

COASTAL CONSERVANCY

Staff Recommendation

April 18, 2013

HUMBOLDT BAY REGIONAL INVASIVE *SPARTINA* PROJECT, PHASE II

Project No. 08-010-03

Project Manager: Joel Gerwein

RECOMMENDED ACTION: Consideration and certification of the “Final Programmatic Environmental Impact Report for the Humboldt Bay Regional *Spartina* Eradication Plan”; consideration and adoption of the Humboldt Bay Regional Invasive *Spartina* Eradication Plan; and authorization to disburse up to \$500,000 to the Humboldt Bay Harbor, Recreation and Conservation District for implementation of Phase II of the Humboldt Bay Regional Invasive *Spartina* Eradication Project.

LOCATION: Humboldt Bay, Humboldt County

PROGRAM CATEGORY: Integrated Coastal & Marine Resources Protection

EXHIBITS

Exhibit 1: [Project Location](#)

Exhibit 2: [Humboldt Bay Regional Invasive *Spartina* Eradication Plan](#)

Exhibit 3: [Photographs](#)

Exhibit 4: [Final Programmatic Environmental Impact Report \(including Mitigation and Monitoring Plan\)](#)

Exhibit 5: [Project Letters](#)

RESOLUTION AND FINDINGS:

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

“The State Coastal Conservancy hereby:

1. Certifies the “Final Programmatic Environmental Impact Report for the Humboldt Bay Regional *Spartina* Eradication Plan” (FEIR), attached to the accompanying staff recommendation as Exhibit 4, and authorizes the Conservancy to implement the Humboldt Bay Regional Invasive *Spartina* Eradication Plan (Plan”, attached to the accompanying staff recommendation as Exhibit 2, as modified by incorporation of all mitigation measures

identified in the FEIR, and adopts the Mitigation Monitoring and Reporting Program (included in the FEIR, Exhibit 4).

2. Adopts the Plan, attached as Exhibit 2 to the accompanying staff recommendation.
3. Authorizes the disbursement of up to \$500,000 (five hundred thousand dollars) to the Humboldt Bay Harbor, Recreation and Conservation District (“Harbor District”) for the implementation of the Plan. This authorization is subject to the following conditions:
 - a. Prior to disbursement of any funds, the Harbor District shall submit for the review and approval of the Executive Officer a work plan, schedule, budget, and the names of any contractors or subcontractors to be retained for implementation of the project.
 - b. The Harbor District shall acknowledge Conservancy funding by erecting and maintaining signs that have been reviewed and approved by the Executive Officer.
 - c. In implementing the Plan, the Harbor District shall ensure compliance with all applicable mitigation measures and monitoring and reporting requirements for the project that are identified in the FEIR and in the Mitigation Monitoring and Reporting Program, attached to the accompanying staff recommendation as Exhibit 4, or in any permits, approvals or additional environmental documentation required for the project.

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 the current Project Selection Criteria and Guidelines.
2. The proposed authorization is consistent with the purposes and objectives of Chapter 5.5 of Division 21 of the Public Resources Code, regarding integrated coastal and marine resource protection projects.
3. The Conservancy has independently reviewed and considered the information contained in the FEIR pursuant to its responsibilities under CEQA (CEQA Guidelines, 14 California Code of Regulations, Section 15090). The FEIR has been completed in compliance with CEQA under the direction and supervision of the Conservancy and reflects the Conservancy’s independent judgment and analysis.
4. The FEIR identifies potentially significant effects from implementation of the Plan in the areas of aesthetics, air quality, biological resources, cultural resources, geology/soils, hazards/hazardous materials, hydrology/water quality, land use, and noise. As modified by incorporation of the mitigation measures identified in the FEIR, implementation of the Plan will avoid, reduce, or mitigate all of the possible significant environmental effects of the project on these resource areas, as described in the accompanying staff report and the FEIR.
5. There is no substantial evidence that the implementation of the Plan, as mitigated, will have a significant effect on the environment.”

PROJECT SUMMARY:

Conservancy staff recommends that the Conservancy

- Certify the “Final Programmatic Environmental Impact Report for the Humboldt Bay Regional *Spartina* Eradication Plan” (FEIR, Exhibit 4) and adopt the Mitigation Monitoring and Reporting Program (MMRP) (included as part of Exhibit 4);
- Adopt the Humboldt Bay Regional Invasive *Spartina* Eradication Plan (Plan, Exhibit 2), with FEIR mitigation measures incorporated, and
- Authorize a grant of \$500,000 to Humboldt Bay Harbor, Recreation and Conservation District (“Harbor District”) for the purpose of implementing, pursuant to the Plan, Phase II of the Humboldt Bay Regional Invasive *Spartina* Project (the “Project”).

The goal of the Project and the Plan is to eradicate invasive *Spartina* from the Humboldt Bay, Eel River, and Mad River estuaries in accordance with the Plan, in order to restore and protect the native plant and wildlife communities of tidal marshes in these areas (Exhibits 1 and 2).

The 2007 West Coast Governors’ Agreement (WCGA) on Ocean Health Action Plan calls for the west coast-wide eradication of invasive *Spartina* by 2018, and prioritizes eradication work in Humboldt Bay. The Harbor District will work with other agencies, nonprofit groups and other stakeholders to prepare site-specific eradication plans, obtain permits for, coordinate and implement eradication activities, monitor eradication sites, and conduct public outreach. Phase II of the Project will focus on eradicating *Spartina* from Humboldt Bay and the Mad River Estuary. *Spartina* eradication from the Eel River estuary will follow in a subsequent phase of the Project.

The Conservancy’s grant would fund the removal of *Spartina* from approximately 100 acres in Humboldt Bay. Areas have been prioritized for *Spartina* removal based on their proximity to salt marshes that have already been restored, and based on commitments from landowners to maintain marshes free of *Spartina* while regional *Spartina* eradication is completed. The North Bay of Humboldt Bay is the first priority for additional *Spartina* removal at present. The Humboldt Bay National Wildlife Refuge (HBNWR) and the Cities of Eureka and Arcata own infested marshes and have committed to ongoing maintenance treatments to ensure that these marshes remain free of *Spartina*. Removing *Spartina* from an additional 100 acres with Conservancy funds would complete *Spartina* removal on 350 of 1,030 mapped acres of *Spartina* infestation in Humboldt Bay. Habitat values restored through the Conservancy grant would be maintained over the long term by HBNWR, Eureka, and Arcata in the event that funding to complete the regional eradication is not secured.

