



OCEAN PROTECTION COUNCIL

OPC Proposition 68 Chapter 10: Coastal Resilience Grant Funding

1. Full Proposal Application Cover Page

Contact Information:					
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Organization Type	Municipality				
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Federal Tax ID#	94-1705778				
Project Information:					
Project Name	Heron’s Head Park Shoreline Resilience				
Project Type	Construction, monitoring and adaptive management:				
Amount Requested	\$1,667,000	Total Project Cost	\$3,893,000	Non-State Matching Funds	\$2,226,000
Location Information:					
County	San Francisco	Specific Location	Heron’s Head Park Cargo Way at Jennings St. San Francisco, 94124		
Latitude	37°44'15.7"N	Longitude	122°22'20.6"W		
What point is represented by the latitude and longitude (center of site)?	Center of tidal marsh at Heron’s Head Park				

2. Project Scope

Project Summary

Heron's Head Park is owned and managed by the Port of San Francisco (Port) and located in the economically disadvantaged Bayview Hunters Point neighborhood (**Figs. 1 & 2**). It is an approximately 21-acre peninsula comprised of 14 acres of public open space, including an environmental education center (The EcoCenter), and approximately 7 acres of tidal wetlands, tidal ponds, mudflats, and rocky intertidal shoreline (**Fig. 3**). Heron's Head Park provides valuable tidal marsh habitat for wildlife and equitable, convenient, and affordable access to natural coastal open space, education, and recreation in a neighborhood where such resources are scarce.

The proposed ***Heron's Head Park Shoreline Resilience Project*** ("the Project") is a multi-benefit project that will use a nature-based shoreline to protect and restore wetland habitat, improve ecological function of diverse intertidal habitats, and enable the shoreline to adapt to sea level rise. The major components of the Project are:

- Construct a dynamically stable coarse beach along the eroding shoreline.
- Fabricate and install oyster reef structures.
- Restore tidal salt marsh plant habitat.
- Monitor project outcomes, share findings, and take adaptive management measures.

The Project will restore former type and extent of habitat at Heron's Head Park and provide new habitat in the form of coarse sand/gravel beach, new wetland vegetation to reinforce shoreline and pond edges, and subtidal oyster reefs. The coarse material shoreline will enable wetlands to migrate with rising sea level so that some wetland habitat and key public access features remain through mid-century. With the proposed monitoring and stewardship, including ongoing removal of non-native species and replanting with locally-adapted native wetland/transition zone plants, the Project will combat a significant infestation by invasive Algerian sea lavender, employ local youth, and provide volunteer opportunities for visitors and students. The Project will engage the surrounding community in implementation and demonstrate how marsh-fringing beach and other living shoreline elements can be integrated to create a resilient shoreline, thereby contributing to statewide efforts to develop technical understanding and implementation of natural systems-based approaches to shoreline stabilization.

Project Need

In the 20 years since the Port expanded and enhanced the wetlands at Heron's Head Park, the shoreline has experienced subsidence of the fill soils, erosion from wind-waves and tidal flows, and a low supply of ambient suspended sediment. These forces have caused a loss of both habitat acreage and ecological function. In the most impacted area, the shoreline has retreated up to 50 feet from its 1998 location, and one of the tidal ponds is consistently flooded rather than tidally flushed. Current rates of erosion in combination with sea level rise are encroaching on tidal wetlands and may eventually threaten the segment of Bay Trail located in the upland portion of the park. Without protection from erosion and capacity to adapt to sea level rise the wetlands are

expected to lose an estimated additional 80,000 sq. ft. over the next 30 years. The Project will create a living shoreline that will enhance and preserve the physical, biological, and community benefit functions at Heron's Head Park for a design life of 30 years.

In addition to improving ecological resilience, the Project will address an important community need for access to open space. Parks and natural areas can improve public health and social well-being, providing space for outdoor recreation and places to bring neighbors together, strengthening communities' social resilience. Due to its location in an urban area where direct public access to the bay is limited and armored shorelines predominate, Heron's Head Park is uniquely well-suited to provide access to natural shoreline habitat that many neighbors and Bay Area residents might not otherwise reach. It is within walking distance (approx. 0.3 miles) of the largest public housing complex in San Francisco and easily accessible by municipal transit. Through a partnership between the Port and the San Francisco Recreation and Parks Department (RPD), the EcoCenter at Heron's Head Park offers free, culturally relevant environmental education (many bilingual) and recreation programs for a diversity of participants. A significant part the Project site's value to habitat conservation is the opportunity for public education and engagement with the type of natural shoreline that once encircled San Francisco Bay.

Disadvantaged Community

The adjacent Bayview Hunters Point neighborhood has been historically disenfranchised and under-served by open space and other public investment. Project area statistics and description of community context are presented in **Attachment 2**. Block group level data indicates that the neighborhood around Heron's Head Park is an Economically Disadvantaged Community, with average income less than 80% of Area Median Income. Social vulnerability, which results from characteristics such as age, income, and language barriers, makes communities like the one around Heron's Head Park more vulnerable to hazards, whether they be sudden disasters or long-term adaptation challenges. The [City of San Francisco's Climate and Health Program](#) has examined contributors to climate-related risk, including social vulnerability, to identify vulnerable communities and engage them in reducing risk in their own neighborhoods. The resultant [Climate and Health Vulnerability Assessment](#) analyzed environmental, demographic and socioeconomic factors that contribute to community vulnerability and found that the community surrounding Heron's Head Park will be disproportionately affected by climate change.

The Project will meet OPC's goals for technical assistance to disadvantaged communities by providing training, workforce development and education as described in **Partnerships** below.

