft^2 (5.3 m^2) of benthic habitat will be disturbed (Table 10). It was also assumed that 40 piles will be installed affecting approximately 55.8 ft^2 (5.2 m^2) of benthic habitat, and totaling approximately 113.4 ft^2 (10.5 m^2) of benthic habitat that would be directly affected from pile removal and installation. This impact is considered less than significant since rapid recovery of existing marine species composition and diversity is expected within two years or less.
- Short-term non-lethal increases in percussive noise during construction (e.g., pile removal and driving) could affect the behavior of some marine species in the immediate vicinity. This impact is not considered significant for waterbirds, fish, and mobile marine invertebrates that can temporarily relocate to adjacent habitats away from noise and vibration effects.
- No net loss in existing surface cover (7,290 ft^2 [677.26 m^2]) would result from the project element, and depending on the alternative selected, a potential gain in surface cover may occur (Table 10 and Figure 24). Any net increase in the amount of open water habitat would be considered a project benefit although other project elements also need to be accounted for (i.e., some project elements result in a net decrease in surface cover).
- No change in water circulation is anticipated since pile footprint would be similar to existing.

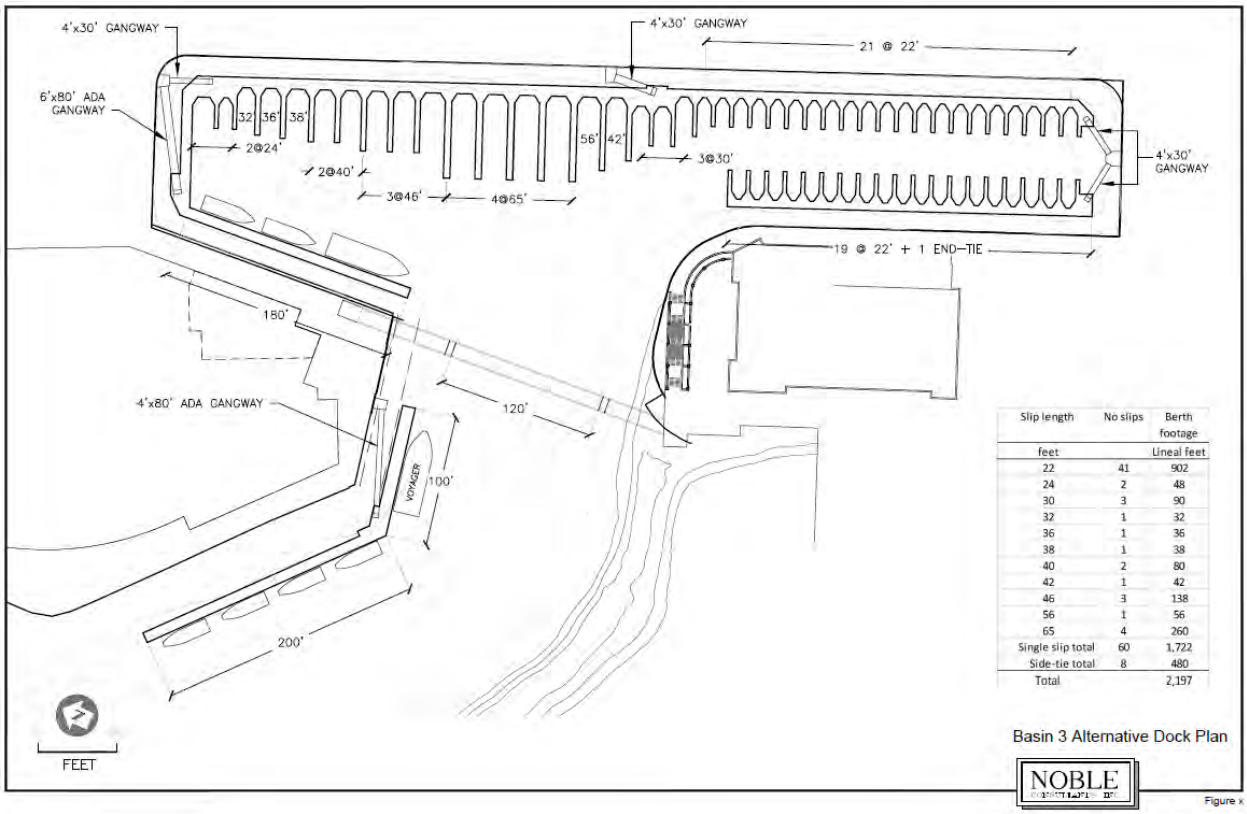
Table 10. Summary of Habitat Impacts from Basin 3 Element.

	Benthic Impact ft^2 (m^2)
Existing Pile Footprint[1]	57.6 (5.3)
Proposed Pile Footprint[2]	55.8 (5.2)
Total	113.4 (10.5)
	Surface Area ft^2 (m^2)
Existing	23,222.9 (2,157.5)
Proposed Marina Plan - Alternative 2	18,649.0 (1,732.5)
Proposed Marina Plan - Alternative 3	21,795.2 (2,024.8)

[1] – 36, 12-inch and 21, 16-inch piles
[2] – 40, 16-inch piles



Slip length	No slips	Berth footage
feet		Lineal feet
24	1	24
28	2	56
30	1	30
32	1	32
34	17	578
36	1	36
38	1	38
40	2	80
46	3	138
65	4	260
Single slip total	33	1,272
Side-tie total	8	480
Total		1,752



Slip length	No slips	Berth footage
feet		Lineal feet
22	41	902
24	2	48
30	3	90
32	1	32
36	1	36
38	1	38
40	2	80
42	1	42
46	3	138
56	1	56
65	4	260
Single slip total	60	1,722
Side-tie total	8	480
Total		2,197

Figure 24. Basin 3 Dock Realignment Alternative 2 (top) and Alternative 3 (bottom).

Significant Impacts

- Approximately 40 16-inch pre-stressed concrete piles would be jetted to near final depth and driven to final elevation by impact hammer. The impact driving of piles is expected to generate noise in the water that is above the 160 dBRMS intensity defining Level B harassment effects (avoidance behavior expected) to pinnipeds (primarily California sea lions). The maximum distance from the driven pile that Level B harassment is anticipated is approximately 13-18 meters (43-59 feet) and the harassment would only persist during the impact hammer driving activities. Because marine mammals are protected from harassment of this type under the MMPA, this impact is considered to be significant.