Invasive dense-flowered *Spartina* (*Spartina densiflora*) (“*Spartina*”) has infested over 90% of salt marshes in the three adjacent estuaries of Humboldt Bay, the Eel River Delta, and the Mad River Estuary. It is known to displace native vegetation, reducing the biodiversity of the salt marsh dramatically. The species was mapped in Humboldt Bay and the Eel River and Mad River estuaries in 2011 (Exhibit 1). At that time, *Spartina* constituted over 25% of the vegetative cover in over half of the total tidal marsh, and the species was present at lower levels in much of the remaining tidal marsh, as well. Over the last ten years, *Spartina* has been removed from approximately 200 acres of Humboldt Bay’s 1,030 acres of tidal marsh, largely through the efforts of the US Fish and Wildlife Service (FWS) Humboldt Bay National Wildlife Refuge (HBNWR). However, in the region’s remaining marshes, the extent of the invasion has increased significantly. Currently, *Spartina* is present in approximately 830 acres in Humboldt

Bay, 660 acres of the Eel River Estuary, and 7 acres of the Mad River estuary. While *Spartina* is most abundant at mid-marsh elevations in Humboldt Bay, it has been shown to be spreading to the high marsh, where it threatens to displace populations of Humboldt Bay Owl's Clover (*Castilleja ambigua* ssp. *humboldtiensis*) and Point Reyes Bird's Beak (*Cordylanthus maritimus* ssp. *palustris*), both ranked as endangered (List 1B.2) by the California Native Plant Society. The cost of eradicating *Spartina* from all three estuaries is estimated to be \$6,000,000, while the cost of eradication from Humboldt Bay and the Mad River Estuary is estimated at \$4,000,000. The Conservancy is working with its public and private stakeholders to secure these additional funds, and is optimistic that it will be successful. Grant proposals are currently pending to Caltrans, the USFWS, and the US Army Corps of Engineers (Corps). Funders that have verbally indicated their support for the project include the Wildlife Conservation Board, the Natural Resources Conservation Service (through their Wetland Reserve Program), the USFWS, the Pacific Coast Joint Venture, the National Marine Fisheries Service, and the Corps.

Spartina is most common in Humboldt Bay in salt and brackish marshes, but its presence has also been noted on mudflats and on sand spits, and it may have the potential to spread in these environments, where it could have serious impacts on oyster farming and on foraging habitat for migratory waterfowl and shorebirds (Exhibit 3). In other estuaries, the invasive members of the *Spartina* genus have been shown to act as "ecosystem engineers," bringing about drastic changes to ecosystem functions, and studies have shown similar effects in Humboldt Bay. Recent studies have demonstrated that *Spartina* reduces net primary productivity of the marsh, most likely by reducing the light penetration required for benthic algal growth¹. In addition, *Spartina* has been shown to alter the benthic macroinvertebrate community, increasing the abundance of non-native snails and reducing the abundance of important prey items for waterfowl and shorebirds².

In addition to its direct impacts, the dominance of invasive *Spartina* in Humboldt Bay has slowed efforts at marsh restoration because of fears that restored marshes will become dominated by *Spartina*, compromising their habitat value. As major marsh restoration projects, such as McDaniel Slough, Salmon Creek, and Arcata Baylands, are completed, the importance of eradicating *Spartina* to prevent infestation of these restoration projects becomes greater. In addition to its impacts locally to these estuaries, *Spartina* in Humboldt Bay and adjacent estuaries threatens to colonize other west coast estuaries via ocean dispersal of its seeds, as demonstrated by the preliminary results of a drift card study carried out by Portland State University. Drift cards from Humboldt Bay in 2004 and 2005 were found within a month of their release in numerous locations along the Oregon Coast, as well as in southwest Washington. Work in several west coast estuaries including San Francisco Bay, California and Willapa Bay, Washington, has shown that a prerequisite to successful eradication of invasive *Spartina* is a coordinated, regional approach. Experiences in other west coast estuaries have shown that the local community must be educated and supportive for such an eradication program to succeed. This is especially true when some salt marshes are under private ownership, as is the case in Humboldt Bay and adjacent estuaries.

¹ Lagarde, L. 2012. Invasive *Spartina densiflora* Brongn. Reduces Primary Productivity in a Northern California Salt Marsh. Master's thesis, Humboldt State University, Arcata, CA.

² Mitchell, M.L. 2012. A Comparison of Terrestrial Invertebrate Communities in *Spartina*-Invaded And Restored Humboldt Bay Salt Marshes. Master's thesis, Humboldt State University, Arcata, CA.

In Washington and Oregon, successful eradication has required the use of the herbicide imazapyr as part of an Integrated Pest Management strategy that also includes mechanical methods. The community around Humboldt Bay has shown resistance in the past to the use of herbicides by land management entities seeking to eradicate invasive species. The proposed project will utilize an Integrated Vegetation Management approach that utilizes multiple approaches to *Spartina* control in order to gain community support and the cooperation of private landowners. Key project partners include the U.S. Fish and Wildlife Service (FWS) Humboldt Bay National Wildlife Refuge (HBNWR), the City of Arcata, and the Humboldt County Resource Conservation District (RCD). HBNWR will provide equipment such as a Marshmaster amphibious tracked vehicle. The City of Arcata will coordinate *Spartina* removal activities on its marshlands and will perform maintenance treatments in these areas. The RCD will conduct outreach to private landowners with *Spartina* infestations, and work with these landowners to obtain funding from the Natural Resources Conservation Services' Wetlands Reserve Program to remove *Spartina* from their marshland.

The Harbor District is well qualified to coordinate the regional eradication effort. The Harbor District has strong working relationships with private landowners, natural resource management and regulatory agencies, and local governments. Through its conservation arm, it has played a significant role in monitoring the Bay's natural resources, such as eelgrass. The Harbor District has worked closely with the FWS on eradication work in the Refuge, hiring and coordinating work crews and monitoring staff and obtaining funding.

