Appendix A:

Final IS & NOP

Humboldt Bay
Harbor, Recreation and Conservation District
(707) 443-0801
P.O. Box 1030
Eureka, California 95502-1030

NOTICE OF PREPARTION OF DRAFT EIR

SUBJECT:	Notice of Preparation of Coast Seafoods Shellfish Aquaculture Draft EIR
PROJECT TITLE:	Coast Seafoods Company Humboldt Bay Shellfish Permit Renewal and Expansion Project
PROJECT LOCATION:	Humboldt Bay
APPLICANT:	Coast Seafoods Company 25 Waterfront Drive Eureka, CA 95501
LEAD AGENCY:	Humboldt Bay Harbor, Recreation, and Conservation District

The Humboldt Bay Harbor, Recreation, and Conservation District ("Harbor District") prepared a draft Initial Study for the proposed project. Based on comments received, the Harbor District has determined that an Environmental Impact Report ("EIR") will be prepared. Interested public agencies, organizations and individuals are invited to comment on the scope of the EIR. Comments already received on the draft Initial Study will be addressed in the Draft EIR and incorporated therein.

Notice of Preparation of Draft Environmental Impact Report

Comments on the Notice of Preparation (NOP) must be received no later than 5:00 p.m., Monday, September 21, 2015 or within 30 days after your receipt of the NOP as indicated by certified mail, whichever is later.

The project description, location, and an analysis indicating potential environmental impacts of the proposed project are provided in the NOP/Final Initial Study, which is available for public review at the Harbor District offices, located at 601 Startare Drive, Eureka. A copy will also be made available on the Harbor District's website, http://humboldtbay.org/. The following is a brief summary of the proposed project:

> The project involves: (1) extending regulatory approvals for Coast's existing approximate 300 acres of shellfish culture, with the exception of a 5.5 acre area where farming will be discontinued; (2) increasing shellfish culture within an already permitted floating upwelling system by adding eight culture bins; and (3) permitting an additional 622 acres of intertidal culture area. Within a maximum of 522 acres, a cultch-on-longline method would be used. Spacing between the lines would be five (5) feet between longlines with a ten (10) foot row between shellfish beds. Basket-on-longline culture would be used on a maximum of 96 acres with three (3) lines spaced five (5) feet apart, with an open row of twenty (20) feet, and then repeated. Rack-and-bag culture would be used on a maximum of four acres and would not be placed within ten (10) feet of an eelgrass bed. The Project only involves culture of the same species that Coast currently cultures (Kumamoto oyster, Pacific oyster and Manila clam). The project would occur entirely in areas currently leased by Coast in Humboldt Bay and that are part of Coast's historic operational footprint in the bay.

Your comments regarding the forthcoming EIR must be written and submitted to:

Adam Wagschal, Deputy Director
601 Startare Drive, Eureka, CA 95501
Telephone: (707) 443-0801
Email: awagschal@humboldtbay.org

FINAL INITIAL STUDY

for the proposed
Coast Seafoods Company Shellfish Culture Permit Renewal and Expansion Project
Humboldt County, California

Applicant: Coast Seafoods Company
25 Waterfront Drive
Eureka, CA 95501

Lead Agency: Humboldt Bay Harbor, Recreation and Conservation District
601 Startare Drive
Eureka, CA 95501

August 2015

Table of Contents

Section 1.0 Introduction

1.1 Document Purpose

This Final Initial Study (Final IS) is a public document that assesses the environmental effects of Coast Seafoods Company's (Coast's)[1] proposed Humboldt Bay Shellfish Culture: Permit Renewal and Expansion Project (Project) as required by the California Environmental Quality Act (CEQA) and in compliance with the State CEQA Guidelines (14 Cal. Code Regs. § 15000 et seq.). A draft initial study (Draft IS) was previously prepared for the Project and was distributed for review and comment on January 20, 2015. A Scoping Meeting was conducted on February 17, 2015. Based on the Draft IS and comments received, it was determined that an Environmental Impact Report (EIR) will be prepared. The comments are partially addressed in this document and will be fully addressed in the EIR. This Final IS (1) identifies the effects determined not to be significant and therefore screened from further review in the EIR and (2) identifies potentially significant impacts that will be further analyzed in the EIR.

The Humboldt Bay Harbor, Recreation and Conservation District (District) is the lead agency under CEQA. The District must evaluate the environmental impacts of the Project prior to considering Project approval. The Final IS serves as an informational document to be used in local planning and decision-making, and does not recommend approval or denial of the Project. Together with the Notice of Preparation and the Environmental Checklist Form, the Final IS will be distributed to all responsible agencies as required by CEQA. A notice will be sent to all interested parties indicating that these documents are available for a 30-day public review period at the Harbor District Planning Department, 601 Startare Drive, Eureka, California.

1.2 Public Comments Received on the Draft IS

The Draft IS generated comments from the following agencies, organizations and individuals.

- Audubon California, Anna Weinstein;
  Earthjustice, Andrea Treece;
  Oceana, Geoffrey G. Shester; and
  Redwood Region Audubon Society, Hal M. Genger

- Humboldt Baykeeper, Jennifer Kalt;
  Northcoast Environmental Center, Dan Ehresman; and
  Ecological Rights Foundation, Fred Evenson

- California Coastal Commission, Cassidy Teufel

- National Marine Fisheries, Irma Lagomarsino

- North Coast Region Water Quality Control Board, Gil Falcone

[1] Coast is a subsidiary of Pacific Seafood Company.

The following individuals attended the Public Comment Meeting held Tuesday February 17, 2015 – 6:00 PM, where comments were recorded anonymously. Note: not all attendees signed in.

Rebecca Garwood	Stan Brandenburg
Steve Granthem	Jen Kalt
Julie Romo	Susan Penn
Frank Shaughnessy	Joe Tyburczy

Comments submitted fell into the following topic categories:

Aesthetics
Biological Resources
Recreation
Greenhouse Gas Emissions
Hazards and Hazardous Materials
Recreation
Transportation/Traffic

Categories Screened from further analysis in the EIR are as follows:

Agricultural Resources
Geology and Soils
Land Use and Planning
Mineral Resources
Population and Housing
Public Services
Utilities and Service Systems

1.3 Document Scope

This document evaluates the Project's potential impacts related to the following topics:

- aesthetics
- agricultural resources
- air quality
- biological resources
- cultural resources
- geology and soils
- greenhouse gas emissions
- hazards and hazardous materials
- hydrology and water quality
- land use planning
- mineral resources
- noise
- population and housing
- public services
- recreation
- transportation/traffic
- utilities and service systems
- mandatory findings of significance

1.4 Impact Terminology

The following general terms are used in this Final IS to describe the significance of impacts that could result from the Project:

- The Project is considered to have *no impact* if the analysis concludes that the Project could not affect a particular resource topic.
- An impact is considered *less than significant* if the analysis concludes that the Project would cause no substantial adverse change to the environment and mitigation is not required.
- An impact is considered *less than significant with mitigation* if the analysis concludes that the proposed Project would cause no substantial adverse change to the environment with the inclusion of mitigation measures identified by the lead agency.
- An impact is considered *environmentally significant* if the analysis concludes that the proposed Project would cause substantial adverse change to the environment that could not be reduced to less-than significant levels by the inclusion of identified mitigation measures.

Section 2.0 Environmental Setting and Existing Shellfish Culture Overview

Humboldt Bay encompasses roughly 62.4 square kilometers (about 15,400 acres) at mean high tide in three geographic segments: South Bay, Entrance Bay, and Arcata Bay (or North Bay). As California's second-largest natural bay and the largest estuary on the Pacific Coast between San Francisco Bay and Oregon's Coos Bay, Humboldt Bay is a complex ecosystem and valuable resource for California and the nation because of its natural resources, aesthetic appeal and recreational opportunities, ecological services, economic benefits, and vital transportation links. Visitors and Humboldt County residents value Humboldt Bay for its natural and anthropogenic attributes. Humboldt Bay biota is diverse and ecologically important locally and globally, with both local fisheries, including oyster farms, and habitat for long-distance shorebird and waterfowl migrants. The Humboldt Bay area hosts more than 400 plant species, 300 invertebrate species, 100 fish species, and 260 bird species, including those that rely on the bay as they travel the Pacific Flyway. Humboldt Bay is also important in the life cycles of commercially and recreationally important fish species, including shellfish, crustaceans, and finfish. Portions of the diked former tidelands around Humboldt Bay, particularly in the Arcata Bottoms, are used for agriculture, primarily livestock grazing. The largest nearby urban concentrations are in Arcata (population approximately 16,651) and Eureka (population approximately 25,866).

In the late nineteenth and early twentieth centuries, the bay was diked and filled, reducing salt marshes from an estimated 9,000 acres to the 900 acres present today. Habitat has been further impacted by discharges of agricultural and urban runoff, industrial and recreational activities, sedimentation from the bay's watershed and other sources, colonization by the invasive grass, *Spartina*, and other stressors.

The oyster and clam culture industry in the bay produces about 70% of the oysters grown in California. Three species of mollusk are cultured in Humboldt Bay: Kumamoto oysters (*Crassostrea sikamea*), Pacific oysters (*C. gigas*) and Manila clams (*Tapes philippinarum*). There are five companies currently farming shellfish in the bay, using various methods to culture clams in subtidal areas and oysters in both subtidal and intertidal areas. There are approximately 70 raft type structures culturing shellfish in subtidal areas, 31 of which are managed by Coast. Additionally, there are approximately 301 acres of intertidal areas cultured, of which approximately 298 acres are managed by Coast.[2] Historically, Coast farmed on as many as 1,000 intertidal acres within its owned and leased footprint using on-bottom culture methods. However, in the late 1990's Coast adopted off-bottom (suspended) methods (Coast 2007). Coast's current and proposed culture operations are described in detail below.

There are several other permitting efforts underway in Humboldt Bay that may also allow for expanded shellfish culture operations. The District's Humboldt Bay Mariculture Pre-permitting Project ("Pre-Permitting Project") would result in approximately 54 new culture rafts to mature Kumamoto oyster, Manila clam, and Pacific oyster seed and intertidal culture of Kumamoto and Pacific oysters on up to 527 acres. Additionally, Taylor Mariculture and Hog Island Oyster Company are implementing efforts that would collectively add a total of 21 culture rafts (15 floating upwelling systems (FLUPSY) and 6 nursery rafts). Some of these permits have already been obtained, with culture currently being implemented. Coast is also seeking entitlements for a shellfish hatchery facility, to be located on an upland parcel on the former Freshwater Tissue site in Samoa on the west side of

[2] Including shellfish nursery areas.

North Bay. Coast currently leases approximately 3,794 acres for shellfish culture and owns 514 acres in Humboldt Bay (Figure 3.2), but only farms on approximately 300 acres (Figures 3.5 and 3.6).

Section 3.0 Project Description

3.1 Project Location

The Project site is located in the north and central parts of Humboldt Bay, California. Humboldt Bay encompasses roughly 62.4 square kilometers (about 15,400 acres) at mean high tide in three geographic segments: South Bay, Entrance Bay, and North Bay. The leased area includes approximately 1,827 acres owned or held in trust by the City of Eureka, approximately 1,452 acres owned or held in trust by the Harbor District, approximately 515 acres owned by Karamu Corporation and approximately 514 acres owned by Coast. Figure 3.1 depicts the Project site within Humboldt Bay and North Bay. Figure 3.2 depicts the boundaries of Coast's leased and owned area in North Bay. Figure 3.3 depicts the area historically and currently farmed by Coast. Figure 3.4 depicts the acreage currently farmed by Coast and the additional 622 intertidal acres proposed for cultivation as part of this Project.

3.2 Surrounding Land Use Settings

Coast's aquaculture operations are located on intertidal and subtidal lands of North Bay and Central Bay that are owned or leased by Coast. The areas surrounding Coast's operations are dominated by tidal flats, tidal channels and open water. The project area is located within tidal and submerged lands granted to the Harbor District and City of Eureka by the State Lands Commission. Because the project is located within Humboldt Bay tidelands, the Harbor District has permitting authority. The entire project area is zoned "Natural Resources – Wetland" by Humboldt County. The Harbor District's Humboldt Bay Management Plan classifies the area as "Combined Water Use – Mariculture".[3] Surrounding areas are either classified "Combined Water Use – Mariculture" or "Bay Conservation" by the Harbor District and zoned "Natural Resources – Wetland" by Humboldt County.

[3] Humboldt Bay Harbor, Recreation and Conservation District, Humboldt Bay Management Plan Vol. 1, Ch. 2.0, Fig. 2-1 (2007).

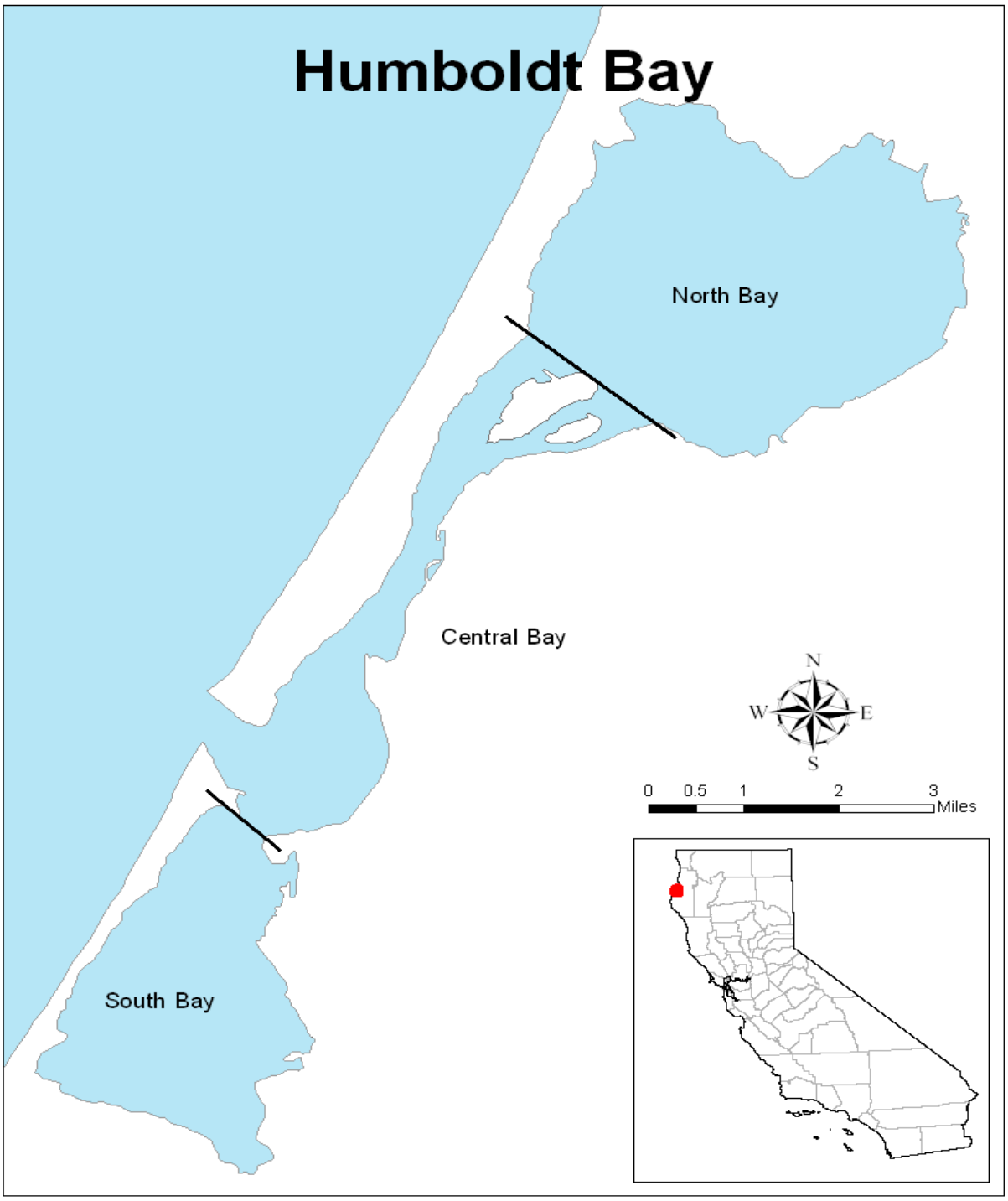

Figure 3.1. Map of Humboldt Bay depicting South, Central and North Bays. The Project is located in North Bay and Central Bay.

