

COASTAL CONSERVANCY

Staff Recommendation  
September 28, 2017

**ASSESSING SEDIMENT DYNAMICS AND SALT MARSH SUSTAINABILITY  
IN HUMBOLDT BAY: AUGMENTATION AND SCOPE EXPANSION**

15-016-02  
Project Manager: Joel Gerwein

**RECOMMENDED ACTION:** Authorization to disburse up to \$260,000 in federal grant funds from the U.S. Environmental Protection Agency to augment an existing contract with the U.S. Geological Survey to expand an assessment of sediment supply, sediment contaminants, water quality, and salt marsh sustainability in Humboldt Bay in Humboldt County.

**LOCATION:** Humboldt Bay, Humboldt County

**PROGRAM CATEGORY:** Climate Change, Coastal and Marine Resource Protection

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**EXHIBITS**

Exhibit 1: [Project Location](#)

Exhibit 2: [Staff Recommendation of October 2015](#)

Exhibit 3: [Project Letters](#)

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**RESOLUTION AND FINDINGS:**

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Chapter 5.5 and Section 31113 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of up to two hundred sixty thousand dollars (\$260,000) in federal grant funds from the U.S. Environmental Protection Agency (EPA) to augment an existing contract with the U.S. Geological Survey (USGS) to expand the ongoing assessment of sediment supply, sediment contaminants, water quality, and salt marsh sustainability in Humboldt Bay.

Prior to the Conservancy’s disbursement of funds, USGS shall submit for the approval of the Conservancy’s Executive Officer the names and qualifications of any subcontractors to be employed and evidence that all permits, approvals, and any access agreements necessary for the work have been obtained.”

Staff further recommends that the Conservancy adopt the following findings:

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

1. The proposed authorization is consistent with Chapter 5.5 (Coastal and Marine Resource Protection) and Section 31113 (climate change) of Division 21 of the Public Resources Code.
  2. The proposed project is consistent with the current Conservancy Project Selection Criteria and Guidelines.”
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### **PROJECT SUMMARY:**

Under the proposed authorization, the Conservancy would augment an existing contract with the U.S. Geological Survey to continue and expand ongoing research regarding sediment dynamics in Humboldt Bay (Exhibit 1). The project will help assess the sustainability of tidal marsh and other tidal habitats in the face of anticipated sea level rise (SLR) caused by climate change, and to communicate research findings to resource managers in the region. Funding under this authorization will be provided by a \$275,000 EPA Wetland Program Development Grant to the Conservancy, of which \$260,000 would pay for contracted work by USGS. The remaining grant funds (\$15,000) would pay for the Conservancy’s project management costs. The Conservancy previously authorized the acceptance and disbursement of \$372,984 in EPA funds for the first phase of this work on October 1, 2015 (Exhibit 2).

For background on the research conducted under this contract, see the attached staff recommendation of October 1, 2015. Preliminary results from the initial funding estimate historic and current marsh accretion rates ranging from 2.9-4.4 mm/yr. Accretion rates appear be higher at North Bay sites than at Entrance Bay and South Bay sites by ~1 mm/yr. This variation is significant, given that sea level rise in Humboldt Bay is estimated at 2.5-5.8 mm/yr in different locations around Humboldt Bay<sup>1</sup>.

Work proposed under this authorization includes:

- 1) An additional two years of water quality and turbidity monitoring to better inform modeling of future sediment supply and accretion rates under different climate scenarios;
- 2) An additional two years of direct accretion rate measurement to improve accretion rate estimates;
- 3) Estimates of salt marsh erosion rates at five locations around the Bay based on comparison of digital elevation models from 2010 and 2018; and
- 4) Measurement of carbon sequestration rates in Humboldt Bay marshes to characterize the impacts on carbon sinks of marsh accretion and erosion.

