

COASTAL CONSERVANCY

Staff Recommendation
January 19, 2012

HUMBOLDT BAY DREDGED MATERIALS REUSE FEASIBILITY STUDY

Project No. 11-065-01
Project Manager: Joel Gerwein

RECOMMENDED ACTION: Authorization to disburse up to \$85,000 to the Humboldt Bay Harbor, Recreation and Conservation District to study the feasibility of reusing dredged materials for tidal marsh restoration and climate change adaptation in Humboldt Bay.

LOCATION: Humboldt Bay, Humboldt County

PROGRAM CATEGORY: Integrated Coastal and Marine Resources Protection

EXHIBITS

Exhibit 1: [Project Location and Site Map](#)

Exhibit 2: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31111 and 31220 of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes disbursement of up to eighty-five thousand dollars (\$85,000.00) to the Humboldt Bay Harbor, Recreation and Conservation District (“Harbor District”) to study the feasibility of utilizing dredged materials for tidal marsh restoration and climate change adaptation projects in Humboldt Bay, subject to the condition that prior to disbursement of Conservancy funds, the Harbor District shall submit for the review and written approval of the Executive Officer of the Conservancy a final work program, including budget and schedule, and the names of any contractors to be employed.”

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 project is consistent with Chapter 5.5 of Division 21 of the Public Resources Code (Section 31220).
 2. The proposed project is consistent with the current Project Selection Criteria and Guidelines.”
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PROJECT SUMMARY:

Staff recommends that the Conservancy authorize disbursement of up to \$85,000 to the Humboldt Bay Harbor, Recreation and Conservation District (“Harbor District”) to study the feasibility of utilizing dredged materials for tidal marsh restoration and climate change adaptation projects in Humboldt Bay. The study would examine the feasibility of utilizing dredged materials to restore tidal marsh in at least three specific locations. For these locations, the study would include an estimate of the amount of sediment needed to restore the area to salt marsh, an analysis of the suitability of available dredged materials for the restoration, and a cost estimate for transferring dredged materials to the site. In addition, the study would evaluate the potential to utilize dredged materials for climate change adaptation projects to reduce the vulnerability of at-risk resources to sea level rise. Such projects could include the creation of marshes on the Bay side of levees, or the creation of brackish marshes and set-back levees on the landward-side of levees. Climate change adaptation approaches involving marsh creation can reduce vulnerability to sea level rise while providing environmental benefits, and have been evaluated for use at sites in San Francisco Bay, such as the Hayward Shoreline¹. A preliminary evaluation of these approaches to climate change adaptation and sediment reuse for Humboldt Bay has been provided in the 2011 Draft Coastal Regional Sediment Management Plan (CRSMP) for the Eureka Littoral Cell, prepared by Moffat and Nichol for the U.S. Army Corps of Engineers (pp. 66-70).

During the late-nineteenth and early twentieth centuries, diking and filling for agricultural use reduced Humboldt Bay salt marshes from an estimated 10,000 acres to only 850 acres today, less than 10% of the estimated historic extent. Diking and draining of former tidelands has led to their subsidence over time. Marsh soils typically have high organic matter content because the anaerobic conditions associated with frequent flooding are not conducive to decomposition. When tidal inundation is restricted or eliminated, the organic matter in the soil breaks down and the soil subsides, often resulting in lower elevations in diked former tidelands than in adjacent intertidal coastal marshes. For example, elevations in diked former tidelands at the White Slough Unit (Exhibit 1) of the Humboldt Bay National Wildlife Refuge (HBNWR) are approximately three feet lower than elevations of tidal marsh adjacent to and outside the dikes. If dikes around these areas are breached without fill material being added to the former tidelands, they would become mudflats or subtidal habitats instead of tidal marsh. Natural resource agencies such as HBNWR seek to restore diked former tidelands in areas like White Slough, but are constrained by the lack of fill material to raise surface elevations adequately to restore tidal marsh. Dredged materials may provide suitable fill to raise the elevations of these areas. Dredged materials have been used successfully for wetland restoration at the Sonoma Baylands and at the Hamilton Wetlands, both Conservancy funded projects in Northern San Francisco Bay.

Dredged materials in Humboldt Bay are generated by two distinct types of dredging operations: 1) maintenance dredging of the federally-authorized navigation channels and 2) maintenance

¹ Preliminary Study of the Effect of Sea Level Rise on the Resources of the Hayward Shoreline (March 2010) prepared by Phillip Williams and Associates for the Hayward Area Shoreline Planning Association.

