Humboldt Bay Oyster Company Shellfish Farm

Initial Study & Proposed Mitigated Negative Declaration

CEQA Lead Agency: Humboldt Bay Harbor, Recreation, and Conservation District

P.O. Box 1030
Eureka, CA 95502
(707) 443-0801

Public Review Draft
January 30, 2026

Table of Contents

Section 1.0 Introduction

1.1 Purpose of this Document

This California Environmental Quality Act (CEQA) Initial Study (IS) assesses the environmental effects of the Humboldt Bay Oyster Company Shellfish Farm in Humboldt Bay, California. The name of the project is the Humboldt Bay Oyster Company Shellfish Farm (also referred to as the "Project"). This Initial Study is intended to satisfy the requirements of CEQA (Public Resources Code [PRC], Div 13, Sec 21000-21177), and the State CEQA Guidelines (California Code of Regulations, Title 14, Sec 15000-15387).

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 when considering whether to approve the Project. CEQA encourages lead agencies and applicants to modify their projects to avoid significant adverse impacts. The IS serves as an informational document to be used in planning and decision-making and does not recommend approval or denial of the Project.

1.2 Scope of this Document

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

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

1.3 Impact Terminology

The following general terms are used in this 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 that impacts would not require mitigation.
- An impact is considered *less than significant with mitigation* if the analysis concludes that the 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 *significant* if the analysis concludes that the 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.

1.4 General Information

1. **PROJECT TITLE:** Humboldt Bay Oyster Company Shellfish Farm

2. **LEAD AGENCY/CONTACT NAME AND ADDRESS:** Humboldt Bay Harbor, Recreation and Conservation District, P.O. Box 1030, Eureka, CA 95502-1030. Vanessa Blodgett, District Planner, districtplanner@humboldtbay.org

3. **PROJECT LOCATION:** Mad River Slough, Tidelands in Humboldt Bay, and Woodley Island Marina.

4. **PROJECT SPONSOR'S NAME AND ADDRESS:** Todd Van Herpe, 2797 O'Neil Lane, Eureka, CA 95503. (707) 499-2388, toddvanherpe@gmail.com.

5. **GENERAL PLAN DESIGNATION: County of Humboldt:** Agriculture Exclusive / Natural Resources/ Water; **City of Eureka**: Woodley Island / Coastal

6. **ZONING: County of Humboldt:** Agriculture Exclusive / Natural Resources/ Water; **City of Eureka**: Woodley Island / Coastal

7. **SURROUNDING LAND USES AND SETTING:** refer to Section 2.0 below

8. **DESCRIPTION OF THE PROJECT:** refer to Section 3.0 below

9. PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED:

Level	Agency	Type of Approval, Permit or Consultation
Local	Humboldt Bay Harbor, Recreation & Conservation District	Harbor District Permit
State	California Coastal Commission	Coastal Development Permit
State	North Coast Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
Federal	United States Army Corps of Engineers	Clean Water Act Section 404 and Rivers and Harbors Act Section 10 Permit

10. HAVE CALIFORNIA NATIVE AMERICAN TRIBES TRADITIONALLY AND CULTURALLY AFFILIATED WITH THE PROJECT AREA REQUESTED CONSULTATION PURSUANT TO PUBLIC RESOURCES CODE SECTION 2108.3.1? IF SO, HAS CONSULTATION BEGUN?

On November 25, 2024 letters were sent to the following Tribes to determine if they have concerns regarding the Project and/or would like to be consulted consistent with State Assembly Bill 52.

- Wiyot Tribe
- Bear River Band of the Rohnerville Rancheria
- Blue Lake Rancheria

The Wiyot Tribe responded in a December 3, 2024 email, the consultation is described in Section 4.18. No other Tribe responded within 30 days and have not responded as of January 30, 2026.

Section 2.0 Surrounding Land Uses and Setting

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. The biota that use the bay are diverse and ecologically important locally and globally. The habitat in the bay provides resources for strong commercial fisheries, including crabs, bivalves, and finfish, and habitat for 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. According to the 2020 U.S. Census, the largest nearby urban concentrations are in Arcata to the north (population approximately 18,857) and Eureka to the south (population approximately 26,512) (U.S. Census Bureau. 2020). Smaller towns along the Samoa peninsula, from north to south, include Manila, Samoa, and Fairhaven. Humboldt Bay encompasses roughly 17,759 acres at mean high water (MHW).

The Project is located in Mad River Slough (existing Rafts), Mad River Slough Channel (Intertidal Culture including existing Rack and Bag culture) and at Woodley Island Marina (existing Floating Upwelling System) (Figure 1). Mad River Slough is a tidal channel extending from Humboldt Bay and is surrounded primarily by agricultural uses (livestock grazing and hay production). There is a clam and oyster seed setting facility and oyster nurseries in the slough. Mad River Slough is not connected to a salmonid bearing river as some other sloughs within Humboldt Bay are. Mad River Slough extends into Mad River Slough Channel. The channel has shellfish nursery and grow out operations. Both Mad River Slough and Mad River Slough Channel are used by motorized and non-motorized vessels for commