

COASTAL CONSERVANCY

Staff Recommendation
November 21, 2024

CARDIFF BEACH LIVING SHORELINE PROJECT, PHASE 4

Project No. 15-003-04
Project Manager: Katie Nichols

RECOMMENDED ACTION: Authorization to disburse up to \$1,060,000 to the City of Encinitas to undertake the Cardiff Beach Living Shoreline Project, Phase 4, consisting of restored dune performance monitoring and adaptive management, including sand placement and native plant management, and preparation of a long-term plan for sea level rise adaptation at Cardiff State Beach in San Diego County.

LOCATION: San Elijo Lagoon, City of Encinitas, County of San Diego (Exhibit 1)

EXHIBITS

- Exhibit 1: [Project Location Maps](#)
Exhibit 2: [June 15, 2017 Staff Recommendation](#)
Exhibit 3: [September 29, 2016 Staff Recommendation](#)
Exhibit 4: [Project Letters](#)
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RESOLUTION AND FINDINGS

Staff recommends that the State Coastal Conservancy adopt the following resolution and findings.

Resolution:

The State Coastal Conservancy hereby authorizes a grant of an amount not to exceed one million and sixty thousand dollars (\$1,060,000) to the City of Encinitas (“the grantee”) to undertake the Cardiff Beach Living Shoreline Project, Phase 4, consisting of restored dune performance monitoring and adaptive management, including sand placement and native plant management, and preparation of a long-term plan for sea level rise adaptation at Cardiff State Beach in San Diego County.

Prior to commencement of the project, the grantee shall submit for the review and written approval of the Executive Officer of the Conservancy (Executive Officer) the following:

1. A detailed work program, schedule, and budget.

2. Names and qualifications of any contractors to be retained in carrying out the project.
3. Evidence that all permits and approvals required to implement the project have been obtained.

Findings:

Based on the accompanying staff recommendation and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed authorization is consistent with Chapter 3 of Division 21 of Public Resources Code (Section 31113), regarding addressing the impacts of climate change and Chapter 6 of Division 21 of the Public Resources Code (Sections 31251-31270) regarding resource enhancement.
2. The proposed project is consistent with the current Conservancy Project Selection Criteria.

STAFF RECOMMENDATION

PROJECT SUMMARY:

Staff recommends the Conservancy authorize a \$1,060,000 grant to the City of Encinitas (City) for the Cardiff Beach Living Shoreline Project (project), Phase 4, consisting of restored dune performance monitoring and adaptive management, including sand placement and native plant management, and preparation of a long-term plan for sea level rise adaptation at Cardiff State Beach in Encinitas, San Diego County (Exhibit 1).

The proposed Phase 4 project builds on three earlier project phases funded by the Conservancy. Phase 1 investigated the appropriate design and approach for restoring historic dunes along Coast Highway at Cardiff State Beach and identified a preferred restoration alternative (authorized for funding by the Conservancy in March 2015). Phase 2 finalized the planning and design of the project and was authorized for funding in September 2016. Phase 3, authorized for funding in June 2017 using funds from the Ocean Protection Council, constructed the dune restoration project and implemented the monitoring and community education components of the project. The goals of Phase 4 of the project, the current phase under consideration, are to continue the dune performance monitoring to provide information needed for project permit renewal and to improve knowledge on how living shoreline systems perform over time, continue the City's adaptive management program to ensure the dunes continue to function, share the data and provide lessons learned to decision-makers and coastal managers throughout the State, and create a long-term sea-level-rise adaptation strategy for this section of the coast.

In May of 2019, construction of the project (Phase 3) was completed. The project established a novel sand-cobble-rock dune system intended to protect Highway 101 from extreme coastal storm waves. It serves as a sea-level-rise adaptation strategy, provides native dune habitat, and increases public access to the coast. Coastal dunes have been heavily impacted by development and very little of this habitat type remains in Southern California. The project involved constructing four acres of beach dunes, creating footpaths along the dunes, and beginning a

scientific monitoring program to assess dune performance. Dune restoration is a useful sea-level rise adaptation strategy because dunes can reduce coastal storm damage by buffering the shoreline from waves and tides. The Cardiff State Beach Living Shoreline Project is an important example for the State of California of how nature based coastal adaptation solutions work on the open coast.

Before the construction of the project, the section of Highway 101 running from Solana Beach to Encinitas was frequently flooded and damaged by extreme wave events, coastal erosion, and high tides, resulting in limited access and emergency repairs. After the project was constructed, this stretch of highway has been less prone to wave over-topping and flooding, in comparison with other areas. However, the project needs continued responsive maintenance to function properly. Large storm events have eroded the beach, resulting in impacts to the dunes. Erosion of the dunes can occur when large waves are present, which can result in a steep scarp that needs to be replenished with sand. Fortunately, the project has leveraged an ongoing lagoon maintenance project and has an adjacent supply of sand. The sand dredged from the nearby San Elijo Lagoon has been used to maintain the project in a condition that is needed to effectively reduce flooding of the highway. This continued sand placement is needed for the project to continue to protect the highway.

