Agenda Item E.1 Supplemental Attachment 4 November 2015

November 14, 2015

Adam Wagschal
Deputy Director
Humboldt Bay Harbor, Recreation and Conservation District
601 Startare Drive
Eureka, CA 95501
awagschal@humboldtbay.org

Re: Coast Seafoods Company Humboldt Bay Shellfish Aquaculture Permit Renewal and Expansion Project (SCH# 2015082051) Draft Environmental Impact Report

Dear Mr. Wagschal:

The Pacific Fishery Management Council (Council) is writing to comment on Coast Seafoods Company Shellfish Aquaculture Draft Environmental Impact Report (DEIR) for the proposed expansion of aquaculture operations into 600 acres of eelgrass habitat. We thank you for delaying the release of the DEIR to provide us the opportunity to comment.

The Council is one of eight regional fishery management councils established by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), and recommends management actions for Federal fisheries off Washington, Oregon and California. The MSA includes provisions to identify, conserve, and enhance essential fish habitat (EFH) for species managed under a Council fisheries management plan (FMP). The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The Council is authorized under MSA to comment on any Federal or state activity that may affect the habitat, including EFH, of a fishery resource under its authority, and is required to comment on actions that may significantly affect the habitat of an anadromous fishery resource under its authority. In addition, Regional Fishery Management Councils may, at their discretion, designate Habitat Areas of Particular Concern (HAPCs). HAPCs are specific habitat types or areas within EFH that are of particular ecological importance in the fish life cycle or are especially sensitive, rare, or vulnerable. The proposed shellfish culture activities will occur in Humboldt Bay, within the estuarine and eelgrass/marine and estuarine submerged aquatic vegetation HAPCs.

Because Coast Seafoods' shellfish aquaculture expansion project proposed for Humboldt Bay would occupy a substantial amount (>17%) of eelgrass habitat in the bay, the Council remains concerned that the project may have significant adverse effects on the EFH of several Councilmanaged species, including salmon and groundfishes; and on herring, an important prey item of salmon and groundfishes. The Council has specific concerns because of the spatial extent and layout of the proposed project in Humboldt Bay. Those key concerns are as follows.

### **Key Concerns:**

1. No Net Loss. The DEIR describes significance criteria for eelgrass that result in a change in areal extent of eelgrass and/or a greater than 25% change in eelgrass density. The DEIR

bases these criteria on the NMFS California Eelgrass Mitigation Policy and Implementing Guidelines (CEMP).

The Council disagrees with Coast Seafoods' interpretation of the CEMP recommendation as guidelines rather than significance criteria under the California Environmental Quality Act (CEQA). The DEIR uses criteria outlined in the CEMP that are appropriate for small footprint projects, but may not apply to the proposed project due to its scale. The Council again recommends the threshold of significance be changed to no net loss of eelgrass function as recommended in the CEMP and by the state of California. Furthermore, the Council supports the NMFS CEMP and recommends full in-kind mitigation for loss of both eelgrass density and the spatial extent of eelgrass beds, as proxies for eelgrass habitat function.

## 2. Eelgrass Avoidance Alternative

The Council has reviewed the alternatives within the DEIR. The Eelgrass Avoidance Alternative was removed from further analysis as it would have reduced the amount of area in which Coast could expand operations. In concert with the No Net Loss recommendation of the CEMP, the Council disagrees with the removal of the Eelgrass Avoidance Alternative from the suite of alternatives. This alternative could have resulted in a project with reduced impacts to EFH. The Council recommends including this alternative and an analysis of its impacts in the Final Environmental Impact Report (FEIR). If this alternative is not considered, the Council recommends the Existing Footprint Alternative be approved by the Harbor District.

## 3. Loss of Eelgrass within Beds at 5-foot Spacing

Data on the effects of cultch-on-longline oyster culture on eelgrass percent cover and turion density were collected by Rumrill and Poulton (2004) and summarized by Dumbauld et al. (2009) and Rumrill (2015). A summary of these results is also presented in the DEIR (Appendix D, page 37, Table 3). In a short-term (two-year) experiment in an area that was previously dredge-harvested, data indicate that areas of longline oyster culture at five-foot spacing showed a 48% reduction in spatial cover and a 64% reduction in turion density compared to nearby control plots. Tests indicated that the differences were not statistically significant. Rumrill (2015) indicates that these estimates, because of study-design constraints, "will result in an underestimate of the actual levels of loss to eelgrass located beneath the larger-scale commercial oyster longline operations that have been in operation for many years." To better reflect the expected long-term effects, Rumrill (2015) suggested that the results from East Bay plots should be used. At a five-foot longline spacing, those data showed a 79-81% reduction in spatial cover and a 53-94% reduction in turion density compared to nearby control plots. Tests of the statistical significance of those results were not provided. Based on these studies, which were summarized in the DEIR, longline oyster culture at a five-ft spacing is expected to result in a substantial reduction in both eelgrass percent cover and turion density compared to areas without longline culture. Given the spatial extent of the proposed project, the Council is concerned that these reductions represent a substantial impact to eelgrass habitat within Humboldt Bay.