Project Description: Nature-based approach to achieve multiple benefits

The Project will achieve multiple benefits and specific outcomes that advance the Ocean Protection Council's (OPC's) strategic plan goals for coastal protection as follows:

Construct a dynamically stable beach along the marsh edge. The Project will beneficially reuse a byproduct of sandmining to construct a dynamic coarse-material beach comprised of natural sand and gravel, stabilized by rock and cobble sills, along the existing tidal marsh. The Port will

competitively bid construction, with specifications for experience and expertise in restoration work, that includes importing and placing 12,000 cu. yd. of natural sand and gravel from the Bay and 1,300 cu. yd. rock and cobble to construct the beach and groynes over 2.06 acres along 1,600 linear feet of shoreline (see **Fig. 4** and **Attachment 3. Design Plans**). The beach and groynes will minimize habitat loss by preventing scarps at the marsh edge and restore tidal ponds that formerly existed at the site. The rock sills and groynes are low-profile features, largely subtidal, that are designed to mitigate lateral migration of the beach material exposed to the forces that have eroded the existing shoreline, and they do not represent grey infrastructure in this context.

Enhance ecological function with physical structures that provide diverse and connected habitat. Construction of the intertidal beach and groynes will provide habitat structure and complexity that enhance biodiversity. Rock/earth sills placed along the high intertidal beach crest will provide substrate for high-intertidal plants. The gravel beach berm and rock groynes will provide foraging, roosting, and high tide refugial habitat for shorebirds. The physical structure of gravel beaches is more variable than the fine-grained mudflat substrate that currently dominates much of the shoreline. This structural variability offers invertebrates a greater array of microhabitats and a more sheltered microclimate, thus, the addition of coarse material may support a more diverse invertebrate population and potentially improve food resources for shorebirds. Ecologically, tidal flat foraging habitat and high tide roost habitat function together: The beach berm provides high tide refuge where shorebirds rest and conserve energy when the tidal flats are submerged.

Incorporate Living Shoreline elements for habitat diversity and ecological function. Shoreline construction will include fabrication and placement of up to 60 oyster reef elements along the subtidal ends of the groynes, creating up to 0.02 acres of subtidal surface area for oysters and other native epifauna, including mussels, crabs, shrimp, and seaweed. This new subtidal habitat is anticipated to provide nursery habitat for juvenile fish, foraging opportunities for fish and birds, and clean, hard substrate for herring spawning. The Project also includes placement of up to 20 cubic yards of large woody debris such as tree limbs and branches within the intertidal beach to provide additional high tide refugial habitat.

Restore native marsh and transition zone vegetation. The Port will contract with Literacy for Environmental Justice (“LEJ”, see **Partnerships** below) to propagate, plant and maintain native salt marsh plant species. The project’s revegetation workplan anticipates planting nearly 17,000 plants or propagules over 0.07 acres in the first two years, and planting approximately 30,000 additional plants/propagules over the subsequent three years, restoring tidal salt marsh vegetation on up to 1.2 acres over the 5-year wetland plant restoration effort. Species include marsh gumplant (*Grindelia stricta*), salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), and the endangered California seablite (*Suaeda californica*). Marsh gumplant is an ecologically important native shrub that occurs in tidal marshes and provides food resources, vertical cover, and high tide refuge for multiple species. California seablite was extirpated from San Francisco Bay in the 1960s and is now found only in Morro Bay and a few reintroduction sites in San Francisco Bay. It was formerly abundant at the Project site but has been significantly impacted by erosion of its preferred coarse sand and shell substrate.

Remove critical mass of invasive species, reducing percent cover by invasive species in the tidal marsh to less than 30% by the end of the 5-year revegetation effort. The Project includes 6-8 weeks/year of labor by trained habitat restoration crews (LEJ’s “Eco-Apprentices”) to remove invasive species. This intensive mass removal and replacement with native species will restore robust tidal marsh vegetation and related ecological function.

Other significant components of the Project, monitoring outcomes to inform adaptive management at the Project site and sharing information broadly, are discussed in **Monitoring effectiveness and informing coastal resource management strategies** below.

Methodology

The Project will be a demonstration of the developing science and practice of creating living shorelines for habitat value, shoreline stabilization and sea level rise adaption. The Project design has been informed by a team (described below) that brings expertise and experience in these disciplines, including design, construction, and monitoring similar projects in San Francisco that have proven successful at stabilizing eroding marsh edges and improving abundance and diversity of wildlife ([SFEI and Baye, 2020](#)). The Project conceptual design, alternatives analysis, Basis of Design Report, and 65% design plans (provided in **Attachment 3.**) have been reviewed for technical/scientific merit and feasibility by the Technical Advisory Committee (“TAC”), the Port’s Engineering Division, and a 3rd-party engineering peer reviewer, the Bay Restoration and Regulatory Integration Team (“BRRIT”) and State Coastal Conservancy (see **Partnerships** below).

Project Management and Readiness

Partnerships

The Project is a collaboration between local (Port), regional, and State agencies and other Project partners, including:

- **The California State Coastal Conservancy** provides technical assistance regarding living shoreline project design, permitting, and construction and serves as project manager for the San Francisco Bay Restoration Authority grant.
- **Technical Advisory Committee (TAC):** The Project’s TAC has guided planning and design. TAC members include Kathy Boyer, faculty and research scientist at the **Estuary and Ocean Science (EOS) Center** at San Francisco State University, and Chela Zabin from the **Smithsonian Environmental Research Center**, who bring specialized expertise in ecology and habitat restoration for the native tidal marsh plants and native oysters respectively. The TAC includes ecologist and botanist Peter Baye, lead author of the **San Francisco Estuary Institute’s** New Life for Eroding Shorelines report. The TAC will be retained to continue providing expert guidance during construction, monitoring, and adaptive management.
- **The San Francisco Bay Restoration Authority** is a regional agency and key stakeholder, providing \$1.1M in funding for tidal marsh habitat restoration and monitoring as well as technical assistance through participation with the TAC.
- **Literacy for Environmental Justice (LEJ):** LEJ is a community-based, non-profit environmental education and youth empowerment organization created specifically to address the ecological and health concerns of Bayview Hunters Point and communities of southeast San

Francisco. LEJ operates a native plant nursery in Hunters Point that specializes in growing locally adapted native species for shoreline and coastal upland habitats. The Port has contracted with LEJ to cultivate, install, monitor, and maintain the tidal salt marsh plants that will be installed over a 5-year period, beginning November 2020 (see **Phasing** below). This work will be conducted by LEJ's "Eco-Apprentices", low-income, predominantly minority transitional-age youth (age 18-26) with an interest in habitat restoration. The Eco-Apprentices and other LEJ youth will also develop and deliver community outreach, under contract to the Port and with technical support from the Project team.