Horseshoe Pier

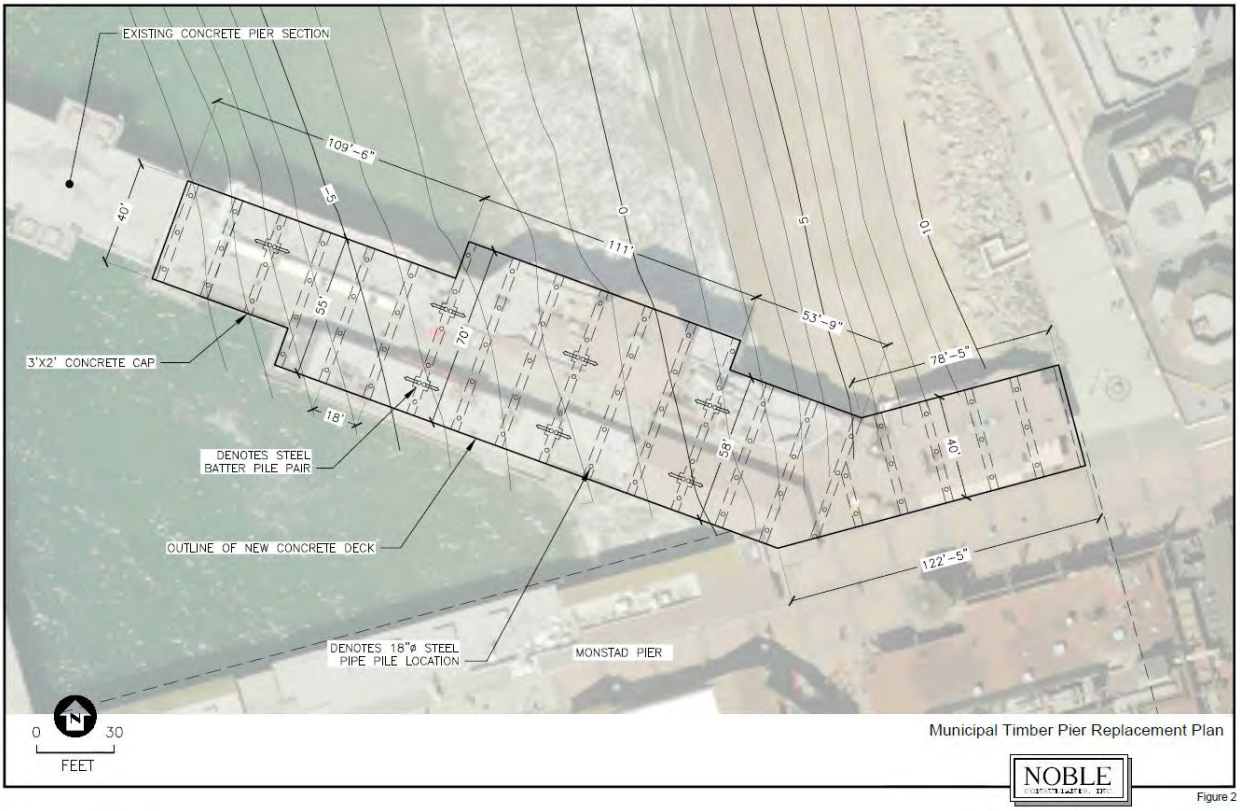
Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Short-term increases in turbidity during pile removal and installation may lead to reduction of water quality. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion,
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area is approximately 9 miles from the project area), construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Direct loss/mortality of benthic infauna and epifauna during pile removal and installation. Assuming 81, 18-inch piles will be removed; approximately 143.1 ft^2 (13.3 m^2) of benthic habitat will be disturbed (Table 11). It can also be assumed that at a similar amount of area would be affected during pile installation. Therefore, approximately 286.2 ft^2 (26.6 m^2) of benthic habitat would be directly affected from pile removal and installation (Figure 25). This impact is considered less than significant since rapid recovery of existing marine species composition and diversity is expected within two years or less.
- Short-term increases in noise during construction (e.g., pile removal and driving by vibratory methods) could affect the behavior of some species in the immediate vicinity. This impact is not considered significant for waterbirds, fish, and marine invertebrates as the vibratory noise generation would be sublethal for common species.
- No net change in existing surface cover or location would result from the project (Figure 25).

Table 11. Summary of Habitat Impacts from Horseshoe Pier Element.

	Benthic Impact ft^2(m^2)
Pile Removal	143.1 (13.3)
Pile Installation	143.1 (13.3)
Total	286.2 (26.6)

[1] – 81, 18-inch piles



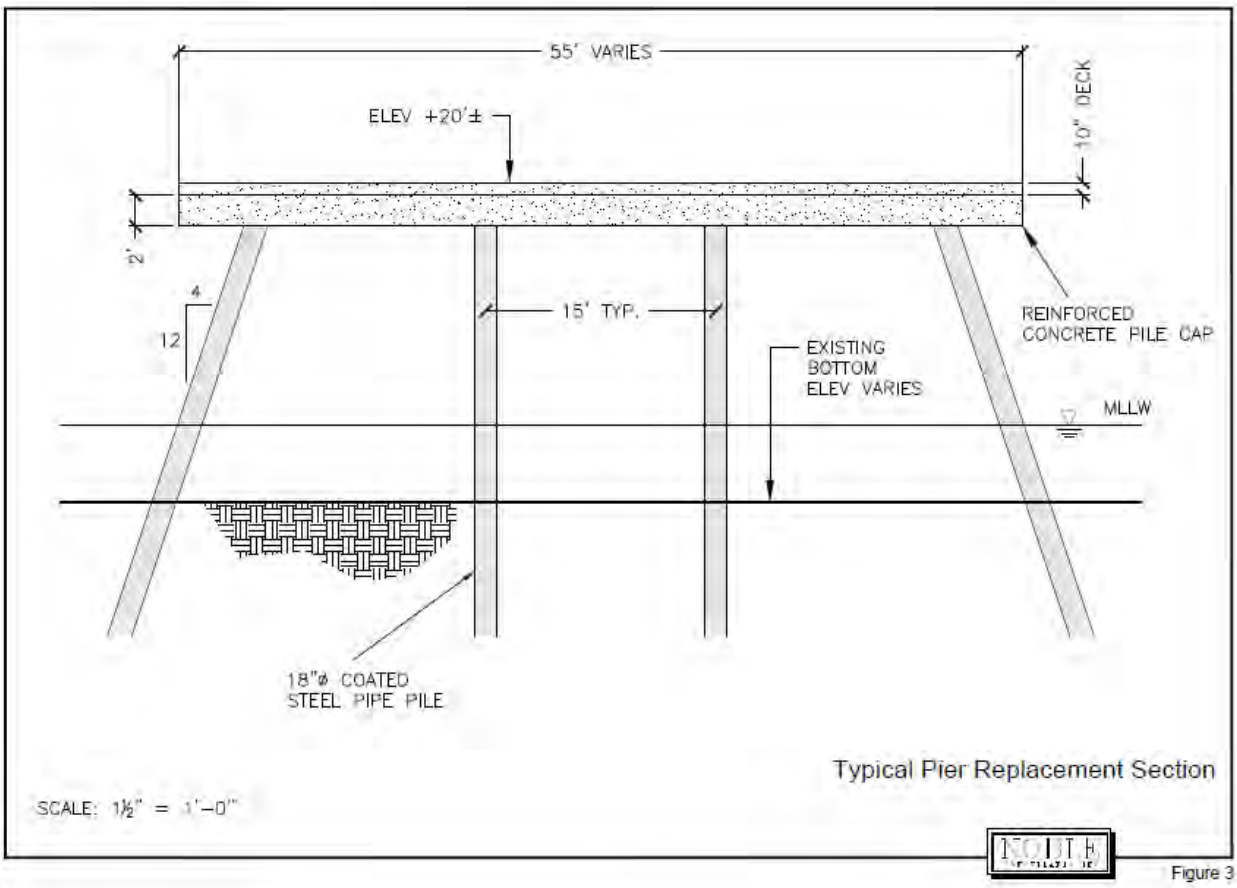


Figure 25. Horseshoe Pier Piling Replacement,

Significant Impacts

- Approximately 81 18-inch steel piles would be driven by vibratory hammer. The impact driving of piles is expected to generate noise levels between 163 and 169 dB_{RMS} in the water at 10 meters from the pile and would be above the 160 dB_{RMS} intensity defining Level B harassment effects (avoidance behavior expected) to pinnipeds (primarily California sea lions). The maximum distance from the driven pile that Level B harassment is between12 and 16 meters (39-52 feet) and the harassment would only persist during the impact hammer driving activities. Because marine mammals are protected from harassment of this type under the MMPA, this impact is considered to be significant.
- Direct disturbance to grunion spawning habitat (i.e., sandy beach habitat) may occur during pile installation and removal. This impact is considered potentially significant since construction activities that could affect grunion spawning habitat overlaps with the grunion spawning season which occurs from March to August, although the peak runs occur early in the season.

Pedestrian Bridge

Less Than Significant Impacts

- No sensitive marine habitats (e.g., eelgrass) are present in the project footprint and therefore impacts would not occur to these resources.
- Short-term increases in turbidity during pile installation may lead to reduction of water quality. This elevated turbidity may potentially affect the local foraging success of piscivorous avian species, and displace or lead to potential mortality of benthic infauna, epifaunal, and fish; however, this impact is considered short-term and localized and not significant as it is expected that any resuspended sediment would quickly settle to the bottom or be dispersed by water motion,
- Given that the closest least tern nesting area to the project (the Marina Del Rey nesting area is approximately 9 miles from the project area), construction activities are not expected to result in significant impacts to least tern foraging or nesting activities.
- Direct loss/mortality of benthic infauna during pile installation. Assuming 2, 18-inch piles will be installed; approximately 24.7 ft^2 (2.3 m^2) of benthic habitat will be lost (Table 12). However, the placement of piles would be expected to provide an increase in site structure over the bare bottom conditions and the pilings alone would not be expected to result in significant impacts due to the trade-off of low relief mud bottom community for that dominated by a hard structure pile community.
- Short-term increases in non-lethal noise during construction (e.g., pile driving) could affect the behavior of some species in the immediate vicinity. This impact is not considered significant for waterbirds, fish, and mobile marine invertebrates that can temporarily relocate to adjacent habitats away from noise and vibration effects.