### 4. Buffers

The Council's Pacific Coast Salmon Fishery Management Plan specifically recommends that new or expanded aquaculture farms implement 25-30 foot buffers from existing native eelgrass beds to avoid and minimize impacts to eelgrass (Appendix A, Pacific Coast Salmon Fishery Management Plan 2014, page 61). For this project, the buffer would apply to rack-and-bag culture only. That recommendation has been accepted and we understand it will appear in the FEIR. Based on the current buffer proposals in the DEIR, the buffer recommendations for long line aquaculture will not be met. To protect and enhance EFH for salmon in Humboldt Bay, the Council recommends a minimum 25-foot buffer, consistent with the salmon FMP.

# 5. Mitigation Activities

The FEIR should specify the methods to be used to restore eelgrass in salt marsh channels and the acres of eelgrass to be anticipated. Monitoring and adaptive management methods should also be defined.

### 6. Impacts to Fish Resources

Salmon: The Council disagrees with the assessment of "less than significant impacts" for salmon. Salmonids have been shown to extensively use eelgrass in both Oregon and Washington. (Murphy 2000, Semmens 2008). The Council is concerned the DEIR only references studies from Humboldt Bay that were not designed to detect salmonid use of eelgrass habitat and neglects to reference the multitude of studies showing extensive eelgrass use by salmonids throughout the Pacific Northwest. The Project may significantly impact salmonid populations by reducing and altering EFH eelgrass habitat that provides foraging and refugia.

Groundfish: Groundfish extensively use eelgrass habitat within estuaries along the Pacific Coast and rely on eelgrass habitat for predator avoidance and prey species. Reduction or thinning of the eelgrass may have detrimental effects on the juvenile groundfish population. The Council disagrees with the "less than significant impact" assessment cited in the DEIR.

Herring: While the DEIR cites successful herring spawn on substrate other than eelgrass, uncertainty remains about the survival of herring eggs on aquaculture gear relative to natural vegetated substrates. Palsson (1984) evaluated egg survival on several types of artificial substrate (including polypropylene and hemp rope, polyethylene netting, tubing and turf mats, and plastic sheeting) deployed within natural eelgrass habitat. Total survival and larval production was significantly lower for the artificial substrates when compared to natural eelgrass spawning substrate. This study highlights that spawning on non-natural substrates may lead to significantly reduced survival of herring eggs through both egg loss (eggs displaced from substrate) and egg death (non-viability of eggs).

Numerous comments have been provided to Coast Seafoods regarding potentially significant impacts to Pacific herring caused by placing aquaculture infrastructure within core herring spawning areas, including loss of native eelgrass habitat, increased desiccation of eggs deposited on aquaculture gear, differential survival of eggs deposited on artificial substrates (aquaculture gear), and changes in fish community structure within core herring spawning areas that may

increase predation of eggs and early larval herring. The Council is concerned that, although the DEIR determines impacts to Pacific herring will be less than significant under CEQA, no substantive information is provided to support this determination.

The California Department of Fish and Wildlife (September 23, 2015) notes that herring have been documented spawning in eelgrass beds in the vicinity of the East Bay Management Unit every time surveys have been conducted. While there is available eelgrass outside of this area, herring do not use it the majority of the time. The reasons for herring spawning site fidelity are not known; however, it is assumed that long-term use of a site reflects selection of highly suitable environmental criteria. Given the lack of substantive information provided by Coast Seafoods regarding possible long-term impacts to herring in the core spawning areas of Humboldt Bay, the Council recommends this area be avoided by the project.

The Council disagrees with the assessment of the DEIR regarding desiccation, and recommends a more comprehensive study regarding the potential of desiccation.

The Council is concerned that a large-scale shift in the type of spawning substrate available to herring in the core eelgrass spawning areas of Humboldt Bay could have impacts on spawning success and negatively impact the population.

The DEIR references an "exposure elevation analysis of aquaculture gear" citing Wagschal, pers. comm., 2015; however, no supporting information was provided. As such, it is not possible for the Council to determine the validity of the results. Based on this analysis, air exposure of eggs deposited on aquaculture gear was estimated to increase by approximately 11%. However, without defining the tidal regimes under which the analysis was conducted, and without providing information on exposure times of herring eggs deposited on eelgrass at the same locations as the aquaculture gear, the results of the exposure analysis are not useful. Further, the DEIR states that "increased mortality due to desiccation is likely to be offset by reduced predation pressure from invertebrates and fish during high tide." The Council acknowledges that predation by invertebrates and fish can be an important source of mortality for herring eggs; however, with no information on desiccation mortality or invertebrate and fish predation of herring eggs in Humboldt Bay, this is an unsubstantiated assertion. Further, this statement does not take into consideration increased avian predation, which can be significant (Rooper and Haldorson, 2000), particularly by opportunistic species such as gulls. Coast Seafoods has not provided sufficient information to reasonably conclude increased desiccation of herring eggs on oyster gear will not result in increased mortality.

## 7. Ecosystem Functions

In response to Coast's Initial Study in February 2015, which described a project with 2.5 foot longline spacing, scientists at Humboldt State University (HSU) described the ecosystem functions provided by eelgrass and the risks of aquaculture expansion (trampling, shading, etc.) to these functions.

