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W15a

2-22-0726 (Surfers Beach Sand Restoration Project)

September 6, 2023

EXHIBITS

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Exhibit 1 – Project Location; Surfers Beach Sand Restoration

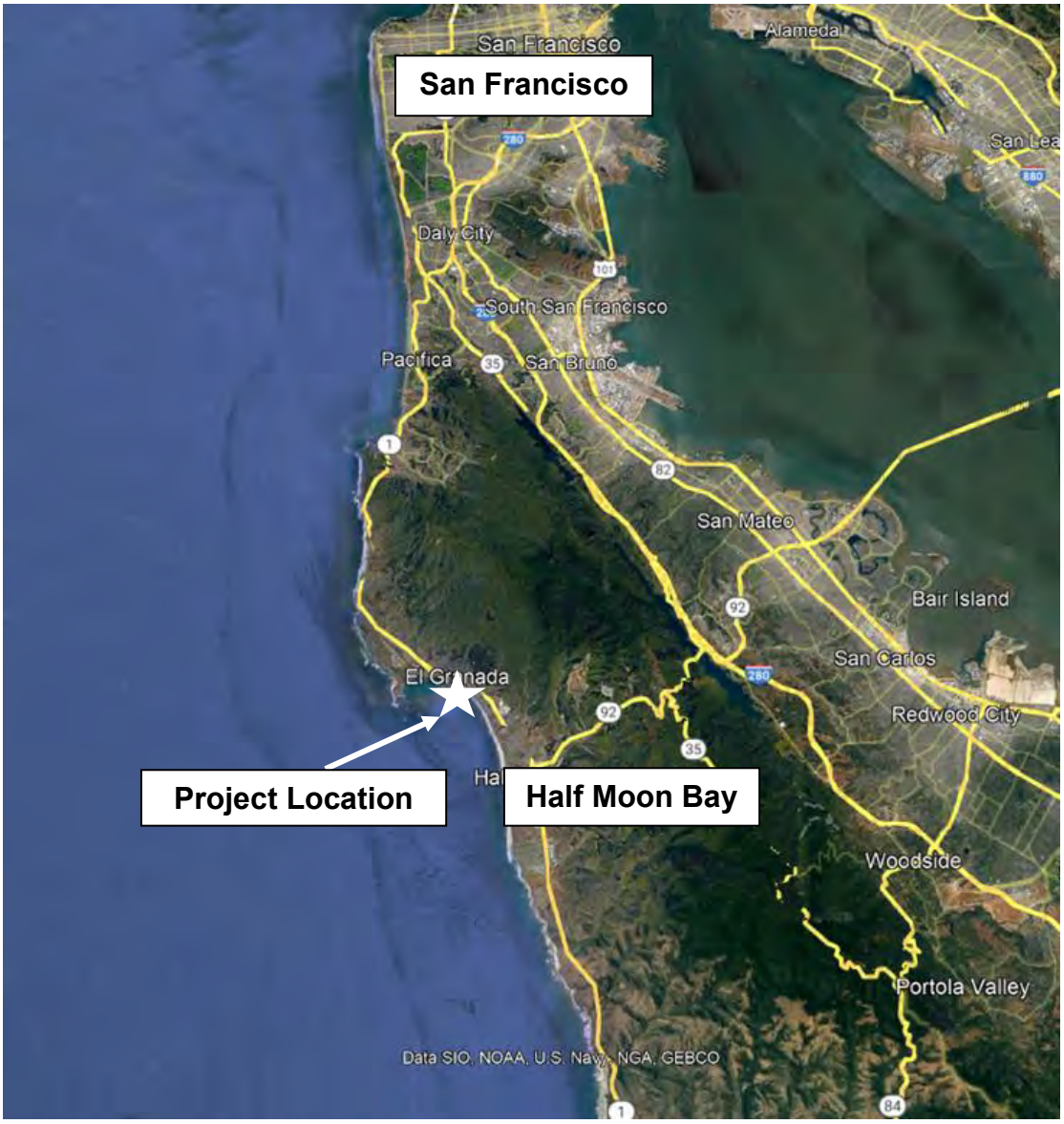

Figure 1. Project vicinity map.

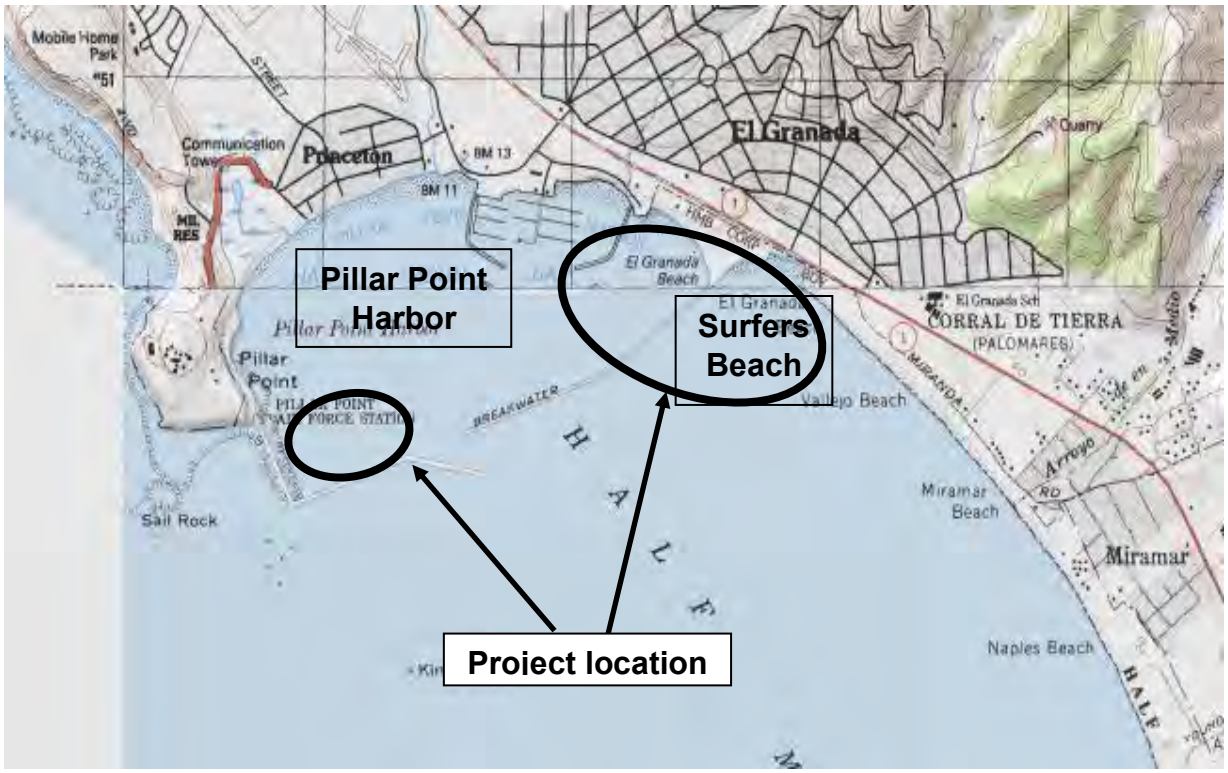

Figure 2. Project location in Pillar Point Harbor and Surfers Beach.

Exhibit 2 – Project Plans; Surfers Beach Sand Restoration

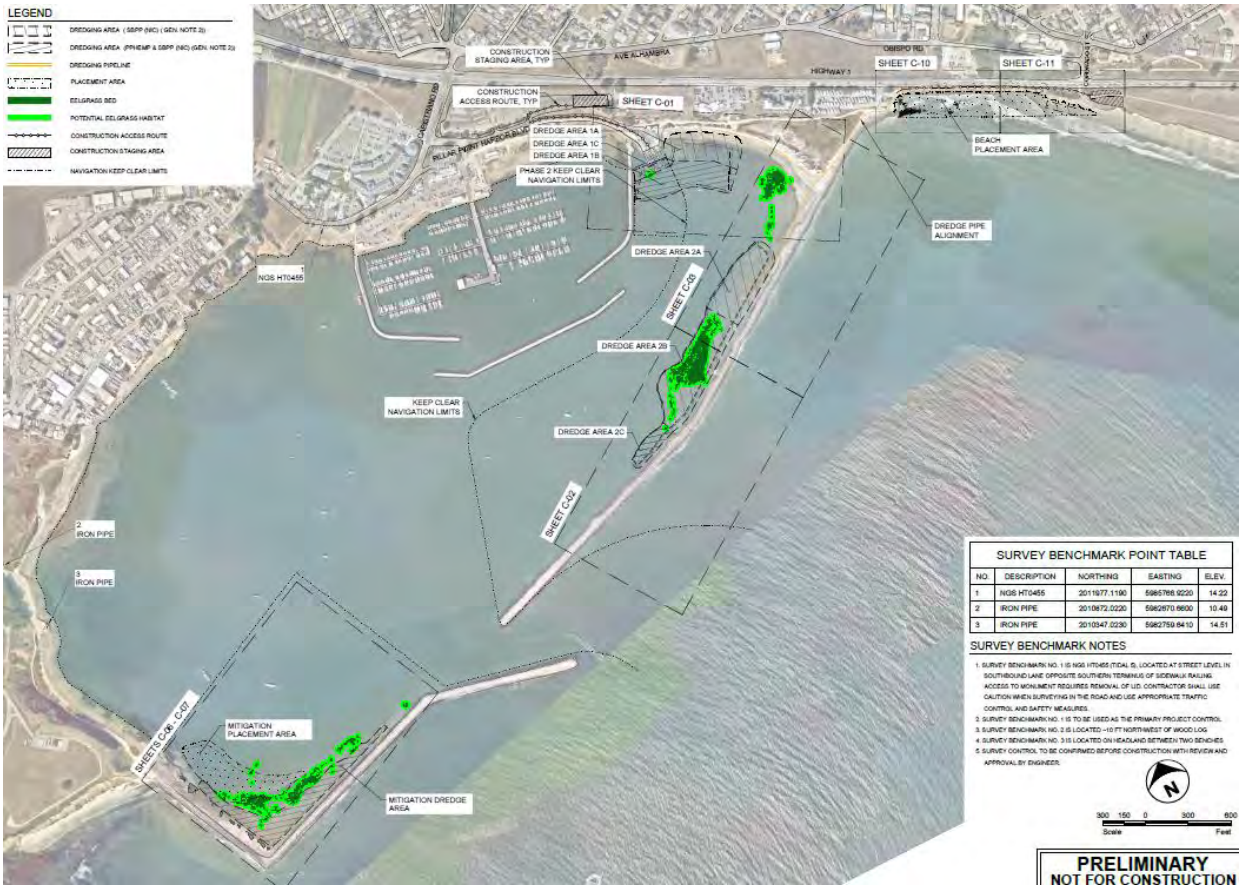

Figure 1. Overall project site plan.

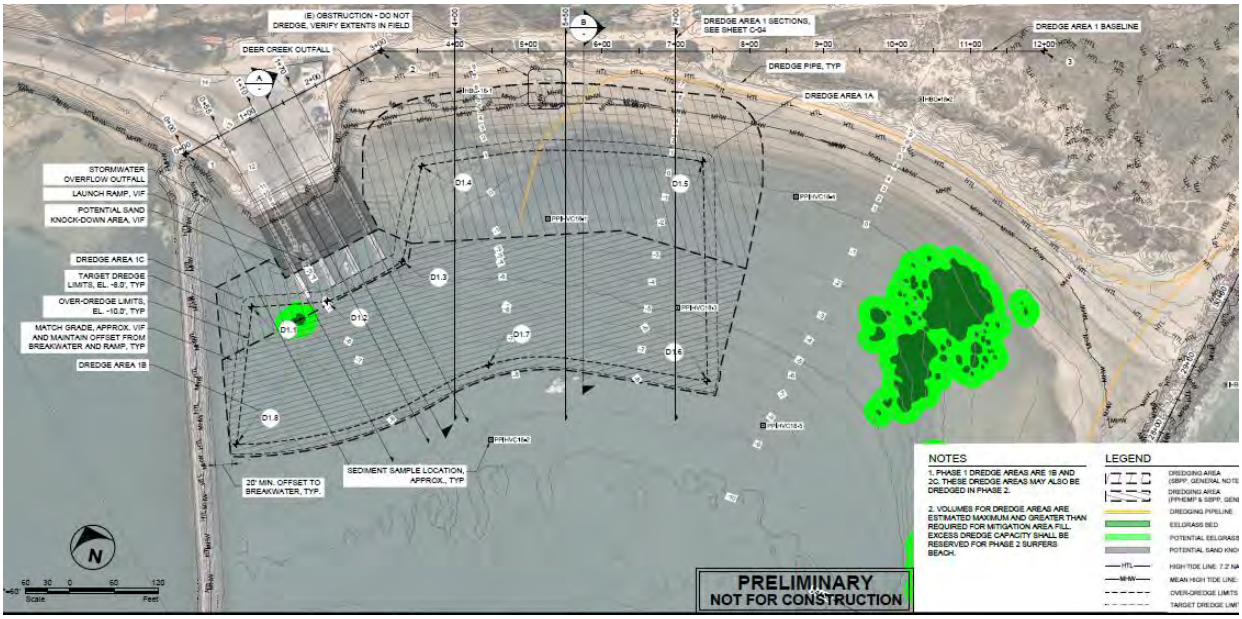

Figure 2. East basin dredge area plan – 1.

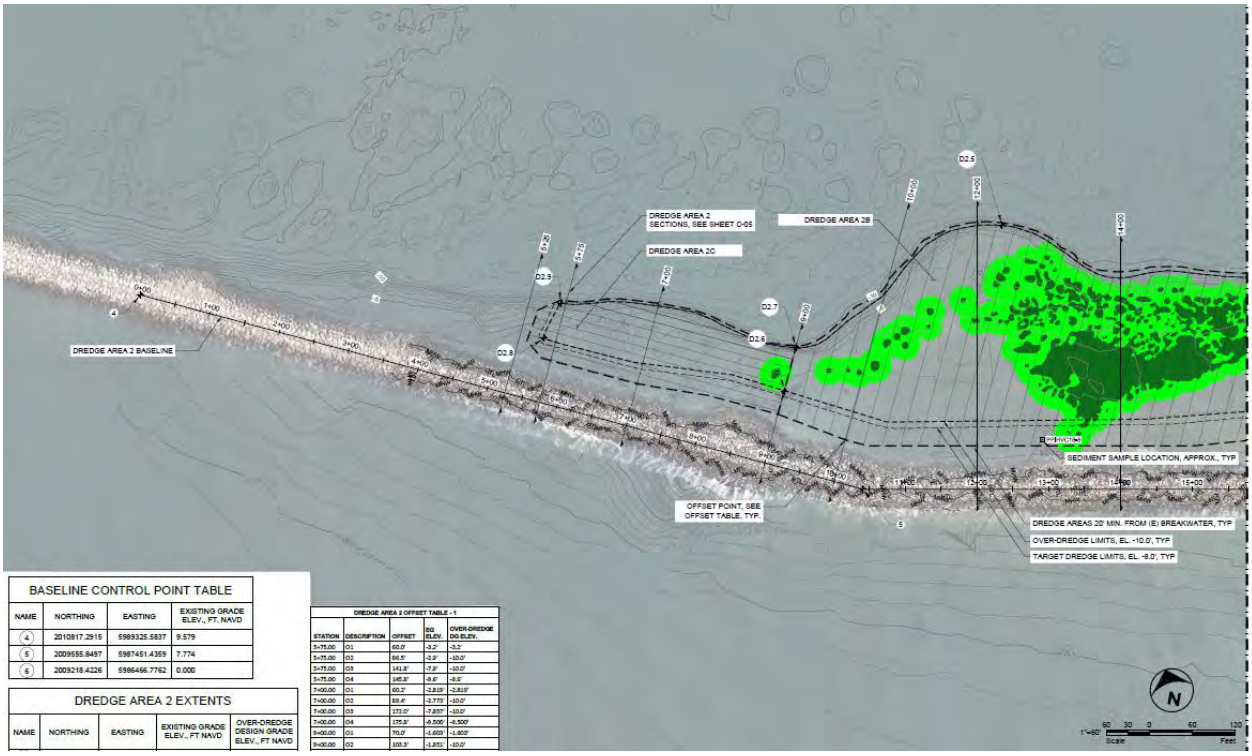

Figure 3. East basin dredge area plan – 2A.

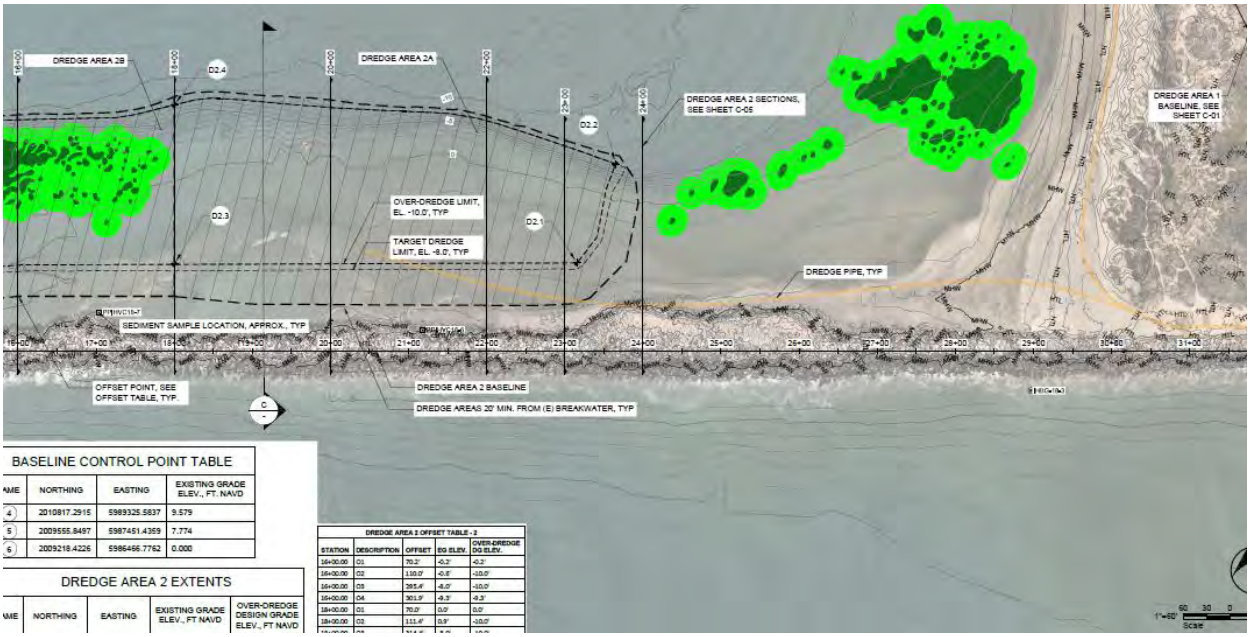

Figure 4. East basin dredge area plan – 2B.

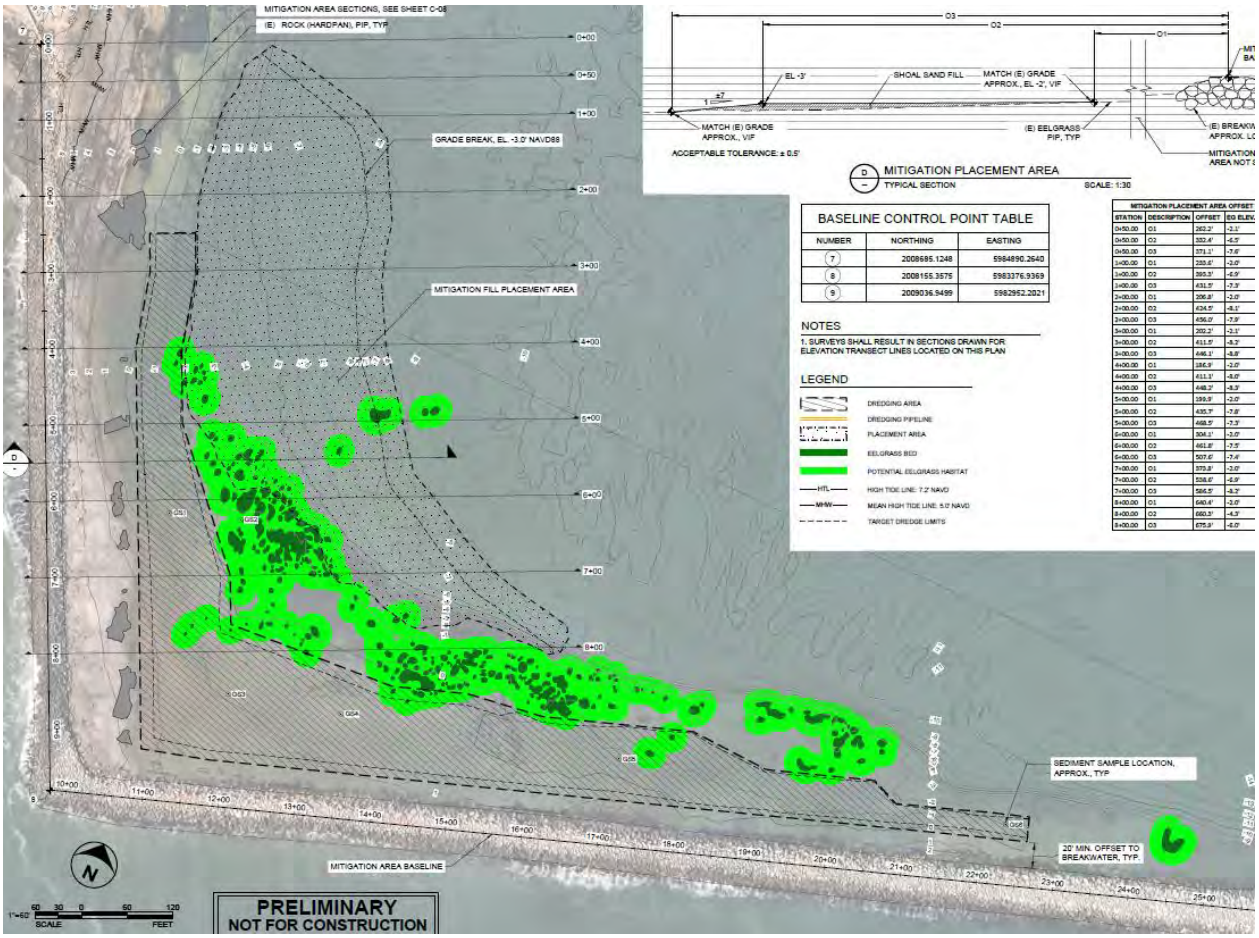

Figure 5. Eelgrass mitigation area.

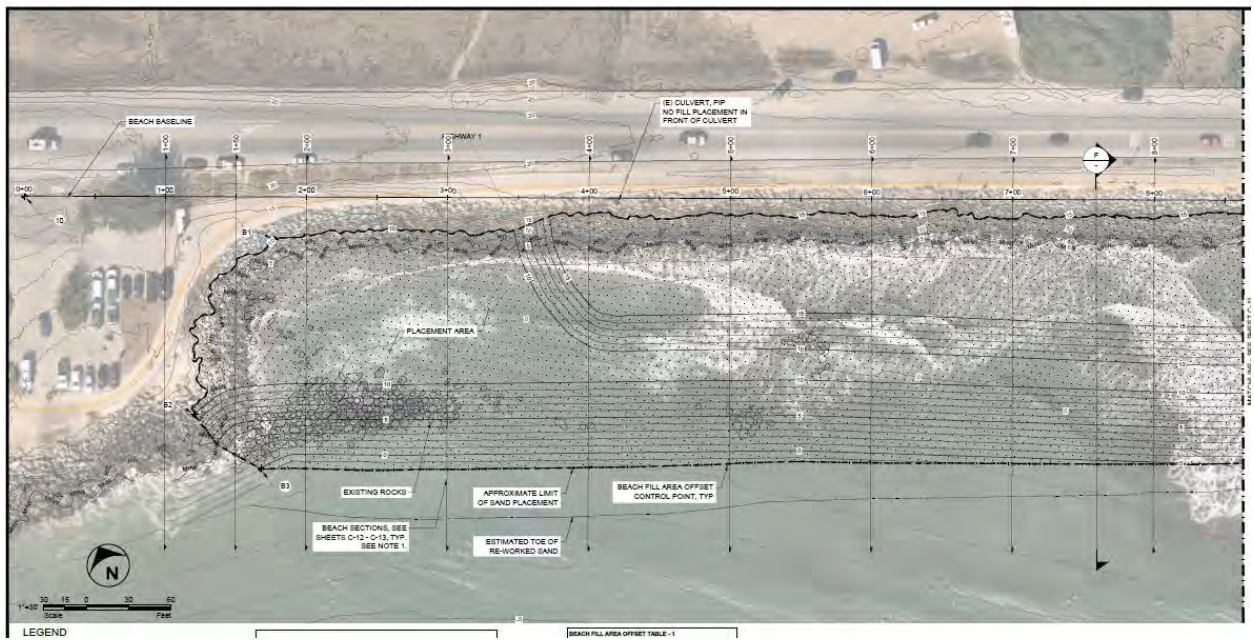

Figure 6. Surfers Beach fill area plan – 1.

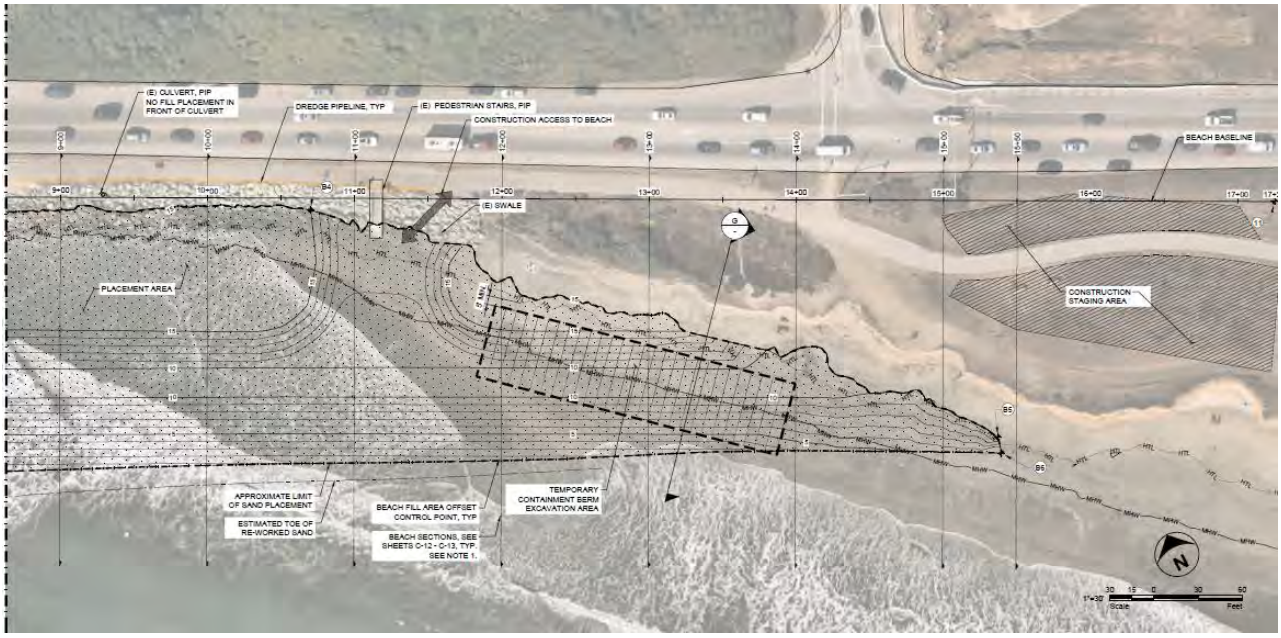

Figure 7. Surfers Beach fill area plan – 1 continued.

Exhibit 3 – Site Photos; Surfers Beach Sand Restoration

Figure 1. Photograph showing erosion of the Surfer's Beach shore looking north toward Pillar Point Harbor in 1971.

Figure 2. Photo of Surfers Beach on January 13, 2021, at low tide, showing Highway 1 at left with rock revetment, eroded beach and exposed rocks.

Figure 3. Photograph showing significant accumulation of sand near boat launch ramp in foreground and along the East Breakwater in background (1/13/21).

Figure 4. March 27, 2023 photo of eelgrass bed in West Harbor Basin, near southwest corner (Photo by Tom Wadsworth).

Figure 5. April 13, 2023 photo of eelgrass bed in East Harbor Basin near proposed reference site (Photo by Tom Wadsworth).

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
Biological Resources	**Mitigation Measure BIO- GC: General Construction Conservation Measures.** The contractor shall be supplied with copies of the permit conditions of approval that detail the below listed measures prior to groundbreaking, as well as any other pertinent avoidance and minimization measures: • No project related activities shall occur outside the delineated work area. • No rodenticides, pesticides, or herbicides shall be used as part of the project. • Construction Areas: Areas within which construction activities and staging are to take place shall be minimized in size and shall be sited and designed to avoid impacts on coastal waters and marine life, and to the extent feasible, public access to the water and shoreline. Construction (including but not limited to dredging activities, and materials and/or equipment storage) shall be prohibited outside of the defined construction, staging, and storage areas. • Construction Methods and Timing: Methods shall be used to keep the construction areas separated from public recreational use areas (including using unobtrusive fencing or equivalent measures to delineate construction areas) to the maximum extent practicable. Full closure of the trail is anticipated during night work (trail is already closed after dusk and varies seasonally) to the public per County rules. • All vehicle parking shall be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to	1. Harbor District reviews construction specifications to verify inclusion. 2. Harbor District conducts periodic site inspections during construction to ensure compliance and klpf p0huadds inspection report to project file.	1. Harbor District and the contractor(s).	Prior to and during construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	the biological monitors and construction supervisors shall be parked at the nearest point on identified existing access roads. Construction BMPs shall be installed prior to construction and used during construction to protect coastal water quality, including the following: • Silt fences, straw wattles, or equivalent apparatus shall be installed at the perimeter of the construction site to prevent construction-related runoff or sediment from discharging to coastal waters or to areas that would eventually transport such discharge to coastal waters. • The fueling and maintenance of vehicles and other equipment shall occur at least 100 feet from any aquatic habitat or water body. • All construction equipment shall be inspected and maintained at an off-site location to prevent leaks and spills of hazardous materials at the project site. • The contractor shall ensure that good construction housekeeping controls and procedures are maintained at all times including: clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly; place trash receptacles on site for that purpose; cover open trash receptacles during wet weather; and remove all construction debris from the site. • All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday.			

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
Biological Resources	**Mitigation Measure BIO-GW. General Wildlife Conservation Measures.** • At least 15 days prior to any ground disturbing activities, the Harbor District shall submit to the USFW and CDFW for review and approval the qualifications of the proposed biological monitor(s). A qualified biological monitor means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the listed species. • Prior to the start of construction, a USFWS- and CDFW-approved biologist will conduct an Environmental Awareness Training. The training will educate all construction personnel regarding habitat, identification of special status species, and required practices before the start of construction. The training will include the general measures that are being implemented to conserve the species as they relate to the Project, the penalties for non-compliance, and the boundaries of the project area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.	1. Harbor District submits the qualifications of the proposed biological monitor(s) to USFWS- and CDFW. 2. Harbor District reviews construction specifications to verify inclusion. 3. Harbor District conducts periodic site inspections during construction to ensure compliance, and adds inspection report to project file.	1. Harbor District, USFW, and CDFW. 2. Harbor District, contractor(s), USFWS, and CDFW.	1. At least 15 days prior to any ground breaking activities. 2. Prior to construction and during construction.

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	• A "soft-start" policy shall be implemented in order to allow wildlife species to vacate the area prior to construction activities. A soft-start (e.g. ramp-up period) shall be used prior to full-power equipment use at the beginning of each day, or following a 30 minute or longer break. • A litter control program shall be instituted at the proposed project area. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the project area at the end of each working day.			
Biological Resources	***Mitigation Measure BIO-1a: Snowy Plover Avoidance and Minimization Measures*** • A qualified biologist (knowledgeable and experienced in snowy plover ecology and identification) shall conduct a pre-construction survey for snowy plovers within 7 days prior to the initiation of construction or equipment use, including pipeline placement and removal, and any beach nourishment activities. A survey report detailing the survey findings shall be prepared and submitted to the biological permitting agencies prior to the start of construction. If disturbance activities are delayed following a survey, then an additional pre-construction survey should be conducted such that no more than one week will have elapsed between the last survey and the commencement of ground disturbance activities at each discrete project location • Prior to the initiation of work, the qualified biologist will conduct Worker Environmental Awareness Training (WEAT) for all personnel conducting work at the project. At a minimum, the	1. Harbor District shall submit the name(s) and credentials of biologist(s) who could conduct mitigation measure activities to USFWS and CDFW for approval. 2. Harbor District ensures all construction personnel receives WEAT and maintains records.	1. Harbor District, USFWS, and CDFW.	Prior to and during construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	training will include written and oral information regarding special status species and habitats that have the potential to occur on the site, a description of the species and their habitat, and the importance of these species. The training will include the general measures that are being implemented to conserve the species as they relate to the project and the penalties for non-compliance. A fact sheet or other supporting materials containing this information will be prepared and distributed to all personnel conducting work at the project. Upon completion of the training, construction personnel will sign a form stating that they have attended the training and understood all of the conservation protection measures. The signed form will be kept onsite at all times and available for agency staff review if requested. Interpretation shall be provided for non-English speaking workers. • If snowy plovers were found to be located within the Surfers Beach project area, the following measures shall be initiated to reduce the potential impacts to a less than significant level: 1. A biological monitor shall be present during any construction activities in and around Surfers Beach during the first week. If snowy plovers continue to be observed near the construction area, the monitor will advise the work crews on how to avoid or minimize impacts to plover, which may include temporarily halting activities, until the plovers have left the site. The minimization measures shall continue throughout the beach nourishment activities. 2. The qualified biologist will conduct surveys of Surfers Beach and immediate surroundings until the snowy plovers have left the work area. Project work			

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	may resume after snowy plovers have left the work area. • During project activities, all trash that may attract predators will be properly contained, removed from the construction area and disposed of regularly. Following construction, all trash and construction debris will be removed from work areas. • Vehicle and equipment refueling, repair, and lubrication will only be permitted in designated areas where accidental spills will be contained.			
Biological Resources	***Mitigation Measure BIO-1b: Coastal Pelagic Fish and Groundfish Avoidance and Minimization Measures*** • Worker Environmental Awareness Training (WEAT), as described in Mitigation Measure BIO-1a, will be provided. • Prior to dredging work a qualified biologist (knowledgeable and experienced in pelagic fish species and groundfish identification) shall remove eelgrass from the proposed dredge footprint in order to remove potential habitat prior to dredging activities. • The project will create approximately 3.90 acres of eelgrass habitat using the fine sands that will be dredged as part of the project work. As soon as feasible, the harvested eelgrass will be replanted within the newly created habitat.	1. Harbor District shall submit the name(s) and credentials of biologist(s) who could conduct mitigation measure activities to NMFS and CDFW for approval. 2. Harbor District ensures all construction personnel receives WEAT and maintains records.	Harbor District, NMFS, and CDFW.	Prior to and during construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
Biological Resources	***Mitigation Measure BIO-1c: Black Abalone Avoidance and Minimization Measures*** • Worker Environmental Awareness Training (WEAT), as described in Mitigation Measure BIO-1a, will be provided. • A qualified biologist (knowledgeable and experienced in black abalone identification) with experience surveying for abalone shall conduct preconstruction surveys within potential habitat inside the project area in order to ensure that they avoid sensitive abalone habitat and existing individuals. If black abalone are not found, then no additional measures are necessary. • If black abalone are found, then beach nourishment work at Surfers Beach shall proceed such that work taking place directly adjacent to (within 25 feet) the outer breakwater shall take place outside of the spring to early summer abalone spawning season to avoid effects on larval settlement or on juvenile abalone.	1. Harbor District shall submit the name(s) and credentials of biologist(s) who could conduct mitigation measure activities to NMFS and CDFW for approval. 2. Harbor District ensures all construction personnel receives WEAT, and maintains records.	Harbor District, NMFS, and CDFW.	Prior to and during construction
Biological Resources	***Mitigation Measure BIO-1d: Nesting Raptors and other Migratory Nesting Birds Avoidance and Minimization Measures*** • Worker Environmental Awareness Training (WEAT), as described in Mitigation Measure BIO-1a, will be provided by a qualified biologist. • If construction would commence anytime during the nesting/breeding season for raptors, or other bird species listed in the Migratory Bird Treaty Act (typically February through September 15), a pre-construction survey of the project vicinity for nesting birds should be conducted. This survey should be conducted by a qualified biologist (experienced with the nesting behavior of bird species of the region) within 7 days prior to the	1. Harbor District includes field surveys in project file and submits to USFWS- and CDFW as determined by qualified biologist. 2. If required, Harbor District will include avoidance procedures in	Harbor District, USFWS, CDFW	Prior to / during construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	commencement of construction activities at each discrete project location that would occur during the nesting/breeding season. The intent of the survey should be to determine if active nests are present within or adjacent (within 100 feet) to the construction zone. If ground disturbance activities are delayed following a survey, then an additional pre-construction survey should be conducted such that no more than one week will have elapsed between the last survey and the commencement of ground disturbance activities at each discrete project location. • If active nests are found in areas that could be directly or indirectly affected by the project, a no-disturbance buffer zone should be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them should be determined through consultation with the CDFW depending on the species, taking into account factors such as the following: a. Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; b. Distance and amount of vegetation or other screening between the construction site and the nest; and c. Sensitivity of individual nesting species and behaviors of the nesting birds. The buffer zone around an active nest should be established in the field with orange construction fencing or another appropriate barrier and construction personnel should be instructed on the nest areas' sensitivity. The qualified biologist should serve as a construction monitor during those periods when construction activities would occur near active nest areas of special status bird species to ensure that no impacts on these nests occur.	construction contract. Add review to project file. 3. Harbor District conducts periodic site inspections during construction to ensure compliance, and adds inspection report to project file.		

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
Biological Resources	***Mitigation Measure BIO-1e: Special Status Plants*** • A qualified biologist shall complete bloom season surveys for special-status plant species prior to initiation of project activities. The survey shall be completed during the appropriate blooming periods for the above listed species that have the potential to occur on site. These surveys shall be in compliance with all CDFW (2009), USFWS (1996), and CNPS (2001) published survey guidelines. • If the surveys find that there are no special-status plants on the property that would be impacted or within the proposed project site, then there would be no further mitigation and the project may proceed, provided all other applicable permits and authorizations are obtained for the project. • If special-status plant species are found, populations will be mapped and enumerated. If any populations are found within the proposed development area, project development plans shall consider avoidance to the extent practicable. If avoidance is not practicable while otherwise obtaining the project's objectives, then other suitable measures and mitigation shall be implemented as detailed below. If impact to the area is unavoidable all activity in that area shall halt and not proceed until CDFW has been consulted and the follow measures shall be implemented: A. Initially the practicability of avoidance shall be evaluated as noted above.	1. Harbor District includes field surveys in project file. If two years elapse between the survey and commencement of ground disturbance, activities, a final set of appropriately-time focused botanical surveys shall be implemented by Harbor District. 2. Harbor District will comply with the FESA and/or CESA by implementing requirements from USFWS and CDFW consultation. 3. Harbor District reviews construction specifications to verify inclusion.	Harbor District, USFWS, CDFW	Prior to and during construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	B. If avoidance is not practicable, a mitigation plan shall be developed and approved by the CDFW for implementation of steps 1 through 3 below prior to site disturbance. The mitigation plan shall include the following elements: 1. Prior to construction within the project area, a qualified botanist shall collect the seeds, propagules, and top soils, or other part of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year. 2. At least 2/3 of the seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late-fall months). Half of the seeds and top soils collected shall be appropriately stored and propagated at a native plant nursery to ensure germination. This material will be planted at an approved and protected area during the appropriate season. Planting location, timing, collection methods etc... will be detailed in the mitigation plan required by Measure B above. 3. The applicant shall hire a qualified biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting efforts. These reports shall be submitted to the City no later than December 1st each monitoring year. 4. These steps shall be implemented prior to site disturbance.			