Significant Impacts

- Construction would result in a net increase in surface coverage of approximately 4,065.6 ft^2 (377.7 m^2) (Table 12 and Figure 26). This impact is considered significant due the increase of surface coverage.
- Steel piles of less than or equal to 18-inch diameter would be driven by vibratory hammer. The impact driving of piles is expected to generate noise levels between 155 and 169 dB_{RMS}

in the water at 10 meters from the pile and would be above the 160 dB_{RMS} intensity defining Level B harassment effects (avoidance behavior expected) to pinnipeds (primarily California sea lions). The maximum distance from the driven pile that Level B harassment is between 3 and 16 meters (10-52 feet) and the harassment would only persist during the impact hammer driving activities. Because marine mammals are protected from harassment of this type under the MMPA, this impact is considered to be significant.

Table 12. Summary of Habitat Impacts from Pedestrian Bridge Element.

	Area ft^2 (m^2)
Piling Installation Footprint[1] (Loss of benthic habitat)	24.7 (2.3)
Surface Cover	4065.6 (-377.7)

[1] – Assumes 14, 18-inch diameter piles

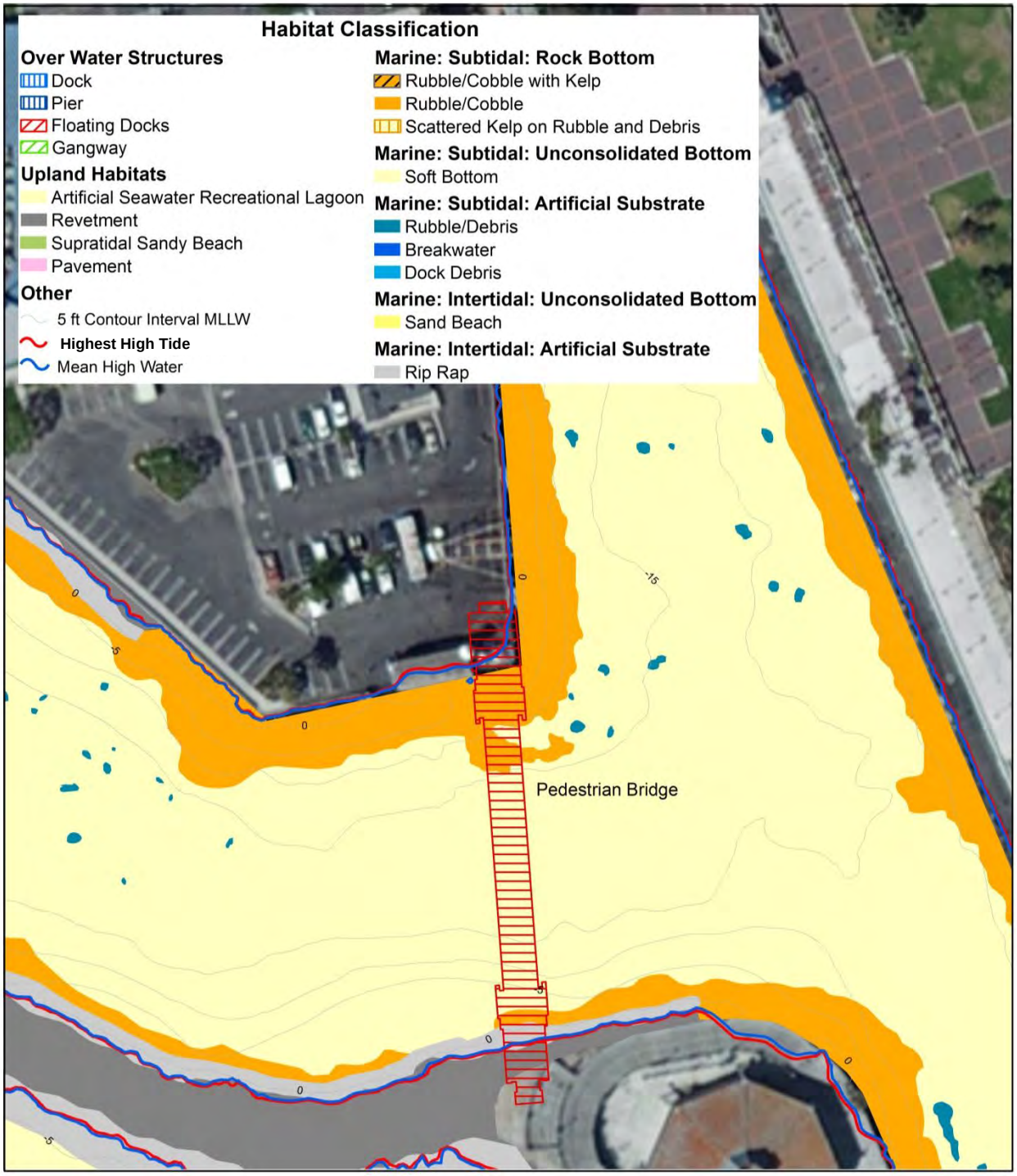


Figure 26. Pedestrian Bridge Habitat Impact Footprint.

SUMMARY OF NET HABITAT AND JURISDICTIONAL IMPACTS

The individual project elements included within the Waterfront Project result in some habitat gains and some losses that individually may result in significant or less than significant effects, but taken in total, impacts may be fully offset, or cumulative increased to a significant level. Table 13 provides a summary of surface water coverage changes across all elements of the project. Where an element would result in an expansion of surface coverage this is considered to be an adverse environmental change. Where surface coverage is removed to re-expose waters, the change is viewed as positive. As a whole, the Waterfront Project results in a significant net increase in water coverage. This impact is reversed if the Sportfishing Pier is removed and not replaced (Table 13).

Table 13. Summary of Surface Cover Impacts for Each Project Element.

Project Element	Surface Cover Change ft^2 (m^2)	
	w/ Basin 3 –Alt 2	w/ Basin 3 –Alt 3
Bulkhead Repair	0	0
Small Craft Boat Launch Ramp (Docks Only)	2,734.7 (254.1)	2,734.7 (254.1)
Sportfishing Pier (Remove/Replace)	0	0
Seaside Lagoon	0	0
Basin 3 – Alternative 2	-4,573.9 (-424.9)	NA
Basin 3 – Alternative 3	NA	-1,427.7 (-132.6)
Horseshoe Pier	0	0
Pedestrian Bridge	4,065.6 (377.7)	4,065.6 (377.7)
Total	**2,226.4 (678.6)**	**5,372.6 (1,637.6)**
With Sportfishing Pier Removal Only	-7,290.0 (-677.3)	-7,290.0 (-677.3)
Total	**-5,063.6 (-1,543.4)**	**-1,917.4 (-584.4)**

Negative value notes element results in decrease in surface cover over waters.

Similar to water surface coverage gains and losses of various habitats may result in significant impacts if the habitat exchanges result in substantial net decline in ecological functions of a particularly important resource as identified in the Thresholds of Significance section. In addition, the loss of jurisdictional waters through implementation of the project would also be a significant concern as it is explicitly defined as a significance threshold. Individual elements of the project that result in fills of the jurisdictional harbor waters may be offset by gains in jurisdictional waters generated by other elements. Table 14 summaries habitat gains and losses as well as changes in jurisdictional waters.

Table 14 identifies the cumulative changes in marine habitat types contemplated under the Waterfront Plan. These are not considered to be significant changes. For jurisdictional waters, the project contemplates substantial harbor fill associated construction of the boat launch ramp breakwater. This fill is either partially or fully offset by the connection of Seaside Lagoon to King Harbor. The extent of fill offset is subject to the determination as to whether Seaside Lagoon is existing jurisdictional water or has been previously removed from jurisdiction. As indicated earlier, this is a purely regulatory rather than an ecological issue as the connection of the lagoon to the harbor

resolves any question with respect to regulation but more importantly enhances lagoon function significantly, irrespective of its present regulatory context as a WOUS.

