

SAN FRANCISCO BAY RESTORATION AUTHORITY

Staff Recommendation  
June 18, 2021

**GREENWOOD GRAVEL BEACH DESIGN PROJECT**

Project No. RA-024  
Project Manager: Linda Tong

**RECOMMENDED ACTION:** Authorization to disburse up to \$380,000 to Marin County Department of Public Works to develop detailed designs and specifications, prepare permit applications, and complete CEQA review for a natural bay beach design at Greenwood Beach in Marin County.

**LOCATION:** Greenwood Beach, Town of Tiburon, Marin County  
Measure AA Region: North Bay

**MEASURE AA PROGRAM CATEGORY:** Vital Fish, Bird and Wildlife Habitat Program;  
Integrated Flood Protection Program

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**EXHIBITS**

- Exhibit 1: [Project Location and Site Map](#)  
Exhibit 2: [Project Designs and Photographs](#)  
Exhibit 3: [Project Letters](#)
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**RESOLUTION AND FINDINGS**

Staff recommends that the San Francisco Bay Restoration Authority adopt the following resolution and findings:

Resolution:

The San Francisco Bay Restoration Authority hereby authorizes the disbursement of an amount not to exceed three hundred and eighty thousand dollars (\$380,000) to Marin County Department of Public Works to develop detailed designs and specifications, prepare permit applications, and complete CEQA review for a natural bay beach design at Greenwood Beach in Marin County. Prior to commencement of the project, the grantee shall submit for the review and written approval of the Executive Officer of the Authority 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. A plan for acknowledgement of Authority funding.

Findings:

Based on the accompanying staff recommendation and attached exhibits, the San Francisco Bay Restoration Authority hereby finds that:

1. The proposed authorization is consistent with The San Francisco Bay Restoration Authority Act, Gov. Code Sections 66700-66706.
2. The proposed authorization is consistent with The San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure (Measure AA).

**STAFF RECOMMENDATION**

**PROJECT SUMMARY:**

Staff recommends that the Authority authorize a grant of up to three hundred and eighty thousand dollars (\$380,000) to Marin County Department of Public Works (DPW) for the Greenwood Gravel Beach Design Project (“the project”). The purpose of the project is to develop detailed designs and specifications, prepare permit applications, and complete CEQA review for a natural bay beach design at Greenwood Beach in Marin County (Exhibit 1).

The project aims to demonstrate that bay beaches as a living shoreline design approach are a viable alternative to riprap and seawalls. Living shoreline techniques reinforce the shoreline and minimize coastal erosion, while restoring natural habitats for estuarine and coastal organisms. Through strategic placement of native vegetation and natural materials such as sand, gravel, and cobble, bay beaches can protect tidal marshes behind them from further erosion. Building on preliminary designs funded through a partnership between the Marin Community Foundation and California State Coastal Conservancy, the project will develop near-final designs for a gravel beach that will provide nature-based shoreline protection and enhance valuable coarse-grained beach habitat. The goal of the project is to complete CEQA documentation and permit applications and be ready for final design and implementation of the gravel beach design.

The project’s beach design concept is the dynamic nourishment approach developed by Dr. Peter Baye (Exhibit 2). The dynamic nourishment approach relies on nourishing the existing beach system with sediments of the proper size, i.e., mixed sand and gravel. Sediments would be placed nearshore, and wave action would redistribute the sediments to a natural, dynamic beach profile. The design would also include drift-sills, which are sediment-retaining and semi-permeable cobble salt marsh structures. The drift-sills would be perpendicular to the shore, reducing beach erosion by acting as partial barriers to longshore drift, which is the movement of sand and other material along the shore by wave action. The beach could potentially require periodic renourishment in seven- to fifteen-year cycles. At the back of the beach profile would be a gravel berm. Natural wave action at the site would result in the berm being buried by sand during spring and summer but exposed during winter storm conditions when it would intercept storm wave

runup and protect the shoreline behind the berm from erosion. The backshore of Greenwood Beach would be designed to dissipate wave energy by re-grading the current near-vertical barren shoreline to a ramp-like bluff profile with gentler slopes.

Marin County DPW has the following objectives for the project:

1. Develop engineering designs for Greenwood Beach, based on a design-with-nature approach that uses coarse-grained beach sediment nourishment and restoration to combat shoreline erosion.
2. Prepare near-final plans and specifications for future construction of the gravel beach design.
3. Coordinate with the Bay Restoration Regulatory Integration Team (BRRIT) and submit necessary permits to various regulatory agencies for the implementation of the bay beach demonstration. Marin County DPW has already attended an initial consultation with the BRRIT to start addressing regulatory needs and questions.
4. Complete California Environmental Quality Act (CEQA) review, with the Town of Tiburon as the lead agency. Marin County DPW expects that CEQA analysis will result in an Initial Study and Mitigated Negative Declaration.
5. Partner with the Richardson Bay Audubon Center to conduct community engagement with the Town of Tiburon and Marin County youth.
6. Conduct data collection and analysis at up to ten additional San Francisco Bay beach reference sites, to help inform the design process. The collective data on San Francisco Bay beach geomorphology and physical processes will also help inform future development of specific engineering design criteria for other projects.

The project design team has extensive experience working on wetland restoration and other shoreline habitat projects, including innovative living shoreline projects in San Francisco Bay for estuarine beaches. The project design team, which includes senior civil engineer Roger Leventhal, P.E. of Marin County DPW and coastal ecologist Peter Baye, Ph.D., developed the first successful Richardson Bay pilot project for habitat-friendly coarse bay beaches at nearby Aramburu Island. Mr. Leventhal and Dr. Baye have a long history of successful collaborations on restoration and living shoreline projects around San Francisco Bay. Marin County DPW also has strong connections with experts at San Francisco Estuary Institute and staff at other agencies that could provide valuable technical expertise and support in coordinating with other partners.

Marin County DPW presented the project several times at Tiburon Parks Open Space and Trails (POST) Commission meetings and once at a Tiburon Town Council meeting. POST Commissioners and Town Councilmembers voted to support the project, and the Town of Tiburon Parks Open Space and Trails Commission previously provided a letter of support for the project (Exhibit 3). Marin County DPW will continue to inform Tiburon residents about the project and will work with the Town of Tiburon to address residents' questions or concerns.

**Site Description:**

Greenwood Beach is the beach along a much-loved public park in Tiburon, Marin County. The project site was historically a larger, wider barrier beach that sheltered a non-tidal salt marsh

with shallow seasonal ponds. The shoreline now includes broad intertidal mudflats, a flood channel delta, a small salt marsh patch, and two small pocket beaches, surrounded by old bay fill and shoreline armoring. The west end of the beach is well-used for recreation, but the rocky concrete and asphalt shoreline around it is avoided. Over the years more fill of asphalt, concrete rubble, and sand has been placed to combat wave erosion at the park shoreline. The wave erosion has been scattering the fill across the mudflats. The boulders and angular asphalt and concrete rubble coupled with the eroding vertical shoreline make this area of Greenwood Beach potentially hazardous and poor wildlife habitat. As the shoreline erodes further, more asphalt and concrete rubble may be deposited into the bay.

The project can support substantial habitat benefits through enhancing the beach system and marsh area behind the beach. Constructed bay beaches can provide breeding or foraging habitat for Forster's terns, black-necked stilts, American avocets, black oystercatchers, and other shorebirds. Bay beaches can also provide unvegetated, high-tide roosts for shorebirds and high-tide refuge for marsh wildlife. The backshore of the project site would be designed have gentle slopes that can support native salt-tolerant shoreline vegetation, such as gumplant, pickleweed, and California sea-blite.

The shoreline conditions found at Greenwood Beach are common to many areas along the San Francisco Bay shoreline. This project would serve regional significance by providing a publicly accessible design-with-nature model for similar locations around San Francisco Bay.

#### **PROJECT FINANCING**

<b>San Francisco Bay Restoration Authority</b>	<b>\$380,000</b>
<b>Project Total</b>	<b>\$380,000</b>

Marin County will be donating staff time for project management, with approximately \$130,000 in in-kind costs provided by the County. Staff time from the Town of Tiburon will also be provided in-kind, and this cost is estimated at approximately \$40,000 over the life of the project.

#### **CONSISTENCY WITH AUTHORITY'S ENABLING LEGISLATION, THE SAN FRANCISCO BAY RESTORATION AUTHORITY ACT:**

The project is consistent with Government Code Section 66704.5 of the Authority's Enabling Legislation, and therefore is eligible for grant funding from the Authority. Marin County Department of Public Works is a local public agency, which is an eligible grantee under Section 66704.5(a). The project will occur along the shoreline of Richardson Bay in Marin County, which is within the Authority's jurisdiction. The project will design and permit a restoration project that enhances coarse-grained beach and salt marsh habitat, and provides shoreline protection in Marin County, making it an eligible project as defined in Section 66704.5(b)(2). Funding this planning project is consistent with Section 66704.5(e), which allows the Authority to award grants for all phases of planning of eligible projects.