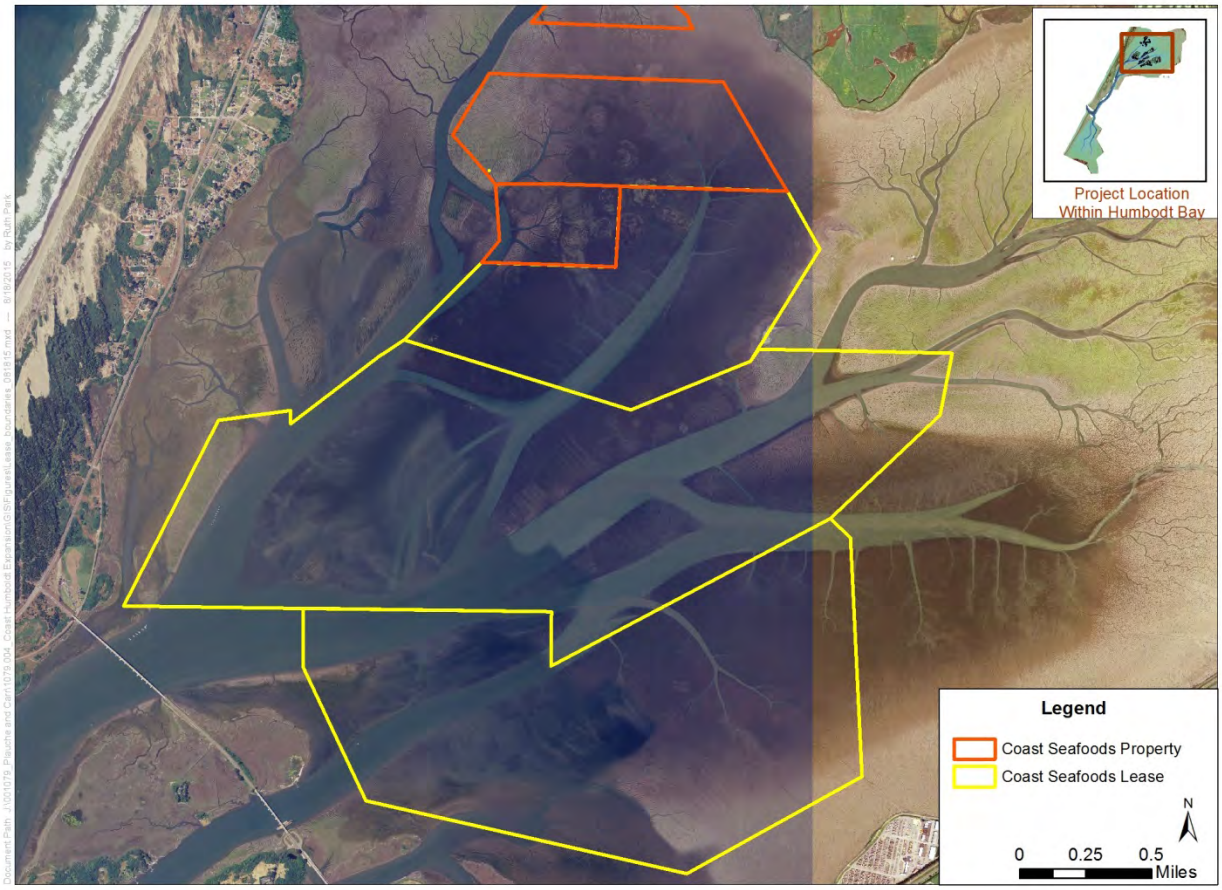

Figure 3.2. Coast's shellfish culture leases and ownership in Humboldt Bay, California.

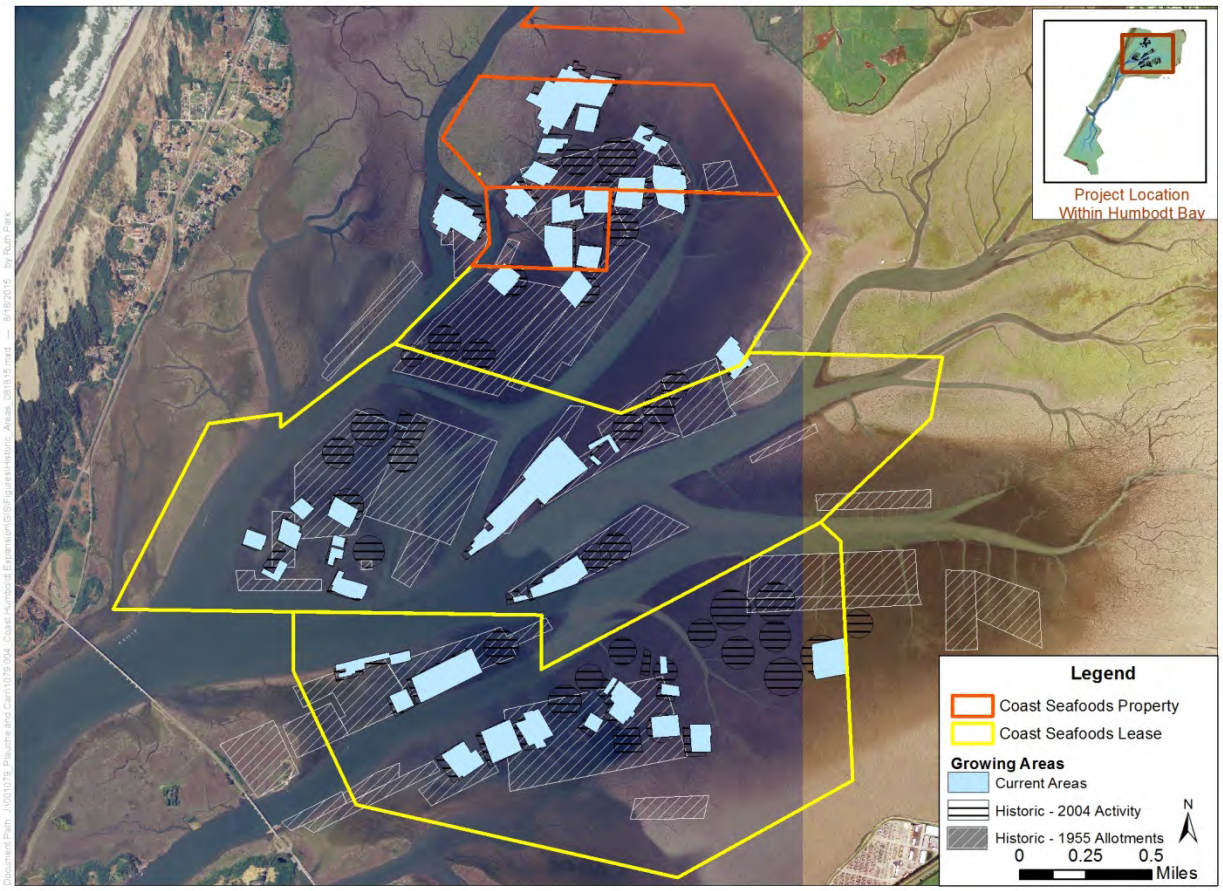

Figure 3.3. Map of Coast's historical and current culture footprint within North Bay and of the boundaries of Coast's current owned and leased area.[4]

[4] A portion of Coast's existing culture footprint is located in areas currently leased from the Harbor District but whose ownership has been questioned by the Department of State Lands. Coast is currently in the process of seeking leases from the tideland property owners.

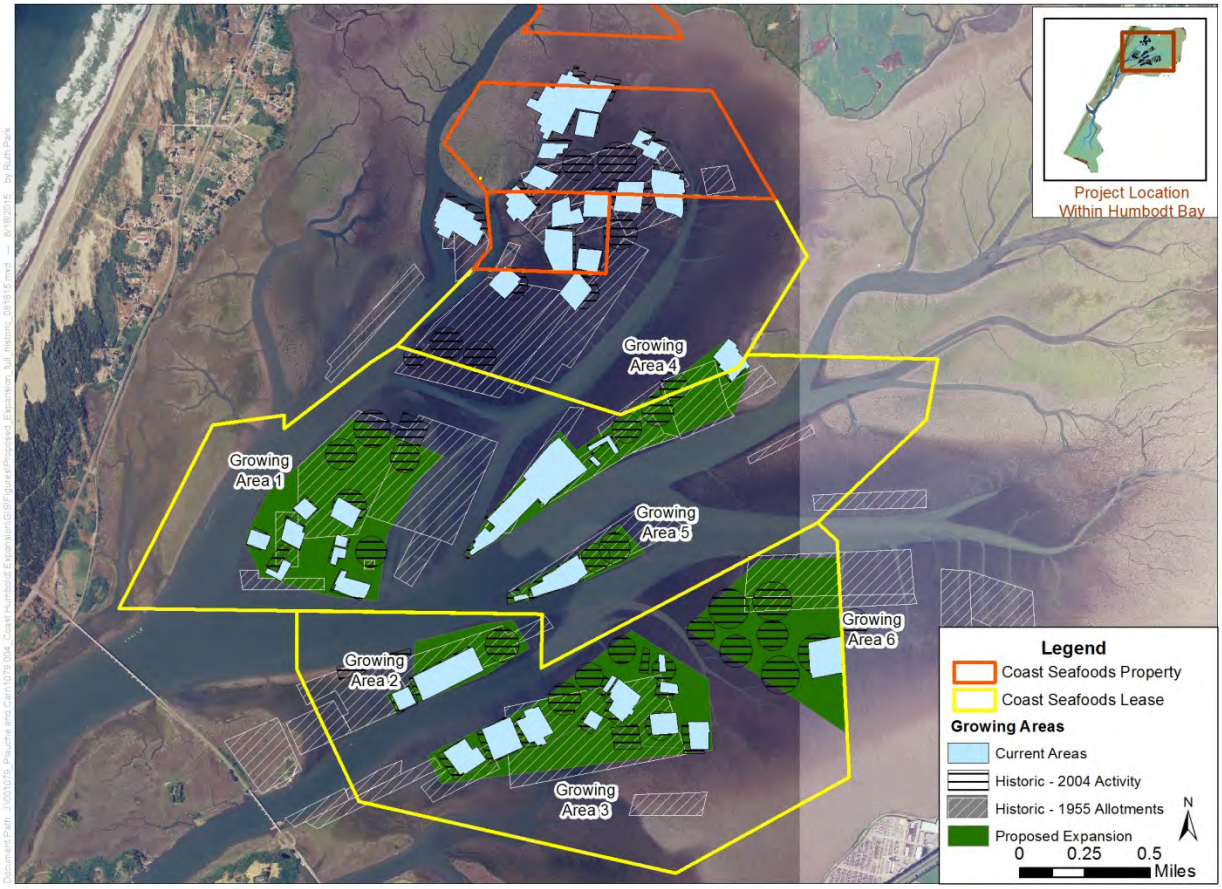

Figure 3.4. Areas proposed for continued and expanded shellfish culture in North Bay.

3.3 Project Background and Existing Operations

Coast has been culturing shellfish in Humboldt Bay, California since the early 1950's. Coast's predecessors in interest cultured shellfish in Humboldt Bay since the early 1900s. Historically, Coast cultured as much as 1000 acres of tidelands for oyster culture within its owned and leased footprint. Coast traditionally cultured shellfish using bottom culture methods, which entailed growing oysters directly on the bay bottom and harvesting them with an oyster dredge. In the mid to late 1990s, in response to requests from regulatory agencies, Coast began to transition its operations to more environmentally sustainable off-bottom culture methods.

In 2006, Coast reduced its operational farm footprint to 300 acres within North Bay and Central Bay using exclusively off-bottom culture methods (cultch-on-longline, basket-on-longline, and rack and bag) to cultivate Pacific and Kumamoto oysters. Coast's cultivated footprint boundaries have not changed since its 2006 approvals. The off-bottom culture methods were approved pursuant to a Mitigated Negative Declaration (SCH 99062069), Harbor District Permit 04-03, U.S. Army Corps of Engineers (Corps) Permit No. 26912N, and Coastal Commission Coastal Development Permit E-06-003. These approvals also permitted 10 clam rafts, a FLUPSY, intertidal nursery, and wet storage areas. Coast also received approval for an additional 20 clam rafts within its leased area in 2012, pursuant to a Negative Declaration, Harbor District Permit Amendment 04-03-1, Corps Permit No. 2011-00428, and Coastal Commission Permit E-02-005-A2. This Final IS incorporates by reference the analysis presented in the prior Mitigated Negative Declarations and accompanying Initial Studies. Figures 3.5 and 3.6 depict Coast's existing culture activities in Humboldt Bay.

Coast currently uses approximately 294 acres of its existing beds to cultivate Pacific and Kumamoto oysters using longline culture (cultch-on-longline and basket-on-longline). The existing footprint includes approximately 34,665 longlines (466 basket-on-longline and 34,199 cultch-on-longline). These culture methods, which will also be utilized in the proposed expansion area, are discussed below.

The remaining acreage within the existing operational footprint is apportioned as follows: approximately 4.8 acres utilized as a nursery area; approximately 0.04 acres utilized for the FLUPSY; approximately 0.04 acres utilized for wet storage floats; and approximately 0.93 acres utilized for clam rafts.[5] Other than slightly reducing the existing planted footprint, as described below, Coast does not propose any changes to the existing cultivated area.

[5] While Coast's existing permits allow for one 20-foot-wide by 27-foot-long floating work platform associated with the clam rafts, Coast currently does not moor a permanent work platform to the clam raft operations. The work platform may be moored to the clam rafts on a temporary basis as needed.

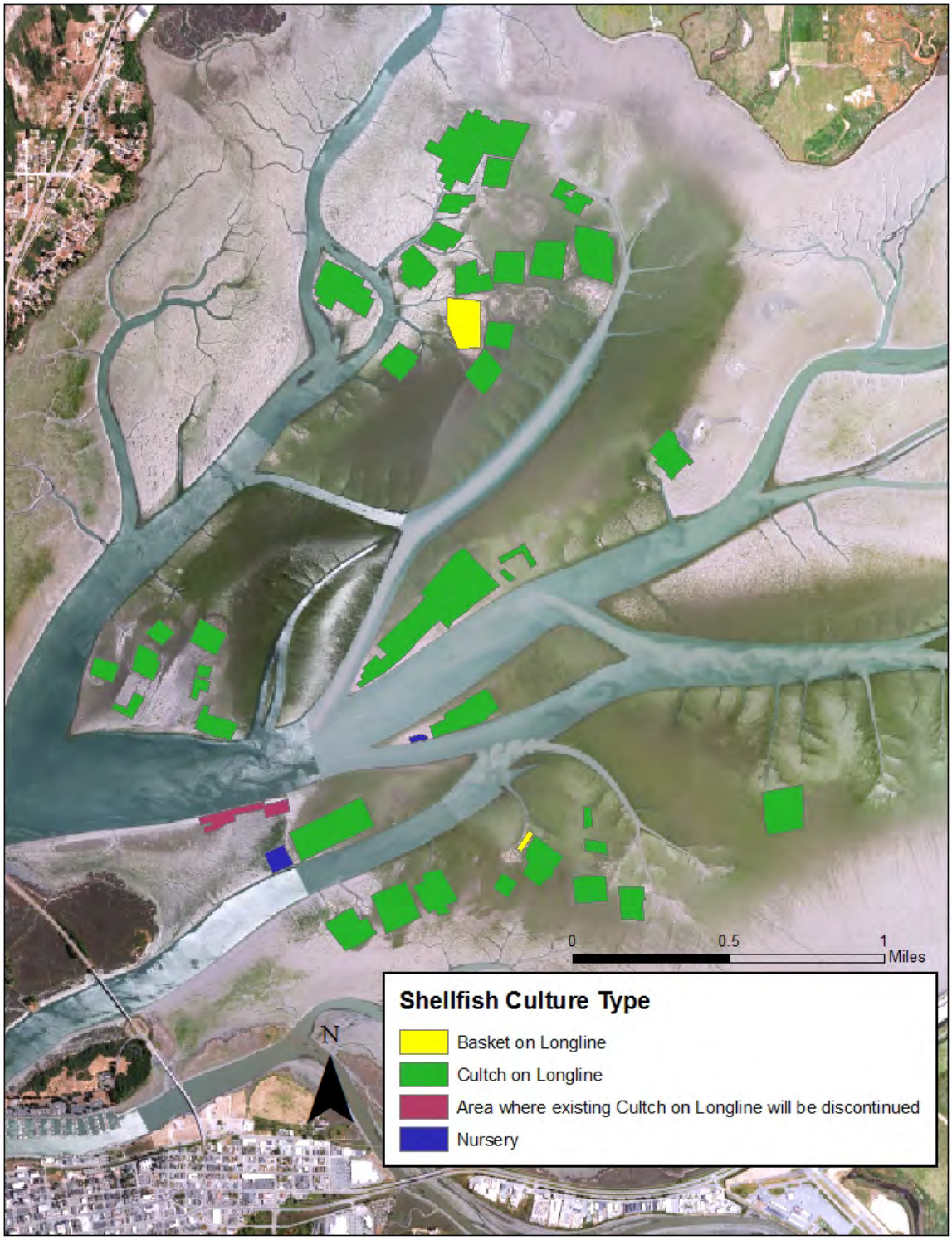

Figure 3.5. Coast's existing intertidal shellfish culture footprint and methods, including a 5.5 acre area where existing culture will be discontinued.

Figure 3.6. Coast's existing subtidal shellfish culture footprint and methods.

3.3.1 Intertidal Nurseries

Figure 3.7. Seed bags at a nursery.

Long-line culture utilizes cultch set with spat attached, collectively referred to as seed. Coast transports the seed by truck from Quilcene, Washington. Each year a representative sample of each type of seed is examined by a United States Department of Agriculture/Animal Plant Health Inspection Service certified veterinarian and the results of this examination are sent to the California Department of Fish and Wildlife (CDFW) with an application for import of seed. Once appropriate results are verified, CDFW issues a certification for the import of oyster seed. Upon arrival, Coast places the bags of seed in the intertidal nursery on Gunther Island. Coast stacks the seed on pallets in order to prevent the bottom of the stack from becoming silted in, which suffocates the seed (Figure 3.7). After a period of time, which varies due to seasonal conditions (usually 2-3 months) the seed is removed from the nursery in small batches daily and is brought to the processing plant. At the plant, individual pieces of cultch are braided into the long-line rope and rebagged. Once the cultch has been braided into the rope and bagged it is put into the bay and placed on either a bed or on Coast's Arcata Channel nursery to await planting.

The seed is transported by boat to nursery areas located in Humboldt Bay on mudflats north of Gunther Island and along Arcata Channel. At these nursery areas the seed is allowed to grow to a less fragile size and age. This process, called beach hardening, is needed to allow the seed to gain size and strength prior to planting. The seed is allowed to beach harden for 3 to 8 months depending on time of year, growth and condition of the seed.

