



Manhattan Beach Dune Restoration Project

Summary: Coastal dune restoration in Manhattan Beach between 36th Street to 23rd Street.

Partners: Los Angeles County Department of Beaches and Harbors, City of Manhattan Beach, The Bay Foundation

Estimated Cost: \$ 400,000 (including long-term maintenance and monitoring)

Funding Source: apply for grant funding

Project Need:

Los Angeles County beaches are some of the most recognizable and popular in the world. They feature cliffs, tidepools, marine life, and hold many recreational opportunities for the millions of people who visit the vast coastline each year. In 2015 alone, over 70 million people visited beaches in Los Angeles County. Beaches are broadly recognized and highly valued as cultural and economic resources for coastal regions, however their value as ecosystems that provide natural protection is less appreciated. This project proposes the enhancement of existing dunes along the Manhattan Beach coastline. By restoring natural processes to these impacted coastal systems, we improve their ecological and utilitarian functions, and serve as a model for similar coastal resiliency projects statewide.

Southern California beach systems and associated wildlife are highly impacted by threats, including native species extirpation and extinction, erosion, non-natural sediment, pollution, and loss of natural morphology. These features also provide a cost-effective buffer to storm surges and other regular, predictable threats, including sea level rise (SLR) and erosion. These systems are essentially the last line of defense in terms of natural protection for homes, roads, and infrastructure.

The establishment of a living shoreline through the restoration of coastal dunes is of specific interest and relevance to ecosystem-based management in the Southern California Bight. This innovative approach would increase the extent and condition of a key ecosystem in the LA area, including all of the functions and services they provide such as habitat for endangered shorebirds, accreting sediment and preventing coastal erosion, sequestering carbon, and many more. This project will create a resilient shoreline that will provide educational and recreational opportunities to millions of residents and visitors.

Project Description:

This project proposes the enhancement of approximately 3.5 acres of the existing back dunes at Bruce's Beach in Manhattan from 36th Street to 23rd Street, approximately 0.6 miles of coastline (Map 1). The restoration project will involve the removal of non-native vegetation, seeding/planting of native vegetation, strategic installation of temporary sand fencing as vegetation establishes, installation of symbolic fencing on existing pathways, and installation of educational features like interpretive signage. Project implementation will be broken into three phases: 1) the restoration of northern dune section, 2 acres, from 36th Street to 28th Street. 2) the restoration of the southern dune section, 1 acre, from 27th Street to 23rd Street (except vicinity of 28th Street), the restoration of the vicinity of 28th Street, 0.5 acre, following the completion of the Manhattan Strand 28th Street Subsurface Infiltration Trench Project.

To restore and enhance Santa Monica Bay through actions and partnerships that improve water quality, conserve and rehabilitate natural resources, and protect the Bay's benefits and values.

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Dune enhancement will occur through the removal of non-native vegetation, predominantly iceplant (*Carpobrotus edulis*) and the seeding/planting of native dune species like the Beach Evening Primrose (Figure 1 and Figure 2).



Figure 1. Current condition of proposed project site dominated by invasive, non-native, iceplant.



Figure 2. Native beach evening primrose and sand verbena as examples of vegetation that would be included in restoration efforts.

Additionally, strategic temporary sand fencing, to allow native plants to establish and avoid wind blown sand onto the bike path would be a component of the restoration project. Existing pathways onto the main beach would be integrated into the restoration design to maintain all existing access. These pathways may include symbolic rope and post fencing to delineate the restoration area. Additional restoration project components will include the opportunity for educational interpretive signage for the public to learn about the project. All detailed project components will be agreed to by partners including



the City of Manhattan Beach and Los Angeles County Department of Beaches and Harbors prior to implementation.

Project Goals:

Goal 1: Increase the resiliency of the shoreline through the restoration of sandy beach and foredune habitat.

This project will result in 3.5 acres of healthy living shoreline that can support native, and in many cases, rare and endemic species of plants and animals. This project will also provide enhanced ecosystem services to the community; including water quality improvement, carbon sequestration, shoreline stabilization, and storm protection. The ecosystem benefits living shorelines projects provide are not limited to a narrow time period but continue over time as the shoreline establishes, compared to hard shorelines that require maintenance and often result in the loss of sandy beach.

Goal 2: Implement “soft-scape” protection measures against sea level rise and coastal storms.

Seeded and planted specialized foredune vegetation will grow and develop and begin trapping sand transported by wind. Additional trapping of sand will occur through the deployment of sand fencing. Wind-driven sand will bump into vegetation, fall, and accrete, increasing the elevation of the plant hummock over time. Subsequently, the vegetation will continue to grow and develop on top of the newly accreted vegetated sand hummocks. Because beach dunes accrete sediment being transported from the ocean, they will continue to grow concurrently with rising sea levels. This process can continue as long as the vegetation community is robust and healthy. Significantly increased resilience will be achieved through natural raising and accretion of the plant hummocks and vegetation.

Goal 3: Increase engagement of the community through enhanced beach experiences, outreach, and education.

This project will help reestablish an appreciation that has been lost in the Los Angeles region of a natural, functioning beach ecosystem and the site will provide educational and recreational opportunities. In addition to reducing coastal hazards, this project will encourage nature-based tourism and increase community awareness of living shorelines while still allowing all other existing recreational uses of the beach to continue.

Post-restoration Monitoring and Maintenance:

TBF will incorporate best available science from planning to implementation and post-restoration monitoring. Accurate and robust scientific monitoring will be a vital part of this restoration project and will be used to measure restoration success and inform adaptive management actions. TBF has extensive knowledge on developing and implementing monitoring protocols and working on restoration projects in coastal and marine environments.

Project Tasks and Schedule:

Tasks associated with this project include the preparation of grant proposals and securing funding, planning and permitting, implementation, and post-restoration monitoring and maintenance.



#	Task Name	Description
1	Outreach and Stakeholder Meetings	Meetings with key project partners will continue to occur to finalize tasks necessary for project implementation. Additional targeted outreach to community stakeholders will be conducted via a diverse strategy of public meetings, a press release, newsletters, websites, and social media.
2	Finalize Planning and Design	TBF and project partners, including the City of Manhattan Beach and Los Angeles County Department of Beaches and Harbors will finalize planning components necessary to successfully implement the project. The finalization of planning and design will include developing a Comprehensive Implementation and Monitoring Plan. Conceptual designs, site analysis diagrams, perspective renderings, and interpretive signage design will be finalized as part of this task.
3	Permitting	Permitting will include the preparation, submittal, and finalization of any necessary permits to implement the project. These permits include but are not limited to a CEQA exemption, Coastal Development Permit (CDP), and any other city/county/state/federal permits deemed necessary.
4	Baseline Monitoring	Monitoring will occur for pre-restoration physical conditions, human use, and biological community.
5	Implementation	Implementation of the project will occur as specified in the final Comprehensive Implementation and Monitoring Plan.
6	Post-Restoration Monitoring and Maintenance	Post-restoration monitoring will be conducted to assess restoration success and identify the need for maintenance and adaptive management actions.
7	Post-Restoration Outreach	Outreach will include tours for stakeholder groups and students, posting online through websites and social media, press releases, newsletters, and meetings to present the results of the project to interested groups.

The proposed project schedule, dependent on funding, is:

Phase 1 (northern dune restoration): 2020-2022

Phase 2 (southern dune restoration): 2022-2023

Phase 3 (dune restoration following infiltration project): TBD

TBF has already identified potential sources of funding for the project and the project is included in the Santa Monica Bay National Estuary Strategic Plan.



Proposed Restoration

 Dune Restoration

 Access Points

 Phase 1 (36th St to 28th St)

 Phase 2 (27th St to 23rd St)

 Phase 3 (vicinity of 28th St following Infiltration Project)

Manhattan Beach Living Shoreline Restoration Project

Site-scale Map

January 2019