The HSU comments also noted the important nuances in environmental parameters between the north and south bay that affect eelgrass growth. To better understand the degree to which

eelgrass would be negatively affected by oyster mariculture, HSU scientists recommended new studies that characterize and quantify the natural variability in eelgrass beds and the ecological effects of the oyster mariculture operations. The earlier meso-scale field experiments conducted by Rumrill and Poulton (2004) were limited in scope in that they were designed only to document the effects of different oyster long-line spacing (i.e., 1.5 ft, 2.5 ft, 5 ft, 10 ft in non-replicated 30 m X 30 m plots) on eelgrass percent cover and plant density, and to document any differences in the composition of infaunal invertebrate communities within the eelgrass beds and oyster mariculture plots. The new investigation proposed by scientists at HSU would provide much needed answers to key questions on the effects of shellfish mariculture on the eelgrass community of Humboldt Bay. We recognize that the proposal does include an extensive monitoring plan that will be useful for addressing some of these uncertainties. Regardless of the proposed long-line spacing, these studies are still needed.

These studies should also characterize the role of eelgrass as fish habitat and how impacts to eelgrass affect fish. The FEIR should compare best management practices defined by Rumrill et al. studies to maintain eelgrass beds, with best management practices of NOAA and state regulatory agencies. This would include spacing of rows, for example.

In summary, the DEIR does not adequately address impacts to eelgrass. The Council recommends that the FEIR first determine how to minimize the operational footprint to avoid eelgrass beds, conduct a more comprehensive study to characterize and quantify impacts to eelgrass and associated fish species, and provide mitigation measures that effectively offset impacts.

The Council believes the DEIR lacks adequate mitigation and reduced-impact alternatives. Without the inclusion of reduced-impact alternatives, the Council supports only the Existing Footprint Alternative.

The Council appreciates the opportunity to provide comment and looks forward to these issues being addressed in the FEIR.

Sincerely, D.O. McIsaac, Ph.D. Executive Director

Cc: Holly Costa, San Francisco District Regulatory Chief, North Branch US Army Corps of Engineers, 1455 Market Street, 15th Floor, San Francisco, CA 94103-1398 Holly.N.Costa@usace.army.mil

Cassidy Teufel, Senior Environmental Scientist (Specialist) California Coastal Commission 45 Fremont Street, Suite 2000, San Francisco, CA 94105-2219, <a href="mailto:CTeufel@coastal.ca.gov">CTeufel@coastal.ca.gov</a>

Gil Falcone, Environmental Scientist North Coast Regional Water Quality Control Board 5550 Skylane Blvd., Suite A, Santa Rosa, California 95403, Gil.Falcone@waterboards.ca.gov

Jim Watkins, Fish and Wildlife Biologist US Fish and Wildlife Service

1655 Heindon Road, Arcata, CA 95521, Jim\_H\_Watkins@fws.gov

Attachments: July 14, 2015 letter to Humboldt Bay Harbor District re: Comment on Humboldt Bay Harbor District Mariculture Project and Coast Seafoods Expansion Project; and the September 21, 2015 letter to Humboldt Bay Harbor District re: Notice of Preparation of Coast Seafoods Shellfish Aquaculture Draft Environmental Impact Statement

### References

Murphy, M.L., Johnson, S.W., and D.J. Csepp. 2000. A Comparison of Fish Assemblages in Eelgrass and Adjacent Subtidal Habitats near Craig, Alaska. Alaska Fishery Research Bulletin. 7:11-21. Semmens, B.X. 2008.

Acoustically derived fine-scale behaviors of juvenile Chinook salmon (Oncorhynchus tshawytscha) associated with intertidal benthic habitats in an estuary. Canadian. Journal of Fisheries and Aquatic Sciences Vol. 65.

Palsson, W. 1984. Egg mortality upon natural and artificial substrata within Washington state spawning grounds of Pacific herring (Clupea harengus pallasi). MS thesis, University of Washington, Seattle, WA.

California Department of Fish and Wildlife (September 23, 2015) Re: Notice of Preparation of an Environmental Impact Report for the Coast Seafoods Company Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project (SCH# 2015082051)

Dumbauld, B.R., J.L. Ruesink, and S.S. Rumrill. 2009. The ecological role of bivalve shellfish aquaculture in the estuarine environment: a review with application to oyster and clam culture in West Coast (USA) estuaries. Aquaculture 290:196-223.

Rumrill, S. and V. Poulton. 2004. Ecological role and potential impacts of molluscan shellfish culture in the estuarine environment of Humboldt Bay, CA. Western Regional Aquaculture Center Annual Report November 2004. 79 p.

Rumrill, S. 2015. Personal communication with the National Marine Fisheries Service regarding eelgrass and shellfish aquaculture interactions from Humboldt Bay WRAC study. Oregon Department of Fish and Wildlife. April 5, 2015. <a href="mailto:steven.s.rumrill@state.or.us">steven.s.rumrill@state.or.us</a>

PFMC Salmon FMP



# Pacific Fishery Management Council

Style Definition

[1]

7700 NE Ambassador Place, Suite 101, Portland, OR 97220-1384 Phone 503-820-2280 | Toll free 866-806-7204 | Fax 503-820-2299 | www.pcouncil.org Dorothy M. Lowman, Chair | Donald O. McIsaac, Executive Director

