



## **Malibu Living Shoreline Project Supplemental Project Plan – Signage, Fencing, & Symbolic Pathways**

This document was drafted as a supplemental permit requirement to provide additional detail on the installation of specific project elements as part of the Malibu Living Shoreline Project (MLSP). MLSP is a habitat restoration pilot project taking place at Zuma Beach and Point Dume Beach (Figures 1 and 2). This project will use a combination of native plants and seeds, as well as strategically placed fencing, wooden slats, symbolic pathways, and signage. There will be no grading or sand movement, irrigation, or lighting installed as part of the project. All figures can be found after the document text.

### **Symbolic Pathways, Perimeter Fencing, and Established Trail Systems**

Boundaries will be defined and established at both sites using symbolic fencing (Zuma Beach: Figures 4-5; Point Dume: Figures 6, 7a-8b). Symbolic post and rope fence will be installed around large areas of the outer perimeter of the project sites (e.g., northwest edge of Zuma Beach restoration area, perimeters of the Point Dume area polygons). There will be no fencing on the eastern edge of the Zuma Beach restoration area, as the habitat will naturally merge with adjacent transition areas leading into the wetland marsh. This perimeter establishment will serve several purposes, including delineating areas to be restricted from mechanical grooming, encouraging safe recreational activities, and minimizing excessive disturbance to the dune areas, especially during establishment.

Post and rope fencing will be used consistent with County guidelines. Symbolic post and rope fence will also be installed through several cross-cutting trails to formally delineate project trails through the dunes at both sites (e.g., Figure 4). This will be an improvement both for recreation purposes as well as native habitat protection as compared to the random and unmaintained pathways that currently exist from the parking lots through the dunes to the ocean. The post and rope fence will be no more than 36 inches (3 feet) in height and designed to be removable in the event of significant storm events or emergencies. Post and rope fencing will consist of “anchor rods” or eyebolt posts. Figure 9 illustrates a representative photograph of this type of fencing. Anchor rod fencing has a longer lifespan in a coastal marine environment and will have longer term sustainability.

Several larger pathway areas at the Point Dume Beach restoration area will be maintained without vegetation to allow for vehicular access to the beach and are identified in Figures 7a-8b.

### **Interpretive Signage**

Four interpretive signs will be installed, including two at the Zuma Beach site (Figures 4 and 5) and two at the Point Dume site (Figures 8a and 8b). Table 1 identifies the GPS coordinates for each sign placement. Signs were specially developed specifically for use in the restoration area to help engage the public with the site and to facilitate a unique opportunity for education and recreation. Sign dimensions will be 24 x 36 inches and approximately three feet in height and will have a horizontal bottom stabilizing bar. Posts and the horizontal bottom bar of interpretive signs will be buried several feet using a concrete base following standard sign installation protocols. Example photographs of a time series of similar signs being



installed at Santa Monica Beach can be found in Figure 10. Interpretive signs will be printed and installed by a professional sign installation company, to be determined by competitive bid.

Table 1. GPS coordinates for each of the four interpretive signs.

Interpretive Sign Location	Geographic Coordinates
Northern Zuma Sign	-118.82088706, 34.01569255
Southern Zuma Sign	-118.82054627, 34.01564293
Northern Point Dume Sign	-118.81181691, 34.00588244
Southern Point Dume Sign	-118.81071998, 34.00462388

### **Sand Fencing**

Sand fencing is a proven technique for stabilizing areas with high levels of blowing sand and will be most effective in the coastal strand areas and in strategic locations in the Point Dume restoration area. Sand fencing can be effectively mixed with re-vegetation techniques to delineate restoration areas, slow sand movement, build topography and create areas suitable for plant establishment. Short segments of sand fencing (approximately 10 ft in length each) will be installed perpendicular to predominant wind direction to enhance rapid dune establishment, and in strategic locations to reduce potential for erosion (e.g., Zuma Beach: Figure 5; Point Dume Beach: Figures 8a and 8b). Sand fencing will be approximately 3 feet in height, with one foot buried in the sand (4 ft fence height total, but only 3 feet visible). A shallow trench will be dug using shovels, the sand fence will be placed in the appropriate location identified through high resolution GPS location (Trimble Geo 7X), and the sand will be replaced in the same position, effectively holding the fencing in place. *No cement or other stabilizing mix will be needed.* The fence will quickly accrete sand naturally through aeolian (wind) transport and will be further stabilized as vegetation grows.

