Item 4c

Staff Recommendation
June 14, 2022

Coastal Wetlands, Beaches, and Watersheds Inventory Phase 2

Justine Kimball, Senior Climate Change Program Manager

RECOMMENDED ACTION: Staff recommends that OPC approve the disbursement of up to $750,000 to the San Francisco Estuary Institute to refine and enhance the next phase of the Coastal Wetlands, Beaches, and Watersheds Inventory by integrating remote sensing data and assessing vulnerability to sea-level rise.

LOCATION: Statewide

STRATEGIC PLAN GOALS AND OBJECTIVES: Goal 1: Safeguard Coastal and Marine Ecosystems and Communities in the Face of Climate Change; Objective 1.1: Build Resiliency to Sea-Level Rise, Coastal Storms, Erosion, and Flooding; Goal 3: Enhance Coastal and Marine Biodiversity; Objective 3.1: Protect and Restore Coastal and Marine Ecosystems

EXHIBITS:

Exhibit A: Letters of Support

FINDINGS AND RESOLUTION:

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings:

> "Based on the accompanying staff report and attached exhibit(s), OPC hereby finds that:
>
> 1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the California Ocean Protection Act;
> 2) The proposed projects are consistent with OPC's Environmental License Plate Funding Guidelines (Interim Standards and Protocols, August 2013);

3) The proposed projects are not 'legal projects' that trigger the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section, section 15378."

Staff further recommends that OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

"OPC hereby approves the disbursement of up to $750,000 to the San Francisco Estuary Institute to convene a scientific working group to refine and enhance the next phase of the Coastal Wetlands, Beaches, and Watersheds Inventory by integrating remote sensing data and assessing vulnerability to sea-level rise. This authorization is subject to the condition that prior to disbursement of funds, grantees shall submit for the review and approval of the Executive Director of the OPC detailed work plans, schedules, staff requirements, budgets, and the names of any contractors or grantees intended to be used to complete the projects, as well as discrete deliverables that can be produced in intervals to ensure the projects are on target for successful completion. All projects will be developed under a shared understanding of process, management and delivery."

EXECUTIVE SUMMARY:

Staff recommends that OPC approve disbursement of up to $750,000 to refine and enhance the next phase of the Coastal Wetlands, Beaches, and Watersheds Inventory by integrating remote sensing data and assessing vulnerability to sea-level rise. OPC previously funded the San Francisco Estuary Institute (SFEI) to establish an updated mapping baseline of wetlands, beaches, dunes, rocky intertidal and eelgrass to support conservation and restoration. This next phase of work presents an opportunity to leverage remote sensing expertise from both SFEI and NASA's Jet Propulsion Laboratory (JPL) to further improve the inventory. Additionally, this project will result in a vulnerability assessment of these coastal habitats to sea-level rise that will support resiliency planning and investments.

PROJECT SUMMARY:

Background:

The state has lost approximately 90% of its coastal wetlands due primarily to habitat destruction. Coastal wetlands provide critical habitats for numerous endangered and threatened species, nurseries for marine life, flood protection, water quality improvement, and carbon sequestration and are also threatened by sea-level rise. To turn the tide on these losses, increase coastal resilience and adapt to sea-level rise, Strategic Plan Target 1.1.7 commits OPC to working with partners to ensure an additional 10,000 acres of coastal wetlands will be protected, restored or created by 2025, and increase the acreage of coastal

wetlands in California by 20% by 2030 and 50% by 2040. OPC has also committed to increasing the acreage of eelgrass by 1,000 acres and develop beach and rocky intertidal resiliency plans.

