

11h



COAST SEAFOODS COMPANY

EUREKA OFFICE
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24 January 2013

Mr. Dan Berman
Director of Conservation
Humboldt Bay, Harbor Recreation and Conservation District
601 Startare Drive
Eureka, CA 95501

Subject: Basket-on-longline Kumamoto oyster culture.

Dear Mr. Berman:

Coast Seafoods Company currently maintains permits to culture Kumamoto oysters using a rack-and-bag method at an 11.23 acre site in Humboldt Bay. However, there are aspects of this culture method that require an excessive amount of labor. Fortunately, we have identified a modified method for culturing oysters at this site, which we refer to as "basket-on-longline" culture. This method is very similar to the rack-and-bag method, with two primary differences. First, oysters are contained within baskets rather than bags. Second, to elevate the baskets off the bottom, they are hung off a line rather than supported by a rack. The attached memo provides a description of the basket-on-longline method and a comparison of potential environmental effects between the two methods. We are confident that the basket-on-longline method has less potential environmental effects than the existing rack-and-bag method. We are preparing to convert our operations at the 11.23 acre site from rack-and-bag to basket-on-longline culture methods. Please let me know if you have any questions or concerns.

Sincerely,

Greg Dale
Operations Manager
Coast Seafoods Company
25 Waterfront Drive
Eureka, CA 95501
gdale@coastseafoods.com
707-834-5801

Attachments:

- Memo from H. T. Harvey & Associates. Differences in Environmental Effects between Rack-and-Bag and Basket-on-Longline Kumamoto Oyster Culture. Dated January 3, 2013.

CC:

- Mr. Kelley Reid, U.S. Army Corps of Engineers
- Ms. Diane Ashton, National Marine Fisheries Service



Memorandum

1 April 2013

Subject: Differences in Environmental Effects between Rack-and-Bag and Basket-on-Longline Oyster Culture

Background

Coast Seafoods Company currently maintains regulatory approvals to conduct rack-and-bag Kumamoto and Pacific oyster culture within 2 sites in Humboldt Bay, California on a total of 10.86 acres (Figure 1). Recently, the company determined that a basket-on-longline culture method may be preferable for some of its operations. Hence, they are assessing the potential to convert from rack-and-bag to basket-on-longline culture methods. Basket-on-longline culture is similar to rack-and-bag culture, with nearly identical characteristics but with a smaller footprint and less on-site maintenance activities. As a pilot project to assess the effectiveness of the basket-on-longline method, Coast Seafoods Company has removed rack-and-bag equipment at the 2 sites and installed basket-on-longline equipment within 2.1 acres. This memo assesses (1) potential environmental effects of removing the existing rack-and-bag equipment and installing basket-on-longline equipment within the 2 sites, and (2) differences in potential environmental effects between the current rack-and-bag culture method and proposed basket-on-longline culture method.

Description of Culture Methods

Rack-and-Bag Culture

Rack-and-bag culture (Figures 2 and 3) is described in detail in Coast Seafoods Company's Mitigated Negative Declaration¹. In general, the method consists of culturing oysters in bags that are elevated above the substrate on metal (rebar) racks.

¹ 2007. Humboldt Bay Harbor, Recreation and Conservation District. Mitigated Negative Declaration for Coast Seafoods Application for Continued Mariculture Operations in Humboldt Bay, California. Humboldt Bay Harbor, Recreation and Conservation District, 601 Startare Drive, Eureka, CA 95501.



All

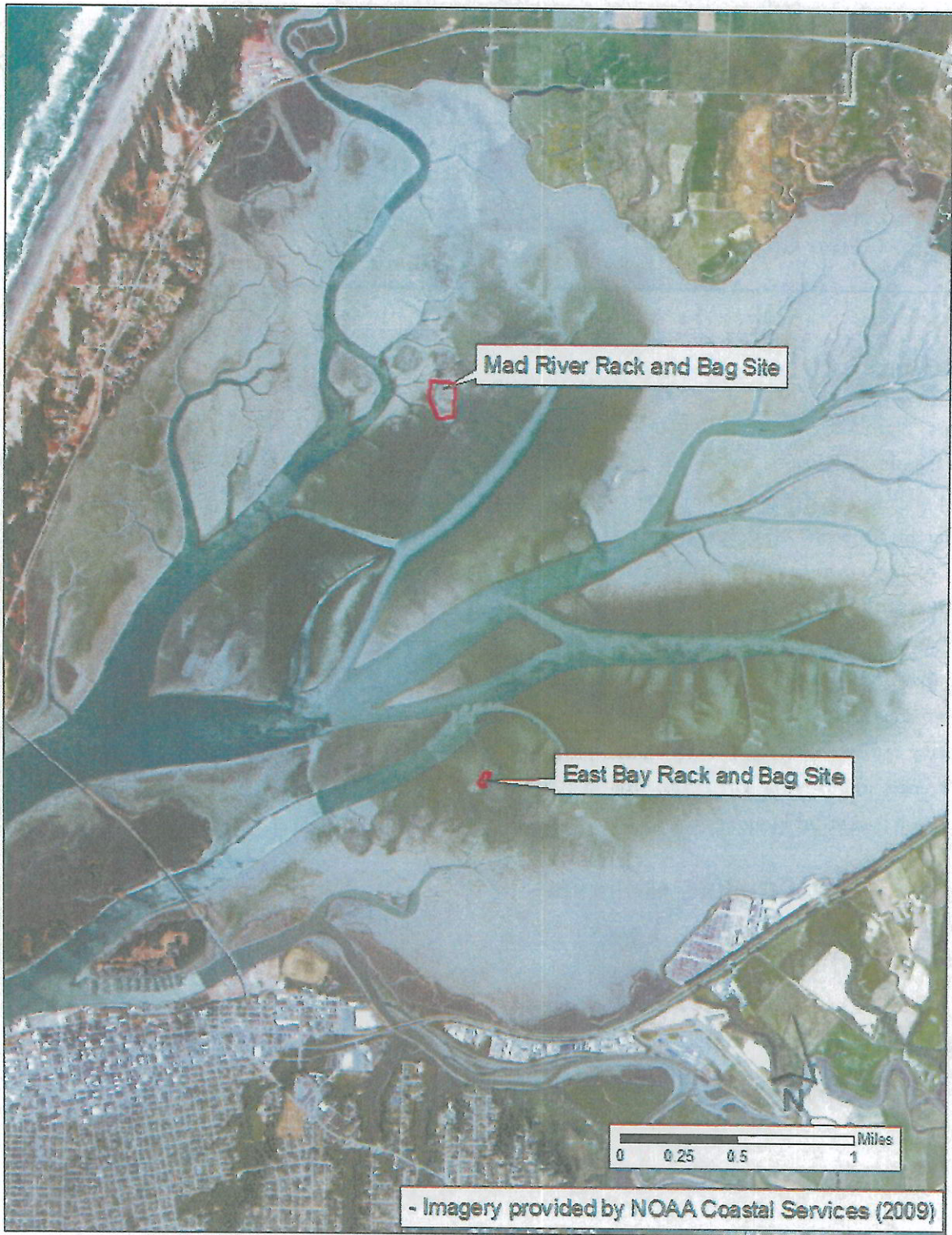


Figure 1. Locations of currently permitted rack-and-bag culture. The total area of the 2 sites is 11.23 acres, but rack-and-bag culture is only currently approved within 10.86 acres.



Figure 2. Rack-and-bag oyster culture in Humboldt Bay, California.