### **Wooden Slats or Biomimicry Stakes**

Small groups of wooden slats (garden stakes) will be installed at several key locations at the Point Dume restoration area in conjunction with strategic sand fencing to maximize sand retention and encourage plant growth (Figures 7a-8b). Wooden slats will not be permanent and will be raised slowly over time every 3-6 months, or as they become more than halfway buried, and eventually removed through adaptive management of the site, once plants are established. Stakes are likely to be removed approximately 4-5 years after implementation, or less, as determined by scientific monitoring. Groups of slats will be in approximately 20 x 20 ft rectangular areas and will be between 6 inches and 1 foot apart from each other. Five groups will be installed and maintained and are identified in Figures 8a and 8b.

### **Grading Plan and Sand Movement**

No grading will take place either through mechanized means or through hand movement. As invasive plants are removed, they will be gently shaken to allow loose sand to fall back in place, and then native plants will be planted as replacements. Any dune formation will be through natural, wind-driven sand transport along the beach or blown in from the ocean. Plant hummocks and small dunes are likely to form over a period of several years after project implementation and may accrete to 3-5 feet over time.

### **Irrigation and Lighting**

No irrigation or lighting will be installed associated with the project.



Figure 1. General overview map of both restoration locations as part of the Malibu Living Shoreline Project. Current vegetated areas are highlighted in dark pink.



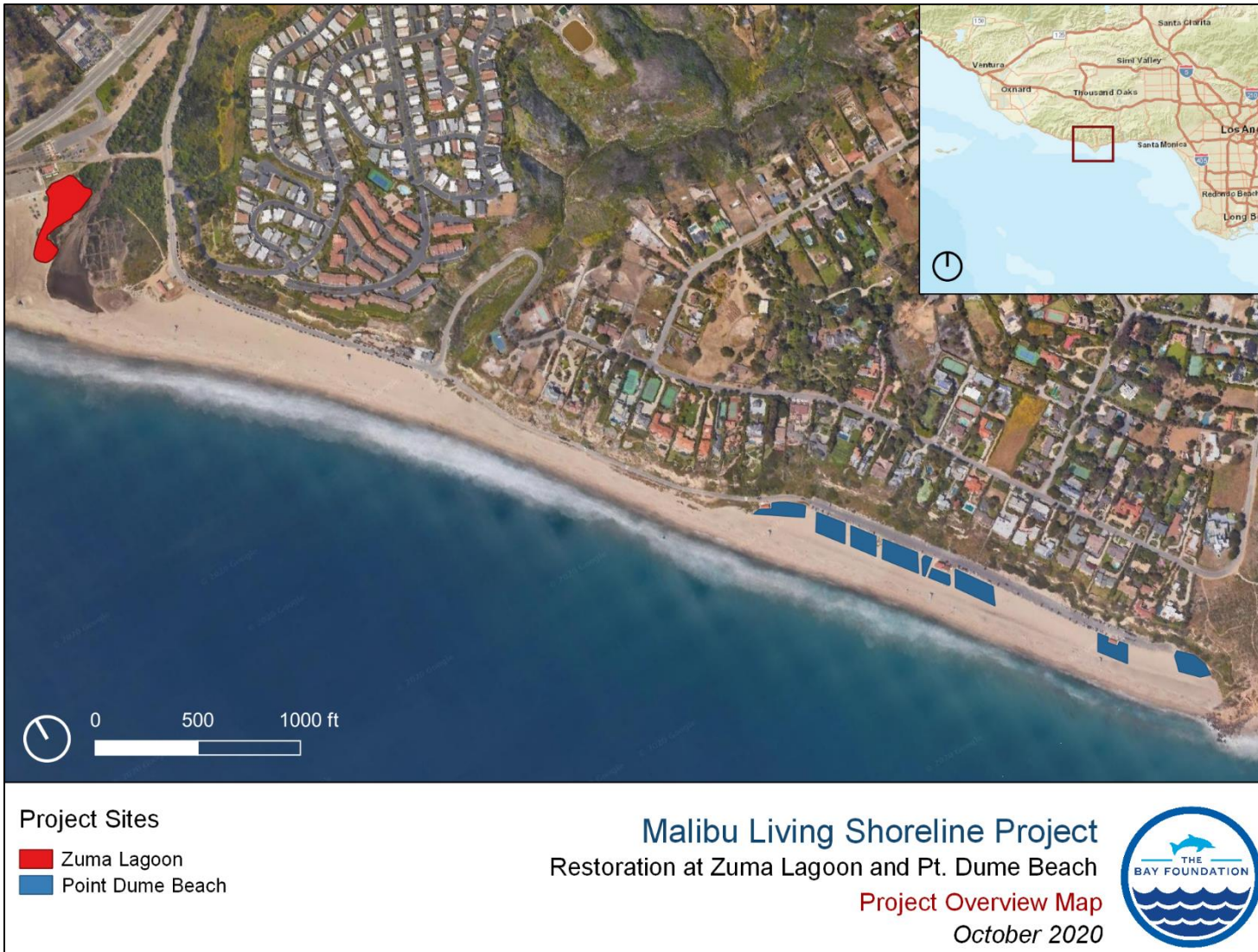


Figure 2. Overview map of Zuma Beach and Point Dume Beach restoration areas as part of the Malibu Living Shoreline Project.