Table 14. Summary of Habitat Loss/Creation under the Waterfront Project.

Project Element	Habitat Type	Marine Habitats Converted ft^2 (m^2)	Jurisdictional Waters Habitat Created ft^2 (m^2)	Jurisdictional Waters Habitat Loss ft^2 (m^2)
Small Craft Boat Launch Ramp	Conversion of soft bottom to hard bottom habitat	67,669.2 (6,286.7)		
	Loss of open water habitat from fill due to construction of breakwater			15,315 (1,422.8)
Pedestrian Bridge	Conversion of soft bottom to hard structure pile community	24.7 (2.3)		
Seaside Lagoon (Jurisdictional)[2]	Conversion of upland habitat to intertidal and subtidal soft bottom habitat		8,107.6 (753.2)	
Net Change (Seaside Lagoon is Jurisdictional)[2]				**7,207.4[3] (669.6)**
Seaside Lagoon (Non-Jurisdictional)[1]	Conversion of upland habitat to intertidal and subtidal soft bottom habitat		27,224.3 (2,529.2)	
Net Change(Seaside Lagoon is Non-Jurisdictional)[2]			**11,909.3 (1,106.4)**	

Notes:
[1] – Dependent upon jurisdictional determination for Seaside Lagoon.
[2] – Difference between open water habitat lost from boat ramp element and open water habitat created from Seaside Lagoon element.
[3] – The loss of waters is reflective of a reduction of WOUS and not an ecological function loss. The connection of Seaside Lagoon to King Harbor is an ecological gain, irrespective of jurisdictional waters benefits due to the controlled hydrology and treated nature of the waters within the lagoon.

WATERSIDE OPERATIONS

Less Than Significant Impacts

- Outside of some additional lighting present along the waterfront, which would not affect any sensitive biological resources, operational impacts are considered less than significant due to the current and proposed uses and intensities in the project area.
- The opening of Seaside Lagoon may create potential opportunities for undesired occupancy by marine mammals; however, a marine mammal nuisance program will be developed and incorporated into the City's LUP and Coastal Zoning Ordinance to ensure intended uses are maintained. The expansion of human-pinniped conflicts in the harbor is not project related, but will affect the desired benefits of the project.
- The small boat ramp and the opening of Seaside Lagoon will not affect water circulation within King Harbor (Noble Consultants 2015), and the repair or replacement of existing structures are to occur within the same footprint, so impacts to water circulation from waterside operations would be less than significant.
- The opening of Seaside Lagoon would eliminate potential NPDES discharge violations since no discharge would exist, and lead to better water quality in King Harbor.

Significant Impacts

- No significant waterside operations impacts are anticipated.

MITIGATION MEASURES

Subtidal Communities

Although eelgrass was not detected during the baseline survey, prior to any in-water construction, the project area would be surveyed per the Southern California Eelgrass Mitigation Policy (SCEMP). The SCEMP (NMFS 1991, revision 11) is administered by the USFWS, NMFS, and CDFW in order to determine impacts to eelgrass (*Zostera marina*) resources. In accordance with the requirements of the SCEMP, a pre-construction eelgrass survey shall be completed by a qualified biologist within 60 days prior to initiation of demolition or construction activities at the site. This survey shall include both area and density characterization of the beds. A post-construction survey shall be performed by a qualified biologist within 30 days following project completion to quantify any unanticipated losses to eelgrass habitat. Impacts shall then be determined from a comparison of pre- and post-construction survey results. Impacts to eelgrass, if any, would require mitigation as defined in the SCEMP. If required following the post-construction survey, a mitigation planting plan shall be developed, approved by NMFS, and implemented to offset losses to eelgrass.

Caulerpa taxifolia is an invasive green alga native to tropical waters that typically grows in limited patches. This alga and potentially other *Caulerpa* species pose a substantial threat to marine ecosystems in California. Prior to initiation of any permitted disturbing activity, a pre-construction survey of the project area shall be conducted to determine the presence or absence of *Caulerpa*. Per the *Caulerpa* Control Protocol (NMFS 2008b), this survey shall be conducted at a Surveillance Level, since *Caulerpa* has not been detected in King Harbor. Survey work shall be completed not earlier than 90 days prior to the disturbing activity and not later than 30 days prior to the disturbing activity and shall be completed, to the extent feasible, during the high growth period of March 1 – October 31. If detected, NMFS and CDFW will be notified within 24 hours of completion of the survey.

Open Water

The project will result in no net increase in surface cover; however, individual elements may result in net coverage of open water habitat offset by removal of other coverage and/or expansion of open water. This loss is partially offset by the creation of open water habitat but is considered an unavoidable project impact that could be mitigated out-of-kind after consultation with resource and regulatory agencies.

To mitigate impacts to water quality, the following measures may be required under the required permits and may include:

1. The Project shall conform to an approved SWPPP and shall incorporate construction-related erosion/sediment control BMPs as appropriate to the specific work. These include installation and maintenance of an erosion/sediment barrier in uplands, covering stockpiled material prior to rain events, maintenance of equipment to prevent runoff of grease and oil into adjacent waters, and providing equipment and staff as required to repair and/or

implement erosion/sediment control measures. Turbidity curtains will be used during the connection of Seaside Lagoon to King Harbor in order to minimize turbidity drift in the harbor. During pier removals and repairs, netting or other debris discharge controls will be used. On the water, debris booms will be deployed around the demolition area to contain floating debris accidentally discharged. Debris will be skimmed off the water surface and removed for upland disposal.

Additional or alternative measures may be developed during project permitting. Provided measures under the state and federal permits provide equivalent or higher water quality protection, these measures would similarly satisfy the offset of potential risks to harbor water quality and biological resources.

Grunion

Horseshoe Pier construction (or any beach-disturbing activity) shall be scheduled outside of the grunion spawning season (March to August). If construction overlaps the grunion spawning season, the following mitigation measures shall be undertaken:

1. Grunion monitoring shall be conducted prior to any beach-disturbing activity (check CDFW website for spawning events as spawning events occur bi-weekly). If grunion are observed, the extent and location of the run (e.g., Walker Scale) shall be quantified and the CDFW be given notice regarding potential action. If no grunion are observed, construction may proceed. If spawning occurs within the work area and is of a Walker Scale 2 or higher, work will not be performed if it would disrupt the high spawning beach used by grunion. Work must be differed until after the next spring tide series when eggs would be expected to hatch and larval fish would return to the water. However, construction can continue where work would not overlap with grunion spawning locations.

Marine Mammals

Impact pile driving and vibratory driving of steel piles is expected to have the potential to result in Level B harassment that leads to avoidance behavior by marine mammals. None of the pile driving is anticipated to result in sound levels that reach an intensity that would result in Level A harassment with the potential to result in injury to marine mammals. To mitigate this potential for significant effects, a Condition of Approval would be applied to the implementation of the project through the project plans and the building permit process. The City is proposing the following Condition of Approval:

1. Because no Level A (injury) harassment is anticipated, a Level B (harassment) safety zone will be established around the pile-driving site and monitored for marine mammals. The Level B radius is based on the estimated safe distance for installation of piles proposed for use in the project. The safety zone varies by pile size and hammer type. Because the noise levels anticipated under this analysis are based on measured values from multiple different projects, the protective buffer has been increased by 20 percent to address inherent variability. The buffers are to be applied using direct straight line exposure thus barriers that create an acoustic shadow (e.g., a jetty) separating the noise generation from mammal receptors would eliminate the buffer requirement.