In September 2020, OPC approved disbursement of $275,000 for the San Francisco Estuary Institute (SFEI) to support Phase 1 of the Coastal Wetlands, Beaches and Watershed Inventory. SFEI is the creator and steward of the California Aquatic Resource Inventory (CARI), a Geographic Information System dataset of surface waters and their riparian areas consisting of polygon and line features with data-rich attributes that can be used for developing broad- or fine-scale landscape summaries of coastal habitats. This statewide dataset provides the best available map of state surface waters and serves as the base map in EcoAtlas to coordinate monitoring and assessment at the landscape scale across federal, state, and local agencies, while providing enough detail to inform local land use planning. This digital inventory includes the shallow subtidal, intertidal and inland wetlands; estuaries; beaches; and watersheds draining directly to the California coast, including the inland Delta of the San Francisco Bay. The detailed and standardized mapping methodologies, classification system, and links to the State Wetland and Riparian Area Monitoring Plan (WRAMP) and Wetland and Riparian Area Protection Policy (WRAPP) provide an ideal starting data set and framework for tracking coastal habitats such as wetlands, beaches, dunes, rocky intertidal and eelgrass.

During this first phase, CARI was updated using the most up to date available data relevant to coastal habitats. This update established a mapping baseline of wetlands, beaches, dunes, rocky intertidal and eelgrass which will be highlighted on a dashboard interface, to support conservation and restoration. Identification and review of available data was supported by a subcommittee of the California Wetlands Monitoring Workgroup (CWMW). CWMW subcommittee members provided statewide expertise on refinement and enhancement of CARI. The subcommittee membership consists of state and federal agencies, including but not limited to, the State Water Resources Control Board, U.S. Environmental Protection Agency, California Department of Fish and Wildlife, and the Ocean Protection Council. One of the outcomes of this effort was developing a better understanding of the age and type of coastal habitat data suitable for statewide mapping. One finding was that a significant portion of the data used for the coastal habitat mapping project was over 15 years old: not ideal for making management decisions to build California's coastal resiliency and better conserve coastal habitats. While not in the scope of the project, remote sensing capabilities were identified as a promising approach to fill spatial and temporal gaps in data, as well as the potential of automated mapping.

Project Summary:
Phase 2 of the Coastal Wetlands, Beaches, and Watersheds Inventory presents an opportunity to leverage remote sensing expertise from both SFEI and NASA's Jet Propulsion Laboratory (JPL) to further improve the inventory. This partnership combines SFEI's reporting capabilities, and its stewardship of the CARI data and classification system, with the vast remote sensing expertise and capabilities of JPL. Phase 2 consists of three major tasks:

- Task 1. Integrate remote sensing approaches to enhance the accuracy and data richness of the features included in the digital inventory.
- Task 2. Conduct a sea-level rise vulnerability assessment using the improved Wetlands, Beaches, and Watersheds Inventory.
- Task 3. Complete analysis, interpretation, and reporting of vulnerability assessment results for integration with OPC efforts.

This project presents an opportunity to update and enhance the existing SFEI coastal habitats classification maps with available remote sensing capabilities. The mapping effort will be focused on identifying beaches, dunes, rocky shores, estuarine wetlands, and eelgrass data. These maps will be developed at 10-meter resolution or higher using a combination of radar and optical satellite and airborne sensors. This project provides an opportunity to explore and incorporate state-of-the science mapping methodologies, including machine learning and other aspects of artificial intelligence, to help realize the potential of automated mapping. To ensure that mapping is consistent and efficient, SFEI will solicit ongoing technical advice from leading experts in relevant science and technology through collaboration between SFEI and NASA JPL staff and researchers to utilize suitable and effective remote sensing approaches; continuing to follow, and modify as appropriate, the Standard Operating Procedures (SOP) of CARI which were developed by the CWMW subcommittee; and continued guidance from the subcommittee of the CWMW.

The generated maps and datasets will then be tied to scenarios of future sea-level rise to assess coastal impacts and vulnerabilities. Initially, the five sea-level scenarios (Low to High) produced by the "2022 Sea Level Rise Technical Report" will be utilized. These scenarios are defined by target values of global mean sea level in 2100, but encompass localized information for each tide gauge and on a 1-degree grid around the U.S. coastlines. Assessments will be provided along the full scenario trajectory from present to 2150 at one-year increments. Where appropriate and available, additional sea level contribution of natural variability will be included on top of the baseline increase covered by the scenarios. When the updated California technical guidance for future sea-level rise in California is developed, the scenarios can be updated in place of those from the national-level report. The vulnerability assessment will provide a statewide analysis of coastal habitat areas that are particularly threatened, as well as opportunities for

upland migration and restoration. In addition, the vulnerability assessment will provide site specific information on individual beaches, wetlands, and other coastal habitats that will be instrumental for local government planning efforts and public education efforts. The vulnerability assessment is a critical step in supporting development of OPC's Wetland Action Plan, Beach Resiliency Plan, and Rocky Intertidal Action Plan as required in the Strategic Plan. The results will also inform the development of the Sea-level Rise Technical Guidance Update.

About the Grantee and Collaborators:
SFEI is a nonprofit 501(c)(3) organization founded through the San Francisco Estuary Project of USEPA Region 9 to provide independent science to assess and improve the health and resilience of natural and human communities of the San Francisco Estuary, California, and beyond. SFEI administers the Aquatic Science Center, a Joint Powers Authority created by the State Water Resources Control Board and the Bay Area Clean Water Agencies to assist with the efficient delivery of scientific, monitoring, and information management support functions. SFEI employs 70 scientists and technicians who oversee an annual budget of over $7,000,000 for innovative programs in Clean Water, Resilient Landscapes, and Environmental Informatics. Among its many accomplishments over the last 25 years, SFEI has led the development of the Bay Area, Delta, and statewide aquatic resource inventories. SFEI will leverage its scientific and technical expertise and partnerships to also lead this new inventory of the wetlands, beaches, and watersheds of coastal California.

JPL is a not for profit, federally funded research and development center (FFRDC) operated by Caltech for NASA under a prime contract. JPL's primary mission is focused on the development and operation of robotic spacecraft to explore the Earth, our Solar System, and the Universe. It also conducts a wide range of sustaining technology and scientific research to advance the capabilities of future space missions. JPL leads a number of Earth observing satellite and airborne missions, which use state of the art technology to acquire measurements that help advance science and applications. JPL will leverage its scientific and technical expertise to update and enhance the new coastal habitat classification maps, working under the leadership of SFEI.

Project Timeline:
This project will be completed from August 2022 to August 2024.

Project Financing:
Staff recommends that OPC authorize encumbrance of up to $750,000 to the San Francisco Estuary Institute to refine and enhance the Coastal Wetlands, Beaches, and Watersheds Inventory by integrating remote sensing data and assessing vulnerability to sea-level rise.

PROJECT FINANCING:

Ocean Protection Council	$750,000
TOTAL	**$750,000**

The anticipated source of funds will be from the Ocean Protection Council's Fiscal Year 2018/2019 appropriation of California Environmental License Plate Funds (ELPF). Using these funds to support this project is consistent with the California Ocean Protection Act, Section 35650(b), as well as OPC's Strategic Plan and Grant Program Funding Guidelines as discussed in more detail in the following section.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

The various projects are consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because they are consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which:

- Improve the management of fisheries and/or foster sustainable fisheries.
- Improve coastal water quality.
- Improve management, conservation, and protection of coastal waters and ocean ecosystems.
- Provide monitoring and scientific data to improve state efforts to protect and conserve ocean resources.
- Address coastal water contamination from biological pathogens.
- Provide funding for adaptive management, planning coordination, monitoring, research, and other necessary activities to minimize the adverse impacts of climate change on California's ocean ecosystem.

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA):

The various proposed projects are not 'legal projects' that triggers the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section 21068 and Title 14 of the California Code of Regulations, section 15378. If any were determined to be a 'legal project' under CEQA, the proposed project(s) are categorically exempt from review under CEQA pursuant to 14 Cal. Code of Regulations Section 15306 because the projects involve information collection, consisting of data collection, research, and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval by OPC.