November 14, 2015		Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black			
Adam Wagschal		Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black			
Deputy Director	( ) \	Formattad, Normal Left Space After: Ont Line spacing			
Humboldt Bay Harbor, Recreation and Conservation District	///	single			
601 Startare Drive	1/1	Formatted: Font: (Default) Times New Roman, 12 pt			
Eureka, CA 95501 awagschal@humboldtbay.org	///	Formatted: Font: (Default) Times New Roman, 12 pt, Kern			
Principal de la companya de la compa	(	at 9 pt			
Re: Coast Seafoods Company Humboldt Bay Shellfish Aquaculture Permit	$\binom{n}{n}$	Formatted [2]			
	$\mathbb{R}^{n}$	Formatted [3]			
Renewal and Expansion Project (SCH# 2015082051) Draft Environmental Impact Report		Formatted [4]			
Dear Mr. Wagschal;		Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black			
The Pacific Fishery Management Council (Council) is writing to comment on Coast Seafoods Company Shellfish Aquaculture Draft Environmental Impact Report (DEIR) for the proposed		Formatted: Space After: 0 pt, Line spacing: single, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers			
expansion of aquaculture operations into 600 acres of eelgrass habitat. We thank you for delaying the	m[n]	Formatted [5]			
release of the DEIR to provide us the opportunity to comment.					
<b>→</b>	lint!	( [0]			
The Council is one of eight regional fishery management councils established by the Magnuson-	hin)				
Stevens Fishery Conservation and Management Act of 1976 (MSA), and recommends		Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt			
management actions for Federal fisheries off Washington, Oregon and California. The MSA	i/[i]	Formatted [7]			
includes provisions to identify, conserve, and enhance essential fish habitat (EFH) for species		Formatted: Font: (Default) Times New Roman, 12 pt			
managed under a Council fisheries management plan, (FMP), The MSA defines EFH as "those	11/0	Formatted: Font: (Default) Times New Roman, 12 pt, Kern			
waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The	11/1	at 9 pt			
Council is authorized under MSA to comment on any Federal or state activity that may affect the	1 191	r: Black matted: Normal, Left, Space After: 0 pt, Line spacing: le matted: Font: (Default) Times New Roman, 12 pt matted: Font: (Default) Times New Roman, 12 pt, Kern pt matted			
habitat, including EFH, of a fishery resource under its authority, and is required to comment on	1111	Formatted: Space After: 0 pt, Line spacing: single			
actions that may significantly affect the habitat of an anadromous fishery resource under its authority.	/ / '''	Formatted [8]			
In addition, Regional Fishery Management Councils may, at their discretion, designate Habitat Areas of	1/10	Formatted: Font: (Default) Times New Roman, 12 pt			
Particular Concern (HAPCs). HAPCs are specific habitat types or areas within EFH that are of particular ecological importance in the fish life cycle or are especially sensitive, rare, or vulnerable. HAPCs	//	Formatted: Space After: 0 pt, Line spacing: single			
designated by this Council are rocky reefs, estuaries, kelp forests, eelgrass beds, seagrass beds, and	\	Formatted [9]			
unique geologic features. The proposed shellfish culture activities will occur in Humboldt Bay, within the	//	([/			
estuarine and eelgrass/marine and estuarine submerged aquatic vegetation HAPCs.					
estuarine and eergrass/marine and estuarine submerged aquatic vegetation in the Cs.		Formatted, Font, (Default) Times New Domes, 12 nt			
Paganga Coast Sastands' shallfish agreen turn agreement project proposed for Hymboldt Day	. – – -				
Because Coast Seafoods' shellfish aquaculture expansion project proposed for Humboldt Bay	/	Formatted [10]			
intends towould occupy a substantial amount (>17%) of eelgrass habitat in the bay, the Council remains	///				

concerned that the project may have significant adverse effects on the EFH of several Councilmanaged species, including salmon, herring, and groundfish. Of particular concern to the Council is the project size, spatial extent and layout, structural spacing, location, operational best management practices, the differential survival rate of herring spawning on aquaculture gear as opposed to eelgrass out of kind mitigation proposals, monitoring plans, and other essential components of the DEIR. managed species, including salmon and groundfishes; and on herring, an important prey item of salmon and groundfishes. The Council has specific concerns because of the spatial extent and layout of the proposed project in Humboldt Bay. Those key concerns are as follows.

Key Concerns:

#### 1. No Net Loss.

The DEIR describes significance criteria for eelgrass that result in a change in areal extent of eelgrass and/or a greater than 25% change in eelgrass density. The DEIR bases these criteria on the NMFS California Eelgrass Mitigation Policy and Implementing Guidelines (CEMP).

The Council disagrees with Coast Seafoods' interpretation of the CEMP recommendation as if the recommendation were designed only as a guideline and not asguidelines rather than significance criteria under the California Environmental Quality Act. (CEQA). The DEIR uses criteria outlined in the CEMP that are intendedappropriate for small footprint projects, and that likely dobut may not apply to the proposed project due to its scale. The Council again recommends the threshold of significance be changed to "no net loss of eelgrass extent and function" as recommended in the CEMP and by the state of California. Furthermore, the Council supports the NMFS CEMP and recommends full in-kind mitigation for loss of both eelgrass density and the spatial extent of eelgrass beds..., as proxies for eelgrass habitat function.

### 2. Eelgrass Avoidance Alternative

1.