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 is diverse and ecologically significant at scales ranging from a local focus on fisheries and algal uses by local residents to 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. During the late-nineteenth and early twentieth centuries, diking and filling reduced Bay salt marshes from an estimated 9,000 acres to only 1,000 acres today. Bay habitat has been further disturbed by discharges of agricultural and urban runoff, industrial and recreational uses, and colonization by invasive *Spartina*.

The estuarine channel of the Eel River flows into the Pacific Ocean approximately 14 miles south of the town of Eureka in Humboldt County. The Eel River Estuary includes approximately 24 square miles of delta lands, wetlands, and estuarine channels that receive runoff from 3,700 square miles of the mountainous Eel River Basin. It is considered one of the most significant estuaries along the entire California Coast, and its mosaic of tidal flats, sloughs, marshes and seasonal wetlands supports hundreds of thousands of resident and migratory waterfowl. Approximately 875 acres of salt marsh are present in the estuary today. Approximately 8,800 additional acres of salt marsh that were present in the estuary in 1855 have been lost due to

diking, filling, and other human activities. The Eel River was designated as a Critical Coastal Area (CCA) in 1995, as a waterbody impaired by excessive sediment and temperature that flows into an estuary.

The Mad River estuary is located just north of Arcata. Like the Eel River, the Mad River was designated as a CCA in 1995, as a waterbody impaired by excessive sediment, temperature, and turbidity that flows into an estuary. The Mad River estuary is smaller than the Humboldt Bay and Eel River estuaries, and contains a smaller acreage of tidal marsh. It is an extremely dynamic ecosystem, as evidenced by significant migration of the mouth of the Mad River up and down the coast since the 1940s. Between 1942 and 1992, the Mad River mouth moved from a location approximately across from present-day School Road in McKinleyville to just below the Clam Beach Vista Point across from the McKinleyville airport. In 1997, the Mad River opened a new mouth two miles south of the former mouth. The abandoned channel became a lagoon/estuary with a mixture of freshwater and brackish marshes, fed by Widow White Creek and subject to high tides entering the new mouth of the river. The estuary supports populations of coho and Chinook salmon, steelhead, and western snowy plover. *Spartina* is present in this estuary, in marshes and flood channels, and in and adjacent to riparian scrub habitat.

Project History: Since the 1980s, the Coastal Conservancy has worked closely with the FWS, the Harbor District, and other stakeholders to protect and restore the fish and wildlife habitat of Humboldt Bay and adjacent dunes. The Conservancy has assisted with conservation acquisitions, development of plans and habitat restoration techniques, implementation of restoration, and post-project monitoring.

A 1997 FWS study reported a dramatic increase in cordgrass frequency over the previous 10 years in the Mad River Slough Unit of the HBNWR, supporting the concern that cordgrass threatens to increase its disruption of the Bay ecosystem. In 1998 and 1999, the FWS mapped Humboldt Bay populations of cordgrass and of two rare high salt marsh plants, Humboldt Bay owl's clover and Point Reyes bird's beak. The study looked at all three plants because cordgrass had been observed to be encroaching upon the same salt marsh elevations at which the two rare plants are found. The FWS' February 2001 report on its findings noted among management implications that the "dense-flowered cordgrass continues to be a major threat to biological diversity" and that "identifying and applying control measures for this invasive plant is of the highest priority."

In April 2003, the Conservancy provided funding to the FWS to undertake a pilot study of manual techniques for eradicating cordgrass in Humboldt Bay. In June 2006, the Conservancy provided \$50,000 to apply the manual techniques tested in the 2003-2005 pilot project to a larger area (approximately 50 acres) of salt marsh within HBNWR. This project was completed in September 2008. As discussed above in the "Project Summary" section, control efforts successfully eradicated mature cordgrass plants and restored native vegetation, but a continued influx of cordgrass seedlings required ongoing control efforts and demonstrated the need for a regional control program. The ample pool of volunteers dedicated to protecting and restoring the HBNWR provided much of the manual labor during the pilot study and the current control effort.

In 2008, the Conservancy provided \$60,000 in Proposition 84 bond funds and an additional \$150,000 in federal Coastal Impact Assistance Program funds to prepare a regional eradication plan. In 2011, the Conservancy funded the preparation of the PEIR with \$20,000 in Proposition 84 bond funds and an additional \$80,000 in federal funds awarded by the Pacific States Marine

Fisheries Commission. The Harbor District and the Conservancy began discussing implementation of the proposed project in fall 2011. In 2010, the HBNWR received a \$1,000,000 grant to conduct research and technical studies and to eradicate *Spartina* from the Refuge, a project which is nearly complete.

Public outreach has been ongoing through the planning and eradication project. The FWS, Conservancy, and other partners including the California Ocean Protection Council, the City of Eureka, the Friends of the Dunes, and Humboldt State University, co-sponsored *Spartina* Summits in 2008, 2010, and 2011 to share information about invasive *Spartina* and its control and to discuss management options for *Spartina* in Humboldt County. In addition, volunteer *Spartina* removal and native marsh revegetation days have been conducted by FWS.

PROJECT FINANCING

Coastal Conservancy	\$500,000
National Fish and Wildlife Foundation	\$100,000
Other Sources	<u>\$1,000,000</u>
Total Project Costs	\$1,600,000

The anticipated source of funding for this project is the fiscal year 2009 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 these funds for the purpose of protecting natural habitat values and coastal lands of the state (Section 75060 of the Public Resources Code). Section 75060(b) of the Public Resources Code specifically allocates funding to the Conservancy for expenditure pursuant to the Conservancy’s enabling legislation, Division 21 of the Public Resources Code. The proposed project serves to enhance coastal resource management, and, as discussed in the section found immediately below, the project is consistent with Chapter 5.5 of Division 21 of the Public Resources Code. The proposed project for the protection of natural resources meets two criteria for prioritization under Section 75071, as follows:

b) Watershed Protection: The project will improve the biological quality of Humboldt Bay’s tidal marshes, which includes critical habitat for four species listed under the federal Endangered Species Act (coho and Chinook salmon, steelhead, and tidewater goby).

e) Non-state matching contributions: State funding from the Conservancy will be matched by funding from the National Fish and Wildlife Foundation and U.S. Fish and Wildlife Service, which has already expended \$1,000,000 on eradication activities in the Refuge and has committed to providing in-kind contributions for this phase valued at \$36,000, including the use of a tracked amphibious vehicle for treatment.