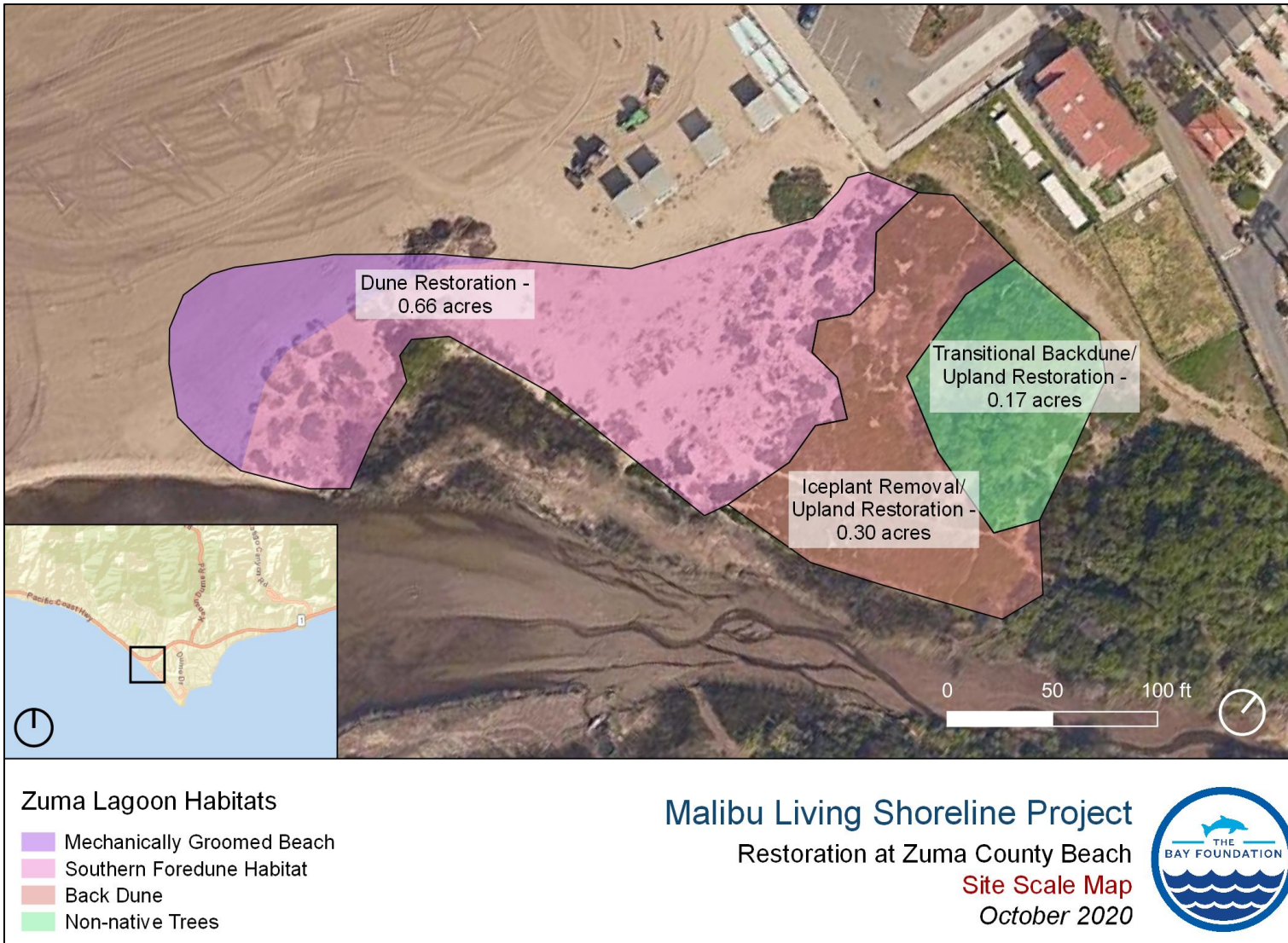


Figure 3. Overview of Zuma Beach restoration footprint (black perimeter line) with acreage polygons for each major area.





Figure 4. Artistic site design and prospective rendering for the approximately one-acre footprint adjacent to Zuma Lagoon.