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
	A CNDDB form shall be filled out and submitted to CDFW for any special-status plant species identified within the project site. When implemented, these measures would reduce potentially significant adverse impacts on special-status plant species to a level considered less than significant.			
Biological Resources	***Mitigation Measure BIO-1f: Eelgrass*** • The project involves eelgrass mitigation efforts that will create approximately 3.90 acres of eelgrass habitat (nearly a 1.5:1 ratio of created to impacted) using the fine sands that will be dredged as part of the project work. In addition, prior to dredging, qualified biologist (knowledgeable and experienced with eelgrass) shall harvest as much of the existing eelgrass from the dredge footprint as practicable. As soon as feasible, the harvested eelgrass will be replanted within the newly created habitat. • The qualified biologists who are conducting the eelgrass harvesting, will obtain a CDFW collection permit and follow all of the measures required by the permit. • Prior to project approval, a plan describing the constructed locations, construction methods, mitigation measures, and monitoring and success criteria will be submitted to the permitting agencies for review and approval. • Prior to construction a baseline eelgrass survey will be completed and the results will be reported to agencies and used to determine final eelgrass mitigation requirements. • Following construction the eelgrass mitigation area eelgrass surveys will occur annually for a 5-year period to assess the success of mitigation efforts.	1. Harbor District will hire qualified biologists to conduct baseline eelgrass survey, conduct transplanting activities, and post-construction monitoring. 2. District will add all reports to project files and report results to agencies.	Harbor District	Before, during and after construction

Issue Area	Mitigation Measure	Monitoring / Reporting Action	Implementing Party / Monitoring Party	Timing
Biological Resources	***Mitigation Measure BIO-1g: Waters of U.S. and State*** • The project will create approximately 4.1 acres of beach habitat and 3.90 acres of eelgrass habitat. As mitigation for the impacts from dredging, eelgrass will be transplanted from the dredging areas into newly created habitat area. Prior to project approval, a plan describing the constructed locations, construction methods, mitigation measures, monitoring and success criteria will be submitted to the permitting agencies for review and approval. • The project will obtain, and comply with the conditions of, the necessary permits from the applicable state and federal resource agencies including, but not limited to: US Army Corps of Engineers, State Regional Water Quality Control Board, and California Coastal Commission, California Department of Fish and Wildlife.	1. Harbor District will provide all final plans and other required submittals to permitting agencies.	Harbor District	Prior to, during and after construction.

MARINE TAXONOMIC SERVICES, LTD.

Pillar Point Harbor-Wide Eelgrass Management and Mitigation Plan

July 27, 2020

Prepared for:

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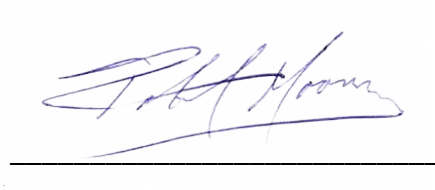
Marine Taxonomic Services Ltd. 2020.Pillar Point Bay-Wide Eelgrass Management and Mitigation Plan. Prepared for Brad Damitz, Consultant to the Harbor District. July 27, 2020.



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Biologist and Report Draft – Grace Teller, MSc.
Review of Report Draft – Jonathan Schram, MEM.

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Pillar Point Harbor-Wide Eelgrass Management and Mitigation Plan

July 27, 2020

1 Introduction

On behalf of the San Mateo County Harbor District (District), Brad Damitz the District consultant, contracted with Marine Taxonomic Services, Ltd. (MTS) to identify the extent of eelgrass (*Zostera marina* and *Z. pacifica*) within Pillar Point Harbor (MTS 2019). MTS was then asked to review the extent of eelgrass presence and create a management and mitigation plan that considered current bathymetry, proposed dredge plans for the Surfers Beach Pilot Restoration Project, Pillar Point Harbor Boat Launching Facility, and to be utilized in the event of future harbor maintenance dredging undertaken by the District. These actions represent a suite of management needs and are collectively referred to as "Projects" in this document.

As the only harbor between Santa Cruz and San Francisco, Pillar Point Harbor (PPH) serves a crucial function for vessels that rely on the boat launch ramps and anchorage area in the Harbor's east basin. The District has an obligation to ensure that safe navigation and anchoring be maintained within PPH, which requires periodic dredging. Due to the construction of the PPH outer breakwaters, the east basin has experienced shoaling of trapped sand that would have otherwise been part of the littoral cell. If no dredging occurs in the future, then ultimately the harbor would not be available for navigation or anchoring. The eelgrass mitigation described in this report is part of a larger effort by the District to obtain permits that would allow for the Surfers Beach Project and required future maintenance dredging.

MTS was also tasked with identifying the steps necessary to create a successful mitigation site for the proposed Projects, and to approximate the change in eelgrass coverage that may result from proposed maintenance activities. The creation of a mitigation site is proposed such that areas currently populated with eelgrass can be managed such that any losses to eelgrass within those areas would be compensated for through restoration within a portion of the PPH that is considered non-critical for safe navigation, berthing, mooring, or boating.

1-1 Project Location

The Project sites are located within the PPH in Half Moon Bay, California (Figure 1). Half Moon Bay is located approximately 18 miles south of San Francisco on the Pacific coast side of San Mateo Country, California. Eelgrass is proposed to be salvaged within the east basin and creation of a mitigation site is proposed in the west basin.

1-2 Project Summary

PPH provides a protected harbor for berthing and mooring of commercial and recreational vessels and includes a public boat launch ramp (Figure 1). To maintain safe access for vessel navigation as well as boat launching, maintenance dredging is required. Additionally, as part of the Surfers Beach Pilot Restoration Project sand that is entrained in the harbor is proposed to be beneficially re-used by being placed on the beach and back into the littoral cell. The sand loss along nearby swaths of Surfers beach has resulted in

the need for beach re-nourishment actions to support overlying public access and roadways adjacent to the Project area (Appendix A).

MTS completed the harbor-wide eelgrass inventory assessment in November 2019 (MTS 2019). The findings provided in that report are utilized to inform the creation of this management and mitigation plan. The results from the 2019 survey mapped 5,712 square meters of eelgrass within PPH. Based on the results from the survey, it is estimated that approximately 4,258 square meters of eelgrass habitat will be directly impacted due to Project activities in the east basin. This assumes that the need for maintenance dredging will encompass all areas currently supporting eelgrass in the east basin. That eelgrass exists in the east basin due to entrainment of sand in the harbor and associated shoaling which has created shallow water conditions that are favorable for eelgrass growth. The California Eelgrass Mitigation Policy (CEMP) outlines a replacement or mitigation ratio of at least 1.2:1 for impacts to eelgrass habitat (NMFS 2014). As a result, the Projects will be required to establish an estimated minimum of 5,110 square meters of new eelgrass habitat to mitigate for impacts. In creating the proposed mitigation site, an additional 31 square meters of eelgrass are estimated to be impacted, thus an additional 37 square meters of eelgrass habitat are required to account for the total impacts to eelgrass in all areas of PPH. The resulting total eelgrass mitigation is 5,147 square meters.

This document provides a management and mitigation plan to account for impacts to eelgrass due to Projects' activities. It includes details on the location and methods for creating new eelgrass habitat as part of the proposed mitigation. Additionally, the plan includes a five-year monitoring plan to assess establishment of the created eelgrass habitat to ensure that the minimum coverage and density obligations are met per the CEMP.

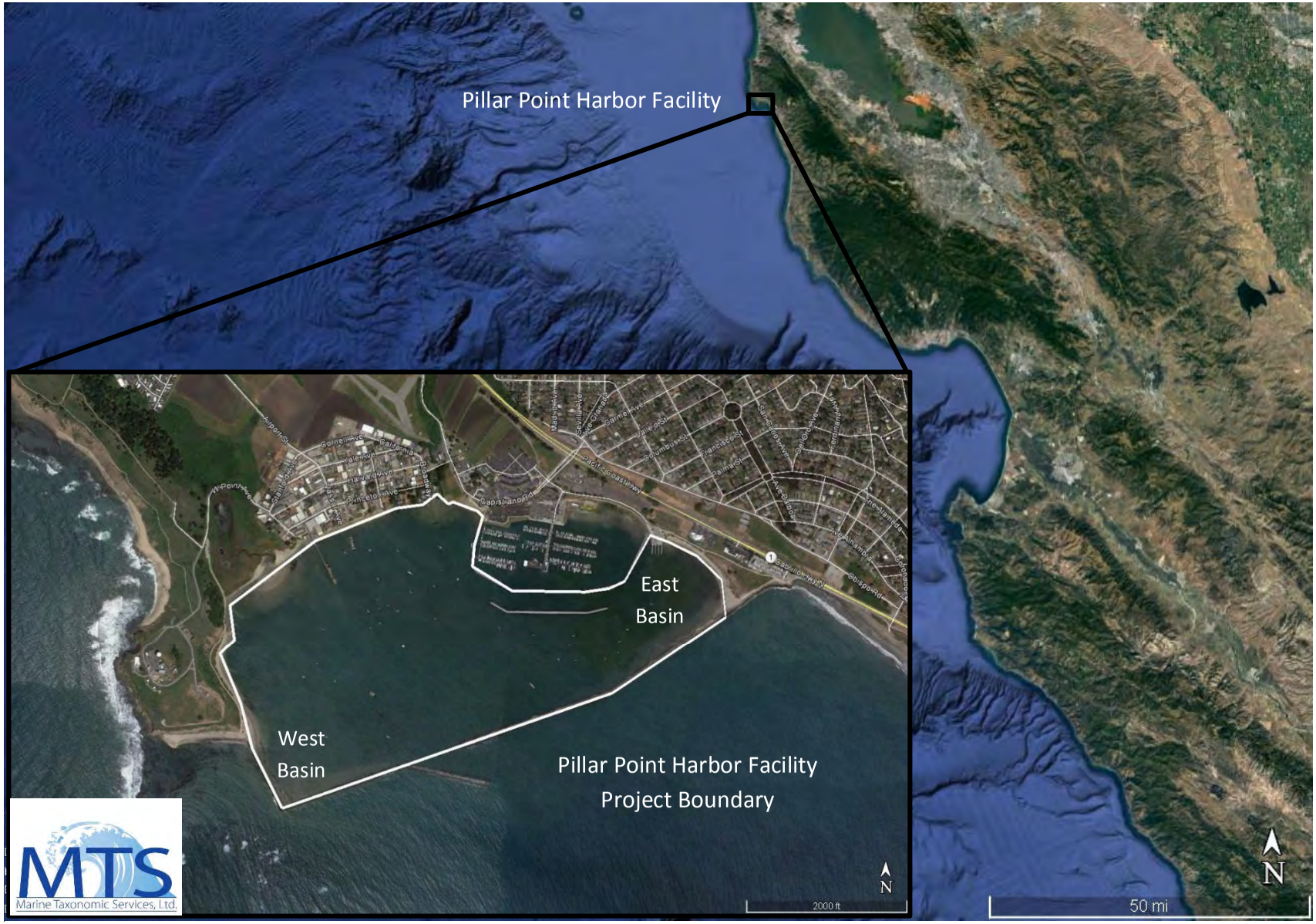

Figure 1. Location of Pillar Point Harbor Facility and Project boundary of the area surveyed for eelgrass and potential restoration sites.

2 Regulatory Reasoning & Mitigation Approach

Seagrass habitat is designated as a Habitat Area of Particular Concern (HAPC) by NOAA Fisheries. *Z. marina* is the dominant eelgrass within the PPH. Because of its designation as an HAPC and its notable contributions to ecological processes, it is protected under the Clean Water Act and managed by NOAA in California through adherence to the California Eelgrass Mitigation Policy (NMFS 2014). Additionally, the California Public Resources Code is committed to expanding eelgrass resources to mitigate effects from ocean acidification and hypoxia (*California Legislative Information* 2020).

Eelgrass plays many important roles in marine systems. Its functions and contributions to ecological processes were summarized by Mooney and Woodfield (2009). It clarifies water through sediment trapping and stabilization (de Boer 2007). It also provides the benefits of nutrient transformation and water oxygenation (Yarbro and Carlson 2008). Eelgrass serves as a primary producer in detritus-based food webs (Thresher et al. 1992) and is further directly grazed upon by invertebrates, fish, and birds (Valentine and Heck 1999), thus contributing to eco-system health at multiple trophic levels. Additionally, it provides physical structure in the form of habitat to the community and supports epiphytic plants and animals, which are in turn grazed upon by other invertebrates, fish, and birds. Eelgrass is also a nursery area for many commercially and recreationally important finfish and shellfish (Heck et al. 2003), including both those that are resident within bays and estuaries, as well as oceanic species that enter the protected areas to breed or spawn. Among recreationally important species, sand basses Dungeness crab, and lobster make use of eelgrass beds as habitat. Besides providing important habitat for fish, eelgrass and eelgrass-associated invertebrates provides important food resources that support migratory birds during critical life stages.

Given the protected status of eelgrass species, the District would be required to mitigate for impacts to eelgrass associated with infrastructure improvements and dredge projects. In recognition of this ongoing need and the beneficial uses of eelgrass habitat, the District is taking a proactive approach to eelgrass management by determining potential eelgrass restoration sites prior to implication of proposed dredge projects and are planning ahead for future eelgrass mitigation needs related to the maintenance of the PPH.

The approach of identifying restoration opportunities ahead of proposed dredge projects and performing restoration before future maintenance needs benefits the resource and the District's management of the harbor. Moreover, if mitigation does not take place in a timely fashion, there are calculations included in the CEMP to increase the mitigation requirements to make up for temporal losses of the resource (NMFS 2014). Establishing eelgrass restoration ahead of the need makes sure the District does not incur costly penalties. Additionally, having the resource in place early means the resource is present in greater abundance than would otherwise and therefore greater ecological benefits are realized from the ecological processes performed by eelgrass beds.