The project includes a robust physical and biological monitoring plan that has yielded many lessons learned on the best practices for the design and management of these types of projects, and these lessons are actively being shared with other coastal managers considering similar projects. The monitoring program also informs the adaptive management plan, which guides the timing and volume of sand placement on the beach in front of the dunes.

The proposed activities for Phase 4 include five years of project maintenance, project monitoring, renewing the Coastal Development Permit, and preparing a plan for long-term solutions for Coast Highway in the project area. The project maintenance will involve rebuilding the dune edge as needed with sand from San Elijo Lagoon dredging, removing invasive plant species in the dune and replanting with native vegetation, maintaining the 2,900 linear feet coastal trail that was constructed as part of the project, and continued maintenance of the six beach access paths through the dune system. Additional data collection for the project is critical to understand how the system performs long term, and to understand the maintenance needs for these types of Sea Level Rise adaptation projects. The monitoring program has been scaled down for Phase 4 based on results to date. The reduced monitoring efforts include twice annual physical surveys of dune and beach morphology, two storm event surveys, and one annual report. Phase 4 will also include biological monitoring of dune habitat and frequent community engagement efforts. The City will subgrant funds to the non-profit Nature Collective to continue its volunteer habitat restoration program which provides invasive species management and native seed broadcasting along the dune. Finally, Phase 4 includes applying for renewal of the City's Coastal Development Permit (CDP) for the project for another 5 years as required by the initial CDP. The Coastal Commission's approval of the CDP renewal is expected to require continued maintenance and management of the dunes, supplemental reports that summarize the project's effectiveness over the last five years, and an evaluation of long-term adaptation options for the dunes and stretch of Coast Highway.

The local community has been engaged throughout all phases of the project, during planning, construction, and post-construction. Since construction, the City has made considerable efforts to emphasize the positive physical performance of the living shoreline and the protection it provides. Additionally, Nature Collective's consistent community engagement efforts have aided in informing the community and building support for the project. This includes providing walking tours and volunteer habitat restoration events. These efforts have built support for the project in the community which appreciate the aesthetically pleasing and multi-beneficial structure of the project design.

Site Description: The project area is located at Cardiff State Beach in the city of Encinitas (Exhibit 1). The Cardiff Living Shoreline area extends from the south end of Restaurant Row to the north end of the Seaside State Park parking lot (See Exhibit 1). The area straddles the Swami's State Marine Conservation Area and the San Elijo Lagoon State Marine Conservation Area, both managed by the California Department of Fish and Wildlife. The area consists of a low-lying barrier spit fronting the San Elijo Lagoon on which the Coast Highway (Highway 101) and numerous utility corridors are located. The project area includes the back beach portion of Cardiff State Beach owned and managed by State Parks. State Parks and the City of Encinitas have developed and signed a Memorandum of Understanding allowing the City to perform general operations and maintenance of the project.

Grant Applicant Qualifications: The City of Encinitas has demonstrated its ability to manage grant funds through past funding from the Conservancy. The City will provide project management, administration, and is responsible for on-going maintenance of the project.

CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA:

The proposed project is consistent with the Conservancy's Project Selection Criteria, last updated on September 23, 2021, in the following respects:

1. Extent to which the project helps the Conservancy accomplish the objectives in the Strategic Plan.

See the "Consistency with Conservancy's Strategic Plan" section below.

2. Project is a good investment of state resources.

The Cardiff Living Shoreline Project is one of the first green/grey shoreline protection systems in California and has been hailed across the State as an innovative climate resilience project. Many scientists, coastal engineers, land use professionals, and elected officials have looked to this project for guidance to execute similar nature-based projects within their local, regional, and state park jurisdictions. The project is an important case study to provide an informed statewide investment into the infrastructure of living shorelines in a consistent manner.

The project was initially grant funded by the Conservancy, Ocean Protection Council, U.S. Fish and Wildlife Service, and the San Diego Association of Governments and is now being managed and maintained by the City of Encinitas and California State Parks. The City has committed to long-term management, maintenance, and monitoring of the project.

3. Project benefits will be sustainable or resilient over the project lifespan.

The stretch of Coast Highway at Cardiff State Beach is affected by coastal erosion and wave overtopping. With predicted rates of sea level rise, the impacts to Coast Highway are predicted to increase. Maintaining the dune system will provide protection of Coast Highway from coastal flooding and prevent additional road closures and emergency repairs that have occurred in the adjacent area.

While constructed with the anticipation that the dunes could withstand modest levels of sea level rise (approximately 2 feet), it was expected to erode and thus require maintenance over time during its lifespan, while a longer-term strategy was developed to address the Highway more broadly. Phase 4 of the project will amend the Adaptive Management Plan for the project and provide adaptive pathways to introduce and authorize new maintenance and management actions. These new pathways will be based on the insights gained from the initial five-year monitoring period with an extension of the monitoring program supporting the implementation of any future maintenance and management actions. Therefore, the development of an amendment to the Adaptive Management Plan will allow for data-driven choices to be made that further the resiliency of this Project.