Funds from the National Fish and Wildlife Foundation for this project were awarded to the Humboldt County Resource Conservation District to conduct outreach to private

landowners with *Spartina* on their property. It is anticipated that private landowners will be able to obtain funding for *Spartina* removal on their properties from the Natural Resources Conservation Service's Wetland Reserve Program³. The HBNWR will provide equipment to be used for *Spartina* removal, such as an amphibious tracked Marshmaster, that will greatly reduce the cost of *Spartina* removal. The Harbor District has submitted additional grant proposals for the project to the Caltrans Environmental Enhancement and Mitigation Program and to the Wildlife Conservation Board (WCB), and the Conservancy has submitted a grant proposal for the project to the USFWS North American Wetlands Conservation Act program. WCB staff has verbally indicated their willingness to support funding. Eradication efforts will initially take place in areas where landowners are committed to funding maintenance treatments over the long term (the Cities of Eureka and Arcata and HBNWR). This will ensure that native marsh vegetation will be maintained in control areas, even in the event that all the funds necessary to eradicate *Spartina* from Humboldt Bay and the Mad River Estuary are not secured. New treatment areas will be added to the project only when funding is available to conduct monitoring, follow up and maintenance treatments in these areas for four years, at which point the seedbank will likely be exhausted and native vegetation will likely have recolonized all of the treated marsh, greatly reducing the cost for additional maintenance treatments.

CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:

This project would be undertaken pursuant to Division 21, Chapter 5.5 (Integrated Coastal and Marine Resources Protection) of the Conservancy's enabling legislation (California Public Resources Code Section 31220), as described below.

Section 31220(a) of the Public Resources Code authorizes the Conservancy to undertake coastal watershed projects that meet one or more criteria detailed in subsections 1 through 10 of Section 31220(b). Consistent with Section 31220(b), the proposed project will achieve the following objectives: protect or restore fish and wildlife habitat within coastal and marine waters and coastal watersheds (subsection 2); reduce threats to coastal and marine fish and wildlife (subsection 3); and protect and restore wetlands and other sensitive watershed lands (subsection 6). Consistent with this section, the proposed authorization authorizes the use of funds to eradicate *Spartina*, thereby restoring tidal marshes in Humboldt Bay, the Eel River Delta, and the Mad River estuary. Eradicating *Spartina* will also reduce the threats to fish and wildlife that utilize the region's marshes, as discussed in the Project Summary Section above.

Section 31220(a) requires the Conservancy to consult with the State Water Resources Control Board (SWRCB) in the development of a project to ensure consistency with Chapter 3 of Division 20.4 of the Public Resources Code. In keeping with this requirement, the Conservancy has consulted with the SWRCB to ensure the consistency of the project with the referenced section of the Public Resources Code.

Under Section 31220(c), Conservancy projects funded under this section must "include a

³ Privately owned marshes infested with *Spartina* comprise approximately 25% of the total infested area in Humboldt Bay. It is anticipated that funding for treatment on half of these privately owned acres (approximately \$200,000) could be provided by the Natural Resources Conservation Service through its Wetland Reserve Program.

monitoring and evaluation component” and be consistent with applicable Integrated Regional Water Management Programs, local watershed management plans, and water quality control plans adopted by the state or regional water quality control boards. The Regional Spartina Eradication Project includes a monitoring and evaluation component (See “Compliance with CEQA” Section below). The project will utilize effectiveness monitoring data and adaptive management principles to optimize control efforts on an ongoing basis. The consistency of this project with local and regional watershed and water quality plans is discussed in the “Consistency with Local Watershed Management Plan and Regional Water Quality Control Plan” section below.

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

Consistent with **Goal 5, Objective D** of the Conservancy’s current Strategic Plan, the proposed project will eradicate a non-native invasive species from Humboldt Bay that threatens important coastal habitats.

CONSISTENCY WITH CONSERVANCY’S PROJECT SELECTION CRITERIA & GUIDELINES:

The proposed project is consistent with the Conservancy’s Project Selection Criteria and Guidelines, last updated on November 11, 2011, 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 supported by State Assemblyman Wes Chesbro, State Senator Noreen Evans, and many others in the Humboldt Bay region. Support letters are included in Exhibit 5.
4. **Location:** The proposed project would be located within the coastal zone of Humboldt County.
5. **Need:** The Conservancy’s funds and leadership are critical to catalyze funding and participation from the multiple partners involved in the project.
6. **Greater-than-local interest:** The proposed project will lead to the restoration of Humboldt Bay, Eel River and Mad River Estuary, plant and wildlife habitat of regional and statewide importance for resident and migratory species. In addition, the project will facilitate the protection of marshes in Oregon and Washington from colonization by invasive Spartina seeds dispersing from the Humboldt Bay region.
7. **Sea level rise vulnerability:** Sea level rise is likely to result in the landward migration of many of the marshes where eradication activities will take place. Spartina control in existing

marshes is nonetheless important. If it is not eradicated now, disturbances associated with sea level rise and extreme storm events will likely favor species with the ability to colonize disturbed areas rapidly, leading new tidal marsh at higher elevations to be even more dominated by *Spartina* than current marshes. In addition, biodiversity is thought to be an important factor in maintaining the resilience of natural communities to climate change. Eradicating *Spartina* will enhance the native biodiversity of tidal marshes and, consequently, their resilience to climate change.

Additional Criteria

8. **Urgency:** The proposed project is urgent due to the need to prevent further spread of *Spartina* within and outside of the Humboldt Bay region, and to restore habitat for Humboldt Bay region fish and wildlife populations that are already stressed by urban, agricultural, and other impacts.
9. **Leverage:** See the “Project Financing” section above.
10. **Readiness:** The Harbor District and its partners have gained valuable experience through their eradication work within the HBNWR. The Eradication Plan is in place and CEQA compliance is complete. The Harbor District can therefore move forward expeditiously with the project.
11. **Realization of prior Conservancy goals:** See “Project History” above.
12. **Cooperation:** The Harbor District will involve a diverse group of stakeholders in control work, including local residents, community groups, and representatives of local, state, and federal agencies.
13. **Vulnerability from climate change impacts other than sea level rise:** Climate change is likely to result in an increase in invasive species. This project includes a monitoring component that will allow for early detection and rapid response to new invasions of Humboldt Bay’s tidal marshes.
14. **Minimization of greenhouse gas emissions:** The project includes measures to minimize erosion due to *Spartina* removal, which will minimize the loss of carbon sequestered in Humboldt Bay tidal marshes. In addition, restoration of native marsh communities will increase the salt marshes’ net primary productivity, resulting in increased carbon sequestration.