Project Element Pile Type	Pile Driving Methods	Level B (160 dB_{RMS}) Distance (meters)	Level B (160 dB_{RMS}) Distance (meters) + 20%
18-inch steel piles	Vibratory hammer	>12 and <16	63 ft (19 m)
14-18-inch steel piles	Vibratory hammer	>3 and <16	63 ft (19 m)
11-14-inch wood piles	Impact hammer	10 meters	39 ft (12 m)
>18-inch concrete pile	Impact hammer	>14 meters	55 ft (17 m)
16-inch concrete pile	Impact hammer	13-18 meters	71 ft (22 m)

The pile-driving site will move with each new pile; therefore the safety zones will move accordingly. Prior to commencement of pile driving, observers on shore or by boat will survey the safety zone to ensure that no marine mammals are seen within the safety zone before pile driving of a pile segment begins. If a marine mammal is observed within the safety zone will pile-driving operations, pile driving will be delayed until the marine mammal moves out of the safety zone. If a marine mammal remains within the zone for at least 15 minutes before pile driving commences then pile driving may commence with a "soft start."

If marine mammals enter the safety zone after pile driving of a segment has begun, pile driving will continue. The qualified observer will monitor and record the species and number of individuals observed, and make note of their behavior patterns. If the animal appears distressed, and if it is operationally safe to do so, pile driving will cease until the animal leaves the area. Prior to the initiation of each new pile-driving episode, the area will again be thoroughly surveyed by the qualified observer.

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APPENDIX A

ALTERNATIVE 8 BOAT RAMP OPTIONS IMPACT ANALYSIS

Under Alternative 8, six conceptual boat ramp options were developed and include:

- Mole A - Option 1 which includes a one lane boat ramp with boarding float and 20 head in parking stalls (vehicle/trailer spaces), and reconfigured docks (Figure A-1);
- Mole A - Option 2 which includes a one lane boat ramp with boarding float plus hand launch and 20 drive through parking stalls (vehicle/trailer spaces), and reconfigured docks (Figure A-2);
- Mole A - Option 3 which includes a two lane boat ramp with boarding float and 40 parking stalls (vehicle/trailer spaces), and reconfigured docks (Figure A-3);
- Mole C which includes a one lane boat ramp with boarding float and 20 parking stalls (vehicle/trailer spaces), but no breakwater(Figure A-4);
- Mole D - Option 1 which includes a one lane boat ramp (points toward Mole C) with boarding float and 20 parking stalls (vehicle/trailer spaces) (Figure A-5); and
- Mole D - Option 2 which includes a two lane boat ramp (points toward opening of harbor) with boarding float, 40 parking stalls (vehicle/trailer spaces), and no breakwater (Figure A-6).

Impacts to biological resources from each boat ramp option are summarized in Table A-1.

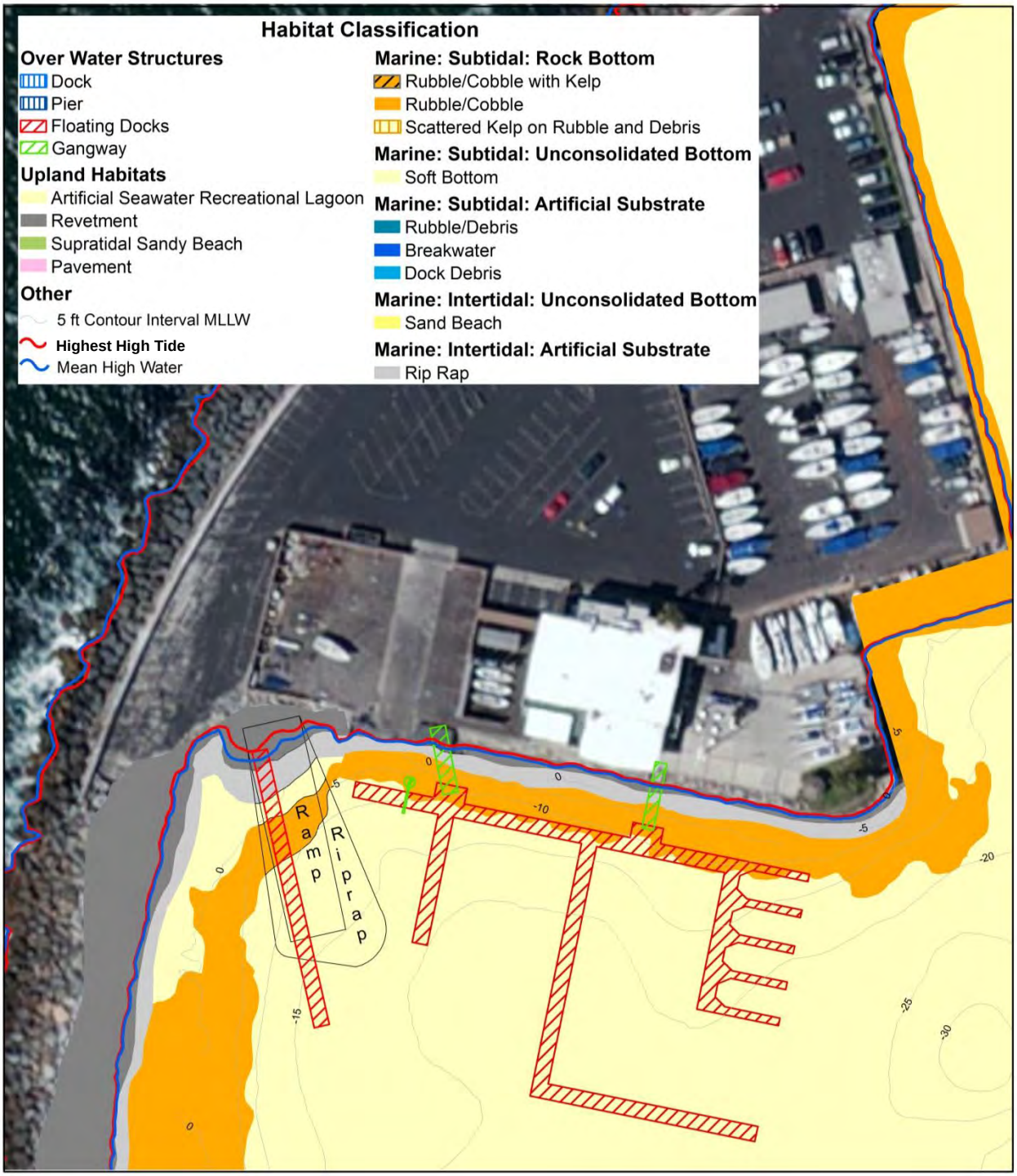

Figure A-1. Mole A – Option 1 Habitat Impact Footprint.