4. Project delivers multiple benefits and significant positive impact.

In addition to biological and sea level rise protection value, the project provides aesthetic value to beach visitors. Cardiff State Beach provides coastal access for about 20,000 users each day. There are several disadvantaged communities surrounding the project area, such as the La Colonia neighborhood in Solana Beach. Many community members use the Coast Highway in their daily commutes and frequent Cardiff Beach for recreation because unlike others in the area, there is no fee to access this beach. The proposed project will maintain the dune habitat and the protection it provides to the Highway from future erosion and undercutting, thereby benefitting the surrounding communities, maintaining public access to the beach, and providing educational opportunities through Nature Collective’s volunteer habitat restoration program.

PROJECT FINANCING

Coastal Conservancy (current authorization)	\$1,060,000
U.S. Army Corps of Engineers	\$120,000
City of Encinitas	\$250,000
California Department of Parks and Recreation	\$50,000
Nature Collective	\$370,000
Project Total	\$1,850,000

The anticipated source of Conservancy funds for this authorization is a FY 23/24 appropriation of General Funds to the Conservancy for “urgent sea-level level rise adaptation and coastal resilience needs using nature-based solutions or other strategies” (Budget Act of 2023 (SB 101)

as amended by Chapter 38, Statutes of 2023 (AB 102)). The proposed project qualifies for use of these funds because it will address sea level rise adaptation needs by maintaining a restored coastal dune system that provides nature-based, sea level rise and flood protection benefits for the adjacent highway.

The grantee will provide funding for this project through various sources. The City will provide \$250,000 (\$50k/yr) for maintenance of the project with a focus on sand placement and storm event cleanup. The California Department of Parks and Recreation will provide \$50,000 (10k/yr) for maintenance of the project with a focus on fencing and signage, the U.S. Army Corps of Engineers' Engineer Research and Development Center will provide \$120,000 via a grant to the University of California Los Angeles for continued research on mixed sand and cobble beaches and Nature Collective will provide \$370,000 (\$74k/yr) for sand replenishment.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

The proposed project will be undertaken pursuant to Chapter 3 of the Conservancy's enabling legislation, (Public Resource Code Section 31113) and Chapter 6, resource enhancement (Public Resources Code Sections 31251-31270).

Section 31113 permits the Conservancy to address the potential impacts of climate change on resources within its jurisdiction by, among other things, awarding grants for projects that address sea level rise, beach erosion, and flooding. Sections 31113(c) and (d) require the Conservancy to prioritize certain types of projects. Consistent with these provisions, the proposed project will maintain a restored native dune habitat that acts as natural infrastructure to help a coastal community adapt to climate change. The project has multiple public benefits including preserving natural resources, providing recreational opportunities, and protecting infrastructure.

Consistent with Section 31251, the proposed project will implement corrective actions (sand placement, native plant management, trail maintenance) to enhance natural resources, specifically the dunes along the coast at Cardiff State Beach, that have suffered the loss of natural and scenic values due to indiscriminate dredging and filling, improper location of improvements, human-induced events, and incompatible land uses. The proposed project is intended to assist the Conservancy in meeting its purposes and objectives under this section by increasing the feasibility, cost-effectiveness, and persistence of coastal habitat restoration and enhancement projects in Southern California's coastal zone and coastal watersheds.

Consistent with Section 31252, the City's Local Coastal Program identifies the project area as an ecological resource to be protected (Land Use Plan Policy 8.10 on Preservation of Environmentally Sensitive Habitats). The City's Land Use Plan Policy for the Community of Cardiff-by-the-Sea includes a commercial revitalization policy that addresses an area including the proposed project site and calls for public improvements in that area (e.g. roadway, parking, traffic control, and drainage).

CONSISTENCY WITH CONSERVANCY'S [2023-2027 STRATEGIC PLAN](#):

Consistent with **Goal 2.4 Build Trails**, the proposed project will maintain 2,900 linear feet of trails constructed along the dunes and six public accessways to the beach.

Consistent with **Goal 3.2 Restore or Enhance Habitats**, the proposed project will maintain four acres of coastal dunes.

Consistent with **Goal 4.3 Multi-benefit Nature-Based Climate Adaptation**, the project will maintain a nature-based climate adaptation project that increases resilience for the community, restores dune habitats and enhances public access.

CEQA COMPLIANCE:

On March 24, 2016, State Parks as lead agency under the California Environmental Quality Act (CEQA) adopted a Mitigated Negative Declaration (MND) and Mitigation Monitoring and Reporting Program for the Cardiff Living Shoreline Project (Project). On September 29, 2016, the Conservancy considered the MND, adopted findings pursuant to CEQA, and authorized a grant for Phase 2 of the Project (See Exhibit 3). On May 10, 2017, State Parks approved an addendum to the MND. On June 15, 2017, the Conservancy considered the addendum and authorized a grant for Phase 3 of the Project (See Exhibit 2). Phase 4 of the Project is within the scope of the Project as described in the MND. Since the 2017 authorization for Phase 3, the Project has not been substantially revised and there is no new information or changed circumstances that would warrant additional CEQA documentation. Accordingly, no new documentation or findings are required.