3.3.2 Intertidal Cultch-on-Longline Culture

Kumamoto oysters and Pacific oysters are grown using the cultch-on-longline method. Planting is accomplished by placing the seeded long-line on notched PVC stakes that are arranged in rows on the mudflats. The longlines are strung through notches on top of the PVC stakes, suspending the oyster seed approximately 1 foot above the bay bottom (Figures 3.8 & 3.10). Long-line spacing within Coast's existing operational footprint varies, with most spaced 2.5 feet apart, with 10 feet between each group of 5 lines (Figure 3.9). Some beds have 2.5 foot spacing over the entire bed.

Long-lines are planted by crews of six at tides low enough to allow for walking on the planting bed. Bags from the nursery are gathered with a skiff and a hook during a high tide, to plant during the subsequent low tide. Alternatively, the planting crew can pull the skiff into the nursery by hand when the tide is coming in and manually throw the bags into the skiff. Bags are then transported to the bed and placed along the edge of a row of empty long-line pipe. At low tide, the longlines are cut and pulled out alongside the empty pipe. Each bag is clipped to the long-line on the notch of each pipe. This continues until all bags are planted. Due to the infrequency of adequately low tides, the planting crew works every available low tide.

Planted beds are inspected monthly, with virtually no other activity occurring on the bed until harvest. Inspection involves walking on the bed at low tide to make sure that the lines are in the notches.

Oysters are harvested when they reach harvestable size (18 to 36 months) subject to seasonal conditions and consumer demand. Two long-line harvest methods are used. Hand picking involves placing round 20-bushel tubs on the bed at high tide using an oyster scow. Tubs are hand filled at low tide. Longlines are cut into manageable single clusters and placed in the tub with a floating ball attached. At high tide, tubs are placed in the oyster scow, unloaded, then placed back on the bed to be refilled. The long-line harvester method involves pulling individual lines onto a scow at high tide, either by hand or with a hydraulically operated roller. Hand-pulled lines are cut into individual clusters, usually at the plant. Mechanically pulled lines are run through a breaker that strips the clusters from the line.

Figure 3.8. Cultch-on-longline oyster culture.

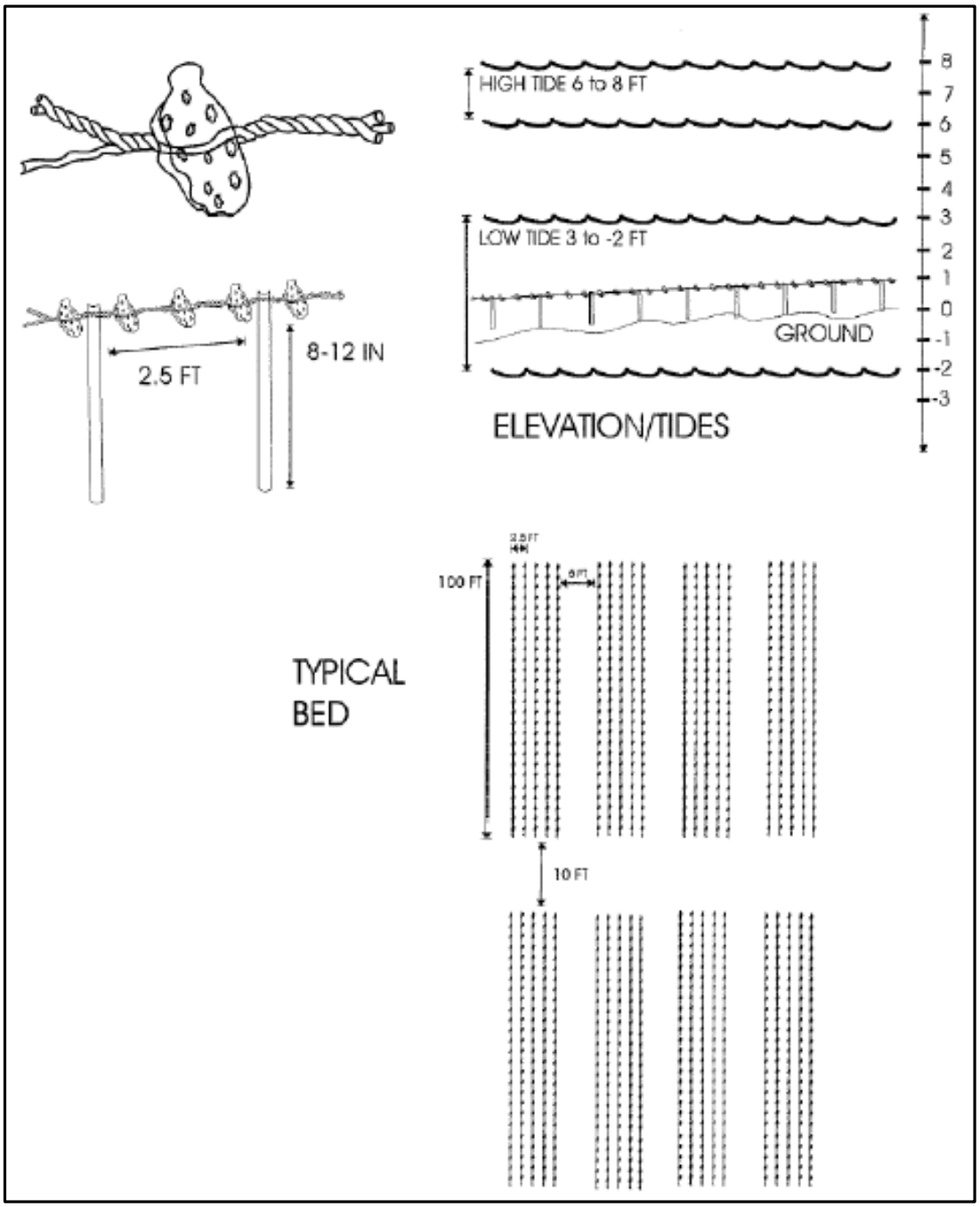

Figure 3.9. Configuration of cultch-on-longline oyster culture within Coast's existing culture area.

Figure 3.10. Cultch-on-longline culture at 2.5 foot spacing.

3.3.3 Intertidal Basket-on-Longline Culture

Kumamoto oysters are grown using the basket-on-longline culture method which utilizes baskets suspended on monofilament line tied between 2 inch diameter schedule 80 PVC pipes (Figure 3.11).

A 3/8" polyethylene sleeve encases the 5mm diameter monofilament line. The baskets are approximately 24"x10"x6" in size and held on the line with plastic clips. A float, approximately 2.5" in diameter and 5.5" long, is often attached to the baskets so they float up during high tides. The line is positioned approximately 2.5' to 3.0' off the bottom making the baskets roughly 1' from the bottom during low tides.

Basket-on-longline lines within Coast's existing culture areas use 3-foot spacing between groups of three lines, with an open row of 20 feet between groups of three lines. Basket-on-longline spacing in the existing culture area is shown in (Figure 3.12).

Figure 3.11. Basket-on-longline culture.

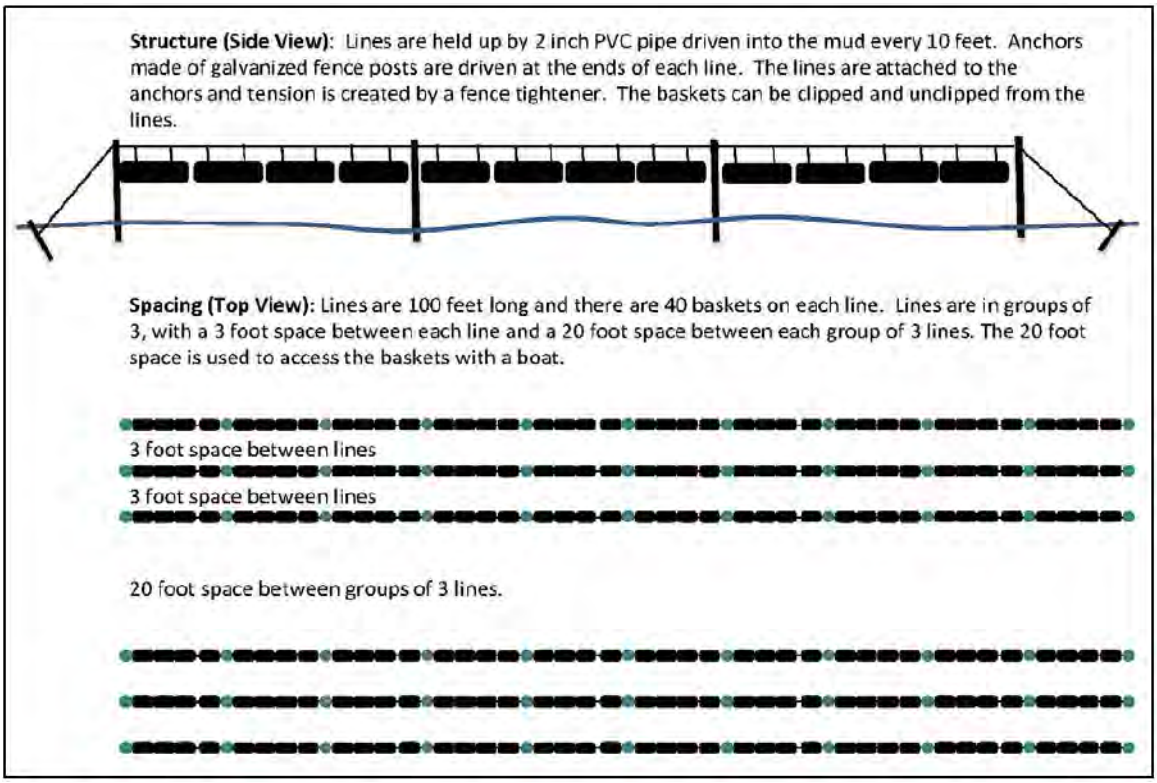

Figure 3.12. Basket-on-longline culture configuration within Coast's existing cultivated acreage. Line length maximum: 100'.

3.3.4 Subtidal Floating Upwelling System

Kumamoto and Pacific oyster seeds are matured in the FLUPSY. The FLUPSY is located on the west side of the entrance channel south of the Simpson wood chip loading dock in Fairhaven, 200 yards from the shoreline in 20 feet of water. The FLUPSY is tied to the dock at the Eureka Boat yard. The FLUPSY is constructed of aluminum with poly-encapsulated floats with a submerged trough containing a paddle wheel (Figure 3.13). This trough is surrounded by 16 open wells containing upwelling bins. The paddle wheel moves the water out of the trough. For the trough to fill, the water must pass through the upwelling bins containing shellfish seed. The bins are removable for seed maintenance. The seed is about 1.4 mm long when it arrives and matured to roughly 6 mm before being placed in bags. FLUPSY activities include maintaining the seed by rinsing off bins with water, and seed grading based on size.

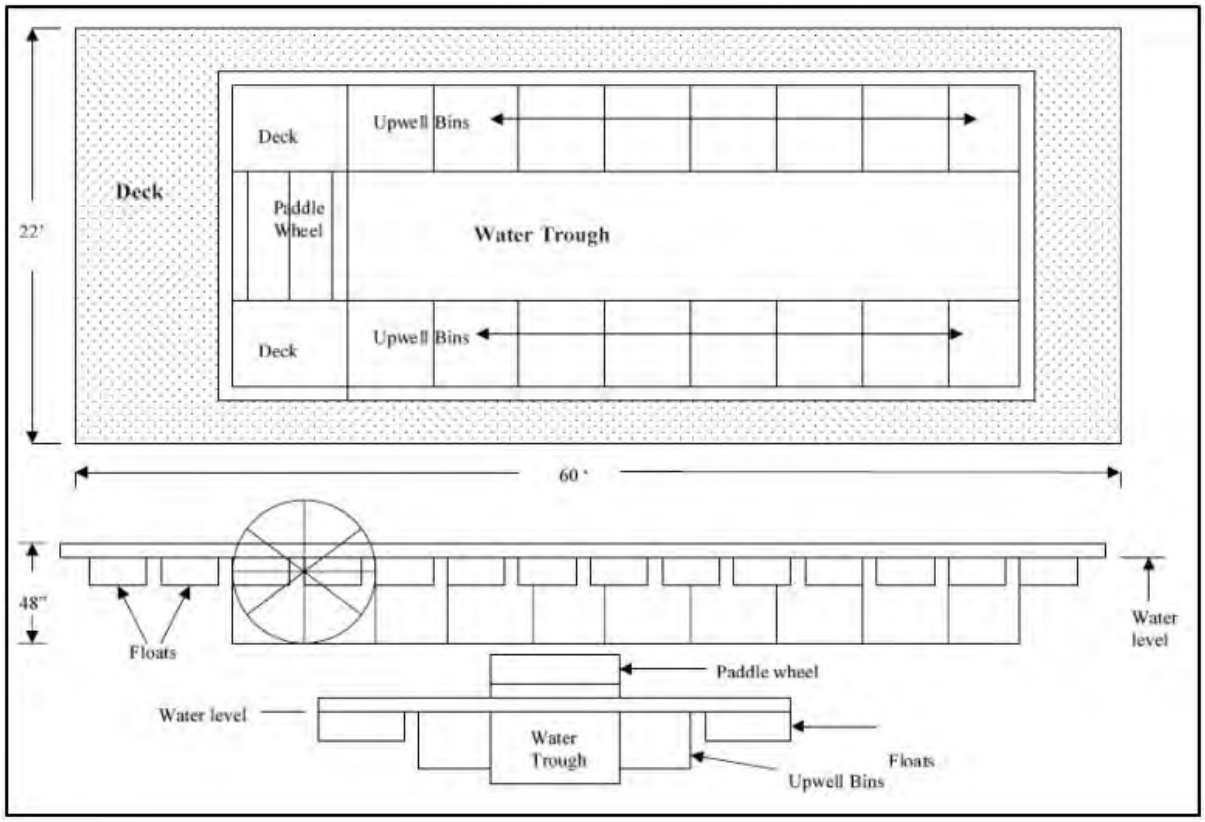

Figure 3.13. FLUPSY Configuration.

3.3.5 Subtidal Clam Rafts

Manila clam seed is matured in clam rafts (Figure 3.14). The clam rafts are located along the west side of the entrance to Mad River Slough Channel opposite Bird Island, approximately ½ mile north of the Samoa/Hwy 255 bridges. Rafts are attached to concrete anchors in approximately 20 feet of water and accessed by skiff. There are 30 floating rafts arrayed in two groups of fifteen, each 12 feet wide by 20 feet long. Rafts are constructed from aluminum and use polyethylene encapsulated Styrofoam for floatation. Each raft has 24 tray wells containing seed nursery trays in stacks of 20 suspended in each well. The rafts only contain seed, which are shipped elsewhere for grow-out and harvest. The activities at the clam rafts include placing and removing stacks of trays daily, cleaning and routine maintenance.

Twice each year, anchors and ground tackle are examined and repaired as necessary by divers using scuba, skiffs and an oyster barge.

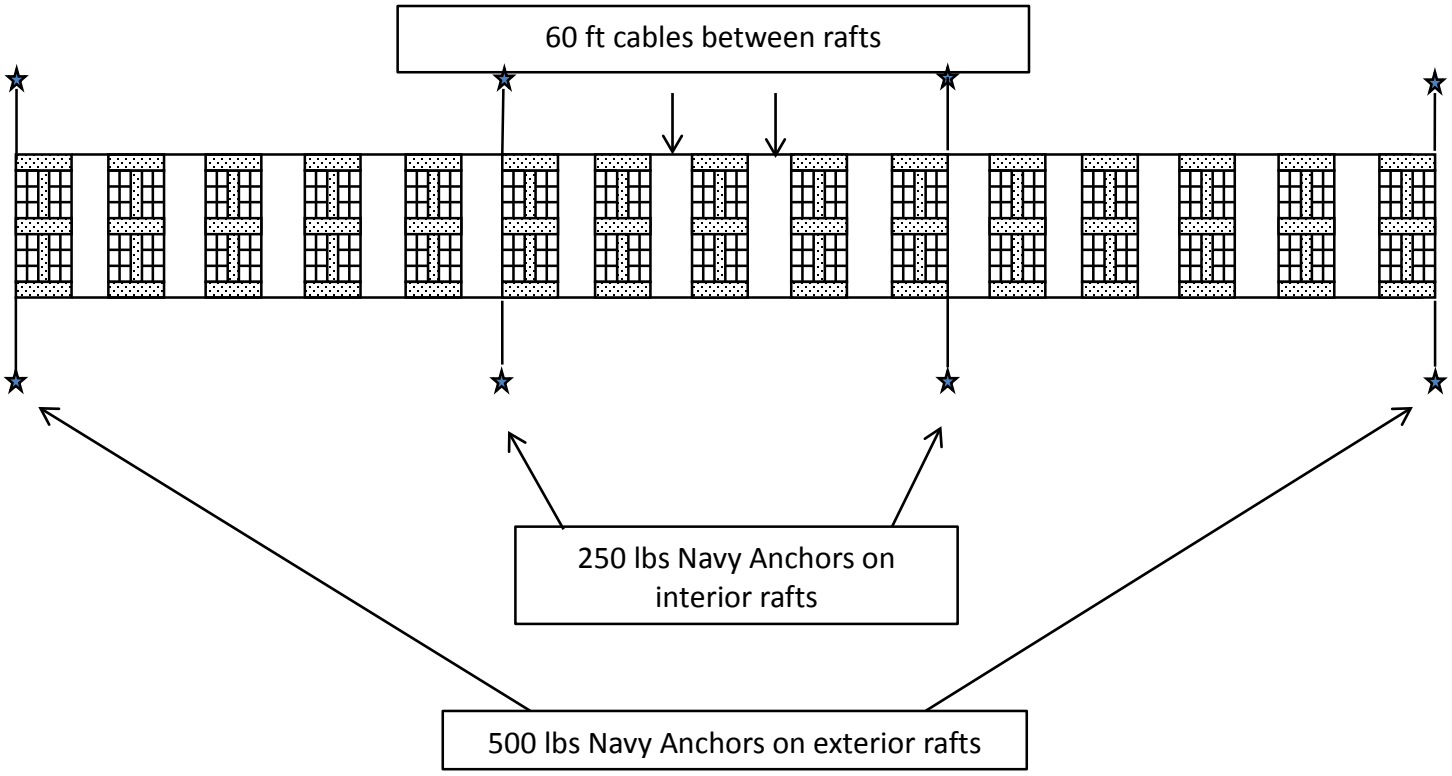

Figure 3.14. Configuration of clam rafts.