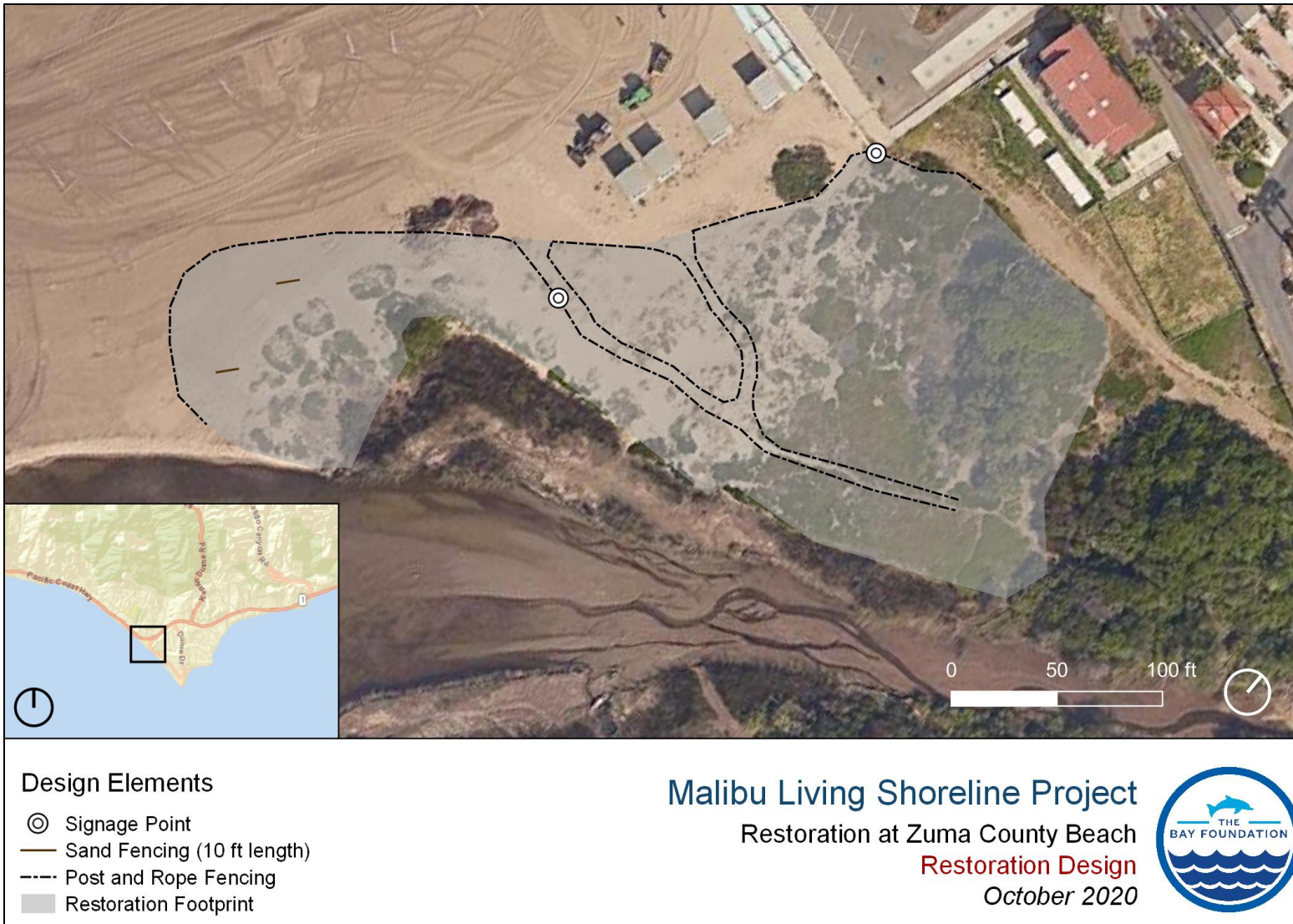


Figure 5. Map of the final site design for Zuma Beach, including sign locations (see also Table 1) and fencing placement.



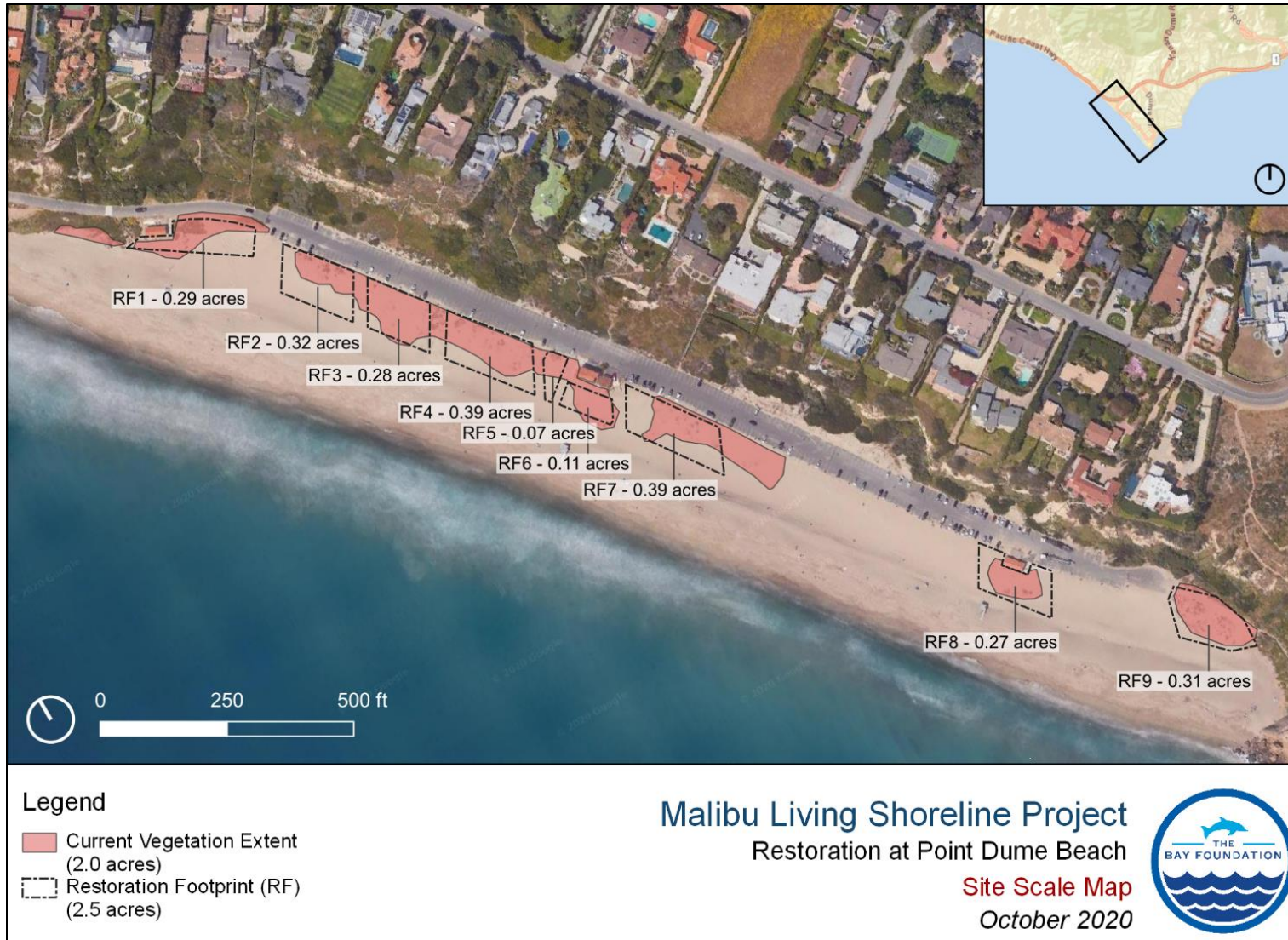


Figure 6. Overview of Point Dume Beach restoration footprint with acreage by polygon overlaid on current vegetation extent.