Rack and Bag Culture

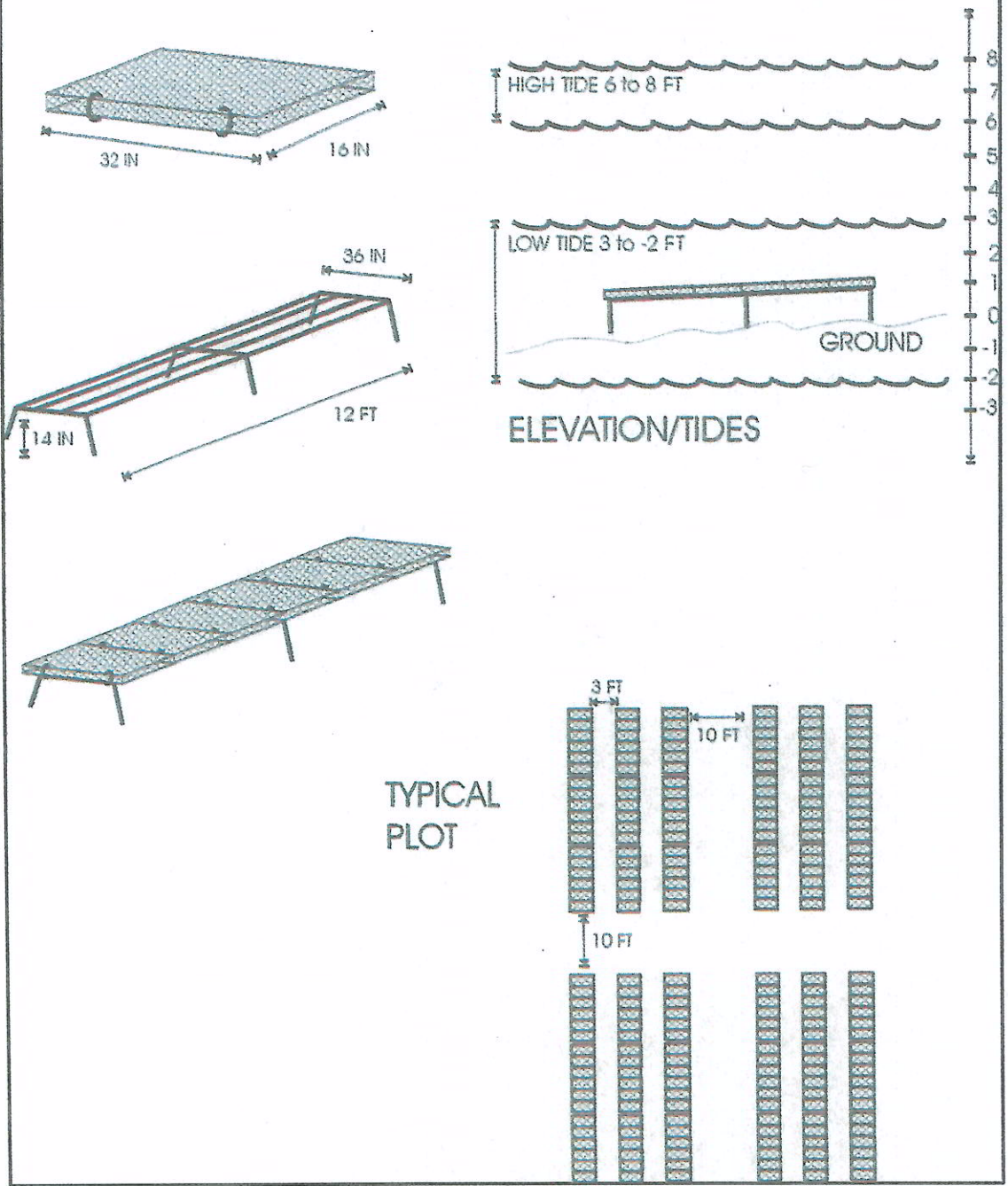


Figure 3. Rack-and-bag culture schematic from Coast Seafoods Company's Mitigated Negative Declaration (2007).

Basket-on-Longline Culture

Basket-on-longline culture (Figures 4 and 5) utilizes baskets that hang off a monofilament line suspended off the bottom using 2 inch schedule 80 PVC pipe. The monofilament line is 5mm in diameter and protected by a 3/8" polyethylene sleeve that the monofilament is slid inside. The baskets are approximately 24"x10"x6" and are held on the line with plastic clips. A float, which is approximately 2.5" in diameter and 5.5" long, is often attached to the baskets so that the baskets float up during high tides. For the purpose of our analysis, we assumed that all baskets have a float attached. The line is positioned approximately 2.5' to 3.0' off the bottom so the baskets are roughly 1' from the bottom when hanging down during low tides.



Figure 4. Basket-on-longline oyster culture.

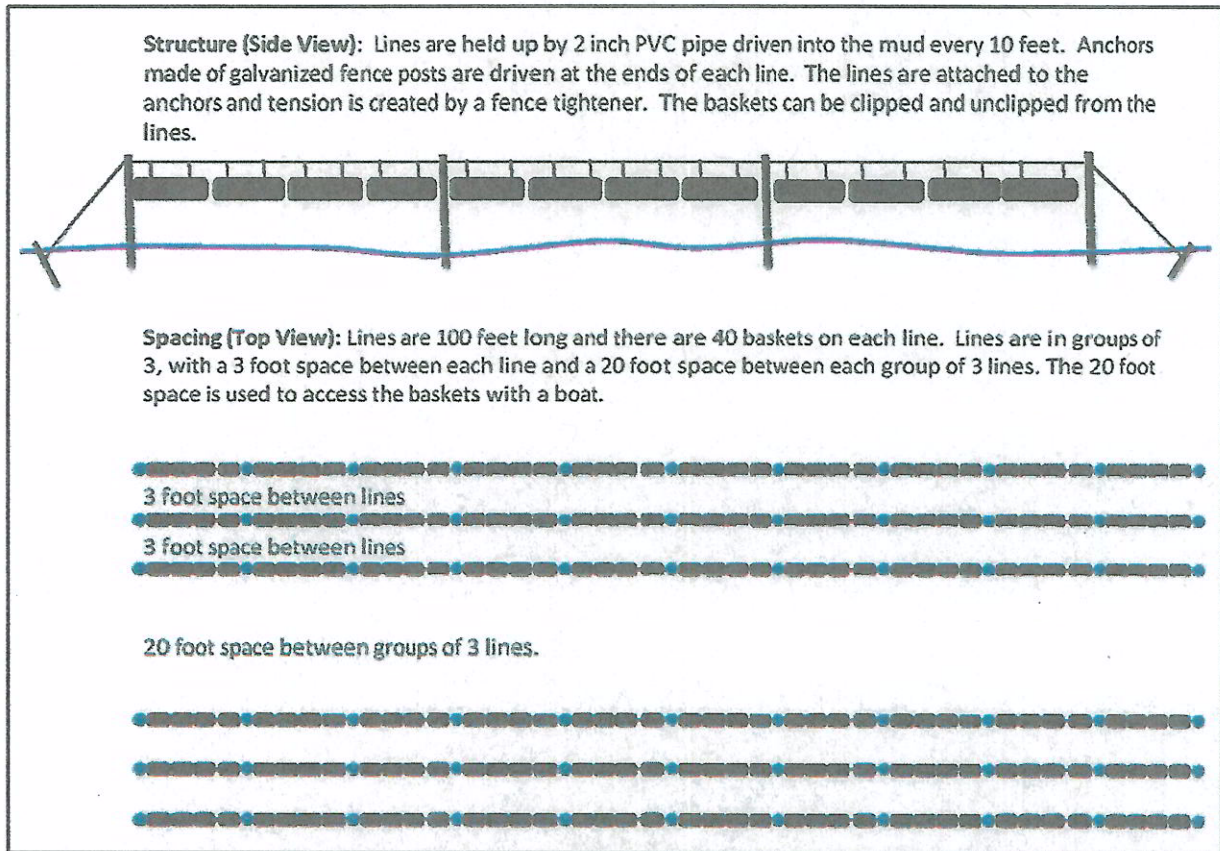


Figure 5. Proposed configuration of basket-on-longline oyster culture. Lines are a maximum of 100', but areas of a lease where a 100' line won't fit are filled by partial lines.

Potential Environmental Effects of Removing the Existing Rack-and-Bag Equipment and Installing Basket-on-Longline Equipment

Removal of Rack-and-Bag Equipment

Removal of the rack-and-bag equipment involves the following steps, which are conducted by 4 people:

1. Bring empty boat to site.
2. Walk through the site, removing the bags from the racks and placing them on the floating boat.
3. Once the bags are off the racks, remove the racks in the same manner as the bags.

Some amount of sediment is displaced when the racks and bags are removed. Additionally, minimal disturbance can occur by farmworkers disturbing wildlife (birds) and walking on vegetation and the substrate. Functionally, the procedures to remove the racks and bags are nearly identical to the

procedures used to maintain the racks and bags on a routine basis. Racks are routinely removed and replaced.