3.3.6 Subtidal Wet Storage Floats

The wet storage floats are located in the "cut across" channel between Bird Island and Mad River. The floats are anchored in approximately 20 feet of water in a series of four 20-foot by 20-foot square wooden frames, with 60 feet between floats (Figure 3.15). Bags of mature oysters recently harvested and ready for distribution to wholesalers are temporarily placed in the floats to maintain the oysters' fresh condition. Bags of oysters are placed and removed by hand and transported by boat.

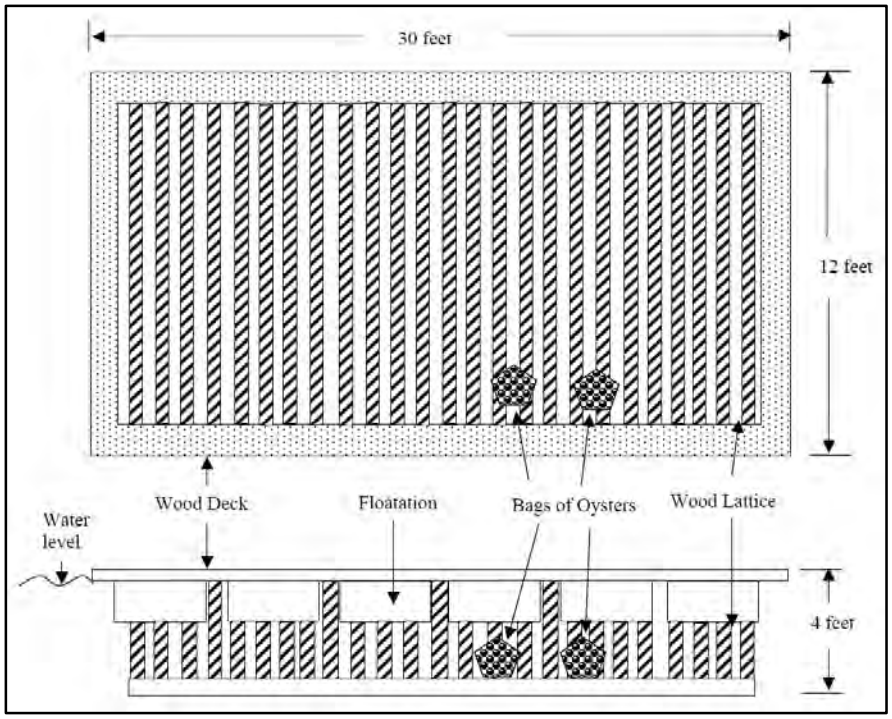

Figure 3.15. Configuration of wet storage floats.

3.4 Project Overview

Coast is proposing to extend regulatory approvals for 294.5 of the 300 acres it currently farms in North Bay and to discontinue farming on 5.5 of its existing acres (Figure 3.4). Coast is also proposing to increase shellfish aquaculture production by planting an additional 622 intertidal acres and increasing the capacity of its already-permitted FLUPSY by adding eight new culture bins. In total, the project would result in 916.5 acres of intertidal oyster culture, which represents 24% of Coast's leasehold.

3.5 Project Characteristics

3.5.1 Project Objectives

The overall purpose of the project is to provide a comprehensive plan for management of Coast's owned and leased area and expansion of its shellfish farm to meet the increasing demand for its product. The project is guided by several major objectives that will aid decision makers in their review of the project and associated environmental impacts:

- To expand Coast's shellfish farm to increase future oyster production and meet Coast and Pacific Seafood's increasing customer demand for raw and shucked oysters.
- To conduct comprehensive eelgrass monitoring and develop sustainable oyster cultivation practices that can be adapted to documented site conditions.
- To create additional job opportunities and sustainable economic development for Humboldt Bay and local jurisdictions.
- To enhance a source of local sustainable seafood and reduce Humboldt County and California's reliance on imported seafood.
- To provide comprehensive planning of Coast's owned and leased areas in Humboldt Bay.
- To develop a flexible farming plan that can adapt to Coast's operational and management needs, environmental conditions, and farm conditions.
- To utilize Coast's existing historic leased and owned areas while maintaining undeveloped areas for habitat and recreational uses.
- To locate oyster beds in areas with optimal growing conditions to maximize efficiency and limit the spatial footprint of the farm.

3.5.2 Species Cultivated

The species proposed for cultivation are Kumamoto oysters and Pacific oysters, which are already cultivated by Coast on its existing acreage.

3.5.3 Culture Methods

Coast will use the same general culture methods in the 622 acre expansion area that are currently being utilized within its existing footprint described above (intertidal cultch-on-longline and basket-on-longline), as well as a limited amount of and rack and bag culture.

3.5.3.1 Intertidal Cultch-on-Longline Culture

Coast will grow Kumamoto and Pacific oysters using cultch-on-longline culture on a maximum of 522 acres of the expansion area, utilizing 5 foot spacing between longlines with a 10 foot row between shellfish beds. Figure 3.16 depicts the spacing regime for cultch-on-longline that will be used in the expansion area. The expanded area will include approximately 43,900 additional cultch-on-longlines.[6]

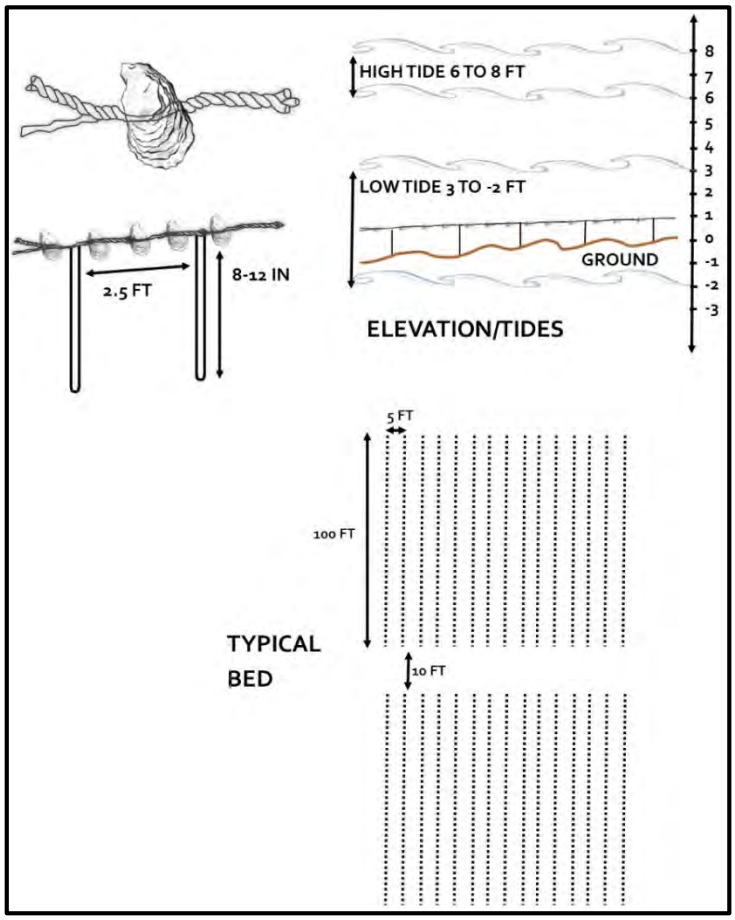

Figure 3.16. Proposed configuration of cultch-on-longline within Coast's expanded culture area.

3.5.3.2 Intertidal Basket-on-Longline Culture

Coast will plant Kumamoto oysters using basket-on-longline culture on a maximum of 96 acres of the expansion area, utilizing groups of three lines spaced 5 feet apart with an open row of 20 feet between

[6] This estimate is based on Coast's conceptual planting design incorporating the proposed longline spacing. The final planting design will be based on Coast's operational needs, farm conditions, environmental factors, and conditions of approval and mitigation measures. Coast reserves the right to modify the planting design as needed to respond to such factors, provided that it is consistent with the overall project description and regulatory permits.

groups of 3 longlines and 10 feet between shellfish beds. Figure 3.17 depicts the spacing regime for basket-on-longline that will be used in the expansion area. The expanded area will include approximately 4,780 additional basket-on-longlines.[7]

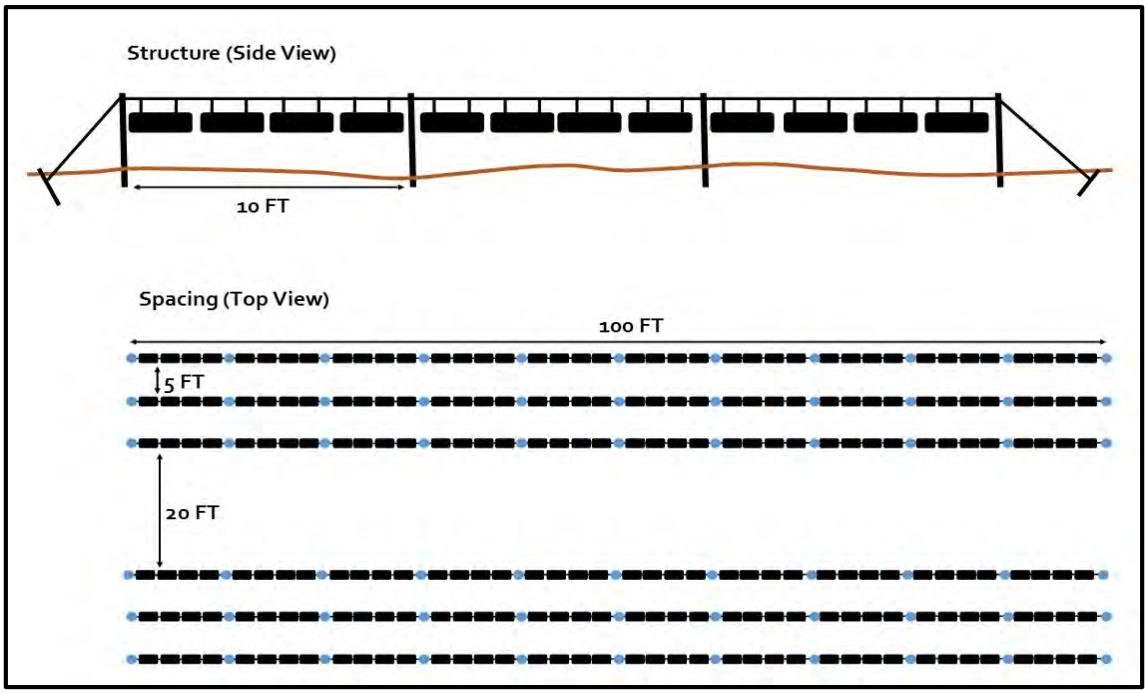

Figure 3.17. Proposed configuration for basket-on-longline culture within Coast's expanded culture area. Line length maximum: 100'.

3.5.3.3 Intertidal Rack and Bag Culture

Coast will plant rack and bag culture on a maximum of 4 acres of the expansion area to grow Kumamoto and Pacific oysters. The oysters are grown as "singles", not attached to any structure or to each-other, in polyethylene mesh bags on rebar frames. Each frame is 3 ft x 12 ft and supports 3-6 bags attached to the frame via industrial rubber bands (Figure 3.18). A bag is initially seeded with oysters and placed in intertidal areas. The bags are inspected up to three times per week and flipped approximately once every two weeks. Oyster seeds grow to market size in one-two years, depending on tidal height and primary productivity. Bags are harvested by hand (lifted from the racks into a skiff), processed and brought to market. Three rows of rack and bag structures are spaced 3 feet apart with an open row of 10 feet between groups of three racks lines, as illustrated in Figure 3.19. Any rack and bag culture placed within the expanded area will be placed at least 10 feet away from existing eelgrass beds.

[7] *See* footnote 6.

Figure 3.18. Rack and bag culture in Humboldt Bay.

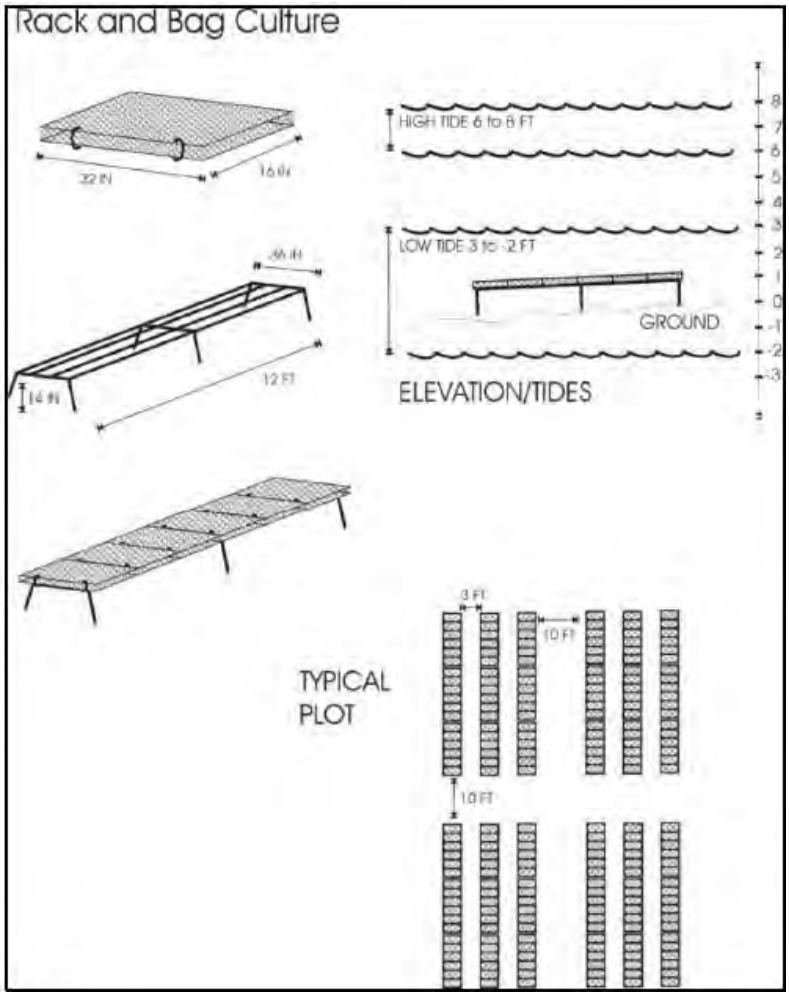

Figure 3.19. Rack and bag culture configuration.

3.5.3.4 Subtidal Floating Upwelling System

As part of the Project, eight upwell bins would be added to the FLUPSY as described in Section 3.3.4 above. Each bin will be 3 feet long x 3 feet wide x 3 feet deep.

3.6 Culture Practices Incorporated into the Proposed Project

The following practices have been incorporated into the proposed Project.

BMP-1. Biofouling Organism Removal. All bio-fouling organism removal operations for the FLUPSY bins will be carried out onshore. Materials removed during this operation will be collected and disposed of at an appropriate upland facility. There will be no discharge of untreated wash water or bio-fouling materials into Humboldt Bay during maintenance cleaning operations.

BMP-2. Boat Transit. During maintenance and oyster harvesting, boat transit areas will be limited to areas devoid of eelgrass as much as is practicable. To the extent practicable, Coast personnel will use the same areas to moor their boats in order to minimize the amount of propeller scarring to eelgrass.

BMP-3. Shading from Longline Harvester. Avoid contact between long-line harvester vessel and the bay bottom where feasible To avoid potential impacts to eelgrass from shading, Coast will not anchor the longline harverster in such a way as to shade the same area of eelgrass for more than 12 hours.

BMP-4. Plot Abandonment. Within 30 days of harvest on any area that is being discontinued, or taken out of production for one year or more, Coast will remove all shellfish culture apparatus from the area, including but not limited to stakes, racks, baskets and pallets.

BMP-5. Shell deposition. Coast will not intentionally deposit shells or any other material on the bay floor. Natural deposition of shells and other materials will be minimized.

BMP-6. Staff Marine Mammal Education. At monthly staff meetings, Coast personnel will review vessel procedures, including proper procedures relating to marine mammals. When marine mammals are encountered, Coast personnel will:

- Reduce speed and remain at least 100 yards from animal(s), whether it is on land or in water.
- Provide a safe path of travel for marine mammals that avoids encirclement or entrapment of animal(s) between the vessel and the shore.
- If approached closely by a marine mammal while underway, boat operator will reduce speed, place vessel in nuetral and wait until animal is observed clear of the vessel before making way.
- Avoid sudden direction or speed changes when near marine mammals.
- Not approach, touch or feed a marine mammal.
- Should Coast's staff observe an injured marine mammal, they will immdediately contact their supervisor and the CDFW.

BMP-7. Discharges. No feed, pesticides or chemicals (including antibiotics and hormones) discharges into bay waters.

BMP-8. Equipment Maintenance. Implement an equipment maintenance program for all vessels used in mariculture activities, to limit the likelihood of fuels, lubricants, paints, solvents, or other

potentially toxic materials release associated with vessels as a result of accident, upset, or other unplanned event.