The Council has reviewed the alternatives within the DEIR. The Eelgrass Avoidance Alternative was removed from further analysis as it would have reduced the amount of area in which Coast could expand operations. In concert with the No Net Loss recommendation of the CEMP, the Council disagrees with the removal of the Eelgrass Avoidance Alternative from the suite of alternatives analyzed in the DEIR. This alternative could have resulted in a project with reduced impacts to EFH. The Council recommends including this alternative and an analysis of its impacts in the Final Environmental Impact Report (FEIR). If this alternative is not considered, the Council recommends the Existing Footprint Alternative be approved by the Harbor District.

### 2. Cumulative Impacts

The Council is concerned that the cumulative impacts analysis within the DEIR does not fully consider the potential cumulative impacts of the combined Coast Seafoods Project and the Humboldt Bay Harbor District's Pre-permitting Project on EFH. Should the Pre-permitting Project move forward, there would be a combined 756 acre increase of aquaculture within eelgrass, equating to approximately 26.8% of total eelgrass in the North Bay. The cumulative impact analysis must analyze the combined effects of all projects in Humboldt Bay independent of potential mitigation efforts in other projects. The Council does not agree that the cumulative impacts can be determined "less than significant" for the Humboldt Bay Harbor District Prepermitting Project; mitigation that may be required to restore net ecological functions cannot be used in the analysis of cumulative impacts.

Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt. Kern at 9 pt Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt, Font Formatted: Space After: 0 pt, Line spacing: single Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt, Kern Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt, Font Formatted: Font: (Default) Times New Roman, 12 pt **Formatted** Formatted: Space After: 0 pt, Line spacing: single Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black Formatted: Font color: Black **Formatted** .. [12] Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black **Formatted** .. [13] Formatted: Font: Not Bold, Not Italic, Font color: Black Formatted [14] Formatted: Font color: Black **Formatted** . [15] Formatted: Font: (Default) Times New Roman, 12 pt **Formatted** ... [16] **Formatted** . [17] Formatted: Font: Not Bold Formatted .. [18] Formatted: Font color: Black Formatted: Font: Not Bold Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt **Formatted** [19] Formatted: Font: 12 pt

### 3. Loss of Eelgrass within Beds at 5-foot Spacing

Data on the effects of cultch-on-longline oyster culture on eelgrass percent cover and turion density were collected by Rumrill and Poulton (2004) and summarized by Dumbauld et al. (2009) and Rumrill (2015). A summary of these results is also presented in the DEIR (Appendix D, page 37, Table 3). In a short-term (two-year) experiment in an area that was previously dredgeharvested, data indicate that areas of longline oyster culture at five-foot spacing showed a 48% reduction in spatial cover and a 64% reduction in turion density compared to nearby control plots. Tests indicated that the differences were not statistically significant. Rumrill (2015) indicates that these estimates, because of study-design constraints, "will result in an underestimate of the actual levels of loss to eelgrass located beneath the larger-scale commercial oyster longline operations that have been in operation for many years." To better reflect the expected long-term effects, Rumrill (2015) suggested that the results from East Bay plots should be used. At a five-foot longline spacing, those data showed a 79-81% reduction in spatial cover and a 53-94% reduction in turion density compared to nearby control plots. Tests of the statistical significance of those results were not provided. Based on these studies, which were summarized in the DEIR, longline oyster culture at a five-ft spacing is expected to result in a substantial reduction in both eelgrass percent cover and turion density compared to areas without longline culture. Given the spatial extent of the proposed project, the Council is concerned that these reductions represent a substantial impact to eelgrass habitat within Humboldt Bav.

#### 4. Buffers

3

The Council's Pacific Coast Salmon Fishery Management Plan specifically recommends that new or expanded aquaculture farms implement 25-30 foot buffers from existing native eelgrass beds to avoid and minimize impacts to eelgrass (Appendix A, Pacific Coast Salmon Fishery Management Plan 2014, page 61). For this project, the buffer would apply to rack-and-bag culture only. That recommendation has been accepted and we understand it will appear in the FEIR. Based on the current buffer proposals in the DEIR-of 10 feet, the Council's buffer recommendations for long line aquaculture will not be met. To protect and enhance EFH for salmon in Humboldt Bay, the Council recommends integrating the recommended buffer distances into the alternatives for a minimum 25-foot buffer, consistent with the FEIRsalmon FMP.

#### 4. Existing Mitigation Areas

Coast Seafood's operational footprint in Humboldt Bay was reduced from 500 to 300 acres in 2007. This reduction in acreage was required as mitigation for the environmental impacts of their existing 300-acre operational footprint during the last California Environmental Quality Act (CEQA) regulatory process. The current proposal expands operations into areas previously designated for mitigation. The Council believes this is a negligent action and should not be permitted. In the event that expansion into the 2007 mitigation area is permitted, additional mitigation requirements are needed to account for this 200-acre loss.

## 5. Mitigation Activities

The DEIR describes four potential in-kind mitigation activities to address loss of eelgrass density and spatial extent. Of these four potential activities, only two attempt to provide in-

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Not Bold, Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Kern

Formatted: Font: Not Bold

Formatted: Normal, Left, Space After: 0 pt, Line spacing: single. No bullets or numbering

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Indent: Left: 0", Space After: 0 pt, Line spacing: single

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: Not Bold, Font color: Black

Formatted: Font: Not Bold

Formatted: Normal, Left, Space After: 0 pt, Line spacing: single, No bullets or numbering

Formatted: Font: (Default) Times New Roman, 12 pt

kind mitigation for loss of eelgrass habitat and function that is recommended in the NMFS CEMP. The Council does not agree with mitigation measures that do not include "in kind" on an acre for acre basis, or do not directly address the loss of eelgrass habitat and function (including shoot density). That is, the Council does not support Option 3 Elk River Estuary Enhancement and Option 4 Hoff Parcels, Eureka, California, which propose to modify the Elk River brackish water habitat and undeveloped pasture land to restore the former tidally influenced channels. These efforts do not contribute to eelgrass mitigation.