CONSISTENCY WITH LOCAL COASTAL PROGRAM POLICIES:

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 Eel River Area Plan (ERAP) of the Humboldt County LCP, also certified by the California Coastal Commission in 1982, specifically highlights the protection of salt marshes in the area and of the Eel River estuary as important issues of statewide concern. The ERAP defines environmentally sensitive habitats within the Eel River Planning Area as including “estuaries, sloughs, and wetlands” (ERAP Section 3.41(A), p. 33). Similar to the HBAP, the ERAP 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” (ERAP Section 3.41, p. 33). The ERAP designates estuarine areas and salt marshes as natural resource areas, with limited allowable uses, including wetland restoration (ERAP Section 3.41(B), p. 35).

The project will result in the restoration of coastal wetlands in Humboldt Bay, the Eel River estuary, and the Mad River estuary. Therefore, the project is entirely consistent with the policies of the HBAP and the ERAP of the Humboldt County LCP, as discussed above.

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 project is consistent with, and furthers the goals of, the Humboldt Bay Management Plan (HBMP), prepared in May 2007 by the Harbor District. The HBMP expresses support for the goals of the proposed project in the following statement:

Salt marshes in the Bay have been reduced substantially in area with respect to their pre-settlement extent, and they continue to be lost. In addition, the extant salt marshes are degraded by the dominant presence of dense-flowered cordgrass. The benefits of shoreline-protecting salt marshes for stabilizing sediment and protecting shoreline structures from wave impacts combine with a conservation focus on maintaining or restoring salt marshes to make the restoration or enhancement of salt marshes an important concern for the District. (HBMP, p.129)

The proposed project is consistent with Objective CAS-3: “Maintain and enhance habitat for sensitive species” (HBMP, p.204), in that it will lead to the protection and restoration of habitat for Point Reyes bird’s beak and Humboldt Bay Owls Clover, both listed as endangered by the California Native Plant Society. The proposed project is also consistent with HBMP Objective CAS-4: “Control or remove non-indigenous invasive species” (HBMP, 205).

The project is consistent with, and furthers the goals of, the Humboldt Bay Watershed Salmon and Steelhead Conservation (HBSSC) Plan, prepared by the Humboldt Bay Watershed Advisory Committee in March 2005. The HBSSC Plan highlights the importance of the Bay's tidal marshlands in supporting salmon populations, as well as diverse communities of fish and wildlife (p.11). The HBSSC Plan notes that estuarine habitat is necessary for the survival of salmon and that this habitat "has been significantly reduced by construction of levees and tidegates, and placement of fill" (HBSSC Plan, p.viii). One of the stated goals of the HBSSC Plan is to "Maintain and restore estuary processes that benefit salmonids" (HBSSC Plan, p.ix). The proposed project would further this goal by enhancing tidal marshes, as discussed above in the "Project Summary" section.

The proposed project is also consistent with the North Coast Integrated Regional Water Management Plan (NCIRWMP), completed in July 2007. The NCIRWMP notes that many North Coast habitats have been "impacted...by invasion of non-native plant species" (NCIRWMP, p.14). The NCIRWMP notes that a significant disruption of ecological processes has resulted from this invasion, as well as from a number of other impacts, and that this disruption is exemplified by the decline in salmon populations in the region (*Id.*). The proposed project is consistent with the NCIRWMP's Objective #1: "Conserve and enhance native salmonid populations by protecting and restoring required habitats, water quality and watershed processes" (NCIRWMP, p.7). The proposed project would further this goal by enhancing tidal marshes in estuarine environments that are important to the health of salmon populations.

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 will enhance wildlife habitat, habitat for rare, threatened and endangered species, and estuarine habitat in Humboldt Bay, the Eel River estuary, and the Mad River estuary. 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, the Eel River estuary, and the Mad River estuary (Water Quality Control Plan for the North Coast, Table 2-1, pp. 2-8 to 2-12).

COMPLIANCE WITH CEQA:

As a California public agency with jurisdiction in all of the areas covered by the Plan and as a multi-jurisdictional agency that will support the implementation of the Plan, the Conservancy is also the lead agency under the California Environmental Quality Act (Public Resources Code Sections 21000 *et seq.*, hereafter CEQA) to consider the potential environmental effects of implementing this project. Accordingly, Conservancy staff prepared, through the consulting firm HT Harvey & Associates, the FEIR.

The FEIR analyzes the implementation of the Plan (the "proposed project). Conservancy staff determined that a *programmatic* environmental impact report (EIR) should be prepared, as directed by CEQA Guidelines (Guidelines), 14 Cal. Code Regs., Section 15168. Use of a programmatic EIR presents a multitude of advantages to lead and responsible agencies under CEQA. Benefits enumerated in Section 15168 (b) include:

- (1) Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action,

- (2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis,
- (3) Avoid duplicative reconsideration of basic policy considerations,
- (4) Allow the Lead Agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts, and
- (5) Allow reduction in paperwork.

The development and use of a programmatic EIR can be efficient for the long term management of a large program such as the Plan and with “a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required” (Guidelines Section 15168 (c)(5)). The agency in charge of CEQA compliance is expected to use a written checklist or similar device to document the evaluation of the site. The analysis of site-specific project activities that do not fall within the scope of what was analyzed in the FEIR may build upon this FEIR (“tiering,” or starting where this FEIR ends), and thus avoid duplicative analysis efforts and unnecessary financial expenditures and delays.