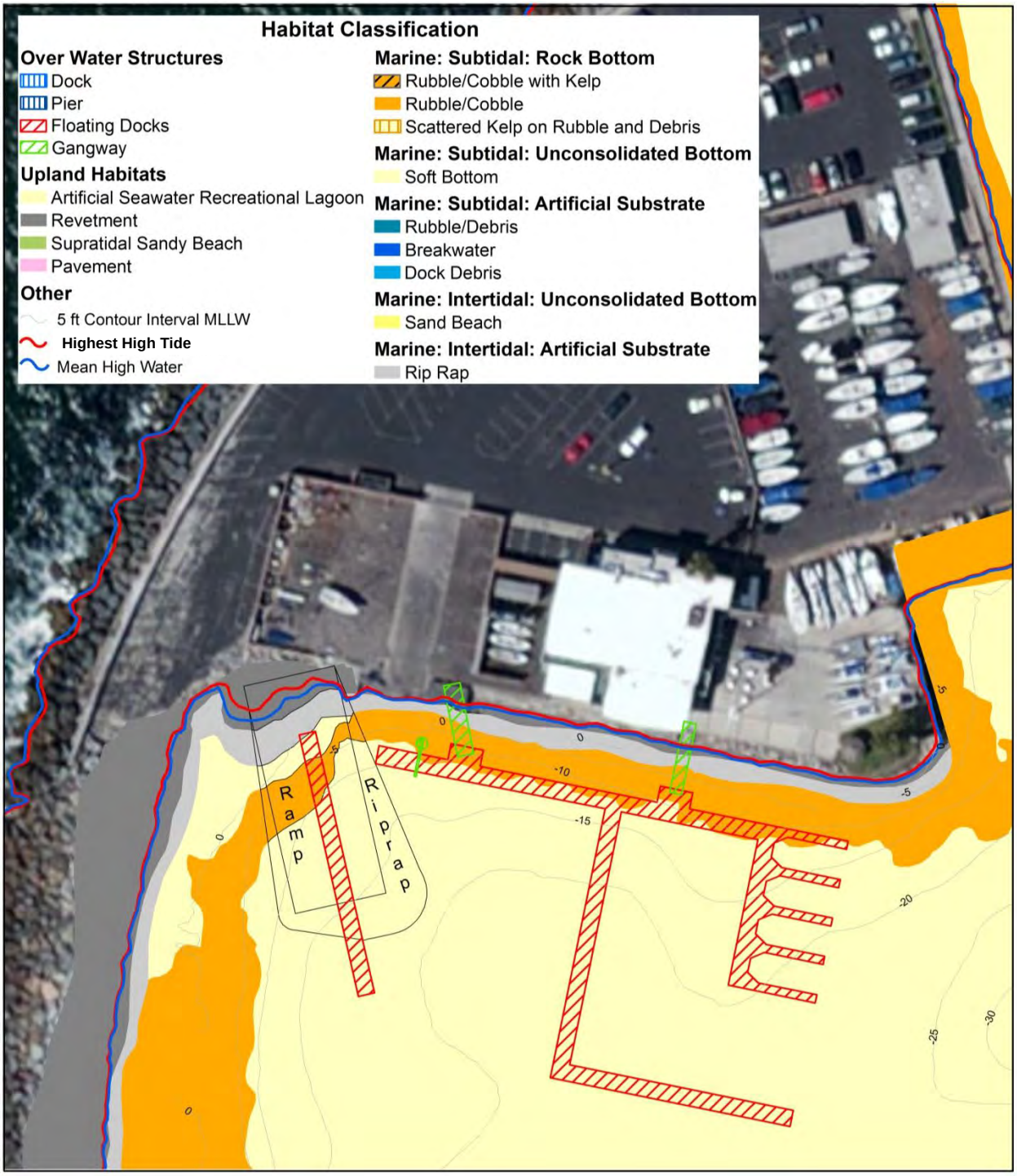

Figure A-2. Mole A – Option 2 Habitat Impact Footprint.

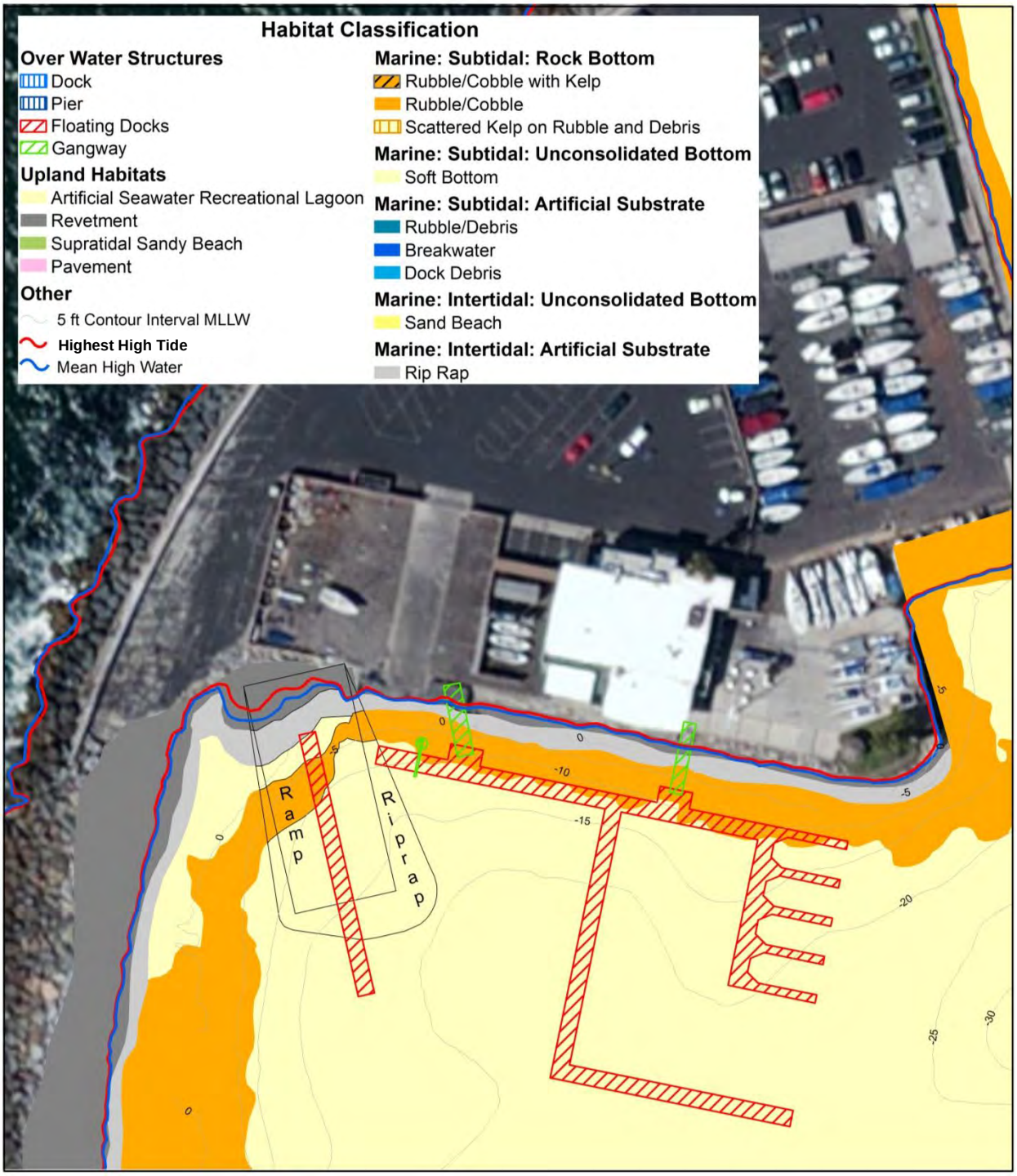

Figure A-3. Mole A – Option 3 Habitat Impact Footprint.