The Project also benefits from being among the first projects reviewed by the BRRIT, comprised of representatives from the U.S. Army Corps of Engineers, San Francisco Bay Regional Water Quality Control Board, Bay Conservation and Development Commission, U.S. Fish & Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Wildlife. The BRRIT members bring experience and expertise to the Project review and permitting process, and their review has resulted in valuable refinements to the Project design.

Organizational Capacity

The Port has the organizational capacity to deliver major capital projects, including experienced engineers, environmental regulatory specialists, accountants, contract managers, and administrative support staff. We have completed large, in-water, construction projects such as the Brannan St. Wharf (\$24M, 2013), the James R. Herman Cruise Terminal (\$75M, 2014), and Crane Cove Park (\$37M, 2020). The Port has designed and constructed shoreline habitat and public access projects similar to the Heron's Head Park Shoreline Resilience Project, including wetland enhancement at Heron's Head Park (\$3M, 1999) and Pier 94 Wetlands (\$0.5M, 2004).

The Project team's capacity includes the resources of our agency, academic, and community partners listed above as well as Port staff and consultants:

- **Port Staff:** Carol Bach, the Port's Environmental Affairs Manager will manage the Project. Rod Iwashita, Chief Harbor Engineer, provides senior engineering review and will lead the Port's in-house construction management group to solicit bids and award and administer the contract. The Port will contract for qualified 3rd party construction management personnel to manage construction in the field.
- **Environmental Science Associates**, under contract to the Port, include Project Manager Eddie Divita, a Hydrologist and Civil Engineer with experience in engineering design of coastal, wetland, and estuarine restoration projects in San Francisco Bay; Senior Engineer, Bob Battalio, who brings over 30 years of experience in coastal engineering and multi-benefit restoration project design; and Anne Borgonovo, who has provided engineering and construction oversight to several coastal stabilization and restoration projects, including one of the first natural system based sea level rise adaptation projects in San Francisco Bay.

Qualifications of Project team members are provided in **Attachment 4**.

Project Readiness

Permits. The Project has received the following permits:

- City and County of San Francisco Planning Department Notice of Exemption from CEQA. was filed with the SF County Clerk 11/12/20 and runs 30 days. (see **Attachment 5**).

- Army Corps of Engineers authorization under Nationwide Permit 27 for Aquatic Habitat Restoration, Enhancement, and Establishment Activities (Authorization letter dated 10/15/20).
- San Francisco Bay Regional Water Quality Control Board CWA Section 401 Water Quality Certification dated 10/2/20.

The Bay Conservation and Development Commission will vote on BCDC Staff’s recommendation to authorize construction of the Project at its December 17, 2020 meeting.

Phasing. The first phase of the Project was initiated in early November 2020 with invasive species removal and seed collection. The shoreline construction component of the Project is seasonally restricted to August through January to protect endangered species, nesting birds and migrating and spawning fish. Shoreline construction is ready to begin during the next permitted construction window, August 2021 through January 2022, subject to availability of funds by March 2021.

Project phases include:

Scope	Schedule	Funding Status
Wetland plant restoration, Phase 1: First two of total of five years of wetland plant habitat restoration	Fall 2020 through Fall 2022.	Funds awarded by the San Francisco Bay Restoration Authority
Shoreline stabilization contract: Advertise construction contract opportunity, complete bid solicitation process, secure Port and City approvals, and award contract.	March through July of any year.	Executed by Port staff with no cost to the Project budget.
Shoreline stabilization: Construct stabilized coarse sand/gravel shoreline, beach crest, pond sills, and oyster reef elements.	August through January of any year.	Proposed for funding by OPC Coastal Resilience Grant.
Wetland plant restoration, Phase 2: Three additional years of wetland habitat restoration will follow construction of stabilized shoreline.	Upon completion of shoreline construction	Funds designated by the SF Bay Restoration Authority, subject to approval of Phase 2 work plan and budget.
Post-Construction Monitoring: Port will monitor physical and ecological performance in accordance with <i>Monitoring and Adaptive Management Plan</i> .	Completed construction through 10 years post-construction	SFBRA designated grant funding for 5 years of monitoring, subject to approval of work plan and budget. Port to fund remaining years.

The proposed schedule assumes that OPC and Port can complete approvals and execute a grant agreement expeditiously, potentially concurrent with solicitation of construction contract bids. If administrative approvals required precedent to use of grant funds prevents advertising for bids in March 2021 and commencement of construction in August 2021, then seasonal restrictions on construction will delay project commencement until August 2022.

Alignment with Prop 68 and OPC's Priorities and California's Climate Policies

Findings & Declarations of Public Resources Code Section 80001(a)

The Project realizes the intent of Prop. 68 as described in the following findings and declarations of the public resource code:

- The Project protects a park that offers the neighboring economically disadvantaged community opportunity to experience the outdoors, improve physical and emotional health, and strengthen the community's social resilience.
- It invests capital to protect and enhance natural resources by protecting the park, wetlands, wildlife habitat, and urban green space in a way that will enable resilience to sea level rise for decades.
- It provides these benefits in an area that has experienced historic underinvestment in parks, trails, and outdoor recreation opportunities.
- It includes active outreach to diverse populations, particularly minority and low-income residents, to increase awareness of the social, educational, and natural resource assets that the Project site offers.
- It coordinates with and builds upon existing youth engagement and empowerment programs, including fostering the partnership between the Port and LEJ, a community-based organization serving local, predominantly minority and low-income, youth.
- It creates an employment and mentoring opportunity for young environmental, outdoor recreation, and conservation leaders working with Project partner, LEJ, to increase diverse representation across these areas.
- The Project engages local youth in developing and presenting culturally appropriate public outreach to their own community.

Consistency with Chapter 10 funding priorities (PRC Section 80133(a))

The Project aligns with OPC's priorities for Chapter 10 funding by protecting habitat in San Francisco Bay, a critical stopover for hundreds of thousands of birds on the Pacific Flyway. The U.S. Shorebird Conservation Plan for the Southern Pacific Region (2003) identifies San Francisco Bay as a wetland of highest importance along the California Coast, and San Francisco Bay is recognized as a Western Hemisphere Shorebird Reserve Network site of Hemispheric Importance for shorebirds. One of the few remaining wetlands in the County of San Francisco, the marsh at Heron's Head Park supports a diverse range of birds, 193 species recorded on the citizen science website eBird.org, including many coastal-dependent and migratory species.

Alignment with priorities of Prop. 68 Coastal Resilience Program solicitation

The Project advances priorities of the Prop. 69 Coastal Resilience grant program as follows:

- It will construct a nature-based shoreline to conserve habitat, promote biodiversity, and protect natural and recreational resources for the 30-year design life of the Project.
- It will beneficially reuse coarse sediment extracted from San Francisco Bay to create a resilient shoreline that protects an adjacent wetland with a diversity of habitat types.
- It will demonstrate the feasibility and effectiveness of a stabilized coarse beach as a form of living shoreline, with long-term monitoring, adaptive management, and reporting to the

scientific community, resource and regulatory agencies, and wetland restoration practitioners that will inform future projects' plans and adaptive management strategies.

- The Project is informed by an expert TAC and will be presented to community stakeholder groups, including the Port's Southern Waterfront Advisory Committee and the EcoCenter Advisory Committee.
- The Project utilizes a managed retreat approach, enabling the protected wetland behind the stabilized shoreline to migrate upland with sea level rise and creating the capacity for future adaptation measures to raise elevation. The Project design balances the goals of preventing erosion and habitat loss without over-building in the near term, while minimizing the need for disruptive maintenance and related environmental impacts in the future.
- The Port is ready to start work upon availability of funds and will be able to be complete the Project within three years.

Alignment with California's Climate Policies

Erosion and sea level rise pose the greatest climate-related risks at the Project site. The Project design used site-specific modelling to determine the type, quantity and location of material needed to prevent flooding and erosion and maintain habitat for decades. The vertical capacity of the constructed shoreline is designed to +2 ft., and shoreline creates capacity for adaptation to sea level rise of up to 3.5 ft. by mid-century. This design for adaptive capacity provides the greatest habitat benefit and long-term resilience to sea level rise with the least environmental impact.

The [2018 Safeguarding California Plan](#) calls for nature-based adaptation measures to mitigate impacts of erosion and sea level rise. It cites the value of living shorelines to stabilize the shoreline and create habitat for coastal species using a variety of structural and organic materials such as wetland plants, oyster reefs, sand fill, fiber, and stone. The Heron's Head Park Shoreline Resilience Project is exactly such a measure.

The Project will provide multiple benefits by implementing varied recommendations of the 2018 Safeguarding California Plan:

- It engages a local non-profit partner, whose mission is to advance environmental justice, in hands-on planting and habitat stewardship.
- It supports a training/employment program that develops job readiness skills and ensures maintenance of wetland habitat.
- It involves individuals, organizations, and academic institutions in improving coastal habitat in their community.
- It uses nature-based shoreline infrastructure to protect and enable future adaptation at coastal salt marsh, a priority habitat considered highly vulnerable to climate change.
- It implements recommendations of the San Francisco Bay Ecosystem Habitat Goals Report, which serves as a guide for conserving important habitat
- It will remove invasive species that contribute to degradation of habitat quality and resilience.
- Post-construction monitoring and information sharing will contribute to establishing goals and success criteria for living shorelines and contribute to the conservation community's and

the general public's understanding of the value of living shorelines, particularly coarse gravel beaches, as climate-smart shoreline protection and habitat enhancement measures.

The [San Francisco Bay Shoreline Adaptation Atlas](#), identified by the 2018 Safeguarding California Plan as an ongoing effort, was subsequently published by the San Francisco Estuary Institute in May 2019. The Adaptation Atlas sets forth a science-based framework for identifying sea level rise adaptation strategies that take advantage of natural processes and are appropriate for the various landscape types and locations. The Adaptation Atlas identifies areas where nature-based adaptation strategies, including living shorelines, can help create a resilient shoreline with multiple benefits, including habitat, recreation, and other benefits. Heron's Head Park is within the Adaptation Atlas' "Mission-Islands" unit, where floodable spaces and nature-based infrastructure such as the proposed Project, are recommended to reduce flood risk restore ecological value.

Effectiveness and Innovation

The Project design builds on a growing body of knowledge emerging from living shoreline projects in the Bay, benefitting from lessons learned from other habitat enhancement projects such as the State Coastal Conservancy's [San Francisco Bay Living Shorelines Project](#) and the Richardson Bay Audubon Center's habitat enhancement project at [Aramburu Island](#).

After construction, the Port will monitor and report on the physical and ecological effectiveness of the Project for 10 years in accordance with the "*Monitoring and Adaptive Management Plan*", which has been approved by the BRRIT, and includes:

- Beach performance (elevation, horizontal movement)
- Shoreline erosion
- Preservation of tidal marsh and pond habitat
- Colonization of oyster reef balls
- Abundance of California Seablite
- Habitat utilization by birds

The project team, including the TAC, consultants, and agency partners will present findings of post-construction monitoring to restoration agencies and practitioners and the general public to disseminate information gained from the Project, inform future nature-based designs, and contribute to the restoration community's and the public's understanding of the role of living shorelines as a feasible and ecologically functional approach to shoreline stabilization. Outreach will be accomplished through various venues as opportunities allow. With growing interest in nature-based solutions to coastal resource conservation, there are many such opportunities. During the past year, various aspects of the Project approach have been addressed in the San Francisco Estuary Institute's [New Life for Eroding Shorelines Project](#) report and at a State Coastal Conservancy "Climate Read Webinar – Living Shorelines 101", a workshop on beneficial reuse of coarse sediment hosted by the San Francisco Bay Joint Venture, and a symposium on Coarse Grain Beaches as a natural intervention for shoreline resilience organized by The Exploratorium and Coastal Conservancy.

Community Support

Local, Regional, State Support

Since Heron's Head Park opened to the public in 1998, it has become a well-loved resource for visitors from the surrounding community and throughout the Bay Area. The Port partners with San Francisco RPD to offer public programs in the park and at the EcoCenter, and many local community-based organizations, use the site for environmental education, community meetings, and volunteer opportunities. Over the course of the Project's planning and engineering design process that began in 2018, the Port has presented plans for the Project to its Southern Waterfront Citizens' Advisory Committee, Golden Gate Audubon Society's Conservation Committee, the EcoCenter Advisory Committee, and the San Francisco Biodiversity Working Group. For the convenience of participants, these meetings were all held in the evening, at the location and regularly scheduled meeting time of the various stakeholder groups. The Port has found enthusiastic local support as well as the support of regional agencies such as the San Francisco Bay Joint Venture and San Francisco Estuary Institute, and State Support, as evidenced by the letters of support and commitments of funding accompanying this proposal (**Attachment 6**).

Community Engagement Plan

The Port has developed a robust [Waterfront Resilience Program \(WRP\) Communications and Engagement Plan](#) that now has capacity to include community engagement about the Heron's Head Park Shoreline Resilience Project. The WRP Communications and Engagement Plan includes both community outreach and stakeholder engagement: Community outreach refers to general education about the WRP that engages, informs, and educates residents via activities at in-person outreach events, webinars, online engagement tools, and other tools. Stakeholder engagement is distinguished from community outreach by creating two-way communication with stakeholders who have a particular and vested interest in the project or program. Inclusion in the WRP Communications and Engagement plan will provide more resources for community engagement and enable meaningful stakeholder input in addition to dissemination of information about the Project. Port staff will also continue to leverage its existing environmental education and public outreach programs at Heron's Head Park and other public meetings and events to engage community stakeholders and the public in the project.

Leverage

The Project leverages funding from many sources: A private business is donating construction material. The Port, a local government agency, has invested approximately \$500,000 and countless hours of staff time to plan, permit, design, create construction plans and specifications, and fund the Project. The San Francisco Bay Restoration Authority, a regional agency has allocated \$1.1M to support the Project. Commitments to provide matching funds are provided in **Attachment 7**. The State Coastal Conservancy has partnered with the Port as co-applicants for federal funding from the National Coastal Wetlands Conservation grant program (currently under review). This broad coalition demonstrates the value that a wide range of constituents place on the project and enables the Port to request an amount from the OPC Coastal Resilience Project estimated to be 42% of the total implementation cost.

3. Budget

	Construct Shoreline	Fabricate & Install Oyster Reef Balls	Restore Tidal Marsh Plant Habitat	Monitor, Inform & Adapt	Total
Subcontractor: Competitively bid construction contract will include all labor, materials, overhead, and other costs incidental to completion of the work, excluding donated material	\$1,667,000	\$350,000			\$2,017,000
Subcontractor: 3 rd party Construction Management; Biological monitoring	\$310,000	\$50,000			\$360,000
Match: Donated beach material, other grant funds	\$417,000 Donated by Project Partner		\$790,000/5 yrs. Funded by San Francisco Bay Restoration Authority	\$308,000/5 yrs. Funded by SF Bay Restoration Authority	\$1,515,000
Task Total	\$2,394,000	\$400,000	\$790,000	\$308,000	\$3,892,000
Total Estimated Project Cost					\$3,892,000
Total Amount Proposed for OPC Agreement:					\$,1667.000

Notes:

Additional budget detail, including breakdown of shoreline construction costs, is included in **Attachment 8**.

Signage informing the public that the project received funds from the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 is not included in construction cost estimate. If grant funds are awarded, cost to fabricate and install acknowledgement signs will be added to Port’s contribution to total project cost.

4. Task Description and Schedule¹

Task Number and Title	Description of task relative to OPC funds	Start Date	End Date	Deliverable(s)
Task 1: Project Management	All project management will be conducted by Port staff at no cost to the Project implementation budget.	In progress	12/31/22	Grant administration, engineering contract administration, new construction contract solicitation and award, administrative approvals, construction contract administration, community engagement.
Task 2: Construct Shoreline	OPC funds are requested to pay for the estimated cost of shoreline construction, excluding donated materials	8/1/21	1/31/2022	Deliverable is completed shoreline construction. Port will competitively bid and award a construction contract that includes all work incidental to construction of the stabilized coarse beach shoreline, including mobilization, earthwork, transportation and placement of beach material, rock groynes and drift sills, wood habitat features, planting on beach crests and pond sills, and restoration of areas impacted by construction such as temporary access routes. Start and end dates are dictated by seasonal restrictions on construction to avoid environmental impacts.
Task 3: Fabricate and Install Oyster Reef Balls	To be funded by Port or grant funds other than OPC.	8/1/21	8/31/22	Deliverable is up to 60 oyster reef balls (ORBs) comprised of a mix of native sand and shell, concrete, and gravel formed into spherical shape and placed in the shallow subtidal zone along the groynes and drift sills. ORBs will be custom fabricated per design informed by previous living shoreline projects. Seasonal factors indicate that oyster recruitment is most successful if ORBs are installed in late summer/early fall. Since this installation would ideally occur months after completion of the shoreline construction, it may be included in the shoreline construction contract or bid as a separate contract.
Task 4: Restore Tidal Marsh Plants	Funded by grant from the San Francisco Bay Restoration Authority	11/1/20	10/31/25	Deliverable is up to 47,000 specified tidal salt marsh plants installed and maintained over a 5-year period. This work will be contracted to community-based non-profit organization.
Task 5: Monitor, Inform, Adapt	Funded by grant from the San Francisco Bay Restoration Authority and Port of San Francisco	2/1/22	1/31/32	Deliverables are Annual reports during 10 years of monitoring in accordance with <i>Monitoring and Adaptive Management Plan</i> and communication with scientists, resource and regulatory agencies, habitat restoration practitioners and the public.

¹ See discussion of schedule in Section 2. Scope: **Phasing**.

5. Supplemental Documents

The following supplemental documents are attached to this proposal:

Attachment 1. Figures and Photos

Attachment 2. Community Context: California State Parks Community FactFinder

Attachment 3. Design Plans

Attachment 4. Resumes, Curricula Vitae, Qualifications of Project Team

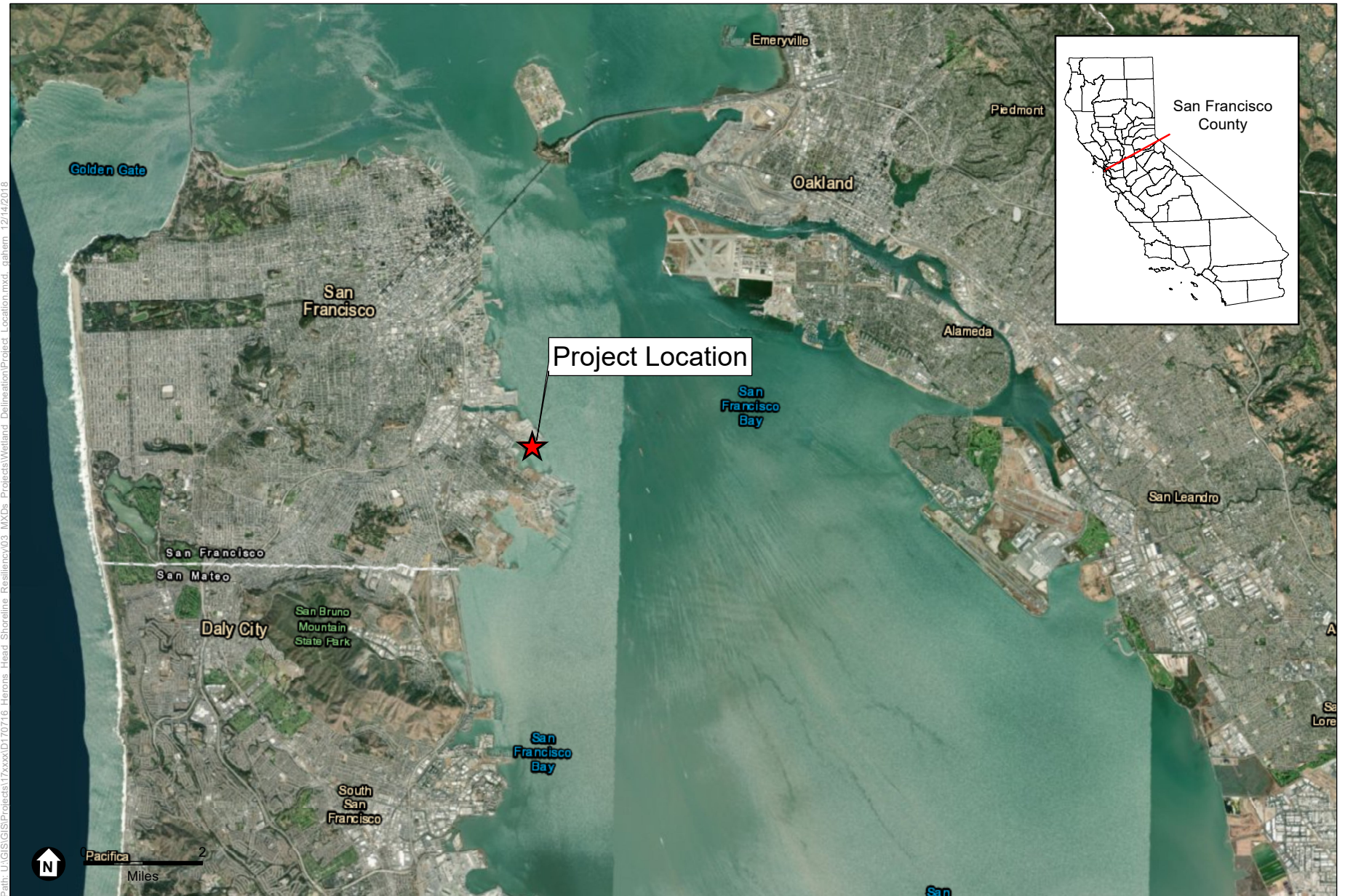
Attachment 5. CEQA and Environmental Compliance Form