A Notice of Preparation (“NOP”) for the FEIR and accompanying Initial Study was issued for agency and public review on January 7, 2011 and a variety of public meetings were held on the Plan and on *Spartina* eradication thereafter (See Section 9 of the DEIR). A Draft EIR (DEIR) was subsequently released for agency and public review on November 30, 2012. A Notice of Availability (NOA) was widely distributed to announce the availability of the document and the 45-day review period. A Notice of Completion (NOC) was also sent to the State Clearinghouse. The DEIR was available online at scc.ca.gov, and copies of the DEIR were made available at the Humboldt Bay Harbor, Recreation and Conservation District Office in Eureka, and the Eureka, Arcata, Ferndale, and McKinleyville branches of the Humboldt County Library, in addition to the documents being available for review at the Conservancy offices in Oakland.

The FEIR consists of two volumes: Volume 1) the “Final Programmatic Environmental Impact Report for the Humboldt Bay Regional Spartina Eradication Plan”, which includes the CEQA-required information and analysis in nine chapters and an executive summary, and into which the changes made in response to comments have been incorporated, and Volume 2) the Response to Comments, the Comments themselves, and the Mitigation Monitoring and Reporting Program.

Significant Effects Reduced To Less Than Significant Levels By Mitigation

The FEIR provides a detailed analysis of potential environmental impacts and proposed mitigation measures to address the possible impacts associated with implementation of the Plan (See Exhibit 4, DEIR, Section 4). The FEIR identified possible significant effects of the project in the areas of Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology/Soils, Hazards/Hazardous Materials, Hydrology/Water Quality and Noise. Mitigation measures identified in the FEIR would reduce all of these impacts to a less than significant level. Because this is a programmatic EIR, the mitigation measures identified in the FEIR may or may not be needed at any particular project site or in connection with the particular method(s) used at that site. The determination of what measures will be needed will be made during the further review of site-

specific implementation.

The major adverse environmental impacts of the restoration project and the adopted mitigation measures are summarized below.

Aesthetics

1. Short term effects on vistas and continuity by creating brown, bare, or covered areas.

Mitigation: Post educational signs to explain the project's benefits, improving public reaction to temporary aesthetic impacts. Covering marshes with tarps or other materials to kill *Spartina* shall be limited to 0.5 acres in areas that are visible from a public vantage point, including roads, highways and other areas of relatively high public use.

Air Quality:

1. Dust emissions from vehicle access to work sites. *Mitigation:* Within 500 ft of sensitive receptors, limit vehicle speeds to 15 mph and suspend work when wind speeds are too high to prevent dust clouds from affecting sensitive receptors.

2. Smoke and ash emissions from burning *Spartina* wrack. *Mitigation:* Notify and coordinate with the NCUAQMD and local fire agency well in advance of the burn.

3. Exposure of public to herbicide drift. *Mitigation:* Prepare and implement an herbicide drift management plan for herbicide application areas within 500 ft of sensitive receptors (houses, schools, hospitals). See also Hazards/Hazardous Materials Mitigation Measure #4.

Biological Resources

1. Impacts to special status fish species from increased turbidity or direct impact.

Mitigation: No ground disturbing methods within 15 feet of special status fish species aquatic habitat. Amphibious vehicles will not contact the channel substrate where special status fish species are present. No flooding where special status fish species are present.

2. Impacts to breeding birds. *Mitigation:* Seasonal surveys will be conducted. Where breeding birds are present, buffers of ~100 m or suitable distance to reduce noise disturbance to <60 dB will be established to reduce noise disturbance. Impacts to northern harriers and short-eared owls will be mitigated by surveys and buffers around nests in adjacent uplands, and is less than significant due to its short-term duration. No mitigation required.

3. Impacts to special status plant species. *Mitigation:* Survey for special status plants during pre-project spring surveys, flag locations and instruct crews to avoid where feasible. Humboldt Bay owl's clover and Point Reyes bird's beak have increased in response to control methods, and no avoidance is necessary. Other annual special status plants will be avoided until after they have set seed or their growing season is over. For perennial plants, a qualified botanist shall stake out *Spartina* treatment exclusion areas around special status plants and provide training to control crews to ensure that they do not enter the area. If special status plant populations occur near the high tide line, wrack and large deposits of mown *Spartina* shall be removed during the growing season. Special status plant populations shall be covered with fabric adjacent to areas sprayed with herbicide, or spray-drift barriers made of plastic or geo textile (aprons or tall silt

fences) shall be installed. If accidental exposure to spray drift occurs, affected plants shall be thoroughly washed with silt-clay suspensions.

4. Impacts to Animal Species from Chemical Spartina Removal Methods. *Mitigation:* See Hazards/Hazardous Materials Mitigation Measure #2 and Hydrology/Water Quality Mitigation Measures #1 and 2.

5. Impacts to eelgrass. *Mitigation:* Workers will be trained to recognize eelgrass and eelgrass will be avoided. Only top-mowing will be used directly adjacent to eelgrass.

6. Noise impacts to marine mammals. *Mitigation:* If marine mammals are present within 200 ft of *Spartina* control operations, then methods which cause relatively high levels of noise (i.e., brushcutters and the marsh master) shall not be used.

Cultural Resources

1. Impacts from mechanical treatments on archeological resources. *Mitigation:* Workers shall be made aware of the potential of uncovering artifacts or human remains, and instructed to cease work should any artifacts or human remains be found, and to contact the NAHC, NCIC and/or County Coroner as appropriate. When treatment is allowed to begin again, areas identified as potentially having artifacts will be treated with methods that do not disturb the soil, such as top mowing and chemical treatment. If during site specific planning, there are indications that artifacts are likely to be found, soil disturbing methods shall be avoided. If, during site specific planning, indications are that human remains are likely to be found, soil disturbing methods shall not be used until the remains are located and properly removed. If the coroner determines that the remains may be Native American, the coroner will contact the NAHC.

Geology/Soils

1. Soil loss due to mechanical control methods. *Mitigation:* Ground disturbing control methods shall not be used on areas that are within 15 ft of a salt marsh edge directly exposed to wave action. This mitigation measure only applies to salt marsh edges along Humboldt Bay proper, not attached sloughs/channels, nor the Eel River or Mad River estuaries.

Hazards/Hazardous Materials

1. Worker injuries from manual and mechanical control. *Mitigation:* Prepare a health and safety plan, use safety procedures and equipment, and provide workers with safety training.

