CALIFORNIA OCEAN PROTECTION COUNCIL

Item 4b

Staff Recommendation
April 24, 2018

Climate Change Effects on Natural Sediment Transport to the Coast: Implications for Coastal Management

Chris Potter, Program Manager

RECOMMENDED ACTION: Authorization to disburse up to $475,000 to the Southern California Coastal Water Research Project (SCCWRP) to complete a study that investigates and models the effects of climate change on natural sediment transport to the coast.

LOCATION: The coastal watersheds, estuaries, and coastal ocean waters of San Diego, Orange, Ventura, Santa Barbara, Monterey, Santa Cruz, Sonoma, Mendocino, and Humboldt Counties

STRATEGIC PLAN OBJECTIVE(S): The proposed project addresses Ocean Protection Council Strategic Plan Objective 11.2: Increase the availability of data and tools that can influence sediment-related planning decisions.

EXHIBITS

Exhibit A: Project Location and Site Map

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), the Ocean Protection Council hereby finds that:

1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act.
2) The proposed projects are consistent with the Ocean Protection Council's grant program funding guidelines (Interim Standards and Protocols, August 2013).
3) The proposed projects are not 'legal projects' that trigger the California Environmental Quality Act pursuant to Public Resources Code section 21068 and Title 14 of the California Code of Regulations, sections 15304 and 15306."

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

"The California Ocean Protection Council hereby approves the disbursement of up to $475,000 to the Southern California Coastal Water Research Project (SCCWRP) to complete a study that investigates and models the effects of climate change on natural sediment transport to the coast. This authorization is subject to the condition that prior to disbursement of funds SCCWRP 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 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."

PROJECT SUMMARY:

SCCWRP in collaboration with the University of California at Davis (U.C. Davis) and the University of California at Irvine (U.C. Irvine) will complete a study that investigates and models the effects of climate change on natural sediment transport to the coast. In addition, the study will demonstrate an integrated approach to sediment management that considers sediment production and transport processes from watersheds through coastal wetlands to the coastal ocean. It is important to note that the proposed study would be conducted in close collaboration with two National Oceanic and Atmospheric Administration (NOAA) funded grants to SCCWRP and U.C, Irvine totaling $2.2 million.

The study will be conducted in two phases. During the first phase, SCCWRP will investigate the San Diego Creek and Tijuana River watersheds. Specifically, SCCWRP will develop models to assess how the rates and timing of sediment flux from these two watersheds into their respective estuaries change in response to climatic cycles and management practice. In addition, the modeling will indicate how much sediment is accumulating inside estuaries or exiting to the ocean, and how near-shore sediment transport affects plume trajectories (at the river mouth).

In the second phase, the methods and results developed during the first phase will be simplified to apply to a range of river systems, such as the Eel, Navarro, Russian, Scott, San Lorenzo, Salinas, Carmel, Santa Maria, and Ventura, where information may be incomplete. The generalized findings will be applicable to coastal resource managers where information is currently lacking to plan for climate change impacts to beaches and wetlands.

Information derived from this study would be useful in determining potential future needs for capital improvements and investments on the coast; e.g., wetlands restoration, sand retention devices.

Background: Alteration of sediment delivery to the coast is one of the most important factors determining the resiliency of coastal resources impacted by sea level rise and climate change. Coordinated sediment management is frequently difficult to achieve across agencies with different objectives and mandates. This presents a challenge because beaches, estuaries and associated coastal wetlands, by definition, are connected in a constant state of flux between erosional and depositional forces. Their resiliency relies on appropriate amounts of sediment supply to compensate for tidal

flooding and associated erosion. Problems can arise when the dynamic sediment balance is perturbed too greatly. Too much sediment can result in coastal wetlands converting to upland habitat or beaches becoming undesirable for recreation. Too little sediment can result in wetlands eroding or converting to open water habitat or beaches washing away. Maintaining the delicate balance is particularly challenging along the California coast where beaches and coastal wetlands are affected by inundation associated with sea level rise and altered sediment inflows due to watershed urbanization and management responses to the effects of urbanization. Ensuring long-term ecological health and recreational opportunities of California beaches and coastal wetlands relies on the ability of scientists and engineers to understand and manage sediment flux in an integrated manner that achieves the appropriate balance over time.

There is a pressing need for a project of this nature because in numerous instances sediment and watershed management plans are currently being developed without the benefit of an integrated approach. For example, stormwater programs, including total maximum daily loads (aka TMDLs), are aiming to reduce sediment yield to estuaries, wetland restoration programs are allocating resources to dredge and redistribute sediment within estuaries to accommodate sea level rise, and shoreline projects are importing sediment for beach nourishment. Lack of coordination is largely due to the lack of an integrated technical approach; however, the implications range from inefficiency to programs working at cross-purposes. Member agencies of the California Coastal Sediment Management Workgroup (CSMW), including OPC, will use the results of this study to inform sediment management programs across local, state, and federal agencies.

Site Description: The study will investigate the San Diego Creek and Tijuana River watersheds during the first phase. In the second phase, study methods and results will be simplified to apply to a range of river systems, such as the Eel, Navarro, Russian, Scott, San Lorenzo, Salinas, Carmel, Santa Maria, and Ventura. In general, the findings from the first phase can be scaled to estuaries throughout the state.

Project Timeline: Implementation of the project will begin in June 2018 and will take approximately 2.5 years to complete.

PROJECT FINANCING:

Staff recommends that the Ocean Protection Council authorize disbursement of up to $475,000 to the Southern California Coastal Water Research Project to complete a study.