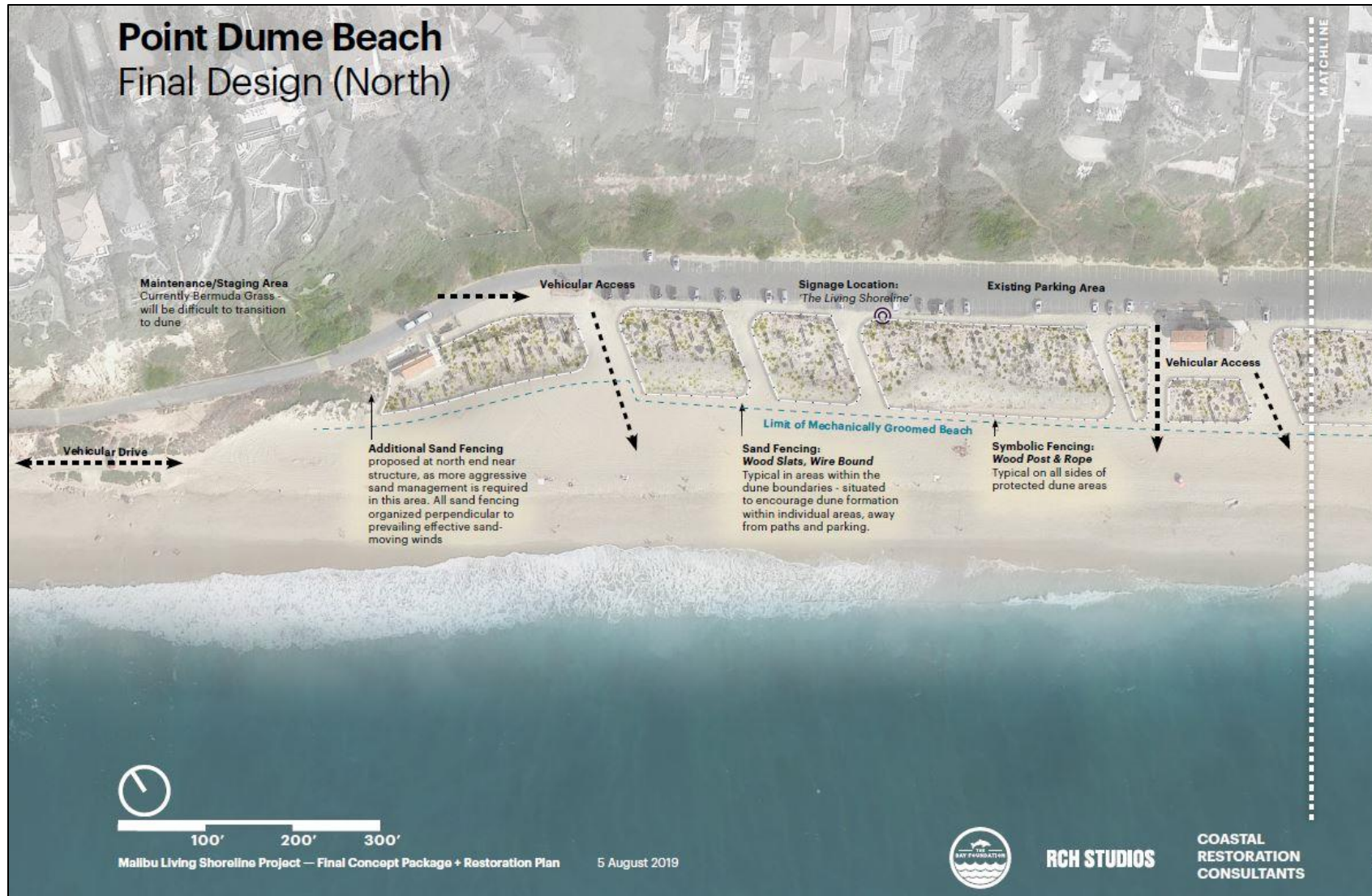


Figure 7a. Artistic site design and prospective rendering for the Point Dume Beach restoration area (north half).