2. Chemical and motor fuel spills. *Mitigation:* Have emergency spill cleanup kits immediately accessible. If fuel storage containers are utilized exceeding a single tank capacity of 660 gallons or cumulative storage greater than 1,320 gallons, a Hazardous Materials Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared. This mitigation is intended to be carried-out in conjunction with Water Quality Mitigation #2. Only vegetable oil-based hydraulic fluid will be used in heavy equipment and vehicles during *Spartina* control efforts. When feasible, biodiesel will be used instead of petroleum diesel in heavy equipment and vehicles.

3. Worker health effects from herbicide application. *Mitigation:* Health and safety procedures

and equipment, as described on the herbicide or surfactant label, including PPE as required, shall be used. Mixing and applying herbicides shall be restricted to certified or licensed herbicide applicators.

4. Public health effects from herbicide application. *Mitigation:* For areas targeted for application of herbicides within 500 ft of human sensitive receptors (i.e., houses, schools, hospitals), prepare and implement an herbicide drift management plan. The plan shall include the elements listed below. To minimize risks to the public, mitigation measures for chemical treatment methods related to timing of herbicide use, area of treatment, and public notification, shall be implemented by entities engaging in treatment activities as identified below:

- Coordinate herbicide applications with the County Agricultural Commissioner. Identify nearby sensitive areas (e.g., houses, schools, hospitals) and/or areas that have non-target vegetation that could be affected by the herbicide and provide advance notification.
- Establish buffer zones to avoid affecting sensitive receptors.
- Identify the type of equipment and application techniques to be used in order to reduce the amount of small droplets that could drift into adjacent areas. Consult with herbicide manufacturer for proper application instructions and warnings.
- Herbicide shall not be applied when winds are below 3 mile per hour or in excess of 10 miles per hour or when inversion conditions exist (consistent with Supplemental California Manufacturer Labeling), or when wind could carry spray drift into inhabited areas. This condition shall be strictly enforced by the implementing entity. Herbicide applications should not be conducted when surface-based inversions are present. The site-specific work plan will identify how meteorological conditions would be obtained.
- Signs shall be posted at and/or near any public trails, boat launches, or other potential points of access to herbicide application sites a minimum of one week prior to treatment.
- Application of herbicides shall be avoided near areas where the public is likely to contact water or vegetation.
- At least one week prior to application, signs informing the public of impending herbicide treatment shall be posted at prominent locations within a conservative 500-foot radius of treatment sites where sensitive receptors could be affected. Schools and hospitals within 500 feet of any treatment site shall be separately noticed at least one week prior to the application.
- No surfactants containing nonylphenol ethoxylate will be used.

5. Release of hazardous waste from existing hazardous waste sites near Spartina control sites. *Mitigation:* See Hydrology/Water Quality Mitigation Measure #4.

Hydrology / Water Quality

1. Degradation of water quality due to herbicide application. *Mitigation:* Herbicides shall be applied directly to plants and at low or receding tide to minimize potential application directly on the water surface and ensure proper dry time before tidal inundation. Herbicides shall be applied

by a certified applicator and in accordance with application guidelines and the manufacturer label. The Control Program shall obtain coverage under the Statewide General NPDES Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States (General Permit Water Quality Order No. 2004-0009-DWQ).

2. Herbicide spills. *Mitigation:* Herbicides shall be applied by trained, certified or licensed applicators. Herbicide mixtures shall be prepared by, or under the direct supervision of trained, certified or licensed applicators. Storage of herbicides and surfactants on or near project sites shall be allowed only in accordance with a spill prevention and containment plan approved by the North Coast Regional Water Quality Control Board; on-site mixing and filling operations shall be confined to areas appropriately bermed or otherwise protected to minimize spread or dispersion of spilled herbicide or surfactants into surface waters.

3. Fuel or petroleum spills. *Mitigation:* Fueling operations or storage of petroleum products shall be maintained off-site, and a spill prevention and management plan shall be developed and implemented. Transport vessels and vehicles, and other equipment (e.g., mowers, pumps, etc.) shall not be serviced or fueled in the field except under emergency conditions; hand-held gas-powered equipment shall be fueled in the field using precautions to minimize or avoid fuel spills within the marsh. For example, gas cans will be placed on an oil drip pan with a PIG® Oil-Only Mat Pad placed on top to prevent oil/gas contamination.

4. Pollutant or contaminant remobilization. *Mitigation:* Where ground disturbing methods or herbicides are used, a preliminary assessment of the potential for sediment contamination shall be made before treatment. If potential sediment contamination is indicated, sediment shall be tested, or soil contamination shall be assumed to be present. If contaminants are present or assumed to be present at levels of concern (but below levels that might trigger site cleanup), and these contaminants raise concerns about synergistic impacts from interactions with imazapyr, no herbicides will be used, or the project shall apply to the Regional Water Board for site-specific Waste Discharge Requirements (WDRs). If the contaminants present do not raise concerns regarding synergistic interactions with imazapyr, but raise concerns regarding potential impacts from sediment disturbance, no ground disturbing treatment methods will be used, or the project shall apply to the Regional Water Board for site-specific Waste Discharge Requirements (WDRs). If significant contamination that warrants site cleanup is identified, sampling information shall be provided to the U.S. Environmental Protection Agency.

5. Soil loss/Increased turbidity due to mechanical control methods. *Mitigation:* Ground disturbing control methods shall not be used on areas that are within 15 ft of a salt marsh edge directly exposed to wave action. This mitigation measure only applies to salt marsh edges along Humboldt Bay proper, not attached sloughs/channels, nor the Eel River or Mad River estuaries.

6. Erosion from staging areas and access. *Mitigation:* Designated ingress/egress routes shall be established at control sites to minimize temporarily disturbed areas. Where areas adjacent to staging and stockpile areas are erosion prone, the extent of staging and stockpile areas shall be minimized by flagging their boundaries. An erosion/sediment control plan (ESCP) shall be developed for erosion prone areas outside the treatment area where temporary ground disturbance may occur as a result of ingress/egress, access roads, staging and stockpile areas if these areas exceed 0.25 ac in size. The ESCP shall be developed by a qualified professional and identify Best Management Practices (BMPs) for controlling soil erosion and discharge of treatment-related contaminants. The ESCP shall be prepared prior to any treatment activities, and

implemented during construction.