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<sup>1</sup> Relative sea level rise (RSLR) rates vary around Humboldt Bay. There is significant variation in Vertical Land Motion (VLM) because a plate boundary crosses this region. There is a north-south gradient of VLM with Crescent City experiencing sufficient tectonic uplift to result in negative relative sea level rise (i.e. the sea level is going down relative to the land) and Hookton Slough in the South Bay experiencing tectonic subsidence resulting in the highest RSLR rate in California.

As with the previously funded work, the project will prioritize interpretation and dissemination of research results to land managers and resource agencies, to ensure that research findings will be applied to wetland management in the Humboldt Bay area. Results will be disseminated through 1) in-person presentations at one or more local workshops to disseminate findings to stakeholders and managers and at a national conference to place the findings in a larger regional picture; 2) publicly available physical data relevant to sustainable salt marsh management in Humboldt Bay; 3) a USGS interpretive report; and 4) a white paper prepared by UC Sea Grant, with assistance from USGS and the Conservancy, describing the management implications and summary of findings.

Project outcomes are expected to include: 1) improved understanding of the current health and condition of Humboldt Bay salt marshes in terms of organic matter accumulation and inorganic sedimentation, which are the two main components of vertical marsh accretion; 2) improved prioritization of marsh restoration and protection in light of SLR impacts; and 3) increased understanding of how climate change and SLR will affect Humboldt Bay marsh sustainability. This project will directly inform the design of restoration and adaptation projects currently in the planning process, such as Arcata's Living Shoreline Project, funded through a Conservancy Climate Ready grant, and Eureka's proposed restoration of the Elk River Estuary.

Scientists from two USGS offices (California Water Science Center and Western Ecological Research Center) will undertake the additional work. The Conservancy will provide project oversight and contract administration.

**Site Description:** See previous staff recommendation (Exhibit 2).

**Project History:** The Conservancy authorized the acceptance of \$359,054 in EPA grant funds and contracted with USGS, UCLA and California Sea Grant for the first phase of this work in October 2015. In addition, the Conservancy has engaged multiple partners to plan for habitat protection and restoration and climate change adaptation in Humboldt Bay. Further detail and information on related projects can be found in the October 1, 2015 staff recommendation.

## **PROJECT FINANCING**

<b>U.S. EPA (this authorization)</b>	<b>\$275,000</b>
<b>U.S. EPA (prior authorization)</b>	<b>\$359,054</b>
<b>Project Total</b>	<b>\$634,054</b>

The EPA contributed \$359,054 towards the first phase of the project. The EPA will contribute up to \$275,000 towards this phase of the project, including up to \$15,000 to cover Conservancy costs for project management.

## **CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:**

This project remains consistent with Sections 31104, 31113 and 31220 as discussed in the October 1, 2015 staff recommendation.

**CONSISTENCY WITH GOALS & OBJECTIVES OF THE CONSERVANCY'S 2013 STRATEGIC PLAN, AS MODIFIED 6/25/2015:**

See October 1, 2015 staff recommendation (Exhibit 2).

**CONSISTENCY WITH CONSERVANCY'S PROJECT SELECTION CRITERIA & GUIDELINES:**

See October 1, 2015 staff recommendation (Exhibit 2).

**CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:**

See October 1, 2015 staff recommendation (Exhibit 2).

**CONSISTENCY WITH LOCAL WATERSHED MANAGEMENT PLAN/ STATE WATER QUALITY CONTROL PLAN:**

See October 1, 2015 staff recommendation (Exhibit 2).

**COMPLIANCE WITH CEQA:** The project remains categorically exempt from the California Environmental Quality Act (CEQA), pursuant to 14 California Code of Regulations Section 15306. Consistent with Section 15306, the project will only involve basic data collection, research, and resource evaluation activities, which do not result in a serious or major disturbance to an environmental resource. Project activities are part of a study that may lead to future actions, which a public agency has not yet approved, adopted, or funded. Upon approval, staff will file a Notice of Exemption for this amendment to the project.