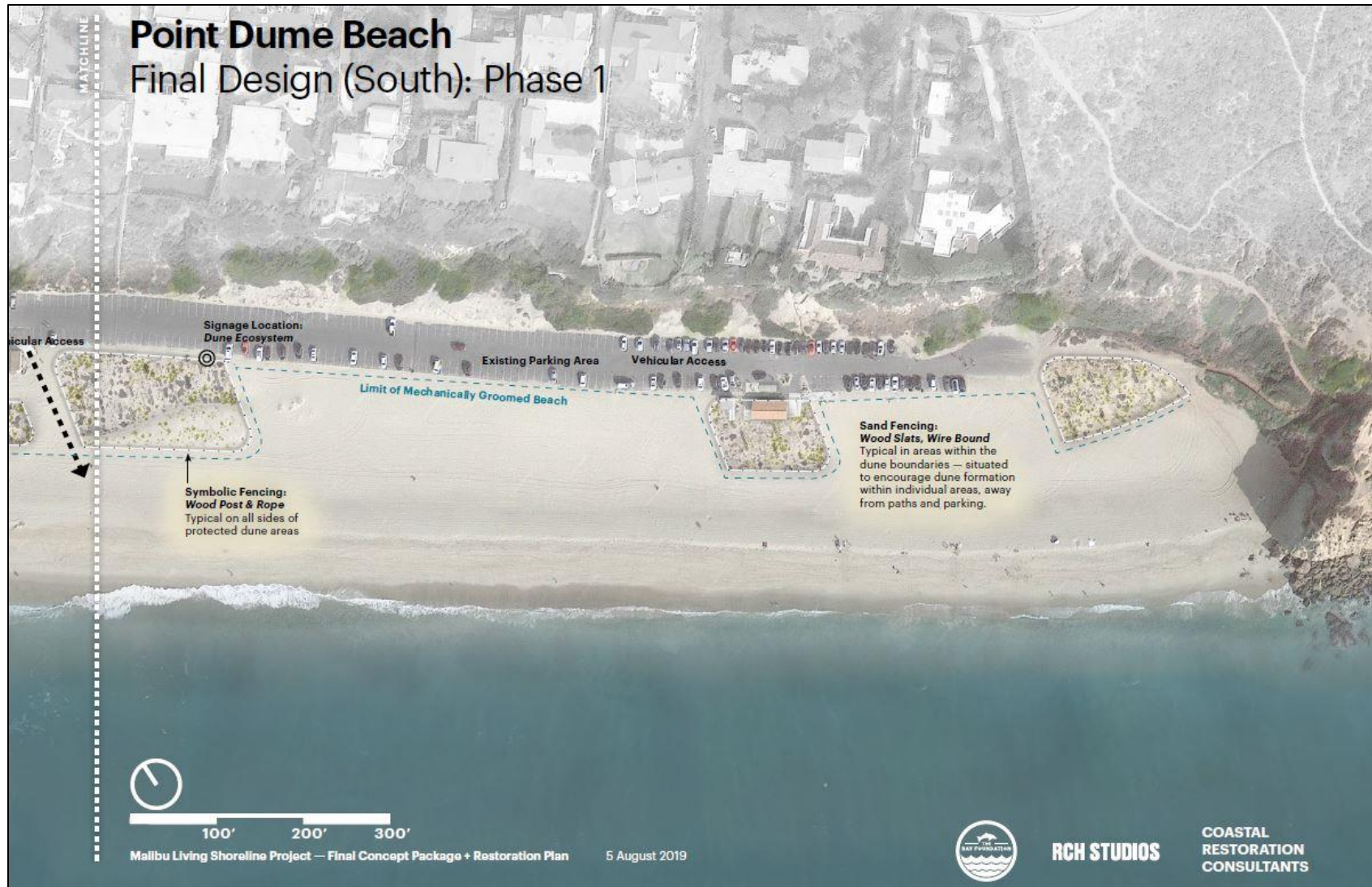


Figure 7b. Artistic site design and prospective rendering for the Point Dume Beach restoration area (south half).





Figure 8a. Map of the final site design for the Point Dume Beach restoration area (north half), including sign location.