In addition to simply providing for greater eelgrass area, the goal of any restoration program is to provide the best quality habitat possible. While making comparisons among eelgrass beds is arguably subjective and based on human judgement, it is generally accepted that moderately dense eelgrass beds provide for the functions and processes described above. The goal of eelgrass restoration should be to provide eelgrass beds with at least 80 turions per square meter. While somewhat arbitrary, this density likely provides sufficient refuge from predation while also providing significant root mass to stabilize sediments and material to support food webs. Moreover, replacing the patchily distributed existing eelgrass beds with a more contiguous eelgrass bed means greater habitat connectivity and fewer deleterious effects associated edges (Gorman et al. 2009).

3 Methods

The entirety of the PPH was reviewed for potential eelgrass restoration sites. The determination of sites most suitable for potential eelgrass restoration within the PPH area required implementation of a 5-step process. The steps involved collection of harbor-wide eelgrass information, development of a model to illustrate potential site selections, review of the model results, review of site alterations, draft preliminary concepts of proposed restoration sites, and field verification of existing conditions to support the selection of the restoration sites. The methods used in each of the steps are provided below,

3-1 Collection of Harbor-Wide Eelgrass Information

Understanding what areas are most likely to support eelgrass depends largely on knowing where eelgrass currently exists and the depth at which eelgrass occurs. Eelgrass data for this report were collected by MTS in November 2019 (MTS 2019). Where they performed a side-scan sonar and SCUBA survey to identify the full extent of eelgrass within the PPH.

Bathymetry within the survey area was provided by Environmental Science Associates (ESA). Those data were interpolated to a 1-ft depth grid with floating point (Decimal) values for depth and then processed into a 1-foot vertical resolution (topographic lines).

3-2 Preliminary Site Selection Model

The bathymetric and eelgrass data were used to determine the depth distribution of eelgrass across the surveyed area. The cumulative eelgrass cover area was designated as eelgrass habitat and fit into the same 1-foot grid as used for the bathymetry data. Dividing the eelgrass present within each depth bin by the total available habitat for each depth bin allowed the eelgrass habitat to be evaluated based on percent occurrence by depth and the cumulative percent contribution for each depth category to overall eelgrass cover. The evaluation of eelgrass percent contribution to each depth category was calculated within designated sub-sections of the PPH. Sub-sections were determined by the localized presence of eelgrass within the PPH. In other words, areas where eelgrass was not present, but depths were “suitable” were ignored because those areas are likely restricted with regards to eelgrass growth based on factors other than depth.

The depth distribution curves were evaluated within the PPH to determine the depths most suitable to support eelgrass and to determine the maximum depth for eelgrass within each region. The use of the 1-foot depth grid meant that on slopes a small percentage of eelgrass could be misclassified. The maximum depth used for selection purposes was determined by looking at the percent of habitat occupied by eelgrass within each depth range and the cumulative percent of eelgrass with increasing depth. The maximum depth was chosen where the slope in the cumulative percent contribution of eelgrass by depth bin and the percent of eelgrass within depth bins noticeably declined. The selection was subjective but based on meaningful trends in the data.

Once the maximum suitable depth was determined, all depths above that value to a maximum of +2 feet MLLW were classified as having the “greatest” likelihood of either supporting eelgrass or requiring minimum site modification to support eelgrass. Just beyond the maximum suitable depth any area within 2 feet of the maximum suitable depth was classified as having “good” potential to support eelgrass with site modification (where modification is cut or fill). The next 2 feet of deeper seafloor beyond the “good” category was deemed “moderate”. Moderately suited areas would require more significant site modification to be deemed suitable to support eelgrass.

3-3 Review of Model Results

Potential restoration sites were sought whereby planting success could be maximized while minimizing the amount of site modification. This meant looking for sites that were either shallower, or sites that were as close as possible to the maximum depth for eelgrass within a region and yet did not contain eelgrass habitat. These areas were then inspected to determine if there were any features within them that would prevent site modification. For example, being close to a channel and proposing fill could result in loss of any placed material into the channel. Additionally, areas known to support another managed or sensitive habitat would be avoided. Generally, sites were sought adjacent to existing eelgrass habitat such that site modification would work to increase the scale of the existing habitat.

3-4 Draft Restoration Concepts

Once sites were evaluated, a conceptual restoration site was created for the selected area. For the mitigation site a preliminary grading plan was developed. The grading plan was designed to generally tie into existing contours and then build up sediment within the site so that elevations were achieved that were within the depth ranges observed to support the relatively high eelgrass cover. Dredge and fill plans proposed in this report are conceptual. An official dredge plan should be prepared by a licensed engineer prior to moving forward with the Project.

4 Results

4-1 Compilation of Existing Information

The existing data from the 2019 bay wide eelgrass survey found that there are 5,712 square meters of eelgrass habitat within the PPH (Figure 2, MTS 2019). Combining the bathymetric data (from ESA) with the eelgrass habitat layer allowed classification of eelgrass habitat with depth. The results show that the maximum suitable depth for eelgrass was deeper in the east basin than the west basin, (-5 feet (ft) and -4 ft, respectively). In the launch ramp area, 21 square meters of eelgrass was mapped from -5 ft to -6 ft. In each of the regions, maximum suitable depths were chosen based on visual inspection of the trends in percent eelgrass cover within depth bins and the curve of cumulative percent eelgrass cover with depth. The chosen maximum suitable eelgrass depth values (MSED) are provided in Table 1. The MSED was the water depth where eelgrass coverage within a given area and depth range is above 1% coverage of the seafloor. The figures showing the relationships between percent eelgrass cover, cumulative eelgrass percent cover, and depth are provided as Figure 3 through Figure 5.

Table 1. Maximum suitable eelgrass depth (MSED) chosen after inspection of eelgrass cover changes with depth. Figure refers to the figure used to mate the determination.

Region	MSED (ft MLLW)	Figure Reference
West Basin	-4	Figure 3
East Basin	-5	Figure 4
Launch Ramp Area	-5	Figure 5

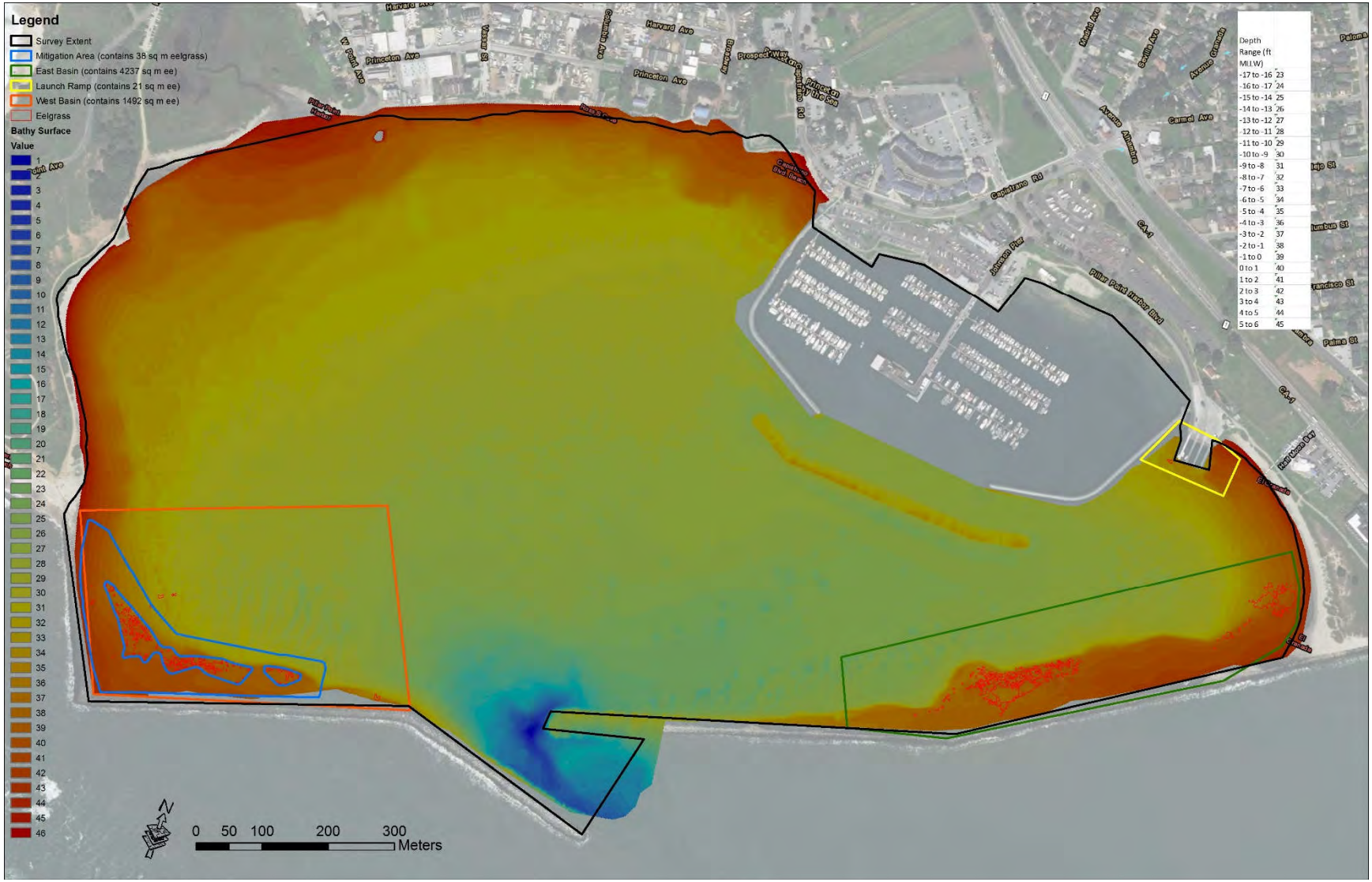

Figure 2. Map of Pillar Point Harbor Facility with the results from the bathymetry data (collected by ESA) and eelgrass data (MTS 2019). Map includes polygon boundaries for the east basin, launch ramp area, west basin, and proposed mitigation area within the west basin used in eelgrass assessment calculations and mitigation planning.

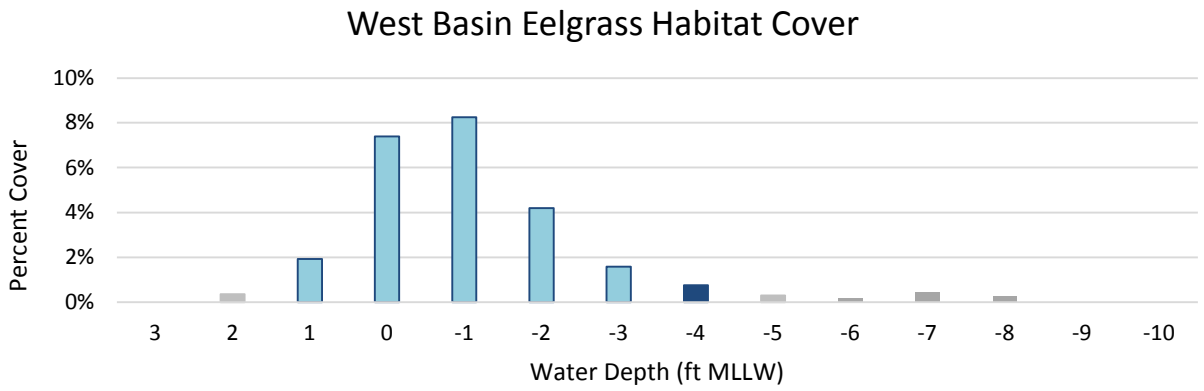

Figure 3. Percent cover of eelgrass habitat within the west basin in Pillar Point Harbor Facility for each 1-foot depth bin. Colored bars represent depths classified as having the "greatest" (light blue), "good/MSED" (dark blue), or "moderate" (gray) suitability for eelgrass restoration.

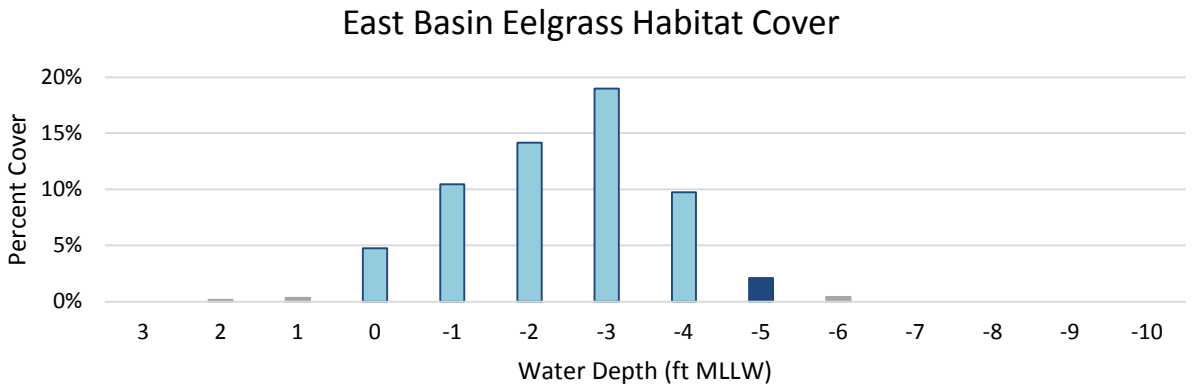

Figure 4. Percent cover of eelgrass habitat within the east basin in Pillar Point Harbor Facility for each 1-foot depth bin. Colored bars represent depths classified as having the "greatest" (light blue), "good/MSED" (dark blue), or "moderate" (gray) suitability for eelgrass restoration.

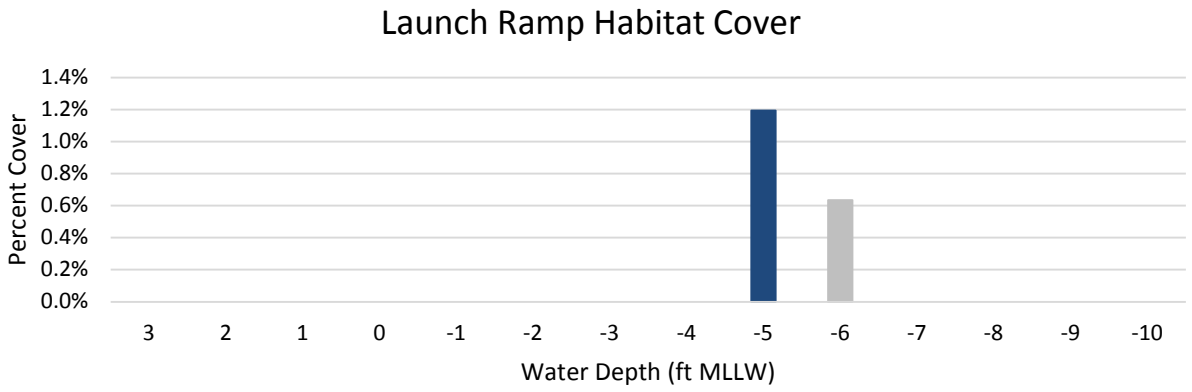

Figure 5. Percent cover of eelgrass habitat within the launch ramp area in Pillar Point Harbor Facility for each 1-foot depth bin. Colored bars represent depths classified as having the "greatest" (light blue), "good/MSED" (dark blue), or "moderate" (gray) suitability for eelgrass restoration.

To support future maintenance activities within the PPH the mitigation plan needs to accommodate for the potential loss of all eelgrass resources within the east basin and launch ramp area. The total amount of eelgrass cover within these two areas is 4,258 square meters. However, per CEMP guidelines of a 1:1.2 mitigation for eelgrass cover, 5,110 square meters of eelgrass would need to be restored unless a mitigation bank was established prior to the impact. Given anticipated timing of the Projects, it is unlikely that eelgrass restoration success could be proven (with protracted monitoring period) prior to the need to dredge.

Currently, habitats in the proximity of the proposed mitigation site range from approximately +3 to -7 feet MLLW with eelgrass occupying space primarily from 0 to -2 feet. The proposed mitigation is to extend eelgrass presence in the west basin by cutting sediment in nearshore portions of the mitigation site and using that material to fill deeper portions of the mitigation site. Additional material would come from placing sediment dredged from the launch ramp area and east basin in the mitigation site to allow for expansion of eelgrass resources from where it currently occurs within the west basin. In development of the proposed mitigation site, 31 square meters of eelgrass that occurs inside the mitigation site would be removed due to cut and fill activities, and needs to be accounted for in the total mitigation needs for eelgrass to be restored. To meet the 1:1.2 mitigation requirement per the CEMP, an additional 37 square meters of eelgrass are needed. Thus, the total mitigation for eelgrass cover is 5,147 square meters.

It is recommended that the mitigation site be modified to a depth between 0 and -2. Eelgrass in the west basin at -1 feet covers approximately 8% of the seafloor. To meet the mitigation goal of 5,110 square meters of eelgrass a total of 64,575 square meters of eelgrass would need to be planted, assuming an 8% coverage of the area planted. Since the supply of sediment and available areas are limited for creation of an eelgrass mitigation site a 29,000 square meter planting area platform is proposed. The creation of a 29,000 square meter planting area assumes a 17.5% eelgrass coverage of the proposed mitigation site, 10.5% greater coverage than is currently observed by eelgrass growing in the west basin.

5 Mitigation

Under the proposed project, direct impacts to eelgrass habitat are currently estimated at 4,258 square meters. Any direct loss or significant indirect impacts to eelgrass would be mitigated in accordance with the provisions of the CEMP (NMFS 2014). The CEMP requires that mitigation be provided for losses to eelgrass beds directly or indirectly damaged by Project elements. For each square meter of eelgrass adversely impacted, 1.2 square meters of new eelgrass habitat must be created. The goal of this mitigation plan is to develop a mitigation site that can be utilized for the initial transplant and expanded upon if necessary, to comply with mitigation needs and mitigation site success.

Based on the known Projects and mitigation site impacts a total of 5,147 square meters of eelgrass are required based on the 1.2:1 mitigation ratio. In central California areas (ranging from the Point Conception to the mouth of San Francisco Bay) the CEMP recommends a planting area of 1.2:1 to meet the requirement. The planting area goal and the mitigation ratio are the same because there were only 4 evaluated transplants to establish the criteria and all of them were successful. Any conservative planning approach should increase the planting area to account for the fact that not all of the planting area will successfully support eelgrass. The planting area in this mitigation plan is 5.63 times larger than the mitigation requirement.

5-1 Mitigation Site

An area for eelgrass mitigation has been identified in the west basin (Figure 6). The identified mitigation site occurs around currently growing eelgrass and covers 29,000 square meters. The 29,000 square meters of mitigation is enough to accommodate the initial mitigation need based on the current estimate of potential impacts.

The mitigation site was chosen to capitalize on areas within PPH that have the potential to support eelgrass habitat. The localized growth of eelgrass within the PPH suggests that eelgrass growth may be limited by various environmental parameters within the harbor including water circulation, turbidity, nutrient inputs, presence of competing algae species, and sediment grain size. By selecting an area within PPH that already supports eelgrass and optimizing the areas around the eelgrass to support mitigation needs, the potential for mitigation site success may be higher relative to other areas more removed from eelgrass supporting areas.

Proposed mitigation site modifications would result in creation of a 29,000 square meter, -1 foot depth, eelgrass planting platform and would include removal (cut) of 12,860 cubic yards of sediment from the nearshore areas within the west basin and placing this material as fill along the offshore portion of the eelgrass beds currently growing there (Figure 7). A total of 19,220 cubic yards of fill material are needed to shallow deeper portions of the mitigation site. Given that 19,220 cubic yards of fill are needed, and 12,860 cubic yards would come from material cut from within the mitigation site, an additional 6,360 cubic yards of sediment would be needed to accomplish the proposed site modifications. The additional 6,360 cubic yards of sediment would come from maintenance dredging at the launch ramp and east basin. The resulting mitigation area would accommodate for planting eelgrass across 29,000 square meters of -1-foot depth habitat (Figure 8).

Should more fill material be needed after creation of the initial mitigation site additional fill material is proposed to come from maintenance dredging events at the launch ramp area (every 6-8 years). This fill material would be used to expand the mitigation site and accommodate for more eelgrass resources over time based on the success of the mitigation site proposed.

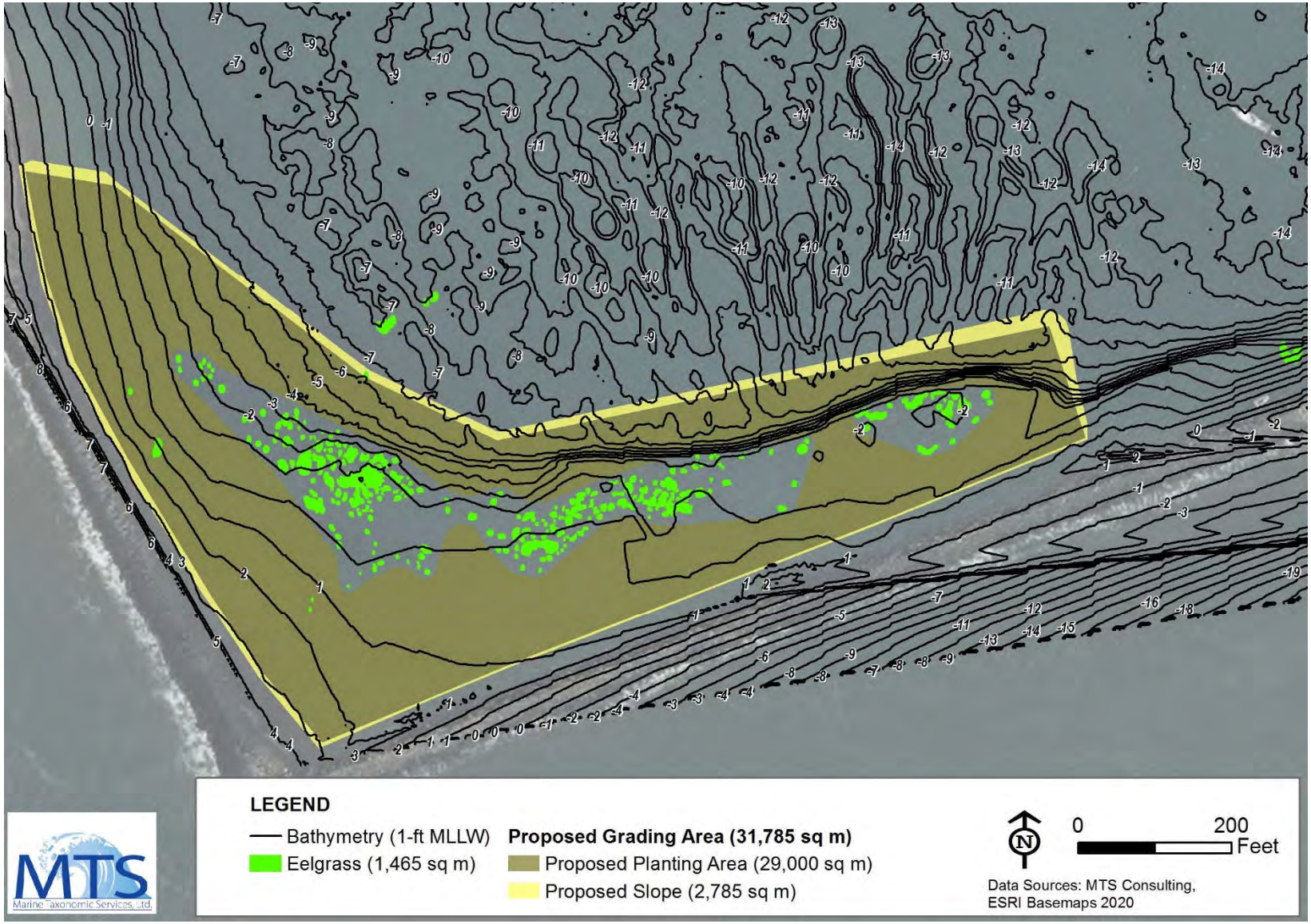

Figure 6. Map showing the current condition of the selected mitigation site where eelgrass would be planted. Contour lines (bathymetry) represent current conditions.

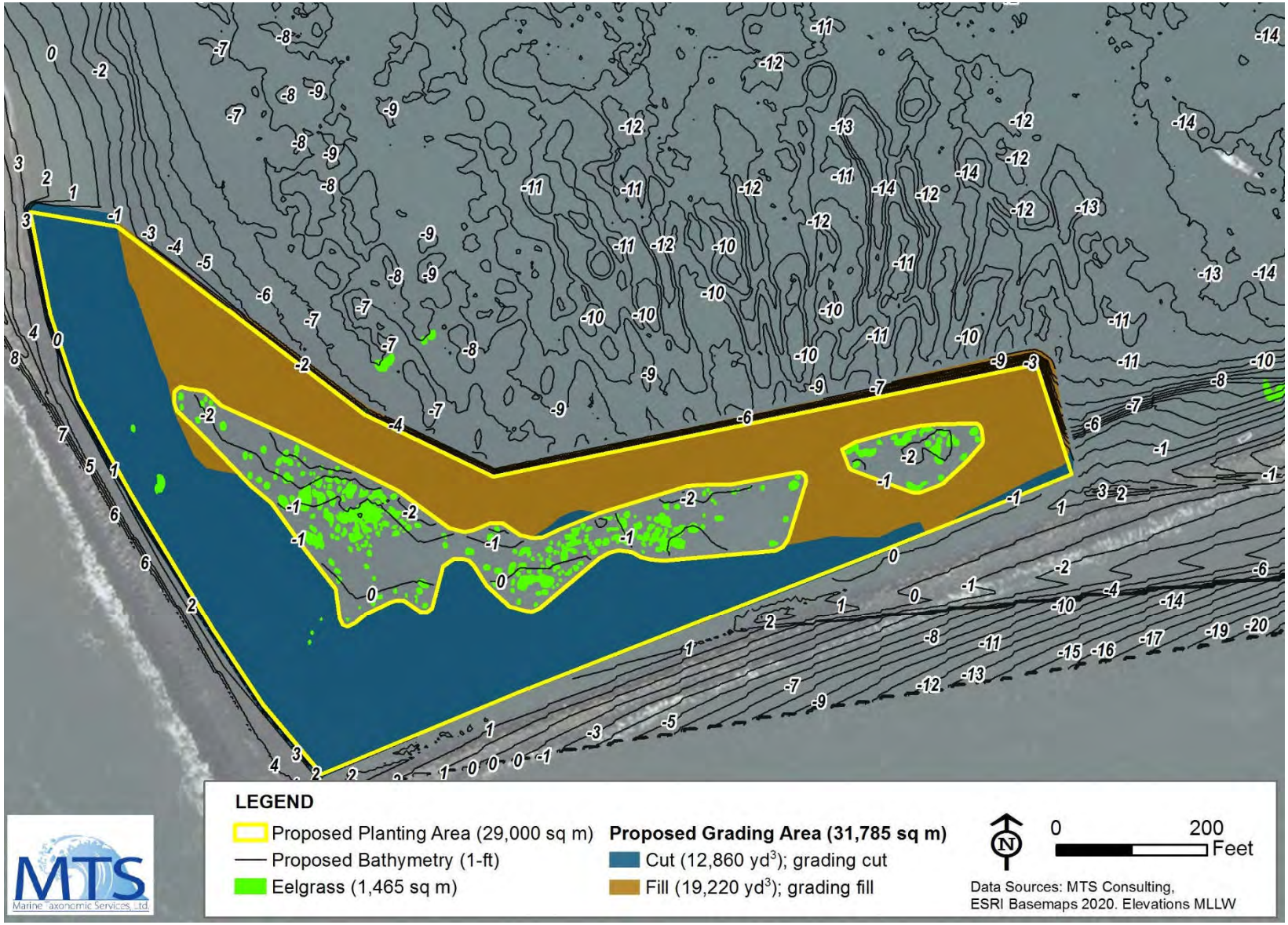

Figure 7. Concept plan of proposed mitigation site showing proposed cut and fill alterations needed to develop the area. Not intended as a dredge plan.