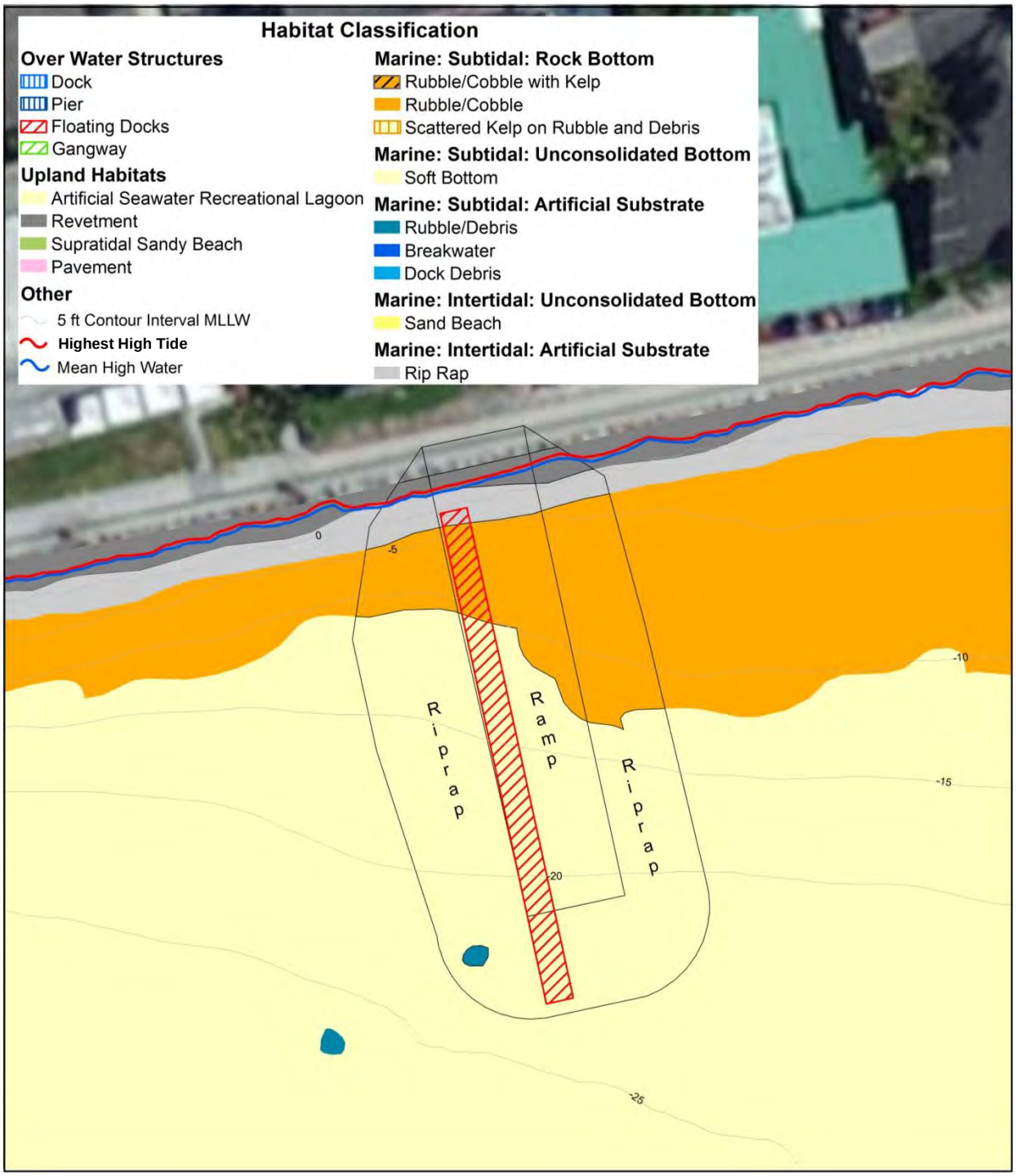

Figure A-4. Mole C Option Habitat Impact Footprint.

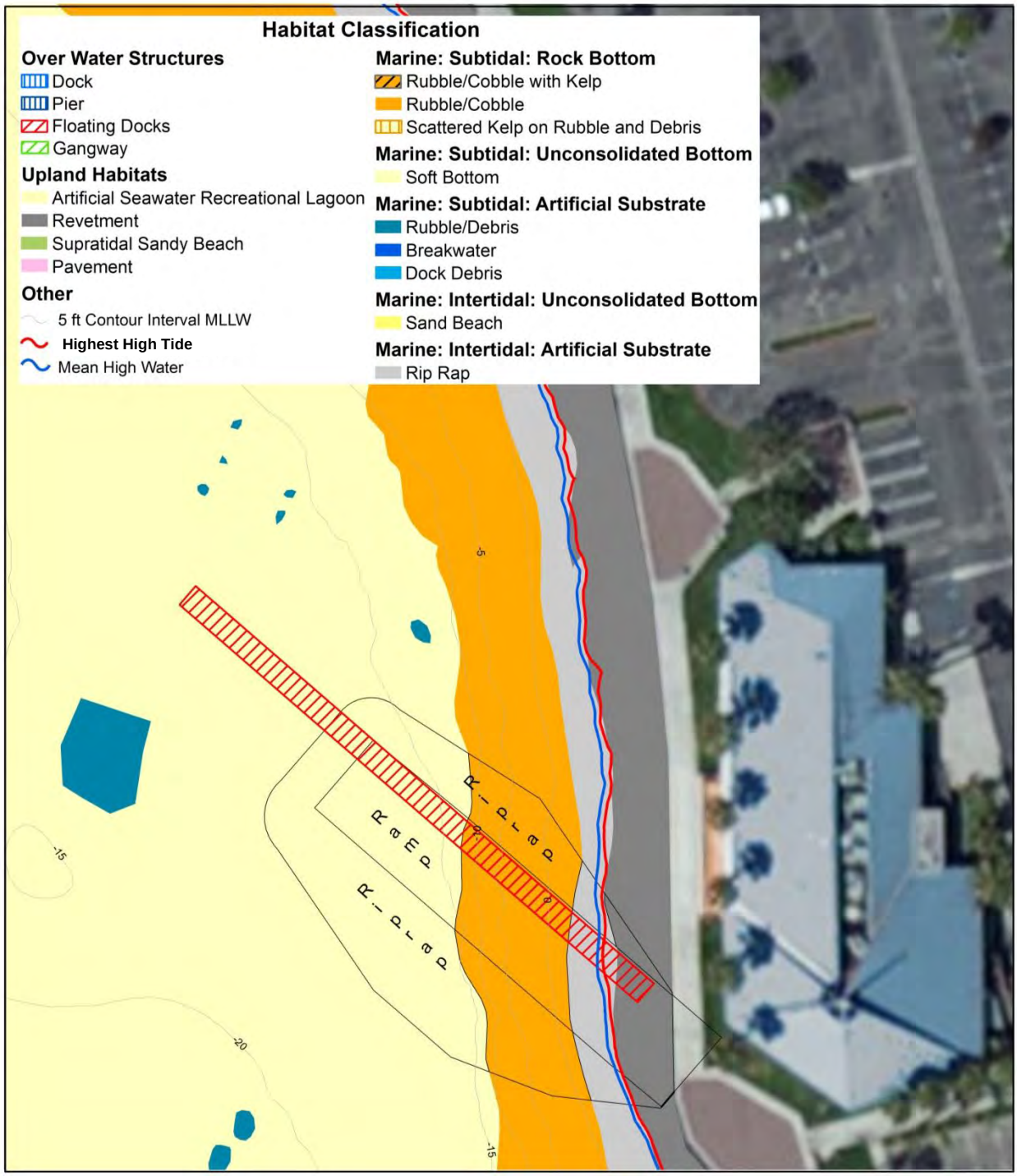

Figure A-5. Mole D – Option 1 Habitat Impact Footprint.