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dredging conducted at a variety of public and private facilities outside of the federally authorized channels (“small scale dredging”). Dredged material from the federal channels is composed primarily of coarse sediment and, since 1990, has been transported to the approved Humboldt Open Ocean Disposal Site (HOODS) approximately 3 nautical miles northwest of the entrance to Humboldt Bay. In order to keep sediment in the littoral cell and decrease the potential recession of the North Spit of Humboldt Bay, the US Army Corps of Engineers plans to begin placing dredged material from the federal channels in a temporary nearshore disposal site in 2012, located 3.5 miles north of the entrance to Humboldt Bay (Exhibit 1). Since the 1970s, dredged material from small scale dredging has been transported to upland disposal sites, or on nearby beaches during the winter months. Small scale dredging generates between 210,000 and 300,000 cubic yards of materials every ten years. Approximately 200,000 cubic yards of the total comes from the Woodley Island Marina and the Eureka Public Marina, the two largest facilities where small scale dredging occurs. Dredged material can be a resource allowing for tidal marsh restoration and climate change adaptation projects, rather than a waste product requiring disposal.

The Harbor District is a county-wide special district with permit jurisdiction over all tide, submerged and other lands granted to the Harbor District including all of Humboldt Bay. It was created by the state legislature in 1970, and approved by the Humboldt County electorate in 1973 to oversee development of harbors in Humboldt Bay for benefit of the public. Along with the US Army Corps of Engineers and the California Coastal Commission, the Harbor District regulates dredging and disposal activities in Humboldt Bay. Its role in maintaining the Port of Humboldt Bay and conserving Humboldt Bay’s natural resources makes it uniquely qualified to carry out this project. The Draft CRSMP for the Eureka Littoral Cell recommends that the Harbor District be the lead agency for the adoption of the final CRSMP.

Site Description: As California’s second largest natural bay and the largest estuary on the Pacific coast between San Francisco Bay and Coos Bay, Oregon, Humboldt Bay (Exhibit 1) is a complex ecosystem and valuable resource for California and the nation because of its natural and environmental resources, its aesthetic appeal and recreational opportunities, its ecological services, economic benefits, and its vital transportation links. Visitors and Humboldt County residents alike value Humboldt Bay for its natural and man-made attributes. The biota associated with Humboldt Bay are diverse and ecologically significant at scales ranging from a local focus on fisheries and algal uses by local residents to a participation in hemispheric ecological patterns such as shorebird and waterfowl migration. The Bay hosts over 100 plant species, 300 invertebrate species, 100 fish species, and 200 bird species, including those that rely on the bay as they travel the Pacific Flyway. Recent studies indicate the importance of the Bay in the life cycles of commercially and recreationally important fish species, and the general level of biological vitality in the Bay has been identified as an important aesthetic and quality-of-life variable for both residents and visitors to the area.

Project History: The Conservancy has worked with the Harbor District on several planning and implementation projects to enhance natural resources and public access in Humboldt Bay. In 2000, the Conservancy granted \$100,000 to the Harbor District to prepare the Humboldt Bay Management Plan, a comprehensive plan to protect and enhance Humboldt Bay’s natural, recreational and economic resources. In 2010, the Conservancy granted \$92,000 to the Harbor District for final designs and permitting for additional access points for the Humboldt Bay Water

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Trail. Also in 2010, the Conservancy granted \$30,000 in federal funds to the Harbor District to complete technical studies to support planning for regional invasive Spartina control.

The Conservancy has been engaged with multiple partners to plan for habitat protection and restoration and climate change adaptation in Humboldt Bay. In 2006, the Conservancy made two grants to California Sea Grant for this purpose: \$75,000 to support the development of a Humboldt Bay Ecosystem Based Management (EBM) Program, and \$115,000 to prepare a Subtidal and Intertidal Habitat Goals Project. The Humboldt Bay EBM Program resulted in the formation of the Humboldt Bay Initiative (HBI), a network of Humboldt Bay agencies and organizations that is involved in planning for wetland restoration and climate change adaptation. HBI is supportive of the proposed project (Exhibit 3). This project is consistent with recommendations in the draft Intertidal Habitat Goals Report. See “Consistency with Local Watershed Management Plan” Section below. In addition, in 2010, the Conservancy contracted with Trinity Associates to map shoreline protection around Humboldt Bay to inform climate change adaptation planning.

Harbor District staff contacted the Conservancy regarding this project in July 2011, and Conservancy staff has been working with the Harbor District to develop the project since that time.

PROJECT FINANCING

Coastal Conservancy	\$85,000
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Total Project Costs	\$85,000
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The expected source of Conservancy funds for this project is the FY 08/09 appropriation to the Conservancy from 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 projects that will carry out the Conservancy’s statutory mission (Bond Statute: Public Resources Code § 75060(b), Implementing Statute: Public Resources Code § 31000 et. seq.). Consistency of the project with the Conservancy’s statutory mission is discussed below in “Consistency with Conservancy’s Enabling Legislation.” The Harbor District will provide approximately 160 hours of staff time as an in-kind contribution to the project, valued at approximately \$8,000.