Figure 8. Map of proposed mitigation site including proposed planting area and currently present eelgrass.

5-2 Proposed Mitigation Methods

5-2.1 Eelgrass Harvesting Methods

Eelgrass existing within the PPH east basin is located within areas proposed for dredging as part of the Surfers Beach Pilot Restoration Project and Pillar Point Boat Launching Facility Maintenance. Any eelgrass harvest material required for transplanting at the proposed planting area would be salvaged from proposed dredge footprints (prior to dredging). Since all harvested eelgrass would be salvaged from areas proposed to be dredged, there is no need to designate a specific harvest site within existing eelgrass beds for collecting donor material. Additionally, there is no need for harvest site monitoring once donor material has been collected because the collection would be considered as salvage. The goal for eelgrass utilized as part of the transplant effort would be to salvage all required material within the east basin and not require any additional eelgrass from other areas outside of PPH. In the event that dredge plans are developed that do not impact areas populated by eelgrass, those areas will not be harvested for donor material. The harvest site was selected based on the following factors:

- Eelgrass would be entirely salvaged from proposed dredge areas.
- Proximity to the mitigation site allows for logistical suitability, including similar oceanographic conditions for the transplant material, similar environmental conditions between harvest and mitigation site, ease of access and diver safety.
- Appropriate genetic profile for eelgrass growing in the region.
- Prevention of the spread of invasive species.

Donor material will be harvested by first removing loose sediment around the rhizome and then removing the rhizome using a hand raking method. Care will be taken when removing rhizomes to avoid tearing or ripping them to preserve as much rhizome as possible. This method minimizes disturbance to surrounding eelgrass and substrate, however surrounding eelgrass and substrate is to be dredged so impacts are negligible. Collected rhizomes will be loosely placed in mesh bags for processing at the surface. Donor material will be considered viable if there are a minimum of three internodal segments per rhizome. Higher numbers of internodal segments are preferred for improved transplant success.

Once on the surface, donor material will be stored in floating mesh bags in the ocean prior to preparation and in a flow-through seawater system during processing. Material will be stored no longer than 24 hours from harvesting to transplant unit preparation. Once prepared, transplanted units will be stored in open water no longer than 24 hours prior to planting.

5-2.2 Eelgrass Transplanting Method

Eelgrass harvested from the harvest site will be bundled into transplant units comprised of approximately 5-8 turions each. This bundling method has a high success rate in achieving self-sustaining eelgrass habitat post-transplanting (Merkel 1988). Transplant units will be installed by hand digging a hole approximately the size of the unit and placing the unit with the rhizomes approximately two inches below the surface. The unit will then be anchored to the substrate using biodegradable stakes and the hole will be back filled. Divers will conduct planting on monumented grid system, accessing the planting area from boats. The grid layout will provide for ease of tracking and quality control of planting. Transplant units will be spaced 1 meter on centers (one unit per square meter). The mitigation site will be planted with approximately 29,000 units to fill the areas devoid of eelgrass in the mitigation site.

6 Mitigation Timing

Mitigation will begin upon receipt of state, federal, and local permits and authorizations (including California Department of Fish and Wildlife (CDFW) Letter of Permission for eelgrass harvest) for the Project. All mitigation work shall be conducted within the eelgrass growing season from March through October, as specified in the CEMP (NMFS 2014). Since the mitigation site would be created from multiple dredge events/locations and harvested material would be salvaged from areas proposed for dredging there is an order in which the site can be created most efficiently.

- Cut material near the break wall and place as fill along the offshore extent of eelgrass currently growing within the proposed mitigation site.
- Dredge material from the launch ramp and use to extend mitigation site. Dredge material placed at the mitigation site should be allowed to settle for a minimum of 2 weeks (4 weeks preferred) to allow consolidation of placed material. This will also allow observation of site stability prior to planting.
- Harvest all eelgrass from east basin areas proposed for dredging and transplant in created eelgrass mitigation site.

7 Mitigation Monitoring & Performance

7-1 Eelgrass Mitigation Monitoring Surveys

Within the harvest area, pre- and post-harvest surveys are not proposed. All eelgrass material harvested for the transplant effort would come from areas proposed for dredging. Thus, all eelgrass collected would be salvaged from proposed dredge footprints. Since all eelgrass material would be salvaged and any material not salvaged would be lost due to dredging, as much material as can be salvaged from within the dredge footprints will be. This will likely result in eelgrass thinning above that typically permitted (10%) in harvest areas. Given that this is also the eelgrass being mitigated for, any impact associated with harvesting should not be considered by regulatory agencies.

Once the planting effort has concluded, monitoring of the mitigation site will be conducted for 60 months (5 years) to document the success of the mitigation as outlined in the CEMP. Monitoring surveys will begin immediately after transplanting has been completed at intervals of 0, 6, 12, 24, 36, and 60 months post-transplant. The monitoring program will assess the aerial extent, percent cover, and density of eelgrass in the mitigation sites by SCUBA and side-scan sonar. SCUBA divers will swim transects across the mitigation site to confirm side-scan sonar recordings and to randomly place quadrats for density. Monitoring dates will be scheduled during the active eelgrass growing season to collect information on growth and survival.

Additional monitoring after the fifth year may be necessary if the aerial extent and density of eelgrass in the mitigation site does not meet the mitigation performance milestones. A reference site would typically be surveyed at the same time as the mitigation site, however a nearby reference site cannot be monitored due to the lack of available eelgrass resources nearby after dredge events occur. For this reason, the site will have to be monitored with trends in mind. For instance, if initial survival and growth is good followed by a die-off, the die-off may be unrelated to the mitigation (e.g. disease). If the dredging does not remove all eelgrass from the east basin, or if eelgrass re-grows within dredged areas, those areas will be monitored to help provide information that could be used to determine the relative health of eelgrass in the mitigation site.

7-2 Mitigation Performance Milestones

Criteria for transplanting success will be determined based on the mitigation performance milestones as specified in the CEMP and outlined in Table 2 below.

Table 2. Mitigation performance milestones for eelgrass transplanting (CEMP, NMFS 2014)

Monitoring Date (post transplanting)	Performance Milestones
Month 0	Confirmation of full coverage distribution of planting units over the initial mitigation site
Month 6	Persistence and growth of eelgrass in the initial mitigation site 50% survival of initial planting units and well distributed coverage Monitoring date should be flexible to fall within active growth season
Month 12	40% eelgrass coverage in the initial mitigation site 20% density of adjacent reference areas* No less than 1.2 times the area of the impact site
Month 36	100% eelgrass coverage in the initial mitigation site 85% density of reference area* No less than 1.2 times the area of the impact site
Month 48	100% eelgrass coverage in the initial mitigation site 85% density of reference area* No less than 1.2 times the area of the impact site
Month 60	100% eelgrass coverage in the initial mitigation site 85% density of reference area* No less than 1.2 times the area of the impact site

* Milestones are taken from CEMP; mitigation performance milestones cannot include comparison to a reference, no reference area is proposed since no adequate reference will remain within PPH.

7-3 Mitigation Contingency & Adaptive Management

If the eelgrass transplanted fails to meet the established success criteria in the initial mitigation site, supplemental mitigation may be required in consultation with CDFW and NMFS. If additional planting area is required, subsequent maintenance dredging events can be used to create additional mitigation area. The timing of any supplemental transplant would have to be performed in accordance with the dredge schedule. The implications of the potential for supplemental planting should be discussed with NMFS prior to the start of the initial mitigation effort. The District is committed to supporting eelgrass resources by providing supplemental material to expand the mitigation site each time maintenance dredging occurs at the launch ramp. Thus, providing additional material to encourage eelgrass expansion and/or transplant area in the mitigation site.

8 Mitigation Coordination and Schedule

8-1 Letter of Permission and Notifications

Prior to the beginning of the eelgrass transplant work, a letter of permission to harvest and plant eelgrass will be obtained from the CDFW. Also prior to the beginning of the eelgrass transplant work, a scientific collecting permit will be obtained to account for the harvesting of eelgrass within the donor site in accordance with this mitigation plan. A minimum five-day notification and a preliminary transplanting schedule will be given to CDFW prior to commencement of the transplant work.

8-2 Planting Schedule

The project may require phasing of dredge elements to ensure that donor material can be salvaged as described in this document. For instance, the initial cut and fill of the mitigation site can be performed as phase 1. Then donor material can be salvaged from areas designated within the first phase of dredging to plant the upper portions of the mitigation site. During the first phase of dredging additional material can be placed in the mitigation area to provide material to complete the deeper portions of the mitigation site. Then the final eelgrass material can be salvaged from the area designated for the final phase of dredging.

8-3 Monitoring Reports

Monitoring reports shall be provided to the resource agencies (CDFW, NMFS) within 30 days after the completion of each required monitoring period and shall include spatial data. Per the CEMP (NMFS 2014), these reports will include: a description of the action, action party, mitigation consultants, relevant points of contact, and relevant permits; the size of permitted impacted estimates, location of activities, actual eelgrass impacts, and eelgrass mitigation needs; a detailed description of eelgrass habitat survey methods, donor harvest methods, and transplant methods; and mitigation performance milestone progress. The initial monitoring report (0 Month) will document any variance from the mitigation plan, sources of donor material, and the full area of planting. The final monitoring report will include an overall assessment of the performance of the eelgrass mitigation site relative to natural variability of the reference site to evaluate if mitigation responsibilities were met.

8-4 Notification of Completion

If mitigation performance milestones (Table 2) have been met once the final monitoring event has been completed, a Notice of Completion will be forwarded along with the final monitoring report. At that point, implementation of the Mitigation Plan will be considered complete.

9 References

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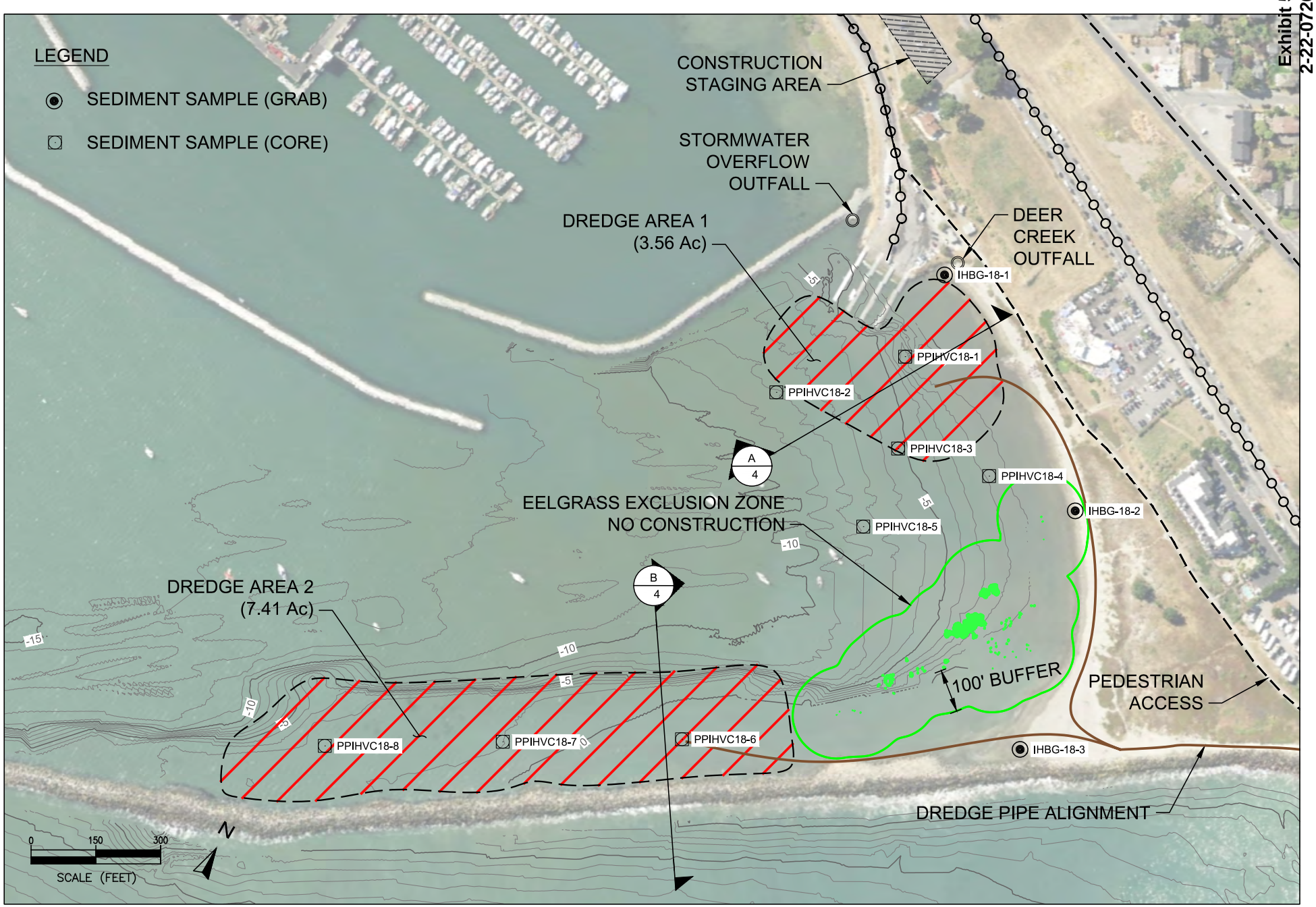
Appendix A: Conceptual Project Plans (requiring update)