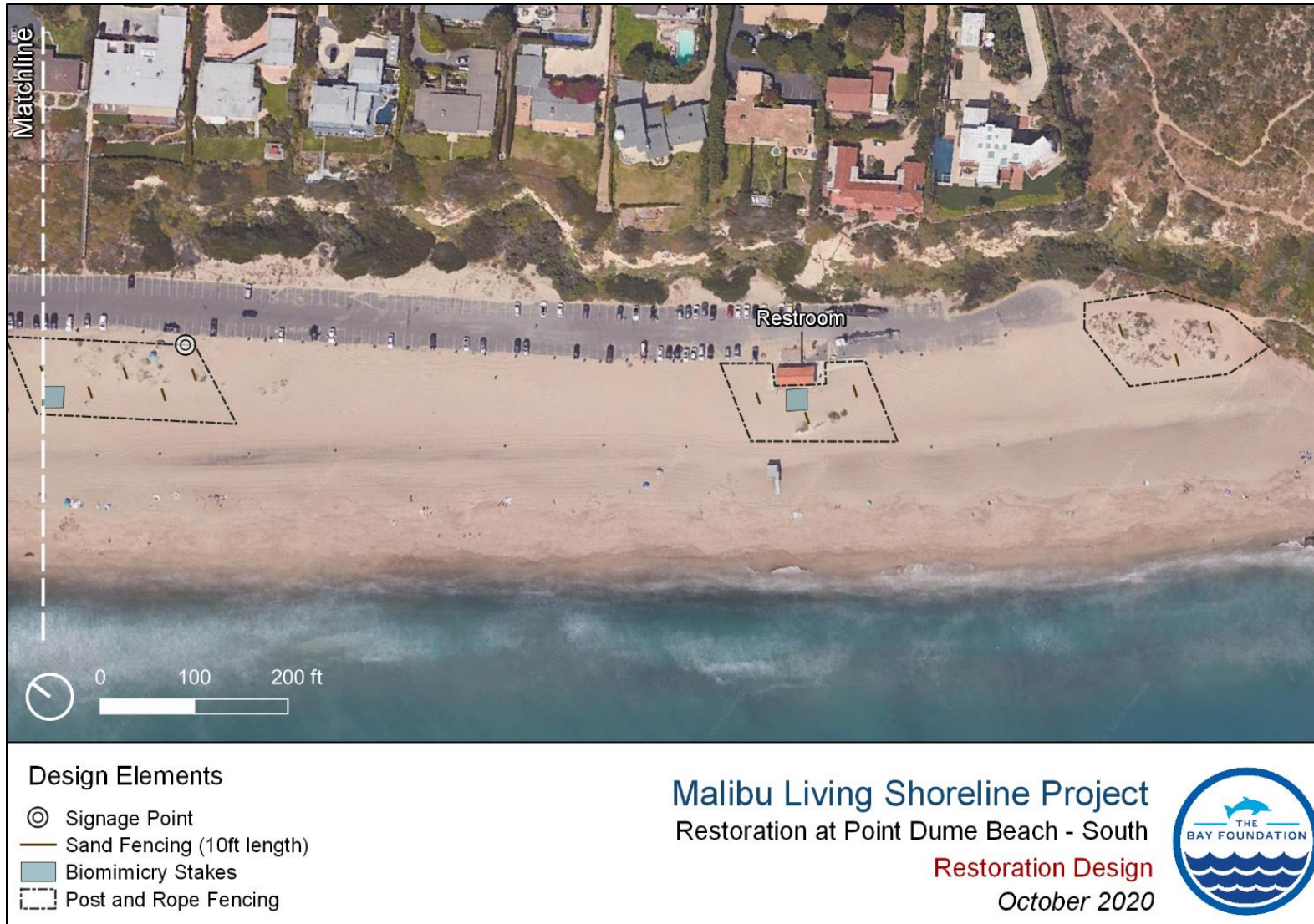


Figure 8b. Map of the final site design for the Point Dume Beach restoration area (south half), including sign location.





Figure 9. Example photograph of an eyebolt anchor rod that screws into the ground.

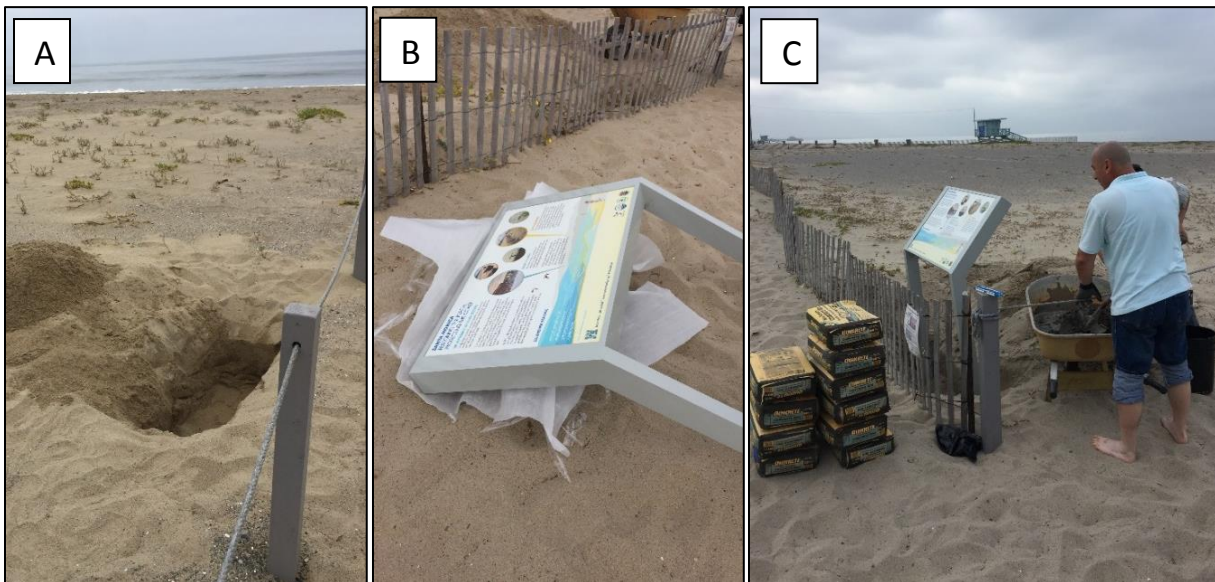


Figure 10. Photograph time series of a similar beach interpretive sign being installed at Santa Monica Beach: (A) hole dug to approximately 2 feet, (B) sign out of packaging, and (C) cement being mixed and the sign placed in hole.

***Recommended document citation:***

Enyart, C., K. Alvarez, and K. Johnston. 2020. Malibu Living Shoreline Project Supplemental Project Plan: Signage, Fencing, and Symbolic Pathways. Technical Memorandum prepared for City of Malibu and California Coastal Commission by The Bay Foundation. 13 pp.