The two proposed mitigation options that address eelgrass coverage and function are insufficient to offset loss of eelgrass habitat and function;

(a) "Option 1: Buoy Deployed Seeding (BuDS) System" is based on the concept that there may be areas within Humboldt Bay that might support eelgrass, but that natural seed dispersal is limited due to circulation and water quality parameters. On the contrary, there is no evidence that natural seed dispersal is limited in Humboldt Bay. Furthermore, this mitigation approach is experimental and does not have established or accepted success criteria. The Council does not agree with using an experimental mitigation approach that is not likely to have measurable outcomes and does not have scientifically verified performance criteria. This method requires additional testing to prove viability.

(b) "Option 2: Parcel 4 Restoration" primarily addresses upland habitats, freshwater marsh, and removal of debris and contaminants. While removal of debris and pilings may open up some habitat for eelgrass, the scale of potential eelgrass impacts from Coast Seafoods' 600 plus acre expansion is not comparable to the small amount of eelgrass habitat that may be restored.

The FEIR should specify the methods to be used to restore eelgrass in salt marsh channels and the acres of eelgrass to be anticipated. Monitoring and adaptive management methods should also be defined.

### 6. Impacts to Fish Resources

Salmon: The Council disagrees with the assessment of "less than significant impacts" for salmon. Salmonids have been shown to extensively use eelgrass in both Oregon and Washington. (Murphy 2000, Semmens 2008). The Council is concerned the DEIR only references studies from Humboldt Bay that were not designed to detect salmonid use of eelgrass habitat and neglects to reference the multitude of studies showing extensive eelgrass use by salmonids throughout the Pacific Northwest. The Project may significantly impact salmonid populations by reducing and altering EFH eelgrass habitat that provides foraging and refugia.

Groundfish: Groundfish extensively use eelgrass habitat within estuaries along the Pacific Coast and rely on eelgrass habitat for predator avoidance and prey species. Reduction or thinning of the eelgrass may have detrimental effects on the juvenile groundfish population. The Council disagrees with the "less than significant impact" assessment cited in the DEIR.

Herring: While the DEIR cites successful herring spawn on substrate other than eelgrass, uncertainty remains about the survival of herring eggs on aquaculture gear relative to natural vegetated substrates.

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern

at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern

Formatted: Font: (Default) Times New Roman, 12 pt, Not Italic. Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Font

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Not Italic, Font color: Black

Formatted: Indent: Left: 0", Line spacing: single

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Not Italic. Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Palsson (1984) evaluated egg survival on several types of artificial substrate (including polypropylene and hemp rope, polyethylene netting, tubing and turf mats, and plastic sheeting) deployed within natural eelgrass habitat. Total survival and larval production was significantly lower for the artificial substrates when compared to natural eelgrass spawning substrate. This study highlights that spawning on non-natural substrates may lead to significantly reduced survival of herring eggs through both egg loss (eggs displaced from substrate) and egg death (non-viability of eggs).

Numerous comments have been provided to Coast Seafoods regarding potentially significant impacts to Pacific herring caused by placing aquaculture infrastructure within core herring spawning areas, including loss of native eelgrass habitat, increased desiccation of eggs deposited on aquaculture gear, differential survival of eggs deposited on artificial substrates (aquaculture gear), and changes in fish community structure within core herring spawning areas that may increase predation of eggs and early larval herring. The Council is concerned that, although the DEIR determines impacts to Pacific herring will be less than significant under CEQA, no substantive information is provided to support this determination.

The California Department of Fish and Wildlife (September 23, 2015) notes that herring have been documented spawning in eelgrass beds in the vicinity of the East Bay Management Unit every time surveys have been conducted. While there is available eelgrass outside of this area, herring do not use it the majority of the time. The reasons for herring spawning site fidelity are not known; however, it is assumed that long-term use of a site reflects selection of highly suitable environmental criteria. Given the lack of substantive information provided by Coast Seafoods regarding possible long-term impacts to herring in the core spawning areas of Humboldt Bay, the Council recommends this area be avoided by the project.

The Council disagrees with the assessment of the DEIR regarding desiccation, and recommends a more comprehensive study regarding the potential of desiccation.

The Council is concerned that a large-scale shift in the type of spawning substrate available to herring in the core eelgrass spawning areas of Humboldt Bay could have impacts on spawning success and negatively impact the population.