BMP-9. Herring Impacts. In December, January, and February, visually survey the beds to be worked on each day prior to harvesting and/or planting, to determine whether herring have spawned on eelgrass, culture materials, or substrate. If herring spawning is observed, (a) postpone harvesting and planting activities for two weeks on those beds where spawning has occurred, and (b) notify CDFW's Eureka Marine Region within 24 hours.

3.7 Project Approvals

This Final IS examines the environmental impacts of Coast's Project and is also being prepared to address various actions by the City of Eureka, Harbor District and others. The anticipated approvals required for the Project include but are not limited to those shown in Table 3.1.

Table 3.1

Agency	Permit Type
Humboldt Bay Harbor, Recreation & Conservation District	Use Permit
City of Eureka	Conditional Use Permit
United States Army Corps of Engineers	Section 10 Rivers and Harbors Act
California Coastal Commission	Coastal Development Permit and Coastal Zone Management Consistency Determination

Note: There is uncertainty as to whether certification from the North Coast Regional Water Quality Control Board will be needed. This is currently being assessed.

Section 4.0 Checklist and Environmental Impacts Evaluation

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- ☒ Aesthetics
- ☒ Biological Resources
- ☐ Greenhouse Gas Emissions
- ☐ Land Use/Planning
- ☐ Population/Housing
- ☐ Transportation/Traffic
- ☐ Mandatory Findings of Significance
- ☐ Agricultural Resources
- ☐ Cultural Resources
- ☒ Hazards/Hazardous Materials
- ☐ Mineral Resources
- ☐ Public Services
- ☐ Utilities/Service System
- ☐ Air Quality
- ☐ Geology/Soils
- ☐ Hydrology/Water Quality
- ☒ Noise
- ☒ Recreation

DETERMINATION: On the basis of this initial evaluation:

☐ I find that the proposed Project **could not** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

☐ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☒ I find that the proposed Project **may** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT (EIR)** is required.

☐ I find that the proposed Project **may** have a "potentially significant impact" or 'potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **EIR** is required, but it must analyze only those effects that remain to be addressed.

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

8-19-15
Date

Deputy Director
Humboldt Bay Harbor, Recreation and Conservation District

I. **AESTHETICS**. Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Have a substantial adverse effect on a scenic vista?	X			
B) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?				X
C) Substantially degrade the existing visual character or quality of the site and its surroundings?	X			
D) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	X			

DISCUSSION

Aes-A: Scenic Vistas. Potentially significant effects on scenic vistas would occur if the proposed Project degraded the existing scenic environment. State Highway 101, along the eastern shore of North Bay, is eligible for designation as a State Scenic Highway. In addition, there are areas near the Project site designated as Coastal Scenic and Coastal View Areas in the Humboldt Bay Area Local Plan. The proposed mariculture activities would increase the presence of workers in the bay and proposed operations would be visible from the shore and from the bay surface (e.g., from boats). Mariculture equipment of the type that will be added to the bay by the Project, including Coast's existing facilities, are characteristic of the Bay's visual background. This is consistent with the Humboldt County General Plan, which acknowledges that resource production areas add to the scenic value of Humboldt County (Policy SR-PX). Further, the expanded cultivation would occur in the same general areas where Coast has existing shellfish operations (see Figure 3.4) and no structures would be placed within 200 feet of a scenic road or viewpoint. Mariculture equipment also typically does not extend more than 2 feet above the water surface, with the most exposure occurring during low tides. Views of shellfish culture operations are common in Humboldt Bay and consistent with the current aesthetic character of the area. The EIR will further address potential impacts to scenic vistas and will recommend mitigation measures as feasible and appropriate.

Aes-B: Scenic Resources. No scenic resources would be damaged. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Aes-C: Visual Character. The Project would expand shellfish culture operations within Coast's existing leased footprint in and around areas that Coast already uses for shellfish cultivation. The low profile of the equipment used in the operations and the fact that most of the equipment will be submerged during high tides minimizes the visual impact to the Project site and surrounding properties. As provide in BMP-4, within 30 days of harvest on any area that is being discontinued or taken out of production for one year or more, Coast will remove all shellfish culture apparatus from the area, including but not limited to stakes, racks, baskets and pallets. The EIR will further address potential impacts to visual character and will recommend mitigation measures as feasible and appropriate.

Aes-D: Light or Glare. The Project would increase nighttime lighting from boats and workers to enable occasional work at night. This lighting could be viewed at a distance by people on the shores of the bay and from a closer distance by people on the bay (i.e., boaters). For these reasons, the EIR will further discuss the impact of additional lighting on the aesthetic quality of the bay and will recommend

mitigation measures where feasible and appropriate.

II. AGRICULTURAL RESOURCES.	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
B) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
C) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

DISCUSSION

Ag-A through Ag-C: There is no agricultural land, forest land, or area zoned as agricultural or forest land immediately adjacent to the Project site, but there is agriculturally zoned land on the shores of Humboldt Bay. The Project would have a beneficial effect on agricultural resources by increasing the footprint of shellfish culture in Humboldt Bay. There would be no negative impacts on agricultural resources, and the proposed land use is consistent with existing zoning, including zones designated by the City of Eureka Municipal Code (Section 156.065) and County of Humboldt Code (Section 313-5.4). The use is also consistent with policies pertaining to this part of the bay that are described in the Humboldt Bay Management Plan (HBHRCD 2007) (Section 2.3.2). Hence, no impact is expected. The Project's potential impacts to agricultural resources will not be further addressed in the EIR.

III. **AIR QUALITY**. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Conflict with or obstruct implementation of the applicable air quality plan?		X		
B) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
C) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?		X		
D) Expose sensitive receptors to substantial pollutant concentrations?				X
E) Create objectionable odors affecting a substantial number of people?				X

DISCUSSION

Air-A through Air-C: Air Quality Standards. The Project area is located in the North Coast Air Basin and is under the jurisdiction of the North Coast Unified Air Quality Management District (AQMD). The North Coast Air Basin is in attainment of all Federal and State air quality standards except for particulate matter smaller than 10 microns in diameter (PM_{10}) under California regulations.

Small boats associated with mariculture operations have internal combustion engines that generate particulate matter. The proposed Project would involve the use of up to four such vessels. The vessel engines would contribute to a minor net increase in emissions of particulate matter. Given the small size and limited quantity of vessels, their contribution to PM_{10} levels in Humboldt Bay is likely negligible, even without mitigation.

Moreover, the District lacks direct jurisdiction over air quality, and thus lacks direct authority to require mitigation for potential air quality impacts. However, the AQMD regulates vessel engine emissions pursuant to several air quality plans. CEQA addresses circumstances such as this through reliance by lead agencies on the regulatory oversight of responsible agencies carrying out statewide policy. Specifically, State CEQA Guidelines Section 15064(h) establishes a procedure that allows lead agencies, including the District, to rely on the environmental standards promulgated by other regulatory agencies, such as the AQMD, with respect to pollutant regulation. The AQMD has adopted several air quality management plan elements, including a "PM_{10} Attainment Plan."

The District finds that Coast would not contribute to a cumulatively significant air quality impact if the company complies with the PM_{10} Attainment Plan adopted by the AQMD and all attendant regulations established thereto. This conclusion is incorporated into the following mitigation measure:

Mitigation Measure Air-1: Coast shall consult with the AQMD with respect to the requirements of adopted AQMD regulatory plans. Coast shall comply with the requirements of all adopted air quality plans, including plans covering particulate emissions, and shall implement all actions required by the

AQMD for Coast's mariculture operations.

With implementation of this mitigation measure, potential air quality impacts would be less than significant. The EIR will further address air quality impacts and will recommend mitigation measures as feasible and appropriate.

Air-D and Air-E: Air Quality Effects on People. The Project would not create any substantial pollution concentrations or objectionable odors. Additionally, there are no sensitive receptors or a substantial number of people in the immediate vicinity of the Project site. Hence, no impact is expected. Potential air quality effects on people will not be further addressed in the EIR.

IV. **BIOLOGICAL RESOURCES**. Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	X			
B) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	X			
C) Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
D) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	X			
E) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
F) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?				X

Bio-A: Effects on Candidate, Sensitive, or Special-status Species. The following species are identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS).

Common Name	**Scientific Name**	**Status**[1]
Green sturgeon, southern DPS	*Acipenser medirostris*	FT/CSSC. Designated critical habitat in Humboldt Bay.
Coho salmon, southern Oregon, northern California ESU	*Oncorhynchus kisutch*	FT/ST
Steelhead, Northern California DPS	*Oncorhynchus mykiss*	FT

Chinook salmon, California coastal ESU	*Oncorhynchus tshawytscha*	FT
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	CSSC
Pacific eulachon – southern DPS	*Thaleichthys pacificus*	FT
Longfin smelt	*Spirinchus thaleichthys*	ST
California brown pelican	*Pelecanus occidentalis californicus*	FP
Western snowy plover	*Charadrius nivosus nivosus*	FT/CSSC
Marbled murrelet	*Brachyramphus marmoratus*	FT/SE
Black brant	*Branta bernicla nigricans*	CSSC
Harbor seal	*Phoca vitulina*	Protected under the Marine Mammal Protection Act
Harbor porpoise	*Phocaena phocaena*	Protected under the Marine Mammal Protection Act
California sea lion	*Zalophus californiaus*	Protected under the Marine Mammal Protection Act

Notes: DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit.
[1] Status abbreviations: FT = Federally listed as threatened; ST = State-listed as threatened; CSSC = California Species of Special Concern; FP = Fully protected in California.

Select species are described below; candidate, sensitive and special status species will be further addressed in the EIR.

Coho and Chinook Salmon, Steelhead, and Coastal Cutthroat Trout (Salmonids)
Salmonid life history is characterized by periods of ocean/coastal pelagic conditions, adult upstream migration, spawning and egg development, fry and juvenile development and rearing, and smolt outmigration. Channels in marsh habitats may be of particular importance to subyearling salmonids because they contain abundant insect and invertebrate prey resources and may provide refuge from predators (Bottom et al. 2005). Pinnix et al. (2013) found that in Humboldt Bay, juvenile coho salmon utilize deep channels, channel margins and floating eelgrass mats as they migrate offshore as smolts to the ocean. Juvenile coho salmon were less likely to occur in shallow channels with large intertidal mudflats and eelgrass meadows in Humboldt Bay (Pinnix et al. 2013).

Green Sturgeon
The green sturgeon is a long-lived, slow-growing fish species. Mature males range from 4.5 to 6.5 feet in fork length and they do not mature until they are at least 15 years old, whereas mature females range from 5 to 7 feet in fork length and do not mature until they are at least 17 years old (National Oceanic and Atmospheric Administration (NOAA) Fisheries 2015). The maximum ages of adult green sturgeon

are likely to range from 60 to 70 years. This species is found along the west coast of Mexico, the United States, and Canada.

The life history of green sturgeon is typical of anadromous fish. They spend most of their lives in nearshore oceanic waters, bays (including Humboldt Bay), and estuaries. Spawning occurs in deep pools in large rivers. Currently, spawning is believed to occur in the Klamath River basin, the Sacramento River, and the South Fork of the Trinity River; however, the listed southern DPS is only known to spawn in the Sacramento River, but migrates northward to Canada along the coast and enters bays and estuaries. Spawning does not occur in creeks flowing into Humboldt Bay. Green sturgeon adults have been observed in channels within Humboldt Bay (Lindley et al. 2011) and Humboldt Bay is designated as critical habitat (74 FR 52300).

Pacific Eulachon – Southern DPS

The Pacific eulachon is a small, anadromous fish from the eastern Pacific Ocean (76 FR 65324). Eulachon spend 3–5 years at sea before returning to freshwater to spawn, from late winter to mid-spring. Eggs are fertilized in the water column, then sink and adhere to the river bottom of coarse sand and gravel. Most adults die after spawning. Eggs hatch in 20–40 days, and larvae are carried downstream and "dispersed by estuarine and ocean currents shortly after hatching" (76 FR 65324).

Eulachon have been documented in Humboldt Bay and spawn in nearby coastal rivers, such as Redwood Creek and the Mad River, although in local rivers, the species is thought to be extirpated (or nearly so). California Natural Diversity Database (CNDDB) records of the species contain no dates, specific locations, or other survey information. In 1996, the Yurok tribe supported a eulachon sampling effort on the Klamath River, of over 110 surveying hours, from early February to early May. No eulachon were observed.

Longfin Smelt

The longfin smelt is a short-lived species (generally living 2 years). Adults spawn in low-salinity or freshwater areas in the lower reaches of coastal rivers. The buoyant larvae are swept into more brackish waters, where they rear. Longfin smelt are known to occur in Humboldt Bay, but little is known regarding their distribution, abundance or life history there. Larval longfin smelt have been captured in the winter in bottom trawls in Humboldt Bay (Eldridge and Bryan 1972).

California Brown Pelican

The brown pelican was listed as endangered until 2009 when the California brown pelican population was determined to have sufficiently recovered to be delisted by both the federal (74 FR 59443) and state agencies (Fish and Game Commission 2009). Pelican populations were decimated by the effects of DDT and the species began to recover after the chemical was banned in 1972. The California brown pelican ranges along the Pacific Coast from California to Mexico. Established breeding colonies occur on West Anacapa Island, Santa Barbara Island, and at the Salton Sea; communal winter roosts occur throughout the range (Shields 2002). Preferred winter roost sites are comprised of estuaries, sand bars, spits, or beaches that are close to aquatic foraging grounds, allow the birds to dry off after foraging, and offer shelter from predators and the elements (Jacques et al 1996, Shields 2002). Pelicans forage in relatively warm brackish and ocean waters where fish are close enough to the surface to be captured by plunge-diving birds (Shields 2002). Non-breeding brown pelicans occur in Humboldt Bay, most commonly in the fall, and often roost on artificial structures, particularly in areas that are isolated from

human disturbance.

Western Snowy Plover

The western snowy plover nests along the Pacific Coast from Damon Point, Washington to Bahia Magdalena, Baja California, Mexico (USFWS 2007). Degradation and use of habitat for human activities has been largely responsible for the decline in the snowy plover breeding population; other important threats to the snowy plover are mammalian and avian predators, and human disturbance (Page et al. 1995). In the Humboldt Bay region, western snowy plovers primarily breed and winter in ocean-fronting beaches (Brindock and Colwell 2011) although small numbers of plovers have been documented nesting in gravel bars of the Eel River (Colwell et al. 2011). Nonbreeding western snowy plovers occasionally occur in Humboldt Bay, but mostly in the South Bay on sandier substrates rather than on softer substrates associated with mudflats in North Bay.

Marbled Murrelet

The marbled murrelet occurs along the Pacific coast from Alaska to California, foraging nearshore in marine subtidal and pelagic habitats for small fish and invertebrates (USFWS 2011). Breeding occurs in mature, coastal coniferous forest with nests built in tall trees. In California, breeding occurs primarily in Del Norte and Humboldt counties. The loss of old-growth forest is a primary reason for this species' decline (USFWS 1992). In California, marbled murrelets nest in redwoods that are older than 200 years (Nelson 1997). They are also vulnerable to oil spills along the coast. Marbled murrelets can occur in Humboldt Bay as foragers, and are expected to primarily occur in the entrance portion of the bay.

Black Brant

The black brant (*Branta bernicla nigricans*) is a sea goose that relies on Pacific coastal habitats. Brant nest in the arctic, including areas in Alaska, Canada, and Russia (Pacific Flyway Council 2002). The majority of the population winters in the Baja California Peninsula, as well as other Mexico estuaries, however the winter distribution of brant has shifted northward in recent years (Ward et al. 2009) possibly as a result in increasing temperatures. Unlike other waterfowl, black brant rely almost entirely on one food source, eelgrass, to meet their energetic needs (Ward et al. 1997, 2005; Moore et al. 2004). The population of black brant is monitored and managed by the Pacific Flyway Council and is estimated at 150,000 birds; the management plan for the species currently allows for harvest which is regulated based on population levels (Pacific Flyway Council 2002). Black brant are considered a species of special concern while wintering/staging in California.

Harbor Seal

Harbor seals are widely distributed throughout the northern Atlantic and Pacific Oceans along coastal waters, river mouths, and bays (Burns 2008; Lowry et al. 2008). Harbor seals consume a variety of prey, but small fishes predominate in their diet (Tallman and Sullivan, 2004). In northern California, pupping peaks in June and lasts about 2 weeks; pups are weaned in 4 weeks (Burns 2008). Foraging occurs in a variety of habitats, from streams to bays to the open ocean, and harbor seals can dive to depths of almost 500 m (Eguchi and Harvey 2005). Harbor seals breed along the Humboldt County coast and inhabit the area throughout the year (Sullivan, 1980). Harbor seals use Humboldt Bay as a pupping and haul-out area; other nearby haul-out sites are located in Trinidad Bay and the mouths of the Mad and Eel Rivers.

Harbor Porpoise
Harbor porpoises are distributed throughout the coastal waters of the North Atlantic and North Pacific Oceans, and the Black Sea. In the North Pacific, they range from Point Conception, California, to as far north as Barrow, Alaska, and west to Russia and Japan (Angliss and Allen 2009; Carretta et al. 2008; Gaskin, 1984). Harbor porpoises from California to the inland waters of Washington have been divided into six stocks (Carretta et al. 2008), with three additional stocks occurring in Alaskan waters (Angliss and Allen, 2009). Porpoises from Humboldt County are included in the northern California/southern Oregon stock that extends from Point Arena to Lincoln City, Oregon (Carretta et al. 2008). Harbor porpoises have been observed throughout the year at the entrance to and within Humboldt Bay, usually as single individuals but sometimes in groups, with a maximum size of 12 animals (Goetz 1983). Abundance peaks between May and October, and porpoises are most abundant in Humboldt Bay during the flooding tide.

California Sea Lion
California sea lions are restricted to middle latitudes of the eastern North Pacific. There are three recognized management stocks: (1) the U.S. stock from Canada to Mexico, (2) the western Baja California stock, and (3) the Gulf of California stock (Carretta et al. 2008; Lowry et al. 2008). Breeding colonies only occur on islands off southern California, along the western side of Baja California, and in the Gulf of California (Heath and Perrin 2008). California sea lions feed on fish and cephalopods, some of which are commercially important species such as salmonids (*Oncorhynchus spp.*), Pacific sardines (*Sardinops sagax*), northern anchovy (*Engraulis mordax*), Pacific mackerel (*Scomber japonicus*), Pacific whiting (*Merluccius productus*), rockfish (*Sebastes spp.*), and market squid (*Loligo opalescens*) (Lowry and Carretta 1999; Lowry and Forney 2005; Lowry et al. 1991; Weise 2000). California sea lions do not breed along the Humboldt County coast; however non-breeding or migrating individuals may occur in Humboldt Bay.

The EIR will include further discussion of the baseline condition of the candidate, sensitive and special status species discussed above. Potential Project-related impacts on these species are discussed below. Where noted, potential impacts to these species will be further addressed in the EIR, with mitigation recommended where feasible and appropriate.

Bio-A1: Reduction of Prey for Green Sturgeon. Tributaries to Humboldt Bay do not provide spawning habitat for green sturgeon. However, adult green sturgeon are known to temporarily reside in deeper channels in the bay (Lindley et al. 2011). Bemis and Kynard (1997) suggested that green sturgeon move into the estuaries of nonnatal rivers to feed; this is likely true for Humboldt Bay. Likely food sources for green sturgeon are small fishes and benthic invertebrates associated with silty/sandy substrates and benthic fauna. There are two potential processes by which the proposed mariculture operations could reduce these prey resources: by displacing prey and by causing ecosystem changes that result in reduced prey populations or availability. The first potential effect is discussed below. The second is discussed in Bio-A6, "Changes in the abundance of suspended organic matter and related effects on native species," and will be further addressed in the EIR, with mitigation recommended as feasible and appropriate.

The Project may impact green sturgeon prey resources by displacement. The proposed intertidal mariculture areas are only temporarily inundated with tidal waters. Small fish that may be prey for green sturgeon likely forage in these areas. For these reasons the potential impact associated with reduction of prey for green sturgeon will be further discussed in the EIR, with mitigation recommended as feasible

and appropriate.

Bio-A2: Entanglement of Green Sturgeon. As an anadromous species, sturgeon swim among diverse structures in rivers, embayments, and the ocean. They have the sensory ability to detect structures and the swimming ability to avoid them, making it unlikely that green sturgeon would collide or become entangled with mariculture equipment or cultured shellfish. However, the Project will introduce additional structures within Humboldt Bay. For these reasons the potential impact associated with entanglement of green sturgeon will be further discussed in the EIR, with mitigation recommended as feasible and appropriate.

Bio-A3: Impacts of Water Intakes on Aquatic Species. Coast's FLUPSY, which would be expanded by eight bins under the proposed Project, contains water intakes that could impinge or entrain small organisms, including special-status fish species (e.g., salmonids and longfin smelt). With implementation of Mitigation Measure Bio-1 below these species would be protected from impingement and entrainment and this impact is less than significant. For this reason potential impacts related to water intakes on aquatic species will not be further discussed in the EIR.

Bio-A4: Changes in the Distribution and Abundance of Predators of Native Fish. The Project would create fish habitat consisting of floating in-water structures (the FLUPSY bins) over sand or silt bottoms at subtidal sites, and various types of off-bottom mariculture equipment over sand or silt bottoms at intertidal sites.

Because the intertidal sites are only temporarily inundated with water, the mariculture equipment at these sites is unlikely to attract predatory fish species. At the subtidal sites, hook and line surveys of fish species associated with 30 floating clam rafts in North Bay was conducted in August 2014 (HTH 2014). Species captured included walleye surfperch (*Hyperprosopon agenteum*), topsmelt (*Atherinops affinis*), jacksmelt (*A. californiensis*), sardine (*Sardinops sagax*), northern anchovy (*Engraulis mordax*), and juvenile rockfish (*Sebastes* spp). These species don't prey on juvenile longfin smelt, juvenile salmonids, or other special-status fish. According to Fritzsche and Collier (2001):

"[T]he diet of surfperches consists of isopods (e.g., rock lice), of all sizes, and gastropod mollusks (e.g., snails); various amphipods (e.g., skeleton shrimp), polychaete worms, brittle stars, and small crabs, also are included. Surfperches are usually bottom grazers, but apparently will feed mid-water when competitors are absent."

According to Love et al. (1990), newly recruited rockfish eat mostly crustaceans. Rockfish species that shift to substrate-associated prey begin feeding on larger algal-associated gammarid amphipods, shrimps, and isopods. Based on this information, the Project is unlikely to attract or encourage predators of special-status fish and the impact is considered less than significant without mitigation. For this reason, changes in the distribution and abundance of predators of native fish will not be further addressed in the EIR.

Bio-A5: Impacts of structures on fish species. The Project's FLUPSY bins would create new overwater structure in Humboldt Bay. Toft et al. (2007) researched fish use of overwater structures in Puget Sound, Washington and determined that juvenile salmonids avoid swimming beneath overwater

structures, whereas surfperch (*Embiotocidae*), crabs (*Brachyura*) and sculpins (*Cottidae*) were observed beneath or adjacent to pilings. During an acoustic telemetry study in Humboldt Bay, Pinnix et al. (2013) found coho salmon were most often associated with deep channels followed by channel margins, floating eelgrass mats and finally pilings/docks. Hook and line surveys of fish species associated with 30 floating clam rafts in North Bay was conducted in August 2014 (HTH 2014). Species captured included walleye surfperch (*Hyperprosopon agenteum*), topsmelt (*Atherinops affinis*), jacksmelt (*A. californiensis*), sardine (*Sardinops sagax*), northern anchovy (*Engraulis mordax*), and juvenile rockfish (*Sebastes* spp). These species are all native to Humboldt Bay and may benefit from the structural habitat provided by the rafts, though this is uncertain. Juvenile salmonids may also avoid overwater structures, as suggested by Toft et al. (2007) and Pinnix et al. (2013). Typically, the structures noted in these studies include ones that extend from the intertidal into the subtidal habitat. For these reasons the potential impact associated with Project-related subtidal structures on fish species will be further discussed in the EIR, with mitigation recommended as feasible and appropriate.

The Project would also result in potentially significant impacts due to the placement of additional shellfish equipment in intertidal areas, in the form of longlines and rack-and-bag gear. Studies of off-bottom mariculture operations have shown similar abundances of some fishes and invertebrates in areas with shellfish culture when compared to nearby areas with eelgrass and higher ambundances than unstructured open mudflat. However, eelgrass attracts some unique species of fish that may not utilize intertidal areas populated with shellfish gear. For this reason, the potential impact to fish associated with placement of shellfish equipment in intertidal areas will be further addressed in the EIR, with mitigation recommended where feasible and appropriate.

Bio-A6: Changes in the Abundance of Suspended Organic Matter and Related Effects on Native Species. Cultured shellfish consume natural food sources that are suspended in the water column, including phytoplankton and other organic matter and there is potential competition for this food source between cultured shellfish and other filter feeders. The Draft IS included an aquacultural carrying capacity analysis of the potential cumulative effect on organic matter food sources of the proposed Project, existing culture, and other planned culture in Humboldt Bay (Attachment B to the Draft IS). The analysis considered the Project, the Humboldt Bay Mariculture Pre-Permitting Project, a project proposed by the District (the "Pre-Permitting Project") to expand shellfish aquaculture in Humboldt Bay, as well as existing and other proposed shellfish culture. The aquacultural carrying capacity will be substantially revised to address comments received on the Draft IS and Pre-Permitting Project Draft EIR and those revisions will be included in the EIR. Mitigation measures will be recommended as feasible and appropriate.

Bio-A7: **Effects to Western Snowy Plover Foraging Habitat**. In the Humboldt Bay region, western snowy plovers primarily breed and winter in ocean-fronting beaches (Brindock and Colwell 2011) although small numbers of plovers have been documented nesting in gravel bars of the Eel River (Colwell et al. 2011). Nonbreeding western snowy plovers are generally not expected to occur in intertidal habitats in Humboldt Bay; however individuals may occasionally forage in the bay, particularly in the South Bay where sandier substrates occur south of the bay entrance. For this reason, potential impacts to western snowy plovers will be further addressed in the EIR and mitigation recommended if feasible and appropriate.

Bio-A8: **Effects to Roosting California Brown Pelicans.** California Brown pelicans (*Pelecanus*

occidentalis californicus) and other waterbirds, including double-crested cormorants (*Phalacrocorax auritus*) and terns (*Sterna* spp.), use docks, rafts, and other structures in Humboldt Bay as roosting habitat. Brown pelicans and other species may occasionally use the FLUPSY, and other infrastructure associated with the Project's aquaculture operations. During maintenance and harvesting, project personnel will access the structures causing roosting pelicans and other birds to abandon their roosts. These disturbances have energetic costs associated with flight while searching for alternative roost sites. For these reasons, the EIR will further address potential impacts to roosting California brown pelican and mitigation recommended if feasible and appropriate.

Bio-A9: Effects to Benthic Fauna. Shellfish culture may affect benthic species by altering sedimentation patterns and through benthic pelagic coupling. Anchors and posts and other equipment associated with the Project will also displace benthic habitat used by animals, including polychaetes, crustaceans and mollusks. Benthic habitat that will be temporarily displaced by Project equipment is used for foraging by bird and fish species. The potential impacts associated with the Project's increased benthic footprint, along with potential impacts associated with the Project's water column volume and stocking rate per acre will be further discussed in the EIR, and mitigation recommended if feasible and appropriate.

Other shellfish culture activities, including those related to planting and harvesting are not expected to result in significant impacts to benthic organisms. Culturists will not walk on beds during low tides except while planting, which occurs on a two to four year cycle and is typically performed by small teams of 6 people. Between planting and harvest, walking on the beds will be restricted to monthly inspections, with virtually no other activity occurring until harvest. Potential impacts associated with trampling will be further addressed in the EIR and mitigation recommended as feasible and appropriate.

Bio-A10: Fouling Organisms and Nonnative Species. Coast is a participant in a disease prevention program, the Shellfish High Health Program, sponsored by the Pacific Coast Shellfish Growers Association (PCSGA). Coast conducts disease examination of all species cultured annually by a USDA certified Shellfish Pathologist. All import of bivalve larvae and seed to Humboldt Bay are done under a permit issued by CDFW, and exports are permitted by cooperating state or foreign governments. All species cultured will be mono-culture from a certified hatchery that cultures only species licensed by the CDFW. Therefore, there is very little risk of new non-native species being introduced through the cultivation of seed.

The species to be cultivated, Pacific and Kumomoto oysters, are already cultivated by Coast on its existing footprint in the bay and have been cultivated in Humboldt Bay for decades without evidence of invasive spread or propagation in the bay to the detriment of other species or habitat. They are the two species most commonly cultivated in California for commercial shellfish projects, and have been successfully grown and harvested in California for over a century. While both species are non-native, they are prevalent throughout California and CDFW does not consider them to be invasive non-native species.

The Project has the potential to provide additional substrate for both native and non-native fouling organisms on the installed structures. To avoid the spread of such organisms on the FLUPSYs, the applicant has incorporated BMP-1 into the project design, which requires that all bio-fouling organism

removal operations for the FLUSPY bins be carried out onshore and that all biological materials removed during cleaning operations will be disposed of at an upland facility. Daily washing of the FLUPSY trays and wells generally prevents their colonization by fouling organisms. The rafts themselves do not require regular maintenance to remove fouling organisms, although periodic maintenance on an annual or greater timeframe may be used, depending on site conditions. Because Coast will be installing structures that may provide substrate for non-native fouling organisms, the EIR will further address issues associated with non-native species.

Bio-B: Effects to Habitats. Eelgrass (*Zostera marina*) forms a Federal Habitat Area of Particular Concern which is a subset of federal Essential Fish Habitat that provides important ecological functions and/or is especially vulnerable to degradation. Eelgrass beds are also recognized as a conservation concern by local and state agencies, including CDFW, California Coastal Commission, City of Eureka and the District. In 2009, Humboldt Bay contained 3,614 acres of continuous eelgrass beds and an additional 2,031 acres of patchy eelgrass beds (Schlosser and Eicher 2012). Although monitoring is sporadic within most areas of California, the eelgrass in Humboldt Bay represents up to 53% of California's eelgrass resource (Ramey, pers. comm., 2012). Further, relative to its size (17,759 acres of coastal wetland habitat), Humboldt Bay has the most eelgrass of any bay in California. Eelgrass in Humboldt Bay represents approximately 32% of the coastal wetland habitat in the bay. Comparatively, in San Francisco, out of 250,000 acres of coastal wetland habitat there was 3,707 acres of eelgrass (or 1.5%) in 2009 (Merkel 2010).

Gilkerson (2008) modeled potential eelgrass habitat in Humboldt Bay, and found that a larger proportion of eelgrass beds were located in South Bay (84% of available habitat) compared to North Bay (39% of available habitat). Eelgrass beds in North Bay are exposed to winds from the south, which tend to accompany high energy winter storms that erode and degrade the beds (Gilkerson 2008). Additionally, studies evaluating surface temperatures showed that South Bay was comparatively cooler than North Bay (Weltz 2012), potentially providing some protection against heat stress and desiccation. Taken together, these observations suggest that eelgrass growing conditions are better in South Bay compared to North Bay, which results in higher abundance and wider distribution of continuous beds.

A variety of environmental factors limit eelgrass growth in the bay, including light and suspended sediments; wind and wave exposure; nutrients; sea surface temperature; space competition; and herbivory. Despite these limiting factors, observed eelgrass cover has remained relatively constant over the past several decades, although there is a significant degree of interannual variability from year to year. The prevalence of eelgrass in Humboldt Bay may indicate that it is reaching its carrying capacity, with limited opportunity for additional growth without some form of habitat modification.

Potentially significant impacts to eelgrass from aquaculture include abrasion and desiccation of eelgrass blades by shellfish and shellfish gear. Gear and shellfish products associated with longline culture techniques may also shade eelgrass, potentially affecting the spatial extent and density of eelgrass beds in the immediate vicinity. For these reasons, potential impacts to eelgrass will be further discussed in the EIR and mitigation proposed where feasible and appropriate. The EIR will also address eelgrass ecosystem function and the value of eelgrass relative to shellfish aquaculture and other habitats.

An eelgrass technical memorandum attached as Attachment A to the Draft IS provides a thorough description of the known ecological functions of eelgrass and shellfish culture and the relationships between these two ecosystem components. The technical memorandum will be significantly revised and included in the EIR. Further, the adaptive management and monitoring plan proposed as Mitigation BIO-2 in the Draft IS will be revised to reflect comments received on the Draft IS and will be presented as amended in the EIR.

The Project incorporates best management practices to avoid or minimize impacts to eelgrass (see project description, above and BMPs 2-5). In areas with eelgrass, culture activities will occur primarily while the area is inundated by the tide to avoid contact with the bay bottom. In addition, there will be no intentional deposition of shell or other material on the sea floor and harvesting boats will not be anchored so as to shade the same area of eelgrass for more than 12 hours. Coast is also committing to the following spacing of shellfish culture equipment, which will further minimize eelgrass impacts:

- For cultch-on-longline equipment, spacing between the lines would be five (5) feet with a ten (10) foot row between shellfish beds.
- For basket-on-longline equipment, groups of three lines would be spaced five (5) feet apart, with a twenty (20) foot space between each group.
- Rack and bag equipment would not be placed within ten (10) feet of an eelgrass bed.

Bio-C: Effects to Wetlands. Wetlands, including in Humboldt Bay, provide numerous functions including primary production, flood protection, nutrient removal/transformation, wildlife habitat and recreational opportunities. With the addition of shellfish culture, all these functions continue. Cultured shellfish can actually contribute to water quality by removing/converting nutrients and other matter in the water column. Additionally, as described in other sections of this Final IS, certain wildlife species benefit from the habitat provided by shellfish culture equipment and cultured shellfish. The Project does not include the removal of any wetlands, placement of fill, or any other interruption or impact to wetland areas other than as described above in Bio-B regarding the placement of shellfish aquaculture structure in eelgrass habitat. Except as provided above, the Project is not expected to have a significant impact on wetlands. For this reason, potential impacts to wetlands other than impacts to eelgrass will not be further discussed in the EIR.

Bio-D1: Effects to Wintering and Migrating Shorebird Populations. Humboldt Bay is an important area for migrating and wintering shorebirds in the Pacific flyway, and the bay has been designated as an International site in the Western Hemisphere Shorebird Reserve Network. During bay-wide surveys, as many as 32 shorebird species and 83,647 individuals have been recorded during spring migration (April 1991) although shorebird counts conducted during the 1990's reflect a substantial decline relative to historic estimates (Colwell 1994). Aquaculture practices may cause potentially significant impacts to shorebirds by reducing the amount of available foraging habitat through habitat degradation and human disturbance (Colwell 1994). For instance, a study on wintering shorebirds conducted in Tomales Bay suggests that some shorebird species will avoid aquaculture areas (Kelly et al. 1996). Foraging resources for waterbirds are altered in two primary ways by shellfish culture: (1) cultured animals and associated bio-fouling organisms can be a food source to birds (Caldow et al. 2007, Forrest et al. 2009), and (2) habitats and thus food resources below culture operations can be altered.