Attachment 6. Letters of Support

Attachment 7. Matching Funds

Attachment 8. Construction Cost Detail

Attachment 9. California Conservation Corps Review



SOURCE: aerial (ESRI), study area (ESA 2018)

NOTE: project site located within USGS Hunters Point and San Francisco South Quads

Heron's Head Shoreline Resiliency Project

Figure 1
Project Location

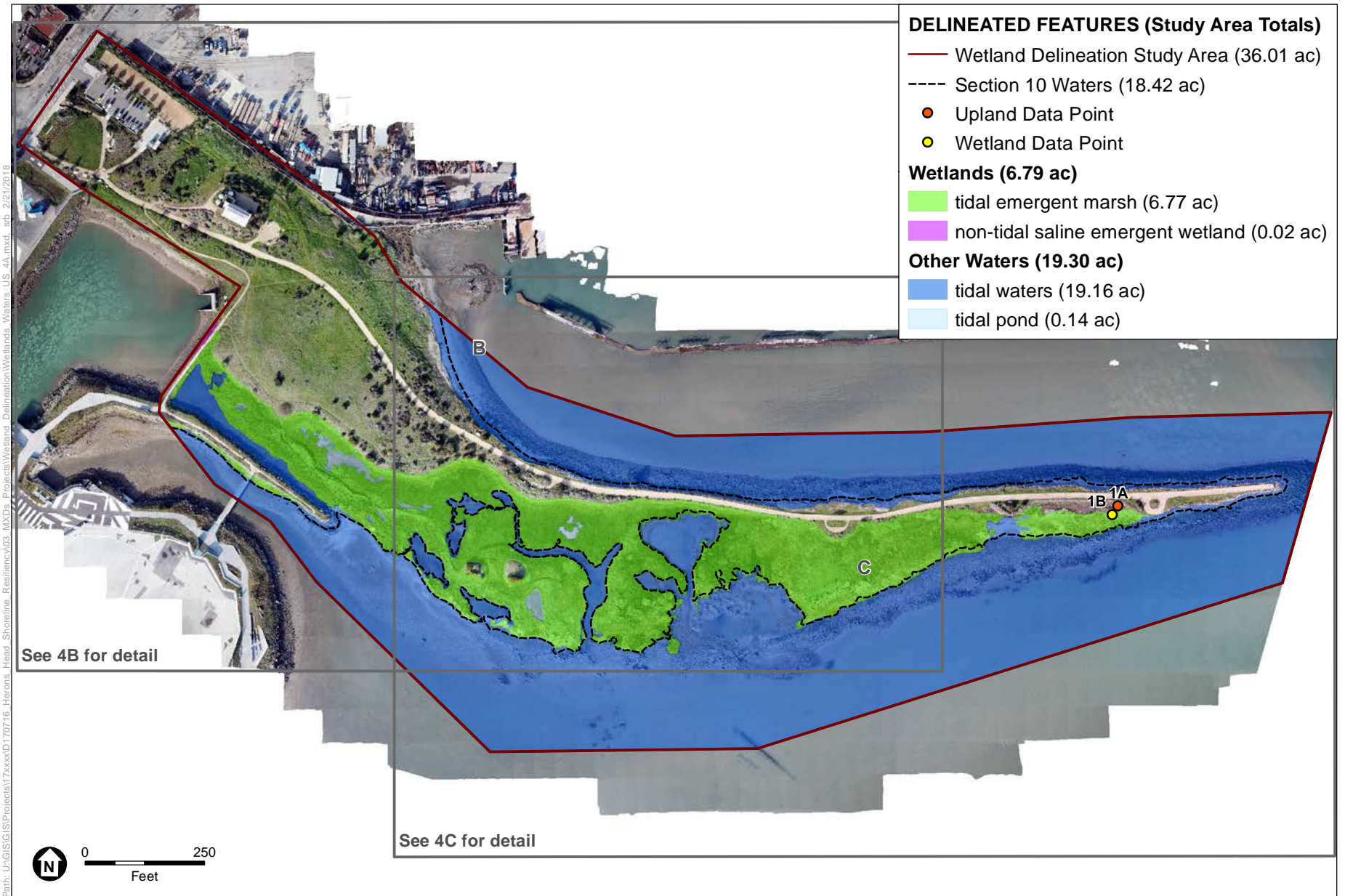




SOURCE: aerial (ESRI), study area (ESA 2018)