The DEIR references an "exposure elevation analysis of aquaculture gear" citing Wagschal, pers. comm., 2015; however, no supporting information was provided. As such, it is not possible for the Council to determine the validity of the results. Based on this analysis, air exposure of eggs deposited on aquaculture gear was estimated to increase by approximately 11%. However, without defining the tidal regimes under which the analysis was conducted, and without providing information on exposure times of herring eggs deposited on eelgrass at the same locations as the aquaculture gear, the results of the exposure analysis are not useful. Further, the DEIR states that "increased mortality due to desiccation is likely to be offset by reduced predation pressure from invertebrates and fish during high tide." The Council acknowledges that mortality frompredation by invertebrates and fish can be an important source of mortality for herring eggs; however, with no information on desiccation mortality or invertebrate and fish predation of herring eggs in Humboldt Bay, this is an unsubstantiated assertion. Further, this statement does not take into consideration increased avian predation, which can be significant (Rooper and Haldorson, 2000), particularly by opportunistic species such as gulls. Coast

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Auto, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Indent: Left: 0", First line: 0", Line spacing: single

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Indent: Left: 0", Line spacing: single

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Kern

Formatted: Font: (Default) Times New Roman, 12 pt, Not

Formatted: Indent: First line: 0", Line spacing: single

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font color: Black

Formatted: Normal, Left, Indent: Left: 0", Space After: 0 pt, Line spacing: single

Formatted: Font color: Black

Seafoods has not provided sufficient information to reasonably conclude increased desiccation of herring eggs on oyster gear will not result in increased mortality.

### 6. Monitoring Plan

The DEIR includes Appendix H, Eelgrass Monitoring Plan but does not include monitoring plans for other species associated with eelgrass. The Council recommends that the FEIR include a monitoring plans for fish species associated with eelgrass, particularly salmon, groundfish, and herring.

#### 7. Lack of Scientific Information

#### 7. Ecosystem Functions

In response to Coast's Initial Study in February 2015, which described a project with 2.5 foot longline spacing, scientists at Humboldt State University (HSU) described the ecosystem functions provided by eelgrass and the risks of aquaculture expansion (trampling, shading, etc.) to these functions. Also

The HSU comments also noted the important nuances in environmental parameters between the north and south bay that affect eelgrass growth. To better understand the degree to which eelgrass would be negatively affected by oyster mariculture, HSU scientists recommended new studies that characterize and quantify the natural variability in eelgrass beds and the ecological effects of the oyster mariculture operations. The earlier meso-scale field experiments conducted by Rumrill and Poulton (2004) were limited in scope in that they were designed only to document the effects of different oyster long-line spacing (i.e., 1.5 ft, 2.5 ft, 5 ft, 10 ft in non-replicated 30 m X 30 m plots) on eelgrass percent cover and plant density, and to document any differences in the composition of infaunal invertebrate communities within the eelgrass beds and oyster mariculture plots. The new investigation proposed by scientists at HSU would provide much needed answers to key questions on the effects of shellfish mariculture on the eelgrass community of Humboldt Bay. We recognize that the proposal does include an extensive monitoring plan that will be useful for addressing some of these uncertainties. Regardless of the proposed long-line spacing, these studies are still needed.

These studies should also characterize the role of eelgrass as fish habitat and how impacts to eelgrass affect fish. The FEIR should compare best management practices defined by Rumrill et al. studies to maintain eelgrass beds, with best management practices of NOAA and state regulatory agencies. This would include spacing of rows, for example.

To ensure objectivity and transparency and avoid conflicts of interest, impact studies and monitoring efforts should be conducted by independent scientists who are not affiliated with the shellfish mariculture industry or the Humboldt Bay Harbor District.

In summary, the DEIR does not adequately address impacts to eelgrass. The DEIR must he Council recommends that the FEIR first determine how to minimize the operational footprint to avoid eelgrass beds, conduct a more comprehensive study to characterize and quantify impacts to eelgrass and associated fish species, and provide mitigation measures that effectively offset impacts.

Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt. Kern Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt, Kern Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font: (Default) Times New Roman, 12 pt, Font Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black Formatted: Font: (Default) Times New Roman, 12 pt, Font Formatted: Font color: Black **Formatted** . [20] Formatted: Font: (Default) Times New Roman, 12 pt Formatted .. [21] Formatted: Font color: Black **Formatted** .. [22] Formatted: Font color: Black Formatted: Font: (Default) Times New Roman, 12 pt **Formatted** . [23] Formatted: Font color: Black **Formatted** .. [24] Formatted: Font color: Black Formatted: Font color: Black **Formatted** ... [25] Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black Formatted .. [26] Formatted: Font: Not Bold, Font color: Black Formatted: Font: (Default) Times New Roman, 12 pt Formatted ... [27] Formatted . [28] Formatted: Space After: 0 pt, Line spacing: single Formatted: Font: (Default) Times New Roman, 12 pt Formatted: Font color: Black **Formatted** .. [29] Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: 12 pt