Installation of Basket-on-Longline Equipment

Installation of the basket-on-longline equipment would involve the following steps, which would be conducted by 2 people:

1. Bring equipment to the site on a boat
2. Insert 2 inch PVC pipe every 10 feet along the longline alignments (see Figure 5)
3. Insert galvanized posts (as anchors) at the end of each longline alignment
4. Install and tighten lines across the PVC pipes
5. Clip baskets onto the lines

It would take 3-5 low tide cycles to install the basket-on-longline equipment. As with the removal of the rack and bag culture, some minimal disturbance would occur through incidental sediment displacement, wildlife disturbance and walking on vegetation and the substrate.

Comparison to Existing Maintenance of Rack-and-Bag Equipment

Existing practices include the periodic replacement of each rack when they become broken or worn, which is approximately every 5 years. Environmental effects of removing the rack-and-bag equipment are described above. Rack-and-bag installation involves 4 people placing each rack, inserting rack footings into the substrate, and then placing the bags. Similar to removal and installation of other intertidal shellfish culture equipment, some amount of sediment is displaced, wildlife may be disturbed and farmworkers walk on vegetation and the substrate.

Discussion

Replacement of the rack-and-bag equipment with basket-on-longline equipment may have environmental effects related to sediment displacement and disturbances by farmworkers. These effects are similar to those that currently occur when broken or worn racks are replaced. Currently, racks are replaced periodically on an as-needed basis; however, replacement of rack-and-bag equipment with basket-on-longline equipment would occur over a shorter time period (i.e., during 3-5 low tide cycles). Overall, replacement of the rack-and-bag equipment with basket-on-longline equipment would require a similar amount of effort and time as normal maintenance of the existing rack-and-bag equipment and the environmental effects are similar. In addition, once installed, the activity level for basket-on-longline culture would be significantly less than the existing activity level for rack-and-bag culture (see discussion below).

Differences in Potential Environmental Effects between Rack-and-Bag and Basket-on-Longline Shellfish Culture

There are 4 types of potential environmental effects that may be different between the 2 culture methods. Each type of environmental effect was assessed based on specific characteristics of each culture method. Table 1 presents the potential environmental effects and the culture characteristics that were assessed to determine differences between the 2 culture methods. The assessment is described in more detail below.

Table 1. Potential environmental effects and the culture characteristics assessed to evaluate the environmental effects of rack-and-bag versus basket-on-longline culture methods.

Potential Environmental Effect	Culture Characteristics Assessed
Shading of eelgrass and other habitat features	Amount of shading directly below cultured oysters and associated structures
Effects on currents and sedimentation	Total volume of cultured oysters and associated structures
Phytoplankton consumption by cultured oysters	Total number of cultured oysters
Environmental effects by farm workers (e.g., trampling, wildlife disturbance)	Number and type of visits by farm workers

Methods

Shading of Eelgrass and Other Habitat Features

Cultured oysters and associated structures can affect eelgrass and other habitat features by increasing shade over these features. We compared the potential for rack-and-bag and basket-on-longline culture to produce shade. We recognize that the angle of the sun changes daily and seasonally. However, we used the shaded area directly below each culture method as a reasonable metric for examining the difference in shading between the 2 culture methods. This shaded area depends simply on the number of racks or baskets and the area of each rack or basket. The proportion of an acre directly below the cultured shellfish and associated structure was calculated based on the following:

For rack-and-bag culture (see Figure 3):

- Racks are 12' by 3'
- Racks are set in groups of 9, with a distance of 3' between subgroups of 3 racks
- Each group of 9 racks is 10' apart from each other group row of 9 racks

For basket-on-longline culture (see Figure 5):

- Baskets are 24" by 10"
- Floats are 2.5" in diameter and 5.5" long
- Lines are in groups of 3, with a distance of 3' feet between each line
- Each group of 3 lines is separated by 20'
- Lines are a maximum of 100', but areas where a 100' line won't fit are filled by partial lines

Effects on Currents and Sedimentation

Cultured shellfish and associated structures can alter water currents and sedimentation rates. The overall volume of shellfish and associated structure is a reasonable metric for comparing how the 2 culture methods may affect currents and sedimentation. The volume of racks or baskets in an acre was calculated based on the following:

For rack-and-bag culture (see Figure 3):

- Rack dimensions are 12' by 3' by 0.7'
- Racks are set in groups of 9, with a distance of 3' between subgroups of 3 racks
- Each group of 9 racks is 10' apart from each other group of 9 racks

For basket-on-longline culture (see Figure 5):

- Basket dimensions are 24" by 10" by 6"
- Floats are 2.5" in diameter and 5.5" long
- Lines are in groups of 3, with a distance of 3' between each line
- Each group of 3 lines is separated by 20'
- Lines are a maximum of 100', but areas where a 100' line won't fit are filled by partial lines

Phytoplankton Consumption by Cultured Oysters

Cultured oysters consume phytoplankton. At some level of consumption, phytoplankton availability for native species could become limited. To assess the relative difference in phytoplankton consumption between the 2 methods, we examined how many animals can be cultured using each method. Specifically, we assessed differences in the number of adults that would be present if all cultured oysters were at an adult size. The numbers of adult oysters in one acre was calculated based on the following:

For rack-and-bag culture:

- Each Rack-and-Bag unit contains 6 bags per rack, with 90 adult oysters per bag

- Racks are set in groups of 9, with a distance of 3' between subgroups of 3 racks
- Each group of 9 racks is 10' apart from each other group of 9 racks

For basket-on-longline culture:

- Each basket contains 70 adult oysters, with 40 baskets/line
- Lines are in groups of 3, with a distance of 3 feet between each line
- Each group of 3 lines is separated by 20 ft
- Lines are a maximum of 100', but areas where a 100' line won't fit are filled by partial lines

Environmental Effects by Farmworkers

Farmworkers may have environmental effects when they are working at the culture sites, for example by trampling vegetation or disturbing wildlife. To compare the potential effects between the 2 methods, Mr. Greg Dale (Coast Seafoods Company's manager) was interviewed to determine the type and number of visits for each method.

Results

Table 2 presents the shaded area, volume and number of adult oysters for each culture method. Table 3 depicts the type and number of visits to culture sites by farm workers. Finally, Table 4 presents the approximate number of potential racks or baskets, and adult oysters for each method at Coast Seafoods Company's 10.86 acre site.

Table 2. Percent shaded area, volume and number of adult oysters per acre for rack-and-bag and basket-on-longline oyster culture methods.

Method	% Shaded Area	Total Acres Shaded (% Shaded * 10.86 Acres)	Culture Volume (ft ³) Per Acre	# Oysters Per Acre
Basket-on-longline	8%	0.87	1,623	126,806
Rack-and-bag	30%	3.3	8,736	196,560

Table 3. Type and number of visits by farm workers for each oyster culture method.

Method	Type of Visit	# Visits Per Year	Note
Basket-on-longline	Stake lines	0.2	Once every 5 years
	Grade oysters	6.4	Every 6-8 wks in summer (Feb to Oct) and every 8-12 wks in winter (Nov to Jan)
	Plant and harvest	1	Plant and harvest once per 2 years
Rack-and-bag	Place racks	0.2	Once every 5 years
	Inspections ¹	104	Range of 1 - 3 times per week, assumed average of twice per week
	Flip bags	26	Bags flipped on average every 2 weeks
	Grade oysters	6.4	Every 6-8 wks in summer (Feb to Oct) and every 8-12 wks in winter (Nov to Jan)
	Plant and harvest	1	Plant and harvest once per 2 years

¹ The bags frequently fall partially or completely off the racks and need to be reattached or replaced. One of the advantages of basket-on-longline culture is that the baskets do not unintentionally come off the lines and therefore basket-on-longline culture does not require the same inspection/maintenance activities as rack-and-bag culture.

Table 4. The total number of baskets or rack-and-bag units and adult oysters that would occur under each method on the 10.86 acre site.

Method	# of Baskets or Rack-and-Bag Units	# Adult Oysters
Basket-on-longline	19,673	1,377,118
Rack-and-bag	3,953	2,134,642

Discussion

Based on every characteristic assessed, basket-on-longline culture would have substantially less environmental effects than rack-and-bag culture. Key results are summarized in Table 5.

Table 5. Summary of the environmental effects of rack-and-bag culture versus basket-on-longline culture.