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

The proposed project is consistent with Chapter 5.5 of the Conservancy’s enabling legislation (Division 21 of the Public Resources Code, Section 31220) regarding integrated coastal and marine resources protection in the following respects:

Section 31220(a) provides that the Conservancy may award grants to conduct coastal habitat protection and restoration and sediment management projects in order to improve and protect coastal and marine water quality and habitats. Consistent with this section, the Conservancy will grant funds to the Harbor District to study the feasibility of utilizing dredged materials for tidal

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marsh restoration and climate change adaptation projects in Humboldt Bay, which will enable better management of and potentially lead to protection and restoration of tidal marsh habitats in the bay.

Section 31220(a) states that projects which are consistent with Division 26.5 of the Public Resources Code shall not require consultation with the State Water Resources Control Board. Consistent with Section 35620 of Division 26.5, the project will increase the amount of baseline scientific and geospatial information regarding the resilience and vulnerability to threats of coastal ecosystems, habitats, and species. Consistent with Section 35650 of Division 26.5, the project will reduce threats to coastal ecosystems, habitats and species. Currently, diked marshes targeted for consideration in this feasibility study are threatened with conversion to mudflat if dikes fail due to storms and sea level rise. Also consistent with Section 35650 of Division 26.5, the project will improve management, conservation, and protection of coastal waters by furthering the beneficial reuse of sediment that is currently disposed off in landfills or outside the littoral cell. Also consistent with Section 35650 of Division 26.5, the project will provide funding for planning to minimize the adverse effects of sea level rise on coastal habitats.

Consistent with Section 31220(b), the project will protect or restore fish and wildlife habitat by furthering the use of dredged materials for tidal marsh restoration. Also consistent with this section, the project will contribute to the reestablishment of natural erosion and sediment cycles by retaining sediment within the littoral cell that is currently removed.

Consistent with Section 31220(c), the project is consistent with the Humboldt Bay Management Plan, the North Coast Integrated Regional Water Management Plan, and the Water Quality Control Plan for the North Coast, as discussed in “Consistency with Local Watershed Management Plan/State Water Quality Control Plan” below. Consistent with Section 31220(c), the project will include a monitoring and evaluation component, such as a requirement to report on whether the restoration and adaptation projects studied move forward, and whether the feasibility study is utilized in detailed planning of restoration and adaptation projects.

The project is also consistent with Chapter 3 of the Conservancy’s enabling legislation (Division 21 of the Public Resources Code, Sections 31100 et seq.). Consistent with Section 31111, the project involves Conservancy providing funding to a public agency to undertake a feasibility study.

CONSISTENCY WITH CONSERVANCY’S 2007 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with Goal 5, Objective 5A of the Conservancy’s 2007 Strategic Plan, the proposed project will develop a plan for the restoration of tidal marsh and enhancement of other coastal habitats in Humboldt Bay.

Consistent with Goal 6, Objective 6G of the Conservancy’s 2007 Strategic Plan, the proposed project will assist in the development of a project implementing a regional approach to sediment management, by exploring opportunities for beneficial reuse of sediment.

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

The proposed project is consistent with the current Conservancy's Project Selection Criteria and Guidelines in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** The project is broadly supported. Supporters include the Humboldt Bay Initiative, the US Fish and Wildlife Service, and the Cities of Eureka and Arcata.
4. **Location:** The proposed project would be located within the coastal zone of Humboldt County.
5. **Need:** Without Conservancy funds this project will not proceed at this time. Limited halting efforts on components of the project will go forward, but the benefits of a more focused effort with expert outside help are substantial.
6. **Greater-than-local interest:** Humboldt Bay is a resource of regional, State, national and international importance. See the "Site Description" section, above. Furthermore, the project will advance climate change adaptation planning to address sea level rise through beneficial reuse of sediments, and may thereby serve as a demonstration project for other regions.
7. **Sea level rise vulnerability:** The study will consider sea level rise effects on the longevity of salt marsh habitats to be restored, and will also evaluate potential projects for beneficial reuse of sediment to protect against sea level rise.

Additional Criteria

8. **Urgency:** The timing is very advantageous to move forward with this project now, with the Regional Sediment Management Plan for the Eureka Littoral Cell nearing completion, and the Humboldt Bay Initiative sea level rise scenario modeling effort expected in Spring of 2012.
9. **Resolution of more than one issue:** The project will advance the restoration and enhancement of salt marsh and other coastal habitats, advance climate change adaptation planning, and also explore opportunities to keep sediment within the Eureka Littoral Cell and reduce the cost of dredged materials disposal.
10. **Leverage:** See the "Project Financing" section above.
11. **Innovation:** The project will evaluate the feasibility of innovative approaches to salt marsh restoration and climate change adaptation utilizing dredged materials.
12. **Readiness:** The Harbor District has been a primary partner in the development of a Coastal Regional Sediment Management Plan (CRSMP) for the Eureka Littoral Cell. The CRSMP provided preliminary analyses of beneficial sediment reuse options. The Harbor District is therefore well positioned to move forward quickly with this project.