Formatted: Font: Not Italic

THE COUNTY OF THE PROPERTY OF	For	matted	[31]
The Council believes the DEIR lacks robustadequate mitigation and monitoring plans, and reduced- impact alternatives. Without the inclusion of reduced-impact alternatives, the Council supports only the		matted	
Existing Footprint Alternative.	$\times$	matted	[33
Existing Footprint Atternative.		matted	[32
The Council appreciates the opportunity to provide comment and looks forward to these issues	$\vdash$	matted	[34
being addressed in the FEIR.	`	matted	( [35
	` <del> </del>	matted	[36
Sincerely, •	` , >	matted	( [37
// /	$:$ $\succeq$	matted	( [38
	\ \ <del>\</del>	matted	( [39
	\ \	matted	[40
D.O. McIsaac, Ph.D.	`\_	matted	( [41
		matted	( [42
Executive Director,			( [43
	` \	matted	( [44
		matted	( [45
Cc: Holly Costa, San Francisco District Regulatory Chief, North Branch US Army Corps of		matted	[46
Engineers, 1455 Market Street, 15th Floor, San Francisco, CA 94103-1398		matted	[47
Holly.N.Costa@usace.army.mil		matted	[48
		matted	[49
Cassidy Teufel, Senior Environmental Scientist (Specialist) California Coastal Commission	Fiel	ld Code Changed	[50
45 Fremont Street, Suite 2000, San Francisco, CA 94105-2219, CTeufel@coastal.ca.gov,	For	matted	[51
Gil Falcone, Environmental Scientist North Coast Regional Water Quality Control Board	For	matted	[52
5550 Skylane Blvd., Suite A, Santa Rosa, California 95403, Gil.Falcone@waterboards.ca.gov	For	matted	[53
5550 Skylane Blvd., Suite A, Santa Rosa, Camornia 75405, Str. alcone waterboards.ca.gov	For	matted	[54
Jim Watkins, Fish and Wildlife Biologist US Fish and Wildlife Service	Fiel	ld Code Changed	[55
1655 Heindon Road, Arcata, CA 95521, Jim H Watkins@fws.gov	For	matted	[56
	For	matted	[57
Attachments: July 14, 2015 letter to Humboldt Bay Harbor District re: Comment on Humboldt	For	matted	[58
Bay Harbor District Mariculture Project and Coast Seafoods Expansion Project; and the	For	matted	[59
September 21, 2015 letter to Humboldt Bay Harbor District re: Notice of Preparation of Coast	For	matted	( [60
Seafoods Shellfish Aquaculture Draft Environmental Impact Statement	For	matted	[61
	For	matted	[62
References	For	matted	[63
M 1 MI II 0W 1DIC 2000 A C : CE:1 A 11 :	For	matted	[64
Murphy, M.L., Johnson, S.W., and D.J. Csepp. 2000. A Comparison of Fish Assemblages in Eelgrass and Adjacent Subtidal Habitats near Craig, Alaska. Alaska Fishery Research Bulletin.	For	matted	[65
7:11-21. <u>Semmens, B.X. 2008.</u>	For	matted	[66
7.11-21. <u>Schillichs, B.A. 2006.</u>	For	matted	[67
Semmens, B.X. 2008. Acoustically derived fine-scale behaviors of juvenile Chinook salmon	For	matted	( [68
(Oncorhynchus tshawytscha) associated with intertidal benthic habitats in an estuary. Canadian.		matted	( [69
Journal of Fisheries and Aquatic Sciences Vol. 65.	$\langle \ \rangle > $	matted	( [70
4		matted	
	`	matted	[71
	-	matted	[72
	/ For	matted	[30

#### Page 7

Palsson, W. 1984. Egg mortality upon natural and artificial substrata within Washington state spawning grounds of Pacific herring (Clupea harengus pallasi). MS thesis, University of Washington, Seattle, WA.

California Department of Fish and Wildlife (September 23, 2015) Re: Notice of Preparation of an Environmental Impact Report for the Coast Seafoods Company Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project (SCH# 2015082051)

Rooper C., Haldorson

<u>Dumbauld</u>, B.R., J.L. <u>Ruesink</u>, and T. Quinn. 1999. Habitat factors controlling Pacific herring (*Clupea pallasi*) egg loss in Prince William Sound, Alaska. *Canadian Journal* S.S. Rumrill. 2009. The ecological role of <u>Fisheries</u> bivalve shellfish aquaculture in the estuarine environment: a review with application to oyster and <u>Aquatic Sciences</u>. 56: 1133–1142-clam culture in West Coast (USA) estuaries. Aquaculture 290:196-223.

Rumrill, S. and V. Poulton. 2004. Ecological Rolerole and Potential Impacts of Molluscan Shellfish Culture molluscan shellfish culture in the Estuarine Environmentestuarine environment of Humboldt Bay, CA. Western Regional Aquaculture Center Annual Report November 2004. 79 pp.p.

Rumrill, S. 2015. Personal communication with the National Marine Fisheries Service regarding eelgrass and shellfish aquaculture interactions from Humboldt Bay WRAC study. Oregon Department of Fish and Wildlife. April 5, 2015. steven.s.rumrill@state.or.us

PFMC Salmon FMP

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Normal, Left, Space After: 0 pt, Line spacing: single

Formatted: Font: (Default) Times New Roman, 12 pt, Not Italic, Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Normal, Space After: 0 pt, Widow/Orphan control

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt, Kern at 9 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: Not Italic, Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt, Font color: Black

Formatted: Font color: Black

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Normal, Left, Space After: 0 pt, Line spacing: single

Formatted

[... [73]

Formatted: Font: +Body (Calibri), Font color: Black

Formatted: Font: +Body (Calibri)

Formatted: Font: +Body (Calibri), Font color: Black

Formatted: Font: +Body (Calibri)

Formatted: Font: +Body (Calibri), Font color: Black

Formatted: Font: +Body (Calibri)

Formatted: Font: +Body (Calibri), Font color: Black

Formatted: Font: +Body (Calibri)

Formatted: Font: +Body (Calibri), Font color: Black

Formatted: Font: +Body (Calibri)

Formatted

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted

[ ... [75]

.. [74]

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted

[76]