Environmental Effect	Summary
Shading of eelgrass and other habitat features	Basket-on-longline culture shades 8% of a given area. This is substantially less than the 30% of an area shaded by rack-and-bag culture.
Effects on currents and sedimentation	Volume is a useful metric for comparing potential effects on currents and sedimentation. Within an acre, the volume of oysters and associated structures is 1,623 ft ³ for the basket-on-longline culture method. This is substantially less than the volume of 8,736 ft ³ occupied by the rack-and-bag culture method.
Phytoplankton consumption by cultured oysters	Within the 10.86 acre culture site, the basket-on-longline method can support 1,377,118 adult oysters. This is substantially less than the 2,134,642 adult oysters supported by the rack-and-bag method. Hence, basket-on-longline culture would have less effect on phytoplankton than rack-and-bag culture.
Environmental effects by farm workers (e.g., trampling, wildlife disturbance)	Basket-on-longline culture requires substantially less visits by farm workers than rack-and-bag culture.

11h

Agenda Report

For Agenda of: April 25, 2013

Title: 11h. Consideration of approving amendment 2013-01 to Coast Seafoods' use permit (# 04-03).

Place on Agenda: New Business 11h

Summary of the Issue: Coast Seafoods has requested an amendment of their existing permit authorizing shellfish culture operations in Humboldt Bay. The amendment would allow Coast to use an alternative culture method, called bag-on-longline, in the 10.86 acre area currently permitted for rack and bag culture.

Both methods are a variation on the same theme of growing adult oysters in plastic mesh bags suspended above the bottom in the intertidal mudflats. Rack and bag culture uses rectangular bags laying flat on rebar racks, which are regularly turned over by company personnel, and periodically opened and sorted for size and quality. Bag-on-longline culture uses cylindrical mesh containers clipped to a line, which is supported by posts and small anchors. It requires less frequent maintenance, which is the stated motivation for the amendment request.

Coast has provided a report describing the bag-on-longline culture method, and comparing its projected environmental effects with the currently permitted rack and bag method. In brief, the proposed new method is expected to result in:

- Fewer site visits by Coast personnel and therefore less associated disturbance to the surrounding flora and fauna
- An overall reduction in the number of cultured oysters per unit area, and therefore a reduction in any potential impact to the bay's carrying capacity for filter feeding organisms;
- Less overall ground coverage, reducing the shaded 'footprint' of the operation on eelgrass and other benthic and infaunal species.

The requested change in culture method will result in lesser environmental impacts than those already considered in the CEQA analysis for the existing permit and approved at that time. Therefore approving the amendment request does not require new CEQA review, as the potential impacts fall within those already approved in the MND for the existing permit.

Attached for your information are:

- a) Coast Seafoods' request for the amendment, including the final memorandum describing the new culture method and evaluating its impacts relative to the rack and bag method
- b) Draft Permit amendment 13-01 to Permit 04-03, for your consideration of approval. The permit amendment would allow Coast Seafoods to utilize the bag-on-longline method within the areas currently approved for rack and bag.

Fiscal Impact: There are no fiscal impacts expected with the issuance of this permit amendment

Staff Recommendation:

Staff recommends that the Board of Commissioners:

1. Grant Permit Amendment 13-01 to Coast Seafoods Company allowing the use of the bag-on-longline culture method in place of the rack and bag method.

Staff makes these recommendations on the following basis:

- This project is consistent with the Humboldt Bay Management Plan and with the District's tidelands trust responsibility;
- The potential environmental impacts of approving this change in culture method fall within the impacts previously considered and approved in the CEQA process for the underlying permit;
- The permit amendment conditions include, among other things, completion of any other required permitting for the project.

**HUMBOLDT BAY HARBOR, RECREATION
AND CONSERVATION DISTRICT**

AMENDMENT 13-01 TO PERMIT 04-03

**601 Startare Drive
Woodley Island Marina
P O Box 1030
Eureka, CA 95502-1030**

Permittee:

**Coast Seafoods Company
25 Waterfront Drive
Eureka, CA 95501**

Project:

**Coast Seafoods Company Use of 'Basket-on-Longline' Culture Method in Growing Areas
Previously Approved for Rack and Bag Culture**

The Board of Commissioners of the **Humboldt Bay Harbor, Recreation and Conservation District** hereinafter referred to as "**District**", having considered the Application herein, number 'Amendment 13-01 to Permit 04-03', received by the **District** on January 24th, 2013, and **Coast Seafoods Company, 25 Waterfront Drive, Eureka, CA**, hereinafter referred to as "**Permittee**", and the Board of Commissioners of the **District** having on April 25th 2013 approved said Application by **Permittee** for the use of the 'Basket-on-Longline' culture method in growing areas previously approved for the 'Rack and Bag' culture method, the **Permittee** is hereby authorized to implement the Coast Seafoods Basket-on-Longline culture technique as more particularly described in the Application filed with the **District**.

You are hereby authorized to implement the Coast Seafoods Basket-on-Longline culture technique as described in the Permit Amendment Application of **Permittee** consisting of:

The installation and use of the Basket-on-Longline culture method on 10.68 acres of tidelands that were previously approved for the rack and bag culture method in District Use Permit 04-03. The proposed method conversion will occur in those areas shown on Figure 1 of the Amendment Application, and the physical arrangement of the culture on the site will not exceed the density or spacing outlined in the Amendment Application and associated Memo dated April 1st 2013. Coast Seafoods Company shall maintain compliance with the mitigation measures associated with the underlying Use Permit 04-03.

The location of the proposed work of improvement shall be in the tide and submerged lands of Humboldt Bay as described in the attached application. The area is not assigned a Parcel Number by the County.

SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

1. That **Permittee**, in implementing this project, shall fully comply with all conditions of Permit 04-03 (attached), including implementing all mitigation measures provided in the adopted Mitigated Negative Declaration associated with Permit 04-03, as well as the associated Mitigation Monitoring and Reporting Program for the activities associated with Permit 04-03
2. That no work authorized by this Permit Amendment shall be implemented until all other permits or approvals required by other agencies for this project are obtained, including but not limited to:
 - A. United States Army Corps of Engineers San Francisco District
 - B. State of California Coastal Commission
 - C. State of California Regional Water Quality Control Board, North Coast Region

and **Permittee** shall fully comply with all regulations and conditions affecting such work as imposed by the above agencies.

3. That no attempt shall be made by the **Permittee** to interfere or forbid the full and free use by the public of all navigable waters at or adjacent to the work;
4. That the **Humboldt Bay Harbor, Recreation and Conservation District**, its Commissioners, or any officer or employee of the **Humboldt Bay Harbor, Recreation and Conservation District** shall in no case be liable for any damages or injury of the work herein authorized which may be caused by or result from future operations undertaken by the **Humboldt Bay Harbor, Recreation and Conservation District** for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.
5. That the Board of Commissioners of the **District** may revoke this Permit Amendment at any time upon a finding by the **District** of a violation by the **Permittee** of any condition of this Permit Amendment, or a finding of substantial new information regarding the effect of the Permitted activities.
6. That the **Permittee** shall comply with any regulations, condition, or instructions affecting the work hereby authorized if and when issued by the Federal Water Pollution Control Administration and/or the State of California Water Resources Control Agency having jurisdiction to abate or prevent water pollution. Such regulations, conditions, or instruction in effect or prescribed by Federal or State Agencies are hereby made a condition of this Permit Amendment.
7. That neither the **Humboldt Bay Harbor, Recreation and Conservation District**, nor its Board of Commissioners, nor any officer of the **District** shall be liable to any extent for the injury or damage to any person or

property or for the work authorized by this Permit Amendment, and the **Permittee** shall indemnify and hold harmless the **District**, its Commissioners and officers free and harmless from any liability for any such injury, death or damage.

8. That as a condition to the issuance of this Permit Amendment, **Permittee** agrees to indemnify and hold harmless **Humboldt Bay Harbor, Recreation and Conservation District** from an against any and all liability, loss, or damage **Humboldt Bay Harbor, Recreation and Conservation District** may suffer from claims and demands for attorneys' fees, costs of suit, and costs of administrative records made against **Humboldt Bay Harbor, Recreation and Conservation District** by any and all third parties as a result of third party environmental actions against **Humboldt Bay Harbor, Recreation and Conservation District** arising out of the subject matter of this Permit Amendment, including, but not limited to attorneys' fees, costs of suit, and costs of administrative records pursuant to the California Code of Civil Procedure §1021.5 or any other applicable local, state or federal laws, whether such attorneys' fees, costs of suit, and costs of administrative records are direct or indirect, or incurred in the compromise, attempted compromise, trial appeal or arbitration of claims for attorneys' fees, costs of suit, and costs of administrative records in connection with the subject matter of this Permit Amendment.
9. That this Permit Amendment is valid as of the 25th day of April 2013, and is made subject to the **Permittee** approving and agreeing to the conditions above set forth and executing said approval as hereinafter provided.