#### **CONSISTENCY WITH MEASURE AA PROGRAMS AND ACTIVITIES:**

The project is consistent with the programs and activities of Measure AA, as outlined below:

The project supports the *Vital Fish, Bird and Wildlife Habitat Program*'s purpose to significantly improve wildlife habitat that will support and increase vital populations of wildlife in and around the Bay, by protecting and restoring bay beach and salt marsh habitat to benefit native shoreline vegetation that can support wildlife.

The project supports the *Integrated Flood Protection Program*'s purpose to use natural habitats to protect the Bay's shoreline from the risks of erosion by planning nature-based flood protection through beach habitat restoration along the Bay's edge.

**CONSISTENCY WITH MEASURE AA PRIORITIZATION CRITERIA:**

1. **Greatest positive impact.** The project will provide an easily accessible demonstration site to the broader Bay Area restoration design community, and will showcase the efficacy of coarse-grained beaches as a nature-based alternative to riprap and rubble. Greenwood Beach was historically bay beach and has the space and wave climate amenable to restoration of a beach system, which makes this location ideal for a gravel beach demonstration project.
2. **Greatest long-term impact.** The project will provide a quantitative, repeatable method to the design-with-nature approach so that it can be more widely used as a component of living shorelines. As the design-with-nature approach becomes more easily adopted it will help prevent the negatives impacts caused by riprap and rubble approaches to shoreline erosion control, especially in the face of rising sea levels.
3. **Leveraging resources and partnerships.** The project is leveraging two prior grants funded through the Marin Community Foundation and California State Coastal Conservancy. The County of Marin is also donating staff time for project management (see PROJECT FINANCING section above).
4. **Economically disadvantaged communities.** See 5. below.
5. **Engage youth and young adults.** Richardson Bay Audubon Center will lead a program to engage youth, many from underserved communities in Marin County, to learn about the design-with-nature approach to shoreline protection.
6. **Monitoring, maintenance, and stewardship.** As part of the permitting process, Marin County DPW will produce a monitoring and adaptive management plan for the proposed project post-construction, detailing monitoring and management triggers and actions. Long-term maintenance of the constructed gravel beach would be funded through future grants or the Town of Tiburon.
7. **Coastal Conservancy's San Francisco Bay Area Conservancy Program.** The project is consistent with the Conservancy's San Francisco Bay Area Conservancy Program's Criteria:

- a. The project is supported by local and regional plans including San Francisco Estuary Institute's Adaptation Atlas, Marin County's BayWAVE Program, and the Baylands Ecosystem Habitat Goals Science Update 2016;
- b. Serves a regional constituency as an applied science and engineering project that will help develop design guidance applicable for the whole San Francisco Bay;
- c. Can be implemented in a timely way, as the preliminary design phases are complete;
- d. Provides opportunities for benefits that could be lost if the project is not quickly implemented, as the project site would continue to be vulnerable to shoreline erosion and impacts of sea level rise; and
- e. Includes in-kind staff time from Marin County DPW and the Town of Tiburon, estimated at approximately \$170,000 for this project.

**8. San Francisco Bay Conservation and Development Commission's Coastal Management Program.** The project is consistent with policies of BCDC's Bay Plan, which informs its Coastal Management Program:

- a. Shoreline Protection Policy 5: When feasible, shoreline protection projects should incorporate nature-based features such as beaches, and the projects should use best available science on shoreline adaptation and restoration. The amount of fill necessary for the project should consider ecosystem benefits, including habitat and water quality improvement.
- b. Shoreline Protection Policy 7: BCDC should encourage pilot and demonstration projects to research and demonstrate the benefits of incorporating natural and nature-based techniques, such as restoration of bay beaches, in San Francisco Bay.

**9. San Francisco Bay Joint Venture's Implementation Strategy.** The project is consistent with the San Francisco Bay Joint Venture's goals and implementation strategy. The project is on the Joint Venture's Project List as a Tier 2 project because implementation funding still needs to be obtained.

**COMPLIANCE WITH CEQA:**

The proposed project is statutorily exempt from preparing an environmental impact document under the California Environmental Quality Act Guidelines, California Code of Regulations Section 15262, because the project involves planning for possible future actions which have not been approved, adopted, or funded. In addition, the project is categorically pursuant to California Code of Regulations, Title 14, Section 15306. Section 15306 provides that basic data collection, research, and resource evaluation activities which do not result in a serious or major disturbance to environmental resources. Upon approval of the project, staff will file a Notice of Exemption.