Ocean Protection Council	$475,000
National Oceanic and Atmospheric Administration (grants to UC Irvine and State Coastal Conservancy)	$2,200,000
TOTAL	**$2,675,000**

The anticipated source of funds will be from the Ocean Protection Council's appropriation of the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84). Proposition 84 authorizes the use of funds for purposes consistent with Section 35650

of the Public Resources Code, establishing the California Ocean Protection Trust Fund (Pub. Res. Code § 75060(g)). Under Section 35650(b), Ocean Protection Trust Fund monies may be expended for projects authorized by the OPC that are identified as appropriate Trust Fund purposes, as specified. The project is consistent with the Trust Fund purposes as discussed in the following section.

Leverage of OPC funds: This project would leverage $2.2 million in grant funds from the National Oceanic and Atmospheric Administration to the State Coastal Conservancy and U.C. Irvine for two projects. The first project focuses on developing tools and a process for informing beneficial reuse of sediment for coastal protection and restoration. The second project focuses on improving understanding of resiliency and adaptation/management options for coastal wetlands and nearshore resources, focusing on intermittently opening systems. SCCWRP is a subgrantee on both projects.

The proposed project would enhance both projects by 1) supporting watershed modeling not currently included in either scope and 2) promoting the development of an integrated approach that couples the two NOAA funded efforts.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:
The proposed project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because it is consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which:

1) Eliminate or reduce threats to coastal and ocean ecosystems, habitats, and species.
2) Improve management, conservation, and protection of coastal waters and ocean ecosystems.
3) Protect, conserve, and restore coastal waters and ocean ecosystems.
4) Fund adaptive management, planning, coordination, monitoring, research, and other necessary activities to minimize the adverse impacts of climate change on California's ocean ecosystem.

As discussed above, this project will promote the activities of the California Coastal Sediment Management Workgroup (CSMW). The CSMW is a state-federal collaborative co-chaired by the Ocean Protection Council and the U.S. Army Corps of Engineers. Workgroup members collaborate on planning, funding, and implementation of projects that reduce shoreline erosion and coastal storm damage, restore and protect beaches, and other coastal environments. The CSMW also focuses on restoring natural sediment supply to the coast (e.g., dam removal) and optimizing the beneficial reuse of sand (e.g., harbor deepening projects).

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:
This project implements Focal Area "Coastal and Ocean Impact from Land", the goal of which is to reduce the negative impacts of land-based activities on marine ecosystems and the state's coastal and ocean economy. Continental shelf sand resources may be utilized to restore wetlands, rebuild beaches and assist coastal recovery from acute events such as El Niño-related storms as well as chronic erosion from currents, wave activity, tides, sea-level rise and human interventions (e.g., dams and stream channelization) that have impeded natural sediment transport along the coast.

The proposed project also supports three OPC goals; (1) *Goal A: Science-based decision making* by addressing *Issue 1: Improving the Use and Sharing of Scientific and Geospatial Information* through our integrated assessment approach; (2) *Goal B: Climate change adaptation* by addressing *Issue 4: Impacts to Coastal Communities by Storms, Erosion, and Sea-Level Rise* by proposing solutions to allow coastal wetlands to accommodate sea level rise; and (3) *Goal D: Coastal and ocean impacts from land* by addressing *Issue 11: Improved sediment management* by increasing the availability of data and tools that can influence sediment management via an engaged stakeholder process.

CONSISTENCY WITH PROPOSITION 84 (The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006; Public Resources Code §75060(g)

The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84) provides funding for the protection of beaches, bays, and coastal waters. The proposed project meets the requirements of Chapters 7 and 9 of Prop 84, *Protection of Beaches, Bays and Coastal Waters Programs* and *Sustainable Communities and Climate Change Reduction Programs*. The grant would be administered by the Southern California Coastal Water Research Project (SCCWRP), a joint powers authority comprised entirely of public agencies, and done in coordination with the U.C. Irvine and U.C. Davis. Planning products would be made broadly available to local agencies to inform their decisions on sediment management and local coastal planning.

CONSISTENCY WITH THE OPC'S GRANT PROGRAM FUNDING GUIDELINES:

The proposed project is consistent with the OPC's Grant Program Funding Guidelines for Proposition 84 funds, in the following respects:

Required Criteria

1. Directly relate to the ocean, coast, associated estuaries, or coastal-draining watersheds: This project would benefit coastal communities on the coast of San Diego, San Mateo, Mendocino, Ventura, Marin, Humboldt and Sonoma Counties.
2. Support of the public: This project is supported by the National Oceanic and Atmospheric Administration and the Coast Sediment Management Workgroup, which is comprised of several local, state and federal agencies and organizations.
3. Greater-than-local interest is demonstrated by the fact that the results from the project will applicable to coastal watersheds and waters along the entire California coast.

Additional Criteria

4. Improvements to management approaches or techniques: Planning products (e.g., watershed and sediment transport models) resulting from this study would be made broadly available to state and local agencies and could be used to inform their decisions on sediment management and local coastal planning.
5. Resolution of more than one issue: The proposed study will enhance our ability to predict changes in sediment transport to the coast associated with climate change, along with changing land use and water management practices. It will also greatly improve our ability to understand and predict the effect of sediment management in estuaries and to inform critical management

decisions regarding wetland restoration.

6. Leverage: This project is being leveraged with approximately $2.2 million in grant funding from NOAA to U.C. Irvine and the State Coastal Conservancy.
7. Timeliness: Timely funding of this project would sustain the momentum of the NOAA-funded work currently being undertaken by SCCWRP and its partners. Also, as discussed above, there is a pressing need for this project because in many instances sediment-related management plans are being developed without the benefit of an integrated sediment and watershed management approach.
8. Coordination: The primary outlet for project coordination will be the CSMW, which is co-chaired by the OPC and the U.S. Army Corps of Engineers.

COMPLIANCE WITH CEQA:

The proposed project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only 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 the OPC.

Exhibit A: Project Location and Site Maps