EXECUTED on this 25 day of April 2013, by authority of the Board of Commissioners of the **Humboldt Bay Harbor, Recreation and Conservation District**.

MIKE WILSON, President
Board of Commissioners
Humboldt Bay Harbor, Recreation and
Conservation District

Coast Seafoods Company, Permittee, in the above Permit Amendment, hereby accepts and agrees to all of the conditions hereinabove set forth. **Permittee** shall indemnify and hold harmless the **Humboldt Bay Harbor, Recreation and Conservation District**, its Board of Commissioners, officers and employees from any and all claims of any nature arising from the performance of and work of improvement contained in the Application for injury, death or damage to any person or property.

Coast Seafoods Company, Permittee, in the above Permit Amendment, agrees to indemnify and hold harmless **Humboldt Bay Harbor, Recreation and Conservation District**, its Board of Commissioners, officers and employees from and against any and all liability, loss or damage **District** may suffer from claims and demands from attorneys' fees; costs of suit and costs of administrative records made against **District** by any and all third parties as a result of third party environmental actions against **District** arising out of the subject matter of this Permit Amendment including, but not limited to, attorneys' fees, costs of suit and costs of administrative records pursuant to the California Code of Civil Procedure §1021.5 or any other applicable local, state or federal laws, whether such attorneys fees, costs of suit and costs of administrative records are direct or indirect, or incurred in the compromise, attempted compromise, trial, appeal or arbitration of claims for attorneys' fees, costs of suit and costs of administrative records in connection with the subject matter of this Permit Amendment.

Coast Seafoods Company

Signature _____

Name _____

Title _____

Date _____

Agenda Report

For Agenda of: April 25, 2013

Title:

- 11 i Consideration of adopting Resolution 2013-04 making findings regarding the adoption and implementation of the Humboldt Bay Regional Invasive *Spartina* Eradication Plan and associated Final Programmatic Environmental Impact Report:
- 11 j Consideration of adopting the Humboldt Bay Regional Invasive *Spartina* Eradication Plan and accepting the role of Regional Coordinator of the Plan.
- 11 k Consideration of accepting an award of \$500,000 from the California Coastal Conservancy to implement the *Spartina* Eradication Plan.

Place on Agenda: New Business – 11 i, j, k

Summary of the Issue: The Harbor District has been working closely with the US Fish and Wildlife Service, Coastal Conservancy, and other partners as part of ongoing efforts to eradicate *Spartina densiflora* on the National Wildlife Refuge properties around Humboldt Bay for the past three years. Major efforts to eradicate invasive *Spartina* species have been ongoing in the San Francisco Bay area as well as in Willapa Bay in Washington.

Also known as dense-flowered cordgrass, *Spartina densiflora* is native to Argentina and Brazil, and is thought to have arrived in Humboldt Bay around 1870. It now dominates the salt marsh habitats in the lower Eel River, the Mad River Estuary and Humboldt Bay, outcompeting native plants and altering the marsh's productivity and the animal communities that inhabit the marsh. In addition to local impacts, the potential for *Spartina densiflora* to spread from the Humboldt Bay Region to other areas of the West Coast has helped local eradication become a priority of the 2010 West Coast's Governor's Agreement on Ocean Health Action Plan.

This agenda report addresses three new developments in the *Spartina* control effort in Humboldt Bay, each led by the California Coastal Conservancy:

1. A Humboldt Bay Regional Invasive Spartina Eradication Plan has recently been completed, an effort led and funded by the California Coastal Conservancy. This Eradication Plan evaluates the existing scope of the problem, considers the effectiveness and costs of a variety of treatment methods, and presents strategies and recommendations to effectively prioritize eradication efforts. The Eradication Plan is available here: [http://www.humbolddbay.org/sites/humbolddbay.org/files/HB Invasive Spartina Eradication Plan.pdf](http://www.humbolddbay.org/sites/humbolddbay.org/files/HB%20Invasive%20Spartina%20Eradication%20Plan.pdf)
2. A Final Programmatic Environmental Impact Report (FEIR) evaluating the effects of implementing the Eradication Plan has also been completed and certified by the California Coastal Conservancy. The FEIR is available here: [http://www.humbolddbay.org/sites/humbolddbay.org/files/HB Invasive Spartina Eradication FEIR.pdf](http://www.humbolddbay.org/sites/humbolddbay.org/files/HB%20Invasive%20Spartina%20Eradication%20FEIR.pdf)
3. The California Coastal Conservancy has authorized a grant of \$500,000 to the District to help us coordinate the implementation of the Plan.

In the interests of saving paper, Staff hereby incorporates the electronically available Eradication Plan and FEIR by reference as Exhibits A and B of this staff report.

Adoption of the Eradication Plan and the proposed role of the Harbor District

The Eradication Plan identifies the need for a Regional Coordinator, an entity that would play the following roles: (See Section 4.2 on p 38 of the Eradication Plan for more detail)

- Serve as the primary applicant for funding to implement the plan,
- Hold (and ensure compliance with) the necessary permits for the work,
- Maintain a database to track and report on eradication efforts, native marsh recovery and other important aspects of the eradication effort
- Coordinate the eradication effort, including equipment and labor force.
- Ensure communication and coordination among the many agencies, and landowners involved in the effort.

The District has been performing much of this role already, albeit on a more limited scale. The Conservancy and other partners see the Harbor District as the most likely entity to serve this Coordination role, given its consistency with our own Humboldt Bay Management Plan, and our jurisdictional area.

Staff strongly recommends, and partner agencies expect, that the Harbor District's efforts as Regional Coordinator would be entirely dependent on external funding sources. This would include the cost of supporting Harbor District staff

efforts on the project. The consultants who authored the Eradication Plan have developed a useful summary of the various tasks and services needed to move forward with implementation of the Eradication Plan, which provides a guide to what the Regional Coordinator role would entail. This April 19th memo titled **"Implementation of Humboldt Bay Regional *Spartina* Eradication Plan"** is included as Exhibit C to this Staff Report.

Assuming resources are available to move forward, existing staffing would not be adequate for the District to serve as Regional Coordinator. Staff anticipates the need for a *Spartina* Coordinator position which could be contracted or hired as a Harbor District employee. All other personnel involved are expected to be by contract.

Environmental Analysis and CEQA

The Coastal Conservancy has completed and certified a Final Programmatic Environmental Impact Report, (FEIR) which was widely distributed for public comment, and includes and responds to comments received. This document identifies and addresses a variety of potential environmental impacts, and includes a Mitigation Monitoring and Reporting Program. Harbor District staff participated throughout the development of the FEIR, and are satisfied that it fully describes the potential impacts and addresses them appropriately.

In order to utilize this FEIR for our own actions as a 'Responsible Agency' under CEQA, the Harbor District does not need to repeat this public CEQA review process, but does need to independently review the material and make specific findings regarding the Eradication Plan and the EIR, as well as agree to conform to the FEIR including the Mitigation and Monitoring Program. Those findings are presented in Resolution 2013-04 for the Commissioner's consideration.

The Coastal Conservancy staff provided an excellent brief summary of the potential environmental impacts identified in the FEIR and the associated mitigation measures, which is reproduced here:

"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."

(end of Conservancy staff summary)

Harbor District Staff emphasize that the use of herbicide has been conditioned to only be utilized where the Regional Coordinator finds that a) it substantially reduces treatment costs, and b) it has a greater likelihood of success in controlling *Spartina*.

Acceptance of Conservancy grant funds:

The Coastal Conservancy has authorized the award of \$500,000 to the Harbor District to move ahead with implementing the Eradication Plan. The authorization was made subject to the following conditions:

- i. 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.
- ii. The Harbor District shall acknowledge Conservancy funding by erecting and maintaining signs that have been reviewed and approved by the Executive Officer.
- iii. 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.

Harbor District staff will work with the Conservancy, based on Commission guidance on these issues, to develop the detailed work plan described above.

Financial Impact: There is no direct commitment of Harbor District resources in the adoption of the Eradication Plan and associated FEIR, acceptance of the Regional Coordinator Role, or acceptance of the Coastal Conservancy's grant award. The overall effort to eradicate *Spartina* in the Humboldt Bay Region will have a significant cost, but the staff recommendations below specify that the Harbor District's efforts will be dependent on outside funding sources. Even so, it is reasonable to expect that some staff time will be expended without reimbursement, for instance time spent applying for grants.

Staff Summary and Recommendations:

Restoration of native salt marsh and control of invasive species is consistent with the Humboldt Bay Management Plan, and with the District's mandate of conserving the natural resources of Humboldt Bay.

Not all non-native species are invasive, and not all invasive species are feasible to control or eradicate. However the substantial resources invested by state and federal agencies to eradicate *Spartina* in Humboldt Bay and throughout the West Coast reflect the significant impacts and further threats to estuarine ecosystems posed by these species. Areas in Humboldt Bay that have received consistent treatment have responded with the recovery of native salt marsh species, with minimal maintenance needed to keep *Spartina* from recurring. The Coastal Conservancy has invested substantial resources in the Eradication Plan and FEIR, is fully aware of the scale of the effort, and will continue to help the Harbor District and the other local partners identify and secure the resources necessary to see this through.

Staff recommends that the Harbor District continue to help coordinate efforts to eradicate invasive *Spartina* and restore native salt marsh in the Humboldt Bay Region. The completed Eradication Plan and Final EIR for that plan will facilitate these efforts, help ensure they are as organized and effective as possible, and ensure that potential environmental impacts of the eradication effort are minimized and mitigated appropriately.

Therefore staff recommend that the Board of Commissioners:

- Adopt Resolution 2013-04: A RESOLUTION ESTABLISHING FINDINGS RELATIVE TO THE ADOPTION AND IMPLEMENTATION OF THE HUMBOLDT BAY REGIONAL INVASIVE SPARTINA ERADICATION PLAN AND ASSOCIATED FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT
- Adopt the Humboldt Bay Regional Invasive Spartina Eradication Plan, and agree to serve as Regional Coordinator as described therein, with the understanding that the Harbor District's efforts will be dependent on external funding sources.
- Agree to accept the funding award from the Coastal Conservancy for implementation of the Eradication Plan, including the Coastal Conservancy's stated conditions, with the final work plan to be completed between Harbor District and Conservancy staff.



19 April 2013

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Subject: Implementation of Humboldt Bay Regional *Spartina* Eradication Plan

Dear Joel and Dan:

Thank you for the opportunity to work with you on development of the Humboldt Bay Regional *Spartina* Eradication Plan (Plan) and associated Programmatic Environmental Impact Report (PEIR). Now that these documents have been adopted/certified by the State Coastal Conservancy (SCC) Board, we want to provide you with our assessment of key next steps. Hopefully our assessment will help you implement the Plan in an efficient and effective manner. This assessment is based on our experience in local *Spartina* research, development of eradication methods, and *Spartina* control work at the Humboldt Bay National Wildlife Refuge (HBNWR). Our advice is also based on our experience with the San Francisco Estuary Invasive *Spartina* Project (ISP), for which we assisted the SCC with a review of the ISP's EIR for compliance, Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), identification of restoration opportunities to offset project impacts, wetland permit applications (including identification of jurisdictional habitats and preparation of a Jurisdictional Waters Delineation Report), an assessment of Essential Fish Habitat (EFH) for purposes of Magnuson-Stevens Fishery Conservation and Management Act compliance with the National Marine Fisheries Service (NMFS), and other agency coordination, permit assistance, and support.

Attached is a chart illustrating the types of services that will be needed to implement the Plan, stressing the importance of good communication and information exchange among project partners. Formation of a *Spartina* Advisory Committee would help guide all aspects of the project. In this assessment, we have focused primarily on ecological services, and have grouped key considerations as they pertain to environmental permitting and compliance, regional database design and maintenance, site-specific evaluation and planning, monitoring and reporting, implementation of treatment measures, and outreach.

Environmental Permitting and Compliance

Permitting. As you are aware, the following regulatory approvals may be needed:



- U. S. Army Corps of Engineers' (USACE) Rivers and Harbor Act Section 10 permit, and Federal Clean Water Act (CWA) Section 404 permit
- California Coastal Commission (CalCC), Consolidated Coastal Development Permit
- California Department of Transportation (Caltrans) encroachment permit(s)
- CDFW Code Section 1601 Streambed Alteration Agreements(s)
- North Coast Regional Water Quality Control Board (NCRWQCB), Federal CWA Section 401 Certification and/or Discharge Permit(s)
- NCRWQCB Aquatic Pesticide Application permit from the Division of Water Quality
- North Coast Unified Air Quality Management District (NCUAQMD) Permit(s)
- Humboldt Bay Harbor, Recreation and Conservation District (HBHRCD) permit(s)
- North Coast Railroad Authority encroachment permit(s)
- State and local agency approvals
- Tribal government permissions and/or agreements

In addition, while we believe that implementation of the Plan will not result in take of species listed under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA), or adversely affect EFH, we do recommend obtaining some level of concurrence from NMFS, USFWS and California Department of Fish and Wildlife (CDFW) that there will be no effect on listed species, designated critical habitat for listed species, or EFH. This likely can be obtained through informal consultation resulting in a letter of concurrence, but it is possible that formal consultation is necessary. For instance, the San Francisco Estuary ISP received agency concurrence in their Programmatic Biological Opinion that there would be "no effect" on numerous listed species that occur in the San Francisco Bay area that would not be affected by treatment of invasive *Spartina*, including several upland- and marine species.

As you are aware, analysis of site-specific conditions and project activities by qualified ecologists may result in the identification of instances that do not fall within the scope of what was analyzed in the PEIR, in which case a tiered environmental assessment can be prepared to build upon the existing PEIR.

Compliance. To ensure compliance with all applicable mitigation measures identified in the PEIR and in the Mitigation Monitoring and Reporting Program (MMRP), or in any permits, approvals or additional environmental documentation required for the project, coordination between qualified ecologists, treatment crews, the regional coordinator, and appropriate agency personnel will be necessary. The determination of which mitigation measures identified in the PEIR are applicable must be made on a site-specific basis. Tasks to be performed by qualified ecologists or other experts using approved protocols include:

Prior to Treatment

- Identify special status fish species aquatic habitat and/or fish presence; delineate areas where ground disturbance is restricted, and recommend appropriate site-specific methods to prevent erosion impacts

- Conduct habitat analyses and nesting bird surveys at appropriate times to detect breeding activity/presence of nests for special status bird species, migratory bird species, and northern harriers or short-eared owls; assess noise levels of proposed activities and delineate appropriate buffer areas around active nests or breeding areas in consultation with USFWS/CDFW
- Conduct habitat analyses and surveys at appropriate times to locate special status plant species; stake exclusion areas as needed; assess need for additional measures such as herbicide spray-drift barriers or wrack removal
- Survey at appropriate times to locate eelgrass in sloughs adjacent to work areas; delineate areas where ground disturbance must be avoided
- Delineate areas within 15 ft of a salt marsh edge directly exposed to wave action in applicable areas of Humboldt Bay where ground disturbance must be avoided to prevent erosion
- Identify areas that qualify as sensitive receptors for applicable PEIR mitigation measures pertaining to aesthetics, air quality, exposure to herbicide drift, and noise impacts; delineate areas where treatment modifications are needed
- Identify sites with special concerns pertaining to cultural resources and consult with the Wiyot Tribe as needed
- Select and stake access routes for equipment and labor crews to avoid sensitive resources

During Treatment

- Provide biological monitors on-site as needed to ensure compliance with all PEIR measures and other regulatory requirements
- Provide training to labor crews to ensure awareness of sensitive resources and site-specific areas of concern or restrictions on activities
- Detect the presence of marine mammals within 200 ft of *Spartina* control activities and alert labor crews regarding noise restrictions

Regional Database Design and Maintenance

Database Design. An ArcGIS geodatabase was created by HBNWR containing region-wide mapping of *Spartina* within 3 density cover classes. For work conducted at HBNWR, site evaluation data and treatment progress were tracked using a FileMaker Pro 11 database. These types of databases can be combined in ArcGIS to enhance geospatial synchronization, and the database could be further developed to meet the monitoring and reporting needs as called for in the Plan and in the MMRP. Summary report templates can be designed to allow generation of periodic progress reports and annual reports.

Data Entry. Data entry performed in a timely and consistent manner will facilitate efficient and effective implementation of *Spartina* control measures region-wide. Once the regional database is designed and individual sites are defined, data entry of available information can begin as soon as funding is available. Early data entry of information such as basic site descriptions, site history, site calculations of *Spartina* extent and density (based on existing regional mapping), and updated treatment records/maps will allow site

prioritization in accordance with the Plan's phased implementation approach. Thereafter, data entry of information such as site conditions, sensitive resources, treatment progress, monitoring, and documentation of environmental permitting and compliance will ideally keep pace with project implementation. Use of a device such as an iPad, Toughbook or other GIS enabled laptop computer will allow efficient data entry in the field, including photodocumentation and synchronization of photographs with geospatial data.

Site Evaluation and Planning

Site-Specific Evaluations/Plans. Site-specific evaluations provide information needed to develop site plans and to ensure environmental compliance. Much of the basic site description information (such as location, size, land ownership, land use history and current information, adjacent land use, and site accessibility) and *Spartina* extent can be compiled using existing information. Field-based evaluations by qualified ecologists are needed to assess site conditions (such as topography, hydrology, substrate, vegetation, sensitive resources, and special circumstances). In accordance with the Plan, the PEIR, and the MMRP, site-specific plans are needed to specify how treatment will be implemented using the most suitable approach, treatment methods, and equipment. Based on our experience with *Spartina* control work at HBNWR and with ISP, some key characteristics of sites or portions of sites to understand for evaluation and planning purposes include:

All Areas

- The presence of sensitive habitat or potential for sensitive resources requiring more detailed surveys/analyses at appropriate times, as listed earlier in this letter with regards to environmental compliance
- The density and distribution of *Spartina* on site (verification/updates to regional map, notation of relevant details as needed)
- The proximity of neighboring *Spartina* populations
- The proximity of marshes that may serve as a source of native propagules
- The presence of features that trigger seasonal restrictions; in addition to sensitive resources these include access routes such as levee roads with wet weather restrictions and seasonal hunting restrictions

Areas Considered for Work Using a Marsh Master

- The height of the marsh and the marsh/bay interface; this will determine the tidal "windows" needed for access and maneuvering to various portions of the site (LIDAR data are available for evaluating this)
- Suitable nearby boat ramps for launching equipment and access routes to sites
- Areas of the site suitable for treatment by the Marsh Master (based on *Spartina* density, channel morphology, and other considerations)
- Areas that need to be restricted to protect sensitive resources (including access across the marsh plain) or to avoid erosion (along marsh edges and bordering channels)

- The presence of sensitive resources that might place seasonal constraints on when the Marsh Master could be used (considering noise levels generated by the equipment)
- Tidal circulation patterns that will affect wrack dispersal (if wrack is generated)

Areas Considered for Work Using Hand Crews

- The width of tidal channels that may require bridges, boats, or specific tide levels to access marsh
- The presence of gravelly substrates, rip-rap levees, standing water, or other factors that affect the specific hand method(s) that will be most suitable

Areas Considered for Work Using Chemical Control

- Conditions that justify the use of chemical control, i.e. factors that would result in substantially lower costs and with a greater likelihood of success as compared to mechanical control
- Site characteristics requiring special measures (e.g., herbicide spray drift barriers to protect sensitive plants)
- Proximity to sensitive receptors that trigger specific mitigation measures per the PEIR

Monitoring and Reporting

Monitoring. Monitoring serves the dual functions of informing treatment decisions (when and where specific treatments are needed) and ensuring environmental compliance (documentation of the presence of sensitive resources, implementation of applicable mitigation measures, and resource response) per the Plan, PEIR, and MMRP. Monitoring tasks to be performed by qualified ecologists include:

Prior to Treatment

- Document baseline conditions through the establishment of photopoints with corresponding field notes; ideally, this would be as seamless as possible by entering data in the database directly in the field and synching photographs with geospatial data

During Treatment

- Soon after primary treatment: describe site conditions; repeat photos at established photopoints
- The first spring following primary treatment, monitor for *Spartina* seedlings and determine the need for treatment; photograph as appropriate
- At 6 months and annually for years 2, 3, and 4: inspect the site to determine the need for followup treatment and to assess the recovery of native vegetation/need for revegetation measures; repeat photos at established photopoints

Post-Treatment

- At each site 5 years following primary treatment: determine whether performance criteria have been met (site has at least 70% vegetation cover and is dominated by native tidal marsh plant species, *Spartina* with <1% cover) and assess the need for remedial measures

Reporting. Providing that the database has been designed with appropriate summary report templates and that all relevant data have been entered in a timely manner, summary tables can be generated easily at desired time intervals to serve as progress reports and to include with annual reports. Summaries of work accomplished during the year, including a list of sites where work was performed, the number of acres treated, the funds expended, and other pertinent information would be readily available for annual reporting purposes. Treatment maps can be generated showing the level of treatment accomplished at each site. Well-prepared reports will facilitate effective communication among project partners, and keep funders informed as to project status. Further, summary tables and treatment maps can be used to develop materials to post to the project website, use in PowerPoint presentations, or to disseminate as printed materials.

Implementation of Control Measures

Effective deployment and management of equipment operators, labor crews, and pesticide use applicators involves a number of logistical and safety considerations. Familiarity with local habitats and conditions; experience working with locally available labor crews; and a keen understanding of when, where, and how to apply specific treatment methods will be valuable for making the most efficient use of time and labor resources. In accordance with the Plan, PEIR, and MMRP, and the Coastal Conservancy staff recommendation for the project; workplans, health and safety plans, and fuel spill prevention/containment plans will be prepared to guide implementation of treatment measures. Based on our experience with *Spartina* control work at HBNWR and ISP, some key considerations during implementation of control measures include:

- Coordination among site partners and adjacent landowners is important
- Scheduling within suitable work windows must take into account tidal cycles, site-specific restrictions, seasonal constraints, and labor availability; schedules will need flexibility and adjustment in response to weather conditions
- Access to specific sites requires providing appropriate signage, road closure cones, etc. per applicable permits
- For many sites, portable toilets need to be placed at suitable locations and maintained regularly to support labor crews
- Talking to labor crews about why we are controlling *Spartina* and teaching them about native marsh communities (e.g., how to recognize sensitive plants occurring in or near work areas) helps with morale and treatment effectiveness
- Training labor crews in the proper technique for specific treatments (e.g., the grind treatment has some fairly specific nuances such as blade angle and proper depth of application), with supervision and technique adjustment as needed, greatly improves the quality of the work performed
- Training labor crews in proper safety measures and ergonomic techniques reduces the risk of injury
- The presence of biological monitors on-site during treatment may be needed to ensure environmental compliance

- Regular tool/equipment maintenance and cleaning is essential
- Tracking on a daily basis the number of hours worked, work accomplished, extent of area covered, and any special circumstances encountered is helpful for planning, budgeting, and reporting

Outreach

Outreach is recognized as an important component of the project for effective communication and for garnering and maintaining public support. Based on our experience with regional *Spartina* eradication planning and *Spartina* control work at HBNWR, we have found:

- Guided tours of restored sites (contrasted with *Spartina* infested sites) and demonstration sites with treatment in progress are very helpful in fostering information exchange and gaining support from community members, coast-wide partners and other researchers, and college students (class field trips)
- Community work days are helpful for engaging volunteers
- A project website, articles in newsletters/newspapers, symposia, radio broadcasts, presentations to community groups, and public meetings are all good ways to keep the public informed, including updates on project status

We are happy to work with SCC, HBHRCD, HBNWR staff and other partners to assist in implementing the Plan in the most efficient means possible. Our staff has diverse expertise which would allow us to provide assistance in a cost-effective manner by assigning the "right person to the right job." For example, interns can be designated to routine field tasks while senior ecologists can help assess complex issues that may arise during permitting or implementation. As funding becomes available, H. T. Harvey & Associates would be interested in providing assistance with Plan implementation. We would be happy to meet with you at your convenience to discuss any of this further. Of course, we are always available to provide advice as needed.

Thank you both for your hard work on this important project.

Sincerely,



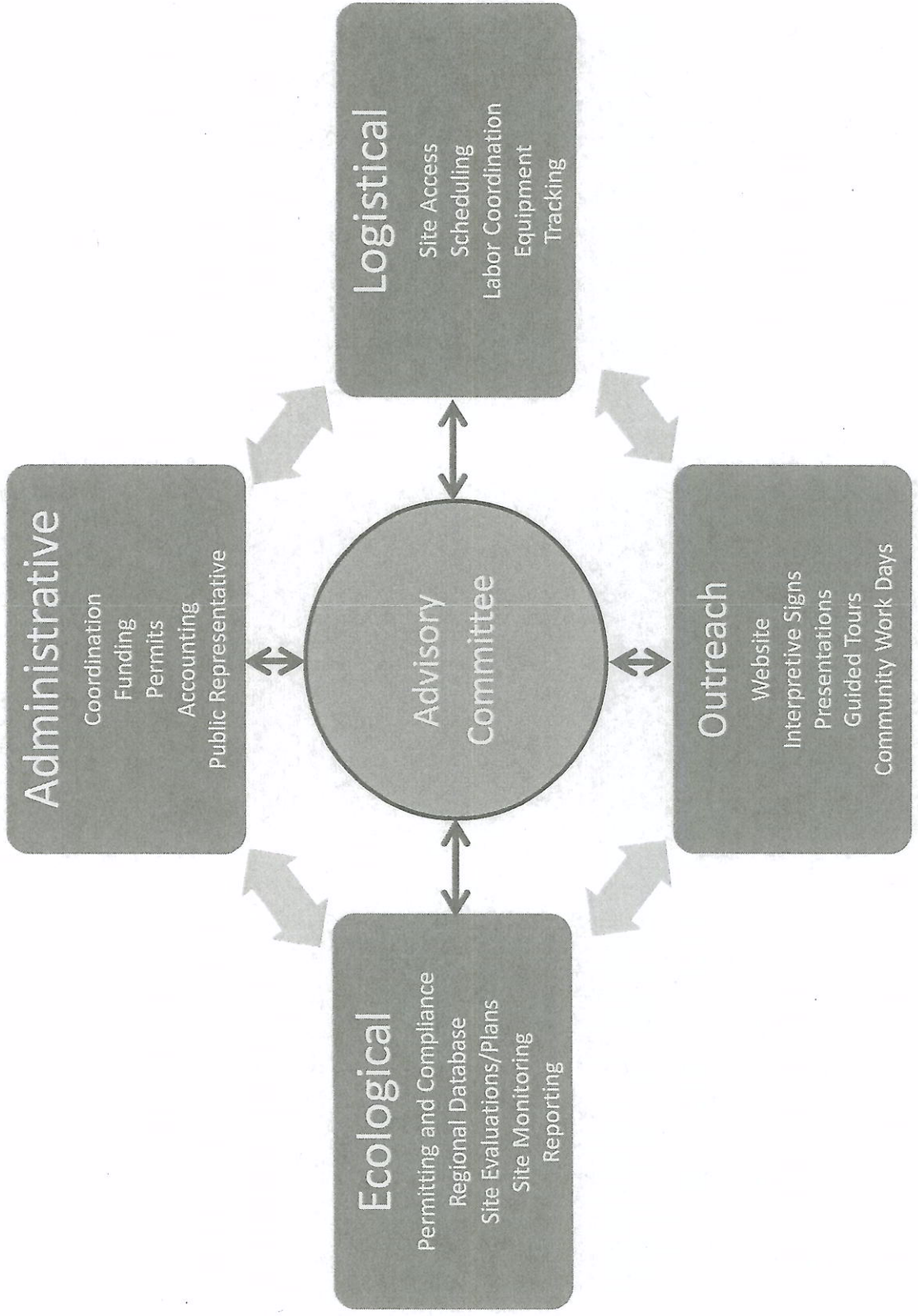
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CC: Sharon Kramer, PhD, Principal

Humboldt Bay Regional Spartina Eradication Work Flow Chart





RESOLUTION NO. 2013-04

**A RESOLUTION ESTABLISHING FINDINGS RELATIVE TO THE
ADOPTION AND IMPLEMENTATION OF THE HUMBOLDT BAY
REGIONAL INVASIVE SPARTINA ERADICATION PLAN AND
ASSOCIATED FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT
REPORT**

WHEREAS, the Board of Commissioners of the Humboldt Bay Harbor, Recreation, and Conservation District are considering adopting the Humboldt Bay Regional Spartina Eradication Plan and serving as Coordinator to help implement the Plan; and,

WHEREAS, no permits, rights, leases, and privileges or other actions which may affect the environment may be granted or approved without first having considered certain potential impacts and without first having made findings relative to said impacts; and,

WHEREAS, the Board of Commissioners of the Humboldt Bay Harbor, Recreation, and Conservation District has been presented with certain evidence relating to the potential impacts of the Humboldt Bay Regional Spartina Eradication Plan upon the air, land, environment, and ecology of the land under the jurisdiction of the Humboldt Bay Harbor, Recreation, and Conservation District; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Humboldt Bay Harbor, Recreation and Conservation District as follows:

The Board of Commissioners of the Humboldt Bay Harbor, Recreation and Conservation District has found the following to be true and adopts the following findings with respect to the adoption and implementation of the Humboldt Bay Regional Invasive Spartina Eradication Plan (hereafter 'Spartina Plan') and associated Final Programmatic Environmental Impact Report:

1. The adoption and implementation of the Spartina Plan is necessary to promote the safety, health, comfort, and convenience of the public; and
2. On April 18th 2013, the California Coastal Conservancy certified the Final Programmatic Environmental Impact Report (FEIR) for the Spartina Plan, and found that the Spartina Plan, as conditioned by the associated Mitigation Monitoring and Reporting Program, is consistent with CEQA and there is no substantial evidence the project will have a significant effect on the environment; and
3. The Humboldt Bay Harbor, Recreation, and Conservation District has independently reviewed and considered the information contained in the FEIR pursuant to its responsibilities under CEQA as a Responsible Agency (CEQA Guidelines, 14 California Code of Regulations, Section 15096).

4. The FEIR identifies potentially significant effects from implementation of the Spartina 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; and
5. Where the Harbor District acts to implement the Spartina Plan, it shall do so in a manner fully consistent with the FEIR, including the Mitigation Monitoring and Reporting Plan included in the FEIR; and
6. There is no substantial evidence that the implementation of the Spartina Plan, as mitigated, will have a significant effect on the environment.
7. The Spartina Plan is consistent with the Humboldt Bay Management Plan; with special relevance to policies CAS-4 (Control or remove non-indigenous invasive species), CAS-1, CAE-1, and CEP-1; and
8. The proposed use is required by the public convenience and necessity; and
9. The proposed use is reasonably required to promote growth, and to meet area demands, and does not adversely effect the environment or ecology of the area to any substantial degree; and,
10. The proposed use will not produce an unreasonable burden on the natural resources and aesthetics of the area, on the public health and safety, and air and water quality in the vicinity of Humboldt Bay, or on the parks, recreation and scenic area, historic sites and buildings, or archeological sites in the area; and

PASSED AND ADOPTED by the Board of Commissioners of the Humboldt Bay Harbor, Recreation and Conservation District at a duly called meeting held on the 25th day of April 2013, by the following polled vote:

AYES:

NOES:

ABSENT:

**MIKE WILSON, President
Board of Commissioners**

ATTEST:

**PATRICK HIGGINS, Secretary
Board of Commissioners**

CERTIFICATE OF SECRETARY

The undersigned, duly qualified and acting Secretary of the HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT, does hereby certify that the attached Resolution is a true and correct copy of RESOLUTION NO. 2013-04 entitled,

**A RESOLUTION ESTABLISHING FINDINGS RELATIVE TO THE
ADOPTION AND IMPLEMENTATION OF THE HUMBOLDT BAY
REGIONAL INVASIVE SPARTINA ERADICATION PLAN AND
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REPORT**

as regularly adopted at a legally convened meeting of the Board of Commissioners of the HUMBOLDT BAY HARBOR, RECREATION AND CONSERVATION DISTRICT, duly held on the 25th day of April 2013; and further, that such Resolution has been fully recorded in the Journal of Proceedings in my office, and is in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this 25th day of April 2013;

PATRICK HIGGINS, Secretary
Board of Commissioners