Heron's Head Shoreline Resiliency Project

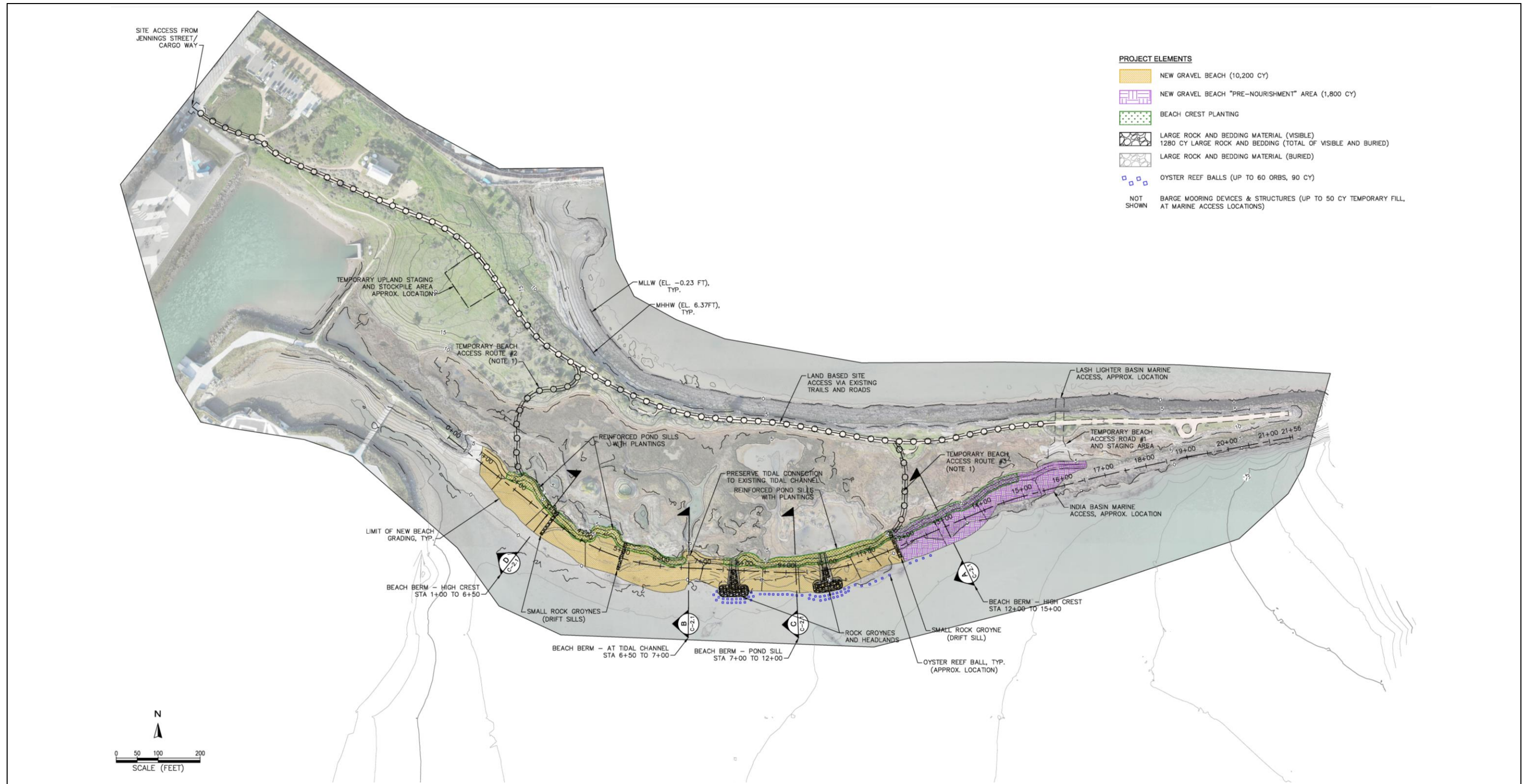
Figure 2
Project Area



SOURCE: aerial (SOA 2018), wetlands and waters (ESA 2018)

Heron's Head Shoreline Resiliency Project

Figure 3
Overview of Potentially Jurisdictional Waters of the U.S.



SOURCE: ESA, 2019

Notes:

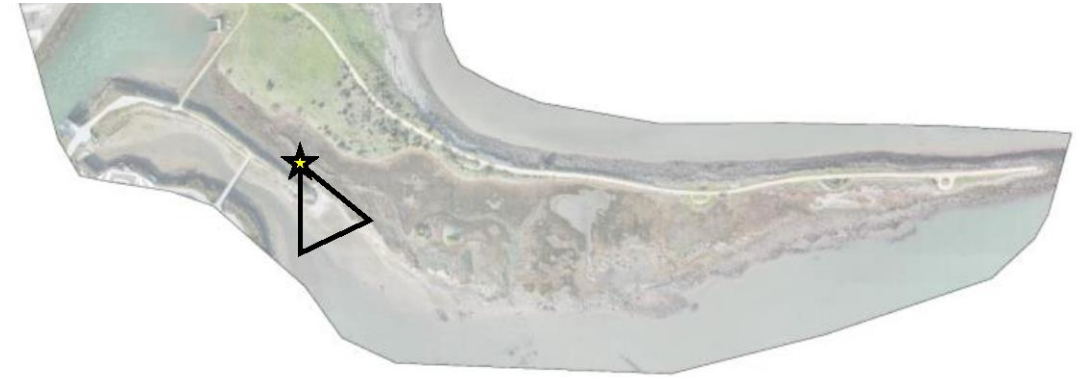
- 1) Contractor would be allowed to use Temporary beach access route #1, and if using land-based approach for material delivery, would have the option to use either Temporary beach access routes #2 or #3.

Heron's Head Shoreline. D170716

Figure 4
Project Overview



Attachment 1. Site Photo 1



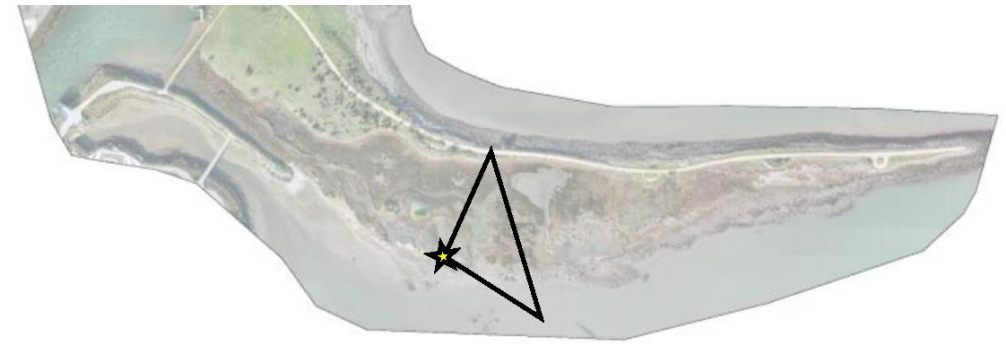
IMAGES TAKEN: 01/26/2018



IMAGE TAKEN: 01/26/2018



IMAGE TAKEN: 01/26/2018



IMAGES TAKEN: 01/26/2018