Preliminary - Not for Construction

ESA

Surfer's Beach Pilot Project . D180631

Figure 1. Site Map
Proposed Dredging of Pillar Point Harbor and Placement on Surfer's Beach

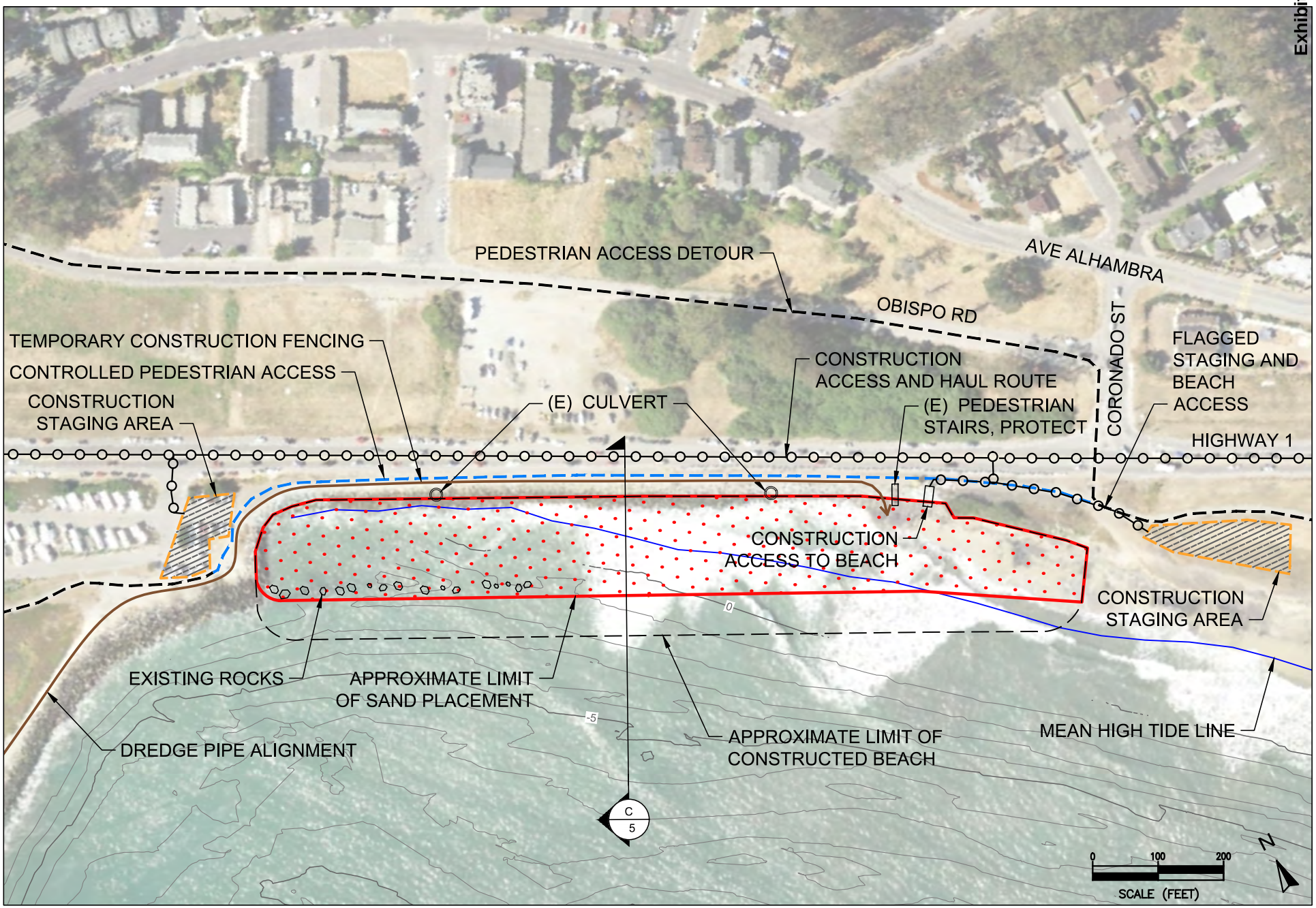


Preliminary - Not for Construction

ESA

Surfer's Beach Pilot Project . D180631

Figure 2. Dredging Areas
Proposed Dredging of Pillar Point Harbor

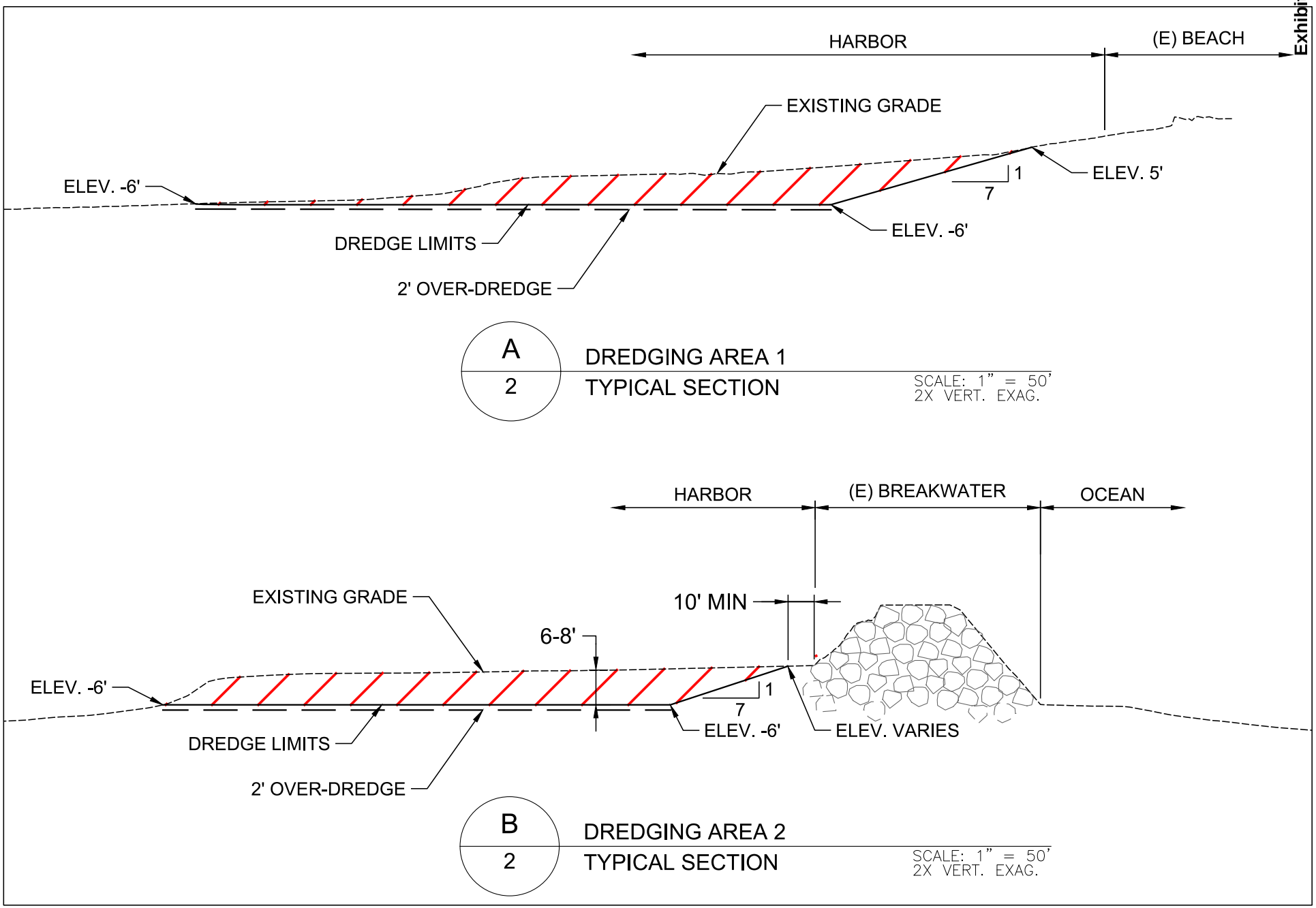


Preliminary - Not for Construction

Surfer's Beach Pilot Project . D180631

Figure 3. Sand Placement Area
Plan

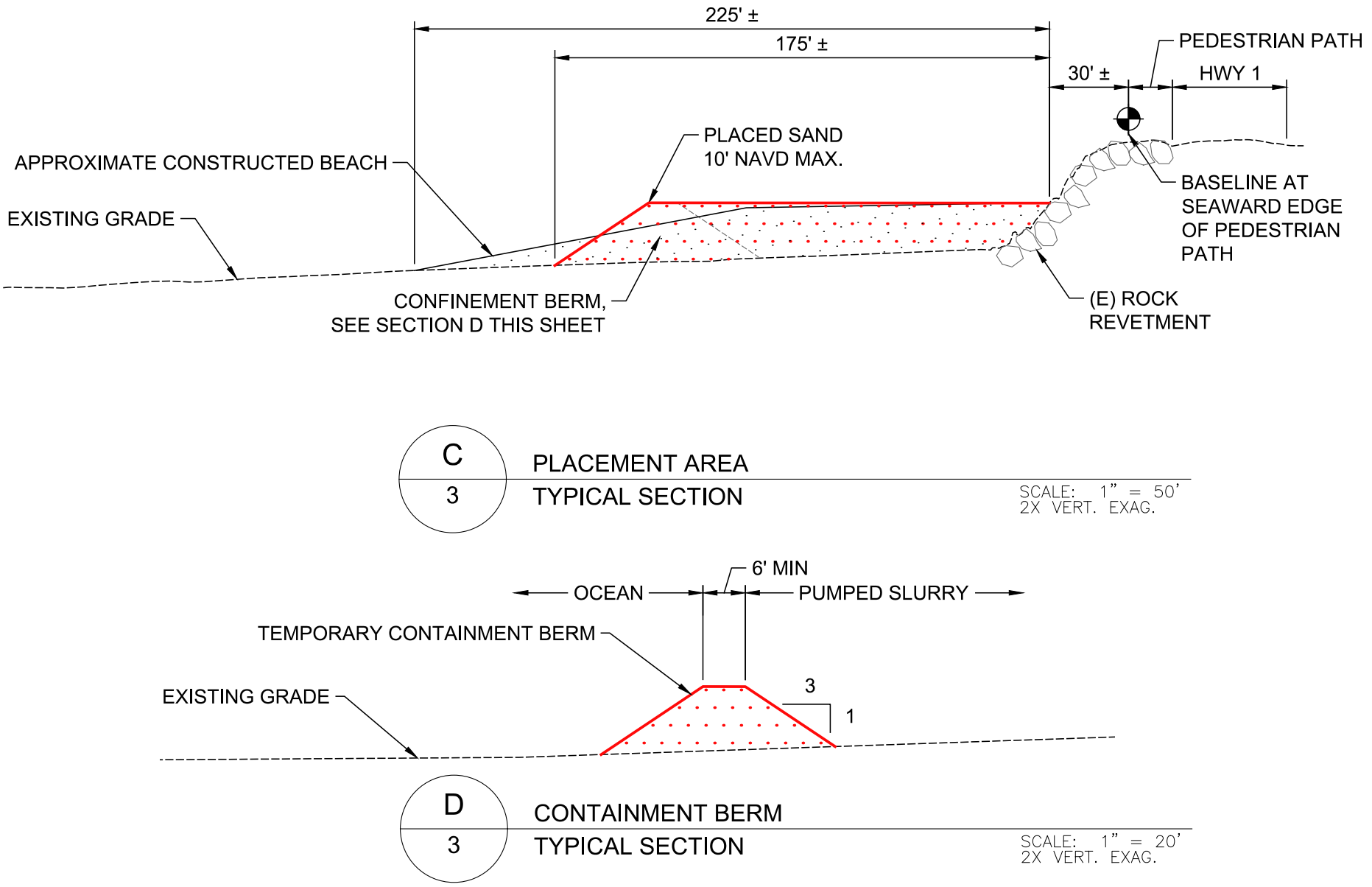
ESA



Preliminary - Not for Construction

Surfer's Beach Pilot Project . D180631

Figure 4. Dredging Area
Sections



Preliminary - Not for Construction

Figure 5. Sand Placement Area
Sections

Exhibit 6 – Applicable Coastal Act Provisions; Surfers Beach Sand Restoration

Section 30210. *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30211. *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Section 30213. *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred…*

Section 30220. *Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Section 30221. *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

Section 30224. *Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.*

Section 30230. *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231. *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum*

populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233(a). *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities...

(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines…

(6) Restoration purposes…

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for these purposes to appropriate beaches or into suitable longshore current systems.

Section 30235. *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply.*