Connolly and Colwell (2005) compared waterbird abundance, diversity and composition between cultch-on-longline oyster plots and adjacent tidal flats in Humboldt Bay during low tides. The results indicate greater bird species diversity on long-line oyster plots than on the tidal flats without oyster culture (i.e., control plots), although there was variation in species use of long-line and control plots. Where differences occurred, five species (willet (*Tringa semipalmata*), whimbrel (*Numenius phaeopus*), dowitchers (*Limnodromus griseus* and *L. scolopaceus*), small sandpipers (*Calidris* spp.), and black turnstone (*Arenaria melanocephala*)) were more abundant on longline plots than control plots during the study (Connolly and Colwell 2005). The authors suggest that increased abundance of these shorebirds on long-line plots was potentially related to increased foraging opportunities or an increase of prey density or diversity. However, one species (black-bellied plover (*Pluvialis squatarola*)) was more abundant on control plots. The authors suggest that greater use of control plots by black-bellied plovers may be a result of greater abundance of their principle prey items occurring on control plots, or factors related to reduced foraging efficiency related to their visual foraging methods. For instance, prey may be less available to black-bellied plovers, due to higher concentrations of shorebirds attracted to the longlines, or prey may be less detectable due to visual obstructions in long-line plots.

Based on this study, the short-term effect of increased aquaculture will likely be negligible or possibly beneficial for most shorebird species, while other species (e.g., black-bellied plover) may avoid long-line areas. For these reasons, potential impacts to shorebirds associated with Project-related changes in habitat and foraging opportunity will be further discussed in the EIR, with mitigation recommended if feasible and appropriate.

Artificial lighting associated with the Project may also impact shorebirds, including by causing disorientation. However, the installation of lighting associated with the Project is expected to be very minimal. In addition, the use of lights at night by culturists is expected to be minimal. To further reduce the potential for substantial light pollution to occur at new lighting locations, mitigation (shielding light fixtures) will be implemented. With this mitigation, the impact is considered less than significant and will not be further addressed in the EIR.

Bio-D2: Effects to Pacific Herring. A portion of the Project overlaps with herring spawning areas in North Bay. Pacific herring spawn on eelgrass in Humboldt Bay and can spawn on shellfish culture equipment. In addition, maintenance of shellfish culture equipment has the potential to impact spawning herring and herring eggs through disturbance. Impacts to eelgrass also have the potential to significantly impact herring. The Project will utilize best management practices to reduce impacts to herring, including avoidance of spawning Pacific herring by postponing harvesting and planting activities for two weeks on beds where spawning has occurred (BMP 9) (see Section 3.0 Project Description, above) . Additional discussion of potentially significant impacts to herring will be provided in the EIR.

Bio-D3: Effects to Marine Mammals. As described above, harbor seals occur in Humboldt Bay and are known to haul out on mudflats in North Bay. California sea lions also occur in Humboldt Bay and occasionally are observed loafing on artificial structures. Potentially significant impacts to marine mammals include disturbance through increased activity and obstruction of marine mammal passage, particularly in the vicinity of seal haul-out and pupping locations. However, marine mammals are expected to primarily use channels for movement and foraging rather than the intertidal areas where longlines will be placed, thus the placement of infrastructure is not expected to occur in areas important to their movement. Further, even if moving through intertidal areas during high tides, shellfish culture

equipment is not expected to restrict movements of marine mammals, as these species would readily navigate among the equipment. The Project also incorporates BMP 6 (see Section 3.0 Project Description)which require the applicant to educate its workforce regarding marine mammal avoidance and implement procedures to avoid marine mammals when using boats in Humboldt Bay, including incorporating speed restrictions, avoidance techniques, and notification requirements should the crew observe an injured marine mammal. Potential impacts to marine mammals will be further evaluated in the EIR.

Bio-D4: Effects to Black Brant. Humboldt Bay is an important wintering area and spring staging site for black brant (*Branta bernicla nigricans*) in the Pacific flyway. Based on peak use, Humboldt Bay is the most important spring staging site in California and the fourth most important site in the Pacific flyway (Moore et al. 2004). Annual estimates of total use-days ranged from 1 to 6 million use-days before 1954, but since have usually been less than 1 million and reached a low of 285,000 use-days in 1985 (Moore and Black 2006a). The total Pacific Flyway brant population is considered to be stable with approximately 120,000 individual birds (Pacific Flyway Council 2002). During a two-year study, Humboldt Bay was estimated to support 28% of the flyway population (37,600 birds) in 2000 and 58% (77,800 birds) in 2001 (Lee et al. 2007). Although "wintering" brant are generally considered winter residents of the Bay, the resident brant population in January and early February has not been shown to be static, with 3 to 8% turnover per week until 15 February (Lee et al. 2007). The mean stopover duration for all birds in winter and spring (January – April) was estimated to be 13 days (Lee et al. 2001). Thus in a given year a substantial proportion of the population relies on Humboldt Bay during migration.

Black brant feed almost exclusively on eelgrass (Ward et al. 1997, 2005; Moore et al. 2004) and a large proportion of the flyway population uses the bay likely due to high eelgrass abundance and its relative isolation from other suitable spring staging sites (Moore et al. 2004). Eelgrass varies in quantity and quality, and is unavailable during two high tides per day, making the achievement of energy demands challenging for brant (Clausen 2000, Moore and Black 2006b). However, in most years there is no evidence that overall eelgrass abundance has been insufficient to support wintering and staging brant in Humboldt Bay. In most years, brant appear to meet their energetic requirements foraging on a relatively abundant and stable source of eelgrass, but in rare circumstances weather and tide conditions can constrain foraging efforts.

Surveys conducted each February between 1976 and 2000 found a mean number of 5,049 brant in South Bay and 1,322 brant in North Bay. Otherwise stated, approximately 83 percent of the birds were observed in South Bay (Moore et al. 2004). Based on comparisons with historical data (1931-1941), the relative proportions of brant using South Bay and North Bay have been similarly distributed (Moore et al. 2004). However, the most recent 2015 winter/spring annual surveys conducted by the Humboldt Bay National Wildlife Refuge detected a recent shift in brant population from South Bay to North Bay, estimating a total of 192,400 bird days for North Bay and 147,930 bird days for South Bay (Refuge, unpublished data). For example, an April survey estimated 3,650 birds occupying North Bay and 2,860 birds in South Bay.

The Project may significantly impact brant by causing them to avoid culture areas (i.e., structures suspended over eelgrass) and areas with increased human disturbance (i.e., the presence of culturists and

boats), as brant are known to be sensitive to human disturbance as a hunted species. The project may also significantly impact brant by reducing forage and forage availability in the bay.

The EIR will further discuss potentially significant impacts to brant and will recommend mitigation if feasible and appropriate. The EIR will also include an analysis of brant energetic needs in relation to available eelgrass forage in the bay.

Bio-E: Local Policies. In the vicinity of the Management Area, numerous riparian habitats and other sensitive natural communities have been identified by local governments, CDFW, and USFWS. These natural communities provide habitat for year-round and migrant species, recreation, environmental interpretation, and preservation of aesthetic resources. The City of Arcata's Marsh and Wildlife Sanctuary also provides wastewater treatment. Specific areas managed by local, state or federal entities protecting riparian habitats and other sensitive natural communities include:

- The Humboldt Bay National Wildlife Refuge Complex, owned and managed by the USFWS. http://www.fws.gov/humboldtbay/
- The Arcata Marsh and Wildlife Sanctuary, owned and managed by the City of Arcata. http://www.cityofarcata.org/departments/environmental-services/water__wastewater/wildlife-sanctuary
- CDFW Wildlife Areas, at the following locations http://www.dfg.ca.gov/lands/wa/region1/index.html: South Spit WA, Eel River WA, Fay Slough WA, Mad River Slough WA, Elk River WA

Plans protecting biological resources in the vicinity of the Project are Local Coastal Plans, the Open Space Element of the County General Plan, habitat conservation plans (HCPs), and recovery plans for listed species that are likely to occur within the Management Area.

Local Coastal Plans and other relevant documents include:

- City of Arcata Certified Local Coastal Program, http://www.cityofarcata.org/departments/building-planning/regulations/certified-local-coastal-program
- Humboldt Bay Area Plan of the Humboldt County Local Coastal Program, April 1995, http://co.humboldt.ca.us/planning/local_coastal_plans/hbap/hbap.pdf
- Eel River Area Plan of the Humboldt County Local Coastal Program, May 1995, http://co.humboldt.ca.us/planning/local_coastal_plans/erap/erap.pdf
- Local Coastal Plan Issue Identification Report, September 2003, http://co.humboldt.ca.us/planning/local_coastal_plans/pdf/issueidentificationreport/issue.pdf
- Humboldt Bay National Wildlife Refuge Comprehensive Conservation Plan 2009, http://www.fws.gov/humboldtbay/ccp.html

The County of Humboldt's Coastal plan policies call for providing maximum public access and recreational use of the coast; protecting wetlands, rare and endangered habitats, environmentally sensitive areas, tidepools, and stream channels; maintaining productive coastal agricultural lands; directing new development to already urbanized areas; protecting scenic beauty; and locating coastal energy facilities such that they have the least impact.

The County of Humboldt General Plan is currently being updated. The Biological Resources section of the Conservation and Open Space Elements describes the policies for preservation of natural resources, management of production of resources, outdoor recreation, and public health and safety.

In the general vicinity of the Management Area, HCPs, Natural Community Conservation Plans (NCCPs), and candidate conservation agreement and assurances plans have been written, but none geographically overlap the Project area.

The Project, with inclusion of best management practices, would not conflict with described policies. Hence, there would be no impact and local policies will not be further discussed in the EIR.

Bio-F: Conservation Plans. There are no adopted or planned Habitat Conservation Plans or Natural Community Conservation Plans for the Project Area. Hence, there would be no impact. This potential impact will not be further discussed in the EIR.

Mitigation Measure Bio-1, Water Intake Screening: CDFW has developed screening criteria to protect juvenile longfin smelt in bays and estuaries from impingement or entrainment by water intakes (Pers. Comm. Ms. Vicki Frey (CDFW Marine Region), email to Adam Wagschal (H. T. Harvey & Associates), March 18, 2014). These criteria also allow for protection of juvenile salmonids, as based on criteria developed by the NMFS (2008). These criteria, which will be followed by all water intakes under the Project, are as follows:

- Round or square (measured diagonally) openings in intake screens shall not exceed 2.38 mm (3/32 in).
- Slotted opening in the screen shall not exceed 1.75 mm (.0689 in).
- Approach velocity shall not exceed .2 feet per second for self-cleaning screens or .05 feet per second for non-self-cleaning screens.
- Overall screen porosity shall be a minimum of 27%.

Mitigation Measure Bio-2, Develop and Implement an Eelgrass Monitoring and Adaptive Management Program. Prior to installation of any additional shellfish aquaculture gear, the Harbor District shall approve an eelgrass monitoring plan, utilizing the concepts of the California Eelgrass Mitigation Policy (CEMP), including pre- and post-project surveys in comparison to selected reference area(s). Baseline studies of eelgrass density and cover will be conducted prior to placement of new shellfish culture equipment. In consultation with the resource agencies, thresholds will be set for project impacts to eelgrass ecological function. Eelgrass monitoring will occur during farming operations and if the established thresholds are exceeded then appropriate mitigation will be implemented. Mitigation measures may include (1) alteration of the Project footprint; (2) modification to aquaculture practices (possibly including alteration of culture spacing); (3) creation of eelgrass habitat; and/or (4) establishment of conservation easements over eelgrass beds. Any such mitigation will be compliant with the CEMP, Corps regulations regarding aquatic vegetation mitigation, and any regional eelgrass mitigation policy adopted by the Harbor District or other authorized regional entity.

V. CULTURAL RESOURCES. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?		X		
B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		
D) Disturb any human remains, including those interred outside of formal cemeteries?		X		
E) Impact tribal cultural resources?[8]				

DISCUSSION

CR-A through CR-E: **Cultural Resources.** Humboldt Bay is the ancestral heartland of the Wiyot Indians, whose native language is affiliated with the Algonquian language family and who had occupied the bay area for at least 2,000 years by the time the first European maritime explorers entered the bay and the first American towns were established in 1850. There are hundreds of known and undiscovered archaeological sites around Humboldt Bay that evidence Wiyot history and prehistory. Today, citizens of Wiyot ancestry are affiliated with three federally-recognized tribes located in the ancestral homeland: Blue Lake Rancheria; Bear River Band of the Rohnerville Rancheria; and the Wiyot Tribe at Table Bluff Reservation.

A number of State and Federal historic preservation laws, regulations and policies address the need to manage potentially significant and/or sensitive (e.g., human remains) archaeological and Native American resources discovered inadvertently and in "post-review" settings. These include:

- CEQA: Requires analysis by the Lead Agency, to determine if the proposed project will cause a significant impact to "historical resources" and "tribal cultural resources" including archaeological and Native American sites.
- Section 106 of the National Historic Preservation Act (NHPA): Requires analysis by the Lead Federal Agency (that provides funding or a permit for the "undertaking") and consultation with the California State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation (ACHP), culturally affiliated Native American Tribes, and others, as appropriate, to "resolve adverse effects" on "historic properties" including archaeological and Native American sites.

Several laws and their implementing regulations spell out evaluation criteria to determine what constitutes a significant 'site' or a significant 'discovery' during construction:

- California Register of Historical Resources criteria (California Code of Regulations, Title 14, Chapter 3, Section 15064.5), for archaeological and Native American resources qualifying for consideration under CEQA.
- National Register of Historic Places criteria (36 CFR 63), qualifying for consideration under

[8] The CEQA Checklist located at Appendix G of the CEQA Guidelines, 14 Ca. Code. Reg. § 15000 *et seq.* has not yet been updated to reflect the passage of AB 52 in 2014.

Section 106 review and NEPA.

State laws call for specific procedures and timelines to be followed in cases when human remains are discovered on private or non-Federal public land in California. It includes penalties (felony) for violating the rules for reporting discoveries, or for possessing or receiving Native American remains or grave goods:

- Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code (PRC) outline requirements for handling inadvertent discoveries of human remains, including those determined to be Native American and associated grave goods found on private or state lands (i.e., the Project area), and PRC 5097.99 (as amended by SB 447) specifies penalties for illegally possessing or obtaining Native American remains or associated grave goods.

Posts and stakes placed in the substrate to secure shellfish culture equipment could potentially disturb cultural and historical resources. Additionally, such resources could be discovered visually by culturists in the areas they work. Mitigation Measures CR-1 and CR-2 provide protocols for actions that will occur if cultural resources are discovered. With these mitigation measures the potential impacts to cultural and historic resources are less than significant.

Mitigation Measure CR-1: Protocols for inadvertent discovery of any cultural or archeological resource. The following protocol shall be implemented if a cultural or archeological resource is discovered.

1. The party who made the discovery shall be responsible for immediately contacting by telephone the District.
2. Ground-disturbing activities shall be immediately stopped at the find locality if potentially significant historic or archaeological materials are discovered. Examples include, but are not limited to, concentrations of historic artifacts (e.g., bottles, ceramics) or prehistoric artifacts (chipped chert or obsidian, arrow points, groundstone mortars and pestles), culturally altered ash-stained midden soils associated with pre-contact Native American habitation sites, concentrations of fire-altered rock and/or burned or charred organic materials, and historic structure remains such as stone-lined building foundations, wells or privy pits. Ground-disturbing project activities may continue in other areas that are outside the discovery locale.
3. An "exclusion zone" where unauthorized equipment and personnel are not permitted shall be established (e.g., taped off) around the discovery area plus a reasonable buffer zone by the District, or party who made the discovery.
4. The discovery locale shall be secured (e.g., 24-hour surveillance) as directed by the District if considered prudent to avoid further disturbances.
5. Upon learning about a discovery, Coast shall be responsible for immediately contacting by telephone the contacts listed below to initiate the consultation process for its treatment and disposition:
    a. Tribal Historic Preservation Officers (THPOs) with Blue Lake Rancheria, Bear River Band and Wiyot Tribe; and
    b. Other applicable agencies involved in Project permitting.
6. In cases where a known or suspected Native American burial or human remains are uncovered,

the Humboldt County Coroner (707-445-7242) shall also be notified immediately.

7. Ground-disturbing project work at the find locality shall be suspended temporarily while Coast, the District, THPOs, a consulting archaeologist and other applicable parties consult about appropriate treatment and disposition of the find. Ideally, a treatment plan may be decided within three working days of discovery notification and the field phase of a treatment plan may be accomplished within five days after its approval, however, circumstances may require longer periods for data recovery. Where a Project can be modified to avoid disturbing the find, this may be the preferred option.
8. Any and all inadvertent discoveries shall be considered strictly confidential, with information about their location and nature being disclosed only to those with a need to know. The District shall be responsible for coordinating any requests by or contacts to the media about a discovery.
9. Ground-disturbing work at a discovery locale may not be resumed until authorized in writing by the District.
10. Final disposition of all collected archaeological materials shall be documented in a data recovery report and its disposition decided in consultation with Tribal representatives.

Mitigation Measure CR-2. Protocols for inadvertent discovery of Native American remains and Grave goods. In the event of a discovery of Native American remains or grave goods, the following protocol would be followed, in addition to the protocol described under Mitigation CR-1.