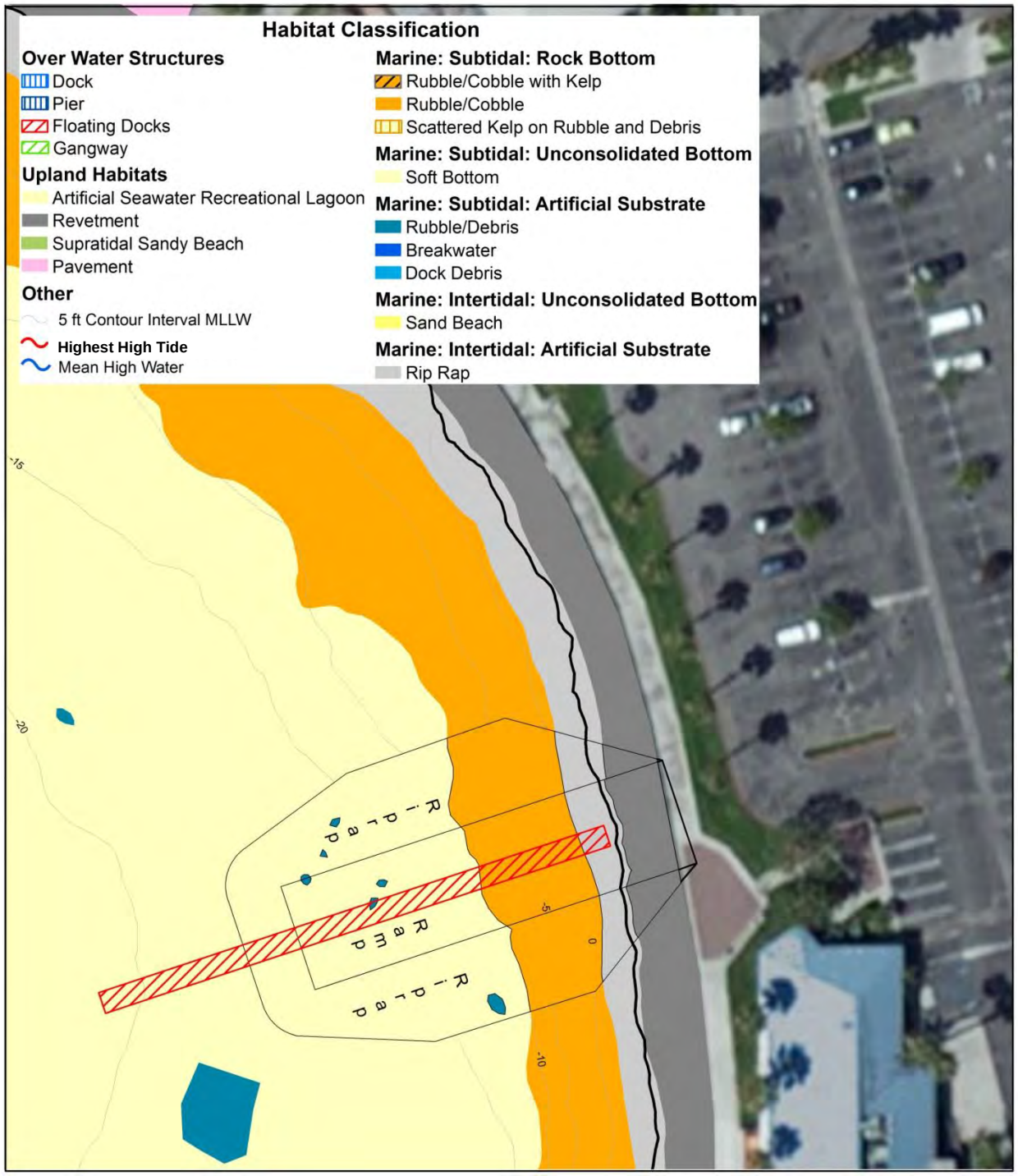

Figure A-6. Mole D – Option 2 Habitat Impact Footprint.

Table A-1. Summary of Impacts from Boat Ramp Options.

Habitat	MOLE C (PROPOSED)		MOLE A - OPTION 1		MOLE A - OPTION 2		MOLE A – OPTION 3		MOLE C OPTION		MOLE D - OPTION 1		MOLE D - OPTION 2	
	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2
Upland Habitats: Revetment	256.7	23.8	156.8	14.6	193.9	18.0	197.0	18.3	129.5	12.0	0.0	0.0	0.0	0.0
Marine: Intertidal: Artificial Substrate: Riprap	972.2	90.3	530.1	49.3	717.4	66.7	762.9	70.9	650.8	60.5	737.8	68.5	987.3	91.7
Marine: Subtidal: Rock Bottom: Rubble/Cobble	5,772.7	536.3	814.5	75.7	949.7	88.2	1,034.2	96.1	3,182.3	295.6	3,203.5	297.6	3,945.0	366.5
Marine: Subtidal: Unconsolidated Bottom: Soft Bottom	61,896.6	5,750.4	3,823.2	355.2	5,283.0	490.8	5,765.0	535.6	8,351.9	775.9	5,024.9	466.8	8,433.9	783.5
Total	68,898.2	6,400.9	5,167.8	480.1	6,950.1	645.7	7,562.0	702.5	12,185.0	1,132.0	8,966.2	833.0	13,366.1	1,241.8
Existing Surface Cover from Boarding Floats and Gangways	0.0	0.0	5,752.4	534.4	5,752.4	534.4	5,752.4	534.4	0.0	0.0	0.0	0.0	0.0	0.0
Surface Cover from Proposed Project – Includes Boarding Floats and Gangways	2734.7	254.1	7,441.9	691.4	6,768.0	628.8	6,768.1	628.8	1,167.4	108.5	1,567.2	145.6	1,567.2	145.6
Surface Cover (Net Change)	2734.7	254.1	1,689.5	157.0	1,015.6	94.4	1,015.6	94.4	1,167.4	108.5	1,567.2	145.6	1,567.2	145.6
Loss of Open Water Habitat Due to Fill	15,315.0	1,422.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Habitat Conversion - Soft bottom to hard bottom habitat	67,669.2	6,286.7	4,637.7	430.9	6,232.7	579.0	6,799.1	631.7	11,534.2	1,071.6	8,228.4	764.4	12,378.9	1,150.0

APPENDIX B

FILLING OF SEASIDE LAGOON ALTERNATIVE IMPACT ANALYSIS

One Alternative considers closing Seaside Lagoon as a water feature, filling it, and converting it into an upland park that would be open to the public year round and would include features such as an open turf area, play structure, benches, and walkways. Assuming Seaside Lagoon is deemed jurisdictional; filling of lagoon would result in the loss of approximately 19,116.7 ft^2 (1,776.0 m^2) of open water and soft bottom habitat. This impact would be considered significant and would require mitigation.

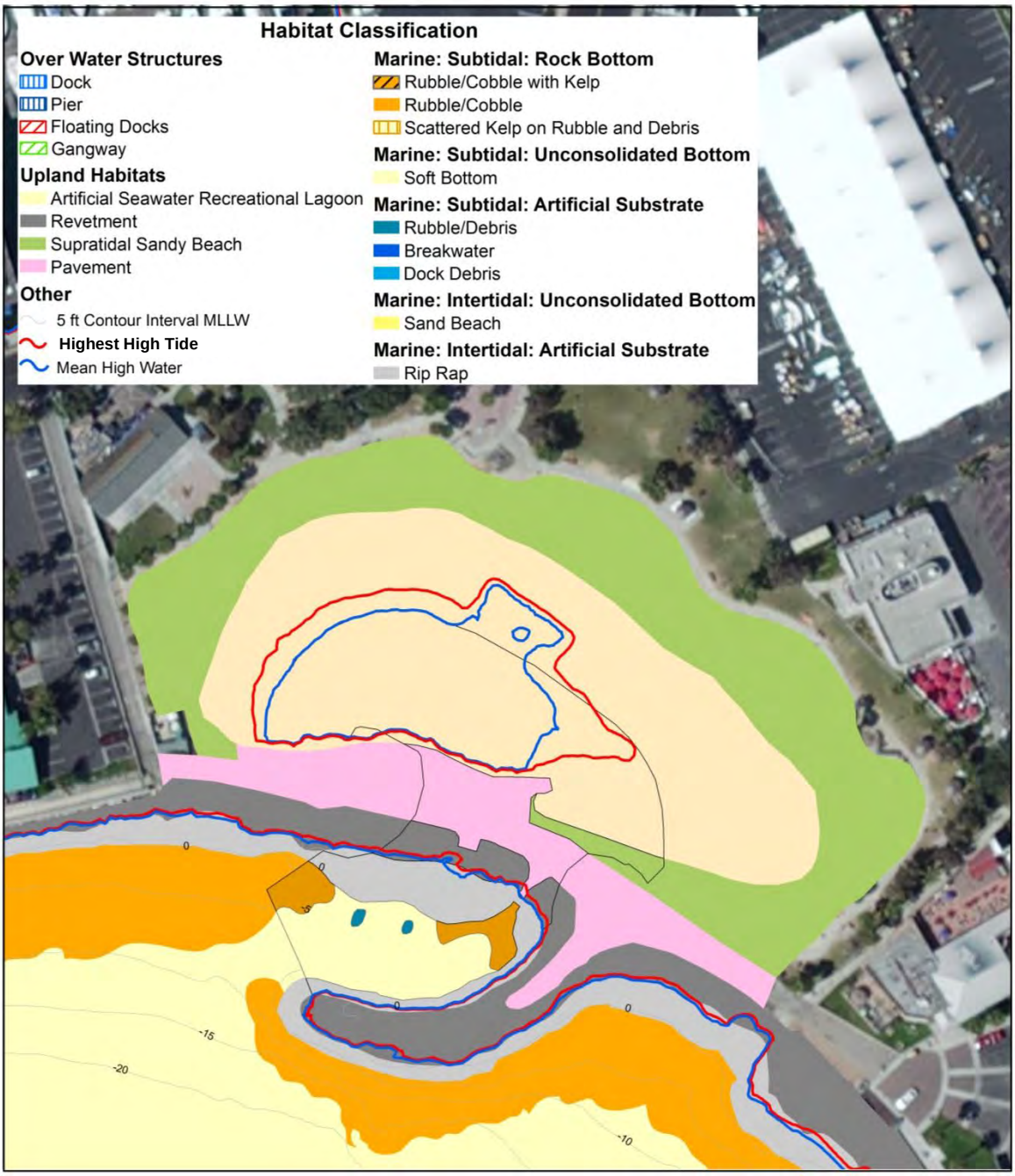

Figure B-1. Seaside Lagoon Fill Alternative Habitat Impact Footprint.