7. Reduction in dissolved oxygen due to *Spartina* wrack accumulation. *Mitigation:* In treatment areas located within or adjacent to waters known to have depressed dissolved oxygen, if wrack/mulch is generated during the treatment process, the wrack/mulch shall be removed from the treatment area subject to tidal inundation or mulched finely and left in place.

8. Placement of temporary structures in FEMA flood zone. *Mitigation:* Temporary structures used to impound water for submerging *Spartina* including but not limited to earthen dikes, cofferdams, inflatable dams, geotextile tubes or concrete ecology blocks that are proposed for placement in a regulatory FEMA flood zone shall be reviewed and approved by the local floodplain administrator prior to placement.

9. Alteration of drainage patterns due to placement of temporary dikes or structures to impound water. Impact is less than significant because impoundments shall not be in place for more than four months or cover more than 20 ac, and shall be monitored weekly. All impoundments shall include a simple mechanism for releasing the impounded water if necessary to prevent any permanent changes to tidal channels.

Land Use

1. Herbicide overuse or overspray in agricultural areas. *Mitigation:* Herbicides will only be applied by certified applicators. Applicators shall be assigned a compliance monitor who observes that spray does not reach agricultural fields. If crops are growing in the vicinity of spraying, such that these crops would be more difficult to sell even if herbicides are undetectable, mechanical methods of treatment shall be used.

2. Impacts to public access and safety in public lands. *Mitigation:* Herbicides will only be applied by certified applicators. Notices will be posted and access limited during treatment periods. Public notice shall be posted at the entrances of public lands, at trailheads, and on the websites of agencies responsible for the public lands, such as the Refuge. If members of the public access lands during treatment, the field supervisor shall ask them to leave for their safety. Control efforts will be timed to avoid peak periods of public use whenever possible.

Noise

1. Noise impacts to residential areas. *Mitigation:* All brushcutters shall be new and quieter models, with noise not exceeding 90 dB. Avoid treatment that uses the Marsh Master, if residential receptors are within 800 ft. Within 3,200 ft of homes, hours of operation shall be within times that residents would be the least disturbed, as in during work and school hours, and avoiding early morning or early evening.

The Conservancy received comment letters on the Draft PEIR from the State Lands Commission, the Coastal Commission, Humboldt Baykeeper, Californians for Alternatives to Toxics, the USFWS HBNWR, the City of Arcata, and 22 individuals (Exhibit 4). All of the comment letters expressed support for *Spartina* removal, but many of the letters oppose the use of herbicides. Comments were received generally requesting that (1) there should be a maximum area that can be treated annually with imazapyr in the Eel River estuary, Humboldt Bay and the Mad River

estuary, (2) there should be a maximum treatment area allowed per year, and (3) herbicides should only be used as a “last resort” for *Spartina* treatment. In recognition of these requests, the following was added to Section 2.4 of the Draft PEIR:

Due to requests by the public, mechanical methods will be preferred over the use of imazapyr. To select imazapyr application as a treatment method at a specific site, the Regional Coordinator must find that:

- Compared to mechanical methods, imazapyr substantially reduces treatment costs, and
- Compared to mechanical methods, imazapyr has a greater likelihood of successfully controlling *Spartina*.

Additionally, the area of annual treatment with imazapyr will be limited as follows:

- Mad River Estuary: 7 acres (all of the mapped *Spartina*)
- Humboldt Bay: 200 acres (approximately 1/5 of the mapped *Spartina*)
- Eel River Estuary: 200 acres (approximately 1/3 of the mapped *Spartina*)

Additionally, no site shall be treated with imazapyr more than three times during any five year period.

Consideration of Project Alternatives

CEQA requires that a reasonable range of feasible alternatives to the proposed project be described and considered within an EIR. The alternatives considered should represent scenarios that could feasibly attain most of the basic objectives of the project, and would avoid or substantially lessen any of the significant environmental effects of the project. The purpose of this process is to provide decision-makers and the public with a discussion of viable options and to document that other potential options that could avoid or substantially lessen one or more of the proposed project’s significant environmental effects were considered (CEQA Guidelines, §15126.6).

Two alternatives to the proposed project were considered: the No Project Alternative and Alternative 1. Alternative 1, which involves the use of all methods except the use of herbicide, will reduce potential impacts due to herbicides, but would require increased use of mechanical methods and may thus have increased impacts associated with mechanical methods. Under the No Project Alternative, individual agencies would continue separate efforts to control *Spartina*, using all methods, but the control efforts would lack the coordination gained through either the proposed project or Alternative 1. The proposed project is an environmental restoration project with short-term environmental impacts and long-term environmental benefits. As compared to the two alternatives, the proposed project will result in more rapid eradication of nonnative *Spartina* and, thus, involve a shorter duration of impacts and a sooner realization of the benefits. Moreover, the coordinated adaptive management approach of the proposed project will allow for continual improvements in implementation as control effectiveness and impacts become better understood. By including “all” potential methods as options that will be continually prioritized based on the best available information (as opposed to Alternative 1, which would not consider

use of chemicals) and by allowing for improved coordination over the No Project Alternative, the proposed project will allow for the most effective removal of *Spartina* while also minimizing environmental impacts. Accordingly, as the FEIR concludes, the proposed project is the preferred and environmentally superior alternative.

Mitigation Monitoring and Reporting Program

Under CEQA, whenever measures are required and adopted in order to mitigate or avoid the significant effects on the environment of an approved project, the agency must also prepare and adopt a Mitigation Monitoring and Reporting Program (MMRP) designed to ensure compliance with the required mitigation during project implementation (CEQA Section 21081.6). An MMRP for this project has been prepared and is incorporated in the FEIR, attached as Exhibit 4 to this staff recommendation.

Based on the foregoing and on the extensive analysis contained in the FEIR, staff recommends that the Conservancy adopt the proposed CEQA findings. The findings conclude that the Conservancy has undertaken an independent review of the environmental effects of the Plan as required by CEQA, and that the Plan, if mitigated as indicated in the FEIR, will not result in significant environmental effects.

Finally, upon Conservancy certification of the FEIR and approval of the proposed project, Conservancy staff will prepare and file a Notice of Determination.