13. **Realization of prior Conservancy goals:** See “Project History” above.

14. **Cooperation:** The Harbor District will work with the USFWS, the County of Humboldt, and the Cities of Eureka and Arcata on the development and review of the study. The Harbor District will also conduct public meetings for the project, and will engage with landowners of sites evaluated in the study.

CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:

Portions of the project area are covered by the Local Coastal Programs of the County of Humboldt, and the Cities of Arcata and Eureka.

The Humboldt Bay Area Plan (HBAP) of the Humboldt County Local Coastal Program (LCP), certified by the California Coastal Commission in 1982, defines environmentally sensitive habitats as including “wetlands and estuaries, including Humboldt Bay and the mouth of the Mad River” (HBAP Section 3.30(B), p. 42). The HBAP cites Section 30240(a) of the California Coastal Act, stating that “environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values” (HBAP Section 3.30, p. 38). In addition, the HBAP stresses the tremendous value of salt marsh, brackish marsh, and other natural habitats for fish and wildlife in Humboldt Bay (HBAP, Section 3.30(A), pp.39-40).

The proposed project is also consistent with resource protection policies in the City of Arcata’s certified LCP and the City of Eureka’s certified LCP. Section D of the City of Arcata’s LCP, regarding wetlands and riparian resources, provides for the establishment of Wetland Buffer Areas to protect sensitive wetlands and states that the City will seek funding for restoration of degraded natural resources. The City of Eureka’s 1997 General Plan Policy Document (GPPD), which was certified by the Coastal Commission as an update to the City of Eureka’s LCP in 1999, contains several policies consistent with the project. The GPPD designates wetlands as environmentally sensitive habitat areas (GPPD Section 6.A.6, pg. B-15) and states that the City of Eureka “shall ensure that environmentally sensitive habitat areas are protected against any significant disruption of habitat values, and that only uses dependent on such resources shall be allowed within such areas” (GPPD Section 6.A.7, pg. B-15). The GPPD also states that the City of Eureka “shall maintain and, where feasible, restore biological productivity and the quality of coastal waters, streams, wetlands, and estuaries” (GPPD Section 6.A.1, pg. B-14).

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

The Harbor District adopted the Humboldt Bay Management Plan (HBMP) in 2007, which includes policies calling for addressing potential shoreline impacts and improvements related to sea level rise, the need for dredging and the re-use of dredged material in and around Humboldt Bay. The HBMP explicitly recognizes that placement of fill in tidelands and some impacts to wetlands may be authorized for specific purposes.

The Draft Coastal Regional Sediment Management Plan for the Eureka Littoral Cell (2011) discusses various options for dredged materials use, including beach restoration, creation of an upland buffer along the Bay shoreline, raising North Spit dunes to protect against tsunamis while controlling invasive beachgrass, wetlands restoration on subsided land, strengthening levees, and utilization for construction projects.

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The proposed project is also consistent with the North Coast Integrated Regional Water Management Plan, Phase I (NCIRWMP) (2007). Objective 1 of the NCIRWMP is to “conserve and enhance native salmonid populations by protecting and restoring required habitats, water quality and watershed processes.” Consistent with objective 1, the project will study the feasibility of restoring tidal marsh in Humboldt Bay that could provide valuable rearing habitat for salmonids.

The proposed project is also consistent with the Water Quality Control Plan for the North Coast (adopted by the Regional Water Quality Control Board North Coast Region in 1988 and last updated in 2007) in that it constitutes an important step towards the protection and enhancement of wildlife habitat, habitat for rare, threatened and endangered species, and estuarine habitat in Humboldt Bay. The Water Quality Control Plan for the North Coast designates wildlife habitat, rare, threatened, and endangered species habitat, and estuarine habitat as beneficial uses of Humboldt Bay (Water Quality Control Plan for the North Coast, Table 2-1, pp. 2-8 to 2-12).

COMPLIANCE WITH CEQA:

The proposed project consists of developing plans and conducting studies, and data collection.

The plans and studies components of the proposed project are statutorily exempt from review under the California Environmental Quality Act (CEQA) pursuant to 14 California Code of Regulations (CCR) Section 15262 in that they involve only feasibility or planning studies for possible future actions which have not yet been approved, adopted or funded.

The data collection component of the proposed project is categorically exempt from review under the CEQA pursuant to 14 CCR Section 15306 in that it consists of basic data collection, research and resource evaluation activities which do not result in a serious major disturbance to an environmental resource, and is for information gathering purposes or as part of a study leading to an action which a public agency has not yet approved, adopted or funded.

Staff will file a Notice of Exemption upon approval of this project.