1. If human remains are encountered, they shall be treated with dignity and respect. Discovery of Native American remains is a very sensitive issue and serious concern of affiliated Native Americans. Information about such a discovery shall be held in confidence by all project personnel on a need-to-know basis. The rights of Native Americans to practice ceremonial observances on sites, in labs and around artifacts shall be upheld. The preference of the Wiyot area tribes is to leave ancestral burials and remains in situ, and that no photographs or analyses will be made.
2. The Coroner has two working days to examine the remains after being notified of the discovery. If the remains are Native American, the Coroner has 24 hours to notify the Native American Heritage Commission (NAHC) at (916) 653-4082.
3. The NAHC is responsible for identifying and immediately notifying the most likely descendant (MLD) of the deceased Native American.
4. Within 48 hours of their notification by the NAHC, the MLD may recommend the means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The recommendation may include the scientific removal and non-destructive or destructive analysis of human remains and items associated with Native American burials. Only those osteological analyses (if any) recommended by the MLD may be considered and carried out.
5. Whenever the NAHC is unable to identify a MLD, or the MLD identified fails to make a recommendation, or the District rejects the recommendation of the MLD and mediation between the parties by NAHC fails to provide measures acceptable to the District, the District shall cause the re-burial of the human remains and associated grave offerings with appropriate dignity at an appropriate nearby location not subject to further subsurface disturbance.

VI. **GEOLOGY AND SOILS**. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?				X
B) Result in substantial soil erosion or the loss of topsoil?				X
C) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
D) Be located on expansive soil, as defined by the California Building Code (2007), creating substantial risks to life or property?				X
E) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

DISCUSSION

Geo-A: Risks to People or Structures. There are numerous fault lines near the Project area, as well as the intersection of three tectonic plates. As such, the area is highly susceptible to seismic activity. However, the Project would not add any fixed structures to the landscape that would be susceptible to seismic damage, nor would it put existing structures at greater risk. The Project area is level and lacks structures that could become unstable and injure culturists. The soil could be subject to liquefaction, which would pose a minor risk to culturists; however, the risk is considered very low, given that (1) liquefaction of the type that would be a risk to culturists is uncommon, and there is no historical evidence of liquefaction in Humboldt Bay; (2) culturists would be at the Project sites only temporarily, and no people would inhabit the Project sites; and (3) culturists would be in or near boats and have safety equipment, including personal floatation devices. Hence, impacts related to seismic risks are expected to be less than significant. This topic will not be further addressed in the EIR.

Geo-B: Erosion. Through a study of sedimentation at shellfish culture sites in Humboldt Bay similar to the proposed Project sites and facilities, Rumrill and Poulton (2004) found that "fine sediments were deposited and eroded in an inconsistent manner." However, based on the study results, there appears to be a net increase in sediment accumulation, not a loss, at these mariculture operations. A minor amount of net sediment deposition, rather than erosion, is expected when shellfish culture equipment is placed in tidelands. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Geo-C: Instability. The Project would not involve the construction of any permanent structures, and is not expected to affect the potential for onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Geo-D: Expansive Soils. There may be expansive soils in the Project area; however, the Project would not add enclosed or habitable structures (buildings) to the landscape; therefore, there would be no substantial risk to life or property from Project development. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Geo-E: Wastewater Disposal. The Project does not involve the development of new waste water disposal systems. Culturists employed through the Project would use existing facilities (restrooms) at Coast's processing plant, which has adequate waste water capacity. Hence, no impact is expected. This topic will not be further addressed in the EIR.

VII. GREEN HOUSE GAS EMISSIONS. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
B) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?				X

DISCUSSION

GHG-A: Greenhouse Gas Emissions. Greenhouse gas emissions would result from the use of small internal combustion engines associated with up to four boats that would be used for the Project. However, the amount of greenhouse gases generated by these activities would be less than significant. The EIR will further address greenhouse impacts and will recommend mitigation measures as feasible and appropriate.

GHG-B: Plans, Policies, or Regulations Regarding Greenhouse Gases. State of California legislation (Senate Bill 375 and Assembly Bill 32) seeks to reduce greenhouse gas emissions through the practice of smart-growth or mixed-use development. The Project does not include any upland construction or mobile sources (other than the four boats described above) that could be a potentially significant source of greenhouse gas emissions. Therefore, the Project would not conflict with plans, policies, or regulations on greenhouse gas emissions. Hence, no impact is expected. This topic will not be further addressed in the EIR.

VII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
B) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
C) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
D) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
E) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
F) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
G) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
H) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized area or where residences are intermixed with wildlands?				X

DISCUSSION

Haz-A through Haz-C: Transport, Use, Release, or Emission of Hazardous Materials. The only hazardous materials that would be associated with the Project are boat fuel and lubricants. Use of these materials is common in Humboldt Bay and does not represent a significant hazard to the environment or people. Project personnel would follow all current and standard safety and cleanup protocols for fueling and lubricating engines. To further minimize the potential for spills, BMPs 7 and 8 (see Project Description above) will be followed. The Project may also result in accidental loss of gear or other debris however any such gear or debris encountered during operations will be retrieved for proper disposal to avoid it breaking down and potentially polluting the bay. The EIR will include an analysis and discussion of this potential impact along with avoidance, minimization, and/or mitigation measures.

The Project also has the potential to mobilize dioxins already present in the bay's substrate and to bioaccumulate dioxins present in the bay in shellfish meat. The EIR will further address potential dioxin impacts and will recommend mitigation measures as feasible and appropriate.

Haz-D: Known Hazardous Sites. The Project area is not known to be on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Because the Project sites are intertidal and subtidal, it is unlikely that they supported historical uses that would have resulted in contamination. There are contaminated sites located on the margins of the bay, but hazardous materials are not expected to reach the Project sites at concentrations that would have any impact on the Project's culturists. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Haz-E and Haz-F: Aircraft/Airport-related Safety. The only nearby airport is Murray Field, which is a public airport approximately 0.9 miles from the nearest Project boundary. Airplanes landing and departing from this airport are not expected to be a hazard for the Project's culturists. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Haz-G and Haz-H: Emergency Response and Fire Hazards. The Project would not have any effect on an adopted emergency response plan or emergency evacuation plan, because it would not impede emergency response or evacuation routes or procedures. Also, because the Project area is in intertidal and subtidal (aquatic) areas, there is no risk of wildfires. Hence, no impacts are expected. This topic will not be further addressed in the EIR.

VIII. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Violate any water quality standards or waste discharge requirements?			X	
B) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
C) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on or off-site?			X	
D) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?				X
E) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
F) Otherwise substantially degrade water quality?			X	
G) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map?				X
H) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?				X
I) Expose people or structures to a significant risk or loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			X	
J) Result in inundation by seiche, tsunami, or mudflow?				X

DISCUSSION

Hyd-A: Water Quality and Discharge Standards. The Project would not involve waste discharge. No additives, feed, or chemicals will be used in project operations (other than fuel for the boats). Changes to water quality would be minor, particularly with implementation of BMPs 7 and 8 (see Project Description, Section 3.3 above) and would not violate any water quality standards. Hence, the impact is considered less than significant. This topic will not be further addressed in the EIR.

Hyd-B: Groundwater. The Project would not involve the use of groundwater. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Hyd-C: Erosion and Siltation. Oyster culture has a localized effect on sediment distribution and tidal circulation. As water is slowed by frictional effects of the culture structure, sediment deposition and organic content increases (Rumrill and Poulton 2004). A study of sedimentation at cultch-on-longline sites in Humboldt Bay (Rumrill and Poulton 2004), which are similar to proposed Project sites, found that "fine sediments were deposited and eroded in an inconsistent manner." The greatest elevation change was an increase of 95 mm. Localized changes of this magnitude would not have an adverse effect on the environment. Hence, this impact is considered less than significant. This topic will not be further addressed in the EIR.

Hyd-D: Flooding. The Project will occur entirely in intertidal and subtidal areas of Humboldt Bay. Therefore, the Project will not result in any surface runoff or flooding. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Hyd-E: Runoff. The Project would not create any runoff water. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Hyd-F: Water Quality. Project activities will temporarily mobilize a minor amount of sediment. For example, when stakes are placed or a vessel comes in contact with the bay bottom, sediment may be mobilized. However, the amount of sediment mobilized during mariculture operations is likely very low compared to the quantities of sediment mobilized during stormy conditions (e.g., strong winds). There is also potential for release of hazardous materials from internal combustion engines. However, particularly with implementation of BMPs 7 and 8 (see Project Description, Section 3.3 above), water quality impacts are not expected to substantially degrade water quality. Furthermore, shellfish are filter feeders which have been found to have a positive impact on water quality. Ecosystem modeling and mesocosm studies indicate that restoring shellfish populations to even a modest fraction of their historic abundance could improve water quality and aid in the recovery of seagrasses (Newell and Koch 2004). While it is unknown if culture in Humboldt Bay is beneficial to water quality, the effect of culture on water quality is not adverse. Hence, the impact is considered less than significant. The EIR will further address potential water quality impacts and will recommend mitigation measures as feasible and appropriate.

Hyd-G and Hyd-H: 100-year Floods. The Project would not involve constructing housing or structures susceptible to flooding impacts, nor would the Project facilities (e.g., upwelling bins) impede floodflows. Hence, no impacts are expected. This topic will not be further addressed in the EIR.

Hyd-I: Risks to People from Flooding. The Project area is prone to tsunamis. The Project culturists working in the bay would be at greater risk of injury or death from a tsunami than people on land. However, the overall risk to the culturists is considered minor, because (1) tsunamis are infrequent, (2) culturists only temporarily work in the bay, and (3) there are warning systems in place in Humboldt County that would likely alert culturists of the potential for a tsunami so that they can evacuate the area. Hence, this impact is considered less than significant. This topic will not be further addressed in the EIR.

Hyd-J: Tsunamis. No activities associated with the Project would result in a seiche, tsunami, or mudflow. Hence, no impact is expected. This topic will not be further addressed in the EIR.

IX. LAND USE AND PLANNING. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Physically divide an established community?				X
B) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
C) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X

DISCUSSION

Land-A: Division of Community. The Project involves expanding mariculture operations in Humboldt Bay. It would not divide a community. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Land-B: Land Use Policy Conflicts. The Project area is zoned as follows:

- Portions of the Project area within unincorporated Humboldt County jurisdiction are zoned as Natural Resources with Coastal Wetlands (Humboldt County Code §§313-5.4, 313-38). Aquaculture is a conditionally permitted use within this zoning designation.
- Portions of the Project area within the City of Eureka's jurisdiction are zoned Conservation Water. Aquaculture is an allowable conditional use within this designation. The City's General Plan similarly permits shellfish farms in waters under the City's jurisdiction (City of Eureka General Plan, Chapter 6 § 6.A.14). A use permit from the City of Eureka will be obtained for the Project.
- The District's *Humboldt Bay Management Plan* designates the intertidal portion of the Project area for conservation and mariculture and the subtidal portion for harbor uses (Humboldt Bay Management Plan § 2.2); however, the Project area is also designated as a Mariculture subarea. The Management Plan permits mariculture operations within the entire Project area, noting that the "use of the Bay for aquaculture or mariculture is expected to remain primarily within Arcata Bay, which includes areas that have been leased previously by the District, the cities, or the State of California for mariculture purposes. … The combining use designation reflects a determination in this Plan that mariculture activities are generally appropriate within the designated area" (Humboldt Bay Management Plan § 2.3.2). The Project is also consistent with the plan's goal of supporting commercial aquaculture and the plan's policy to identify additional aquaculture activities (Policy HFA-5). The plan recognizes the need to balance harbor, recreation, conservation and mariculture uses of the bay.

In summary, the Project would be consistent with zoning and adopted plans for the Project area as a permitted or conditionally permitted use. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Land-C: Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs). There are no adopted or planned HCPs or NCCPs for the Project area. Hence, no impact is expected. This topic will not be further addressed in the EIR.

X. **MINERAL RESOURCES**. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				X
B) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

DISCUSSION

Min-A and Min-B: Mineral Resources. The Project would expand mariculture operations in Humboldt Bay. It would have no effect on mineral resources. Hence, no impact is expected. This topic will not be further addressed in the EIR.

XI. **NOISE**. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
B) Expose persons to or generate excessive ground borne vibration or ground borne noise levels?				X
C) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
D) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	X			
E) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
F) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

DISCUSSION

Noise-A through Noise-F: Noise. The Project would involve expanding mariculture operations on Humboldt Bay. Its primary noise effect would be caused by the addition of up to four small watercraft with internal combustion engines. These would generate intermittent noise similar to that generated by other small watercraft on the bay. The Project boats likely could not be heard from sensitive receptors. In addition the Project may periodically generate intermittent noise associated with generators and mechanical harvesters run during harvest activities. Additional discussion of potential noise-related impacts will be provided in the EIR, with mitigation recommended if feasible and appropriate.

XII. POPULATION AND HOUSING. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Induce substantial population growth in an area, either directly (e.g., by proposing new homes and/or businesses) or indirectly (e.g., through extension of roads or other infrastructure)?				X
B) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
C) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X

DISCUSSION

Pop-A through Pop-C: Population and Housing. The Project would involve expanding mariculture operations on Humboldt Bay. It is not expected to have any effect on population and housing. It may create as many as 50 new jobs, but those jobs are expected to be filled primarily by people who already live in the region. Hence, no impacts are anticipated. This topic will not be further addressed in the EIR.

XIII. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Fire protection?				X
B) Police protection?				X
C) Schools?				X
D) Parks?				X
E) Other public facilities?				X

DISCUSSION

Pub-A through Pub-E: Public Services. The proposed Project would not create increased demand for public services. While the Project would create additional jobs for approximately 50 people, they would likely already live in the local community and so would not represent a new burden on public services. Hence, no impacts are expected. This topic will not be further addressed in the EIR.

XIV. RECREATION. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	X			
B) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

DISCUSSION

Rec-A: Recreation. The Project is expected to create a small increase in boat traffic in the bay in areas utilized for recreation, including by waterfowl hunters. The project would also add new overwater structures to the bay in the form of additional FLUPSY bins and additional shellfish equipment in intertidal areas, in the form of longlines and rack-and-bag gear. The increased presence of aquaculture gear in the bay has the potential to impact recreational users of the water including kayakers, hunters, canoers, and stand-up paddle boarders. Because the Project itself is expected to employ approximately 50 individuals already living in the community, it should not increase recreational use pressure of the water. Potentially significant impacts to recreation will be further evaluated in the EIR with mitigation recommended if feasible and appropriate.

Rec-B: Recreation. The Project does not include recreational facilities. Approximately 50 additional people would be employed by the Project, but they would likely already live in the local community and so would not represent a new burden on recreational facilities. Hence, no impacts are expected. This topic will not be further addressed in the EIR.

XV. TRANSPORTATION/TRAFFIC. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				X
B) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				X
C) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				X
D) Substantially increase hazards due to design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
E) Result in inadequate emergency access?				X
F) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?			X	

DISCUSSION

Trans-A through Trans-C and Trans-E: Traffic Levels, Patterns, and Emergency Access. The Project would not increase the local population. The Project would employ up to a total of 50 additional people. Parking for new employees can be accommodated at Coast's existing processing facility, in nearby public parking that is available along 1st Street where the facility is located or in other nearby areas of Eureka. Coast's existing facilities include 30 parking spaces and there is ample parking available for new employees. The Project would not impact existing roadways or emergency access routes. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Trans-D and Trans-F: Hazards and Alternative Transportation. The proposed Project's mariculture equipment may cause a potentially significant impact on the movement of watercraft (e.g., boats, kayaks) in intertidal areas. This interference would occur only when the tides are high enough for watercraft to move through the intertidal areas, but so low that the vessels can't move readily over the equipment. If boaters are unaware of and cannot see the location of mariculture equipment there is a potential hazard that could result in damage to boats. Increasing the culture area would increase potential hazards to boat navigation. However, these areas are located outside of main navigation channels. Empty space among the equipment would allow smaller watercraft (e.g., kayaks) to move about, but in some cases only in two directions (e.g., parallel to rows of equipment). Watercraft movement in subtidal areas, including in the primary navigation channels for watercraft, would not be affected. Additional discussion of impacts to alternative transportation will be included in the EIR, with mitigation recommended if feasible and appropriate.

XVI. UTILITIES AND SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
B) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
C) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
D) Have insufficient water supplies available to serve the project from existing entitlements and resources (i.e., new or expanded entitlements are needed)?				X
E) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
F) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
G) Violate any Federal, State, and local statutes and regulations related to solid waste?				X

DISCUSSION

Util-A through Util-E: Wastewater and Stormwater. Project employees would use the restrooms at Coast's existing processing plant. The Project would not discharge wastewater or stormwater or involve consumption of water. Hence, no impact is expected. This topic will not be further addressed in the EIR.

Util-F and Util-G: Solid Waste. The Project would generate waste that would go to a landfill. This waste would include rope from cultch-on-longline culture operations and other disposable materials. Local landfills would have the capacity to accept this relatively small amount of waste. The Project would maintain compliance with federal, State, and local statutes and regulations related to solid waste. Hence, no impacts are expected. This topic will not be further addressed in the EIR.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	X			
B) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).	X			
C) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?				X

DISCUSSION

Findings-A: Yes. The Project may have potentially significant impacts to the habitat of a fish or wildlife species and may reduce the number or restrict the range of a rare or endangered plant or animal species. Therefore, an EIR is warranted.

Findings-B: Yes. As generally described above and in Attachments A and B to the Draft IS, shellfish culture activities do not intrinsically have significant environmental effects. However, a more thorough analysis of the Project's potential impacts combined with the cumulative impacts of other proposed and existing mariculture in the bay is warranted in the EIR.

Findings-C: No. The Project involves the expansion of shellfish culture and no aspect of the Project is expected to cause substantial adverse effects on human beings, either directly or indirectly.

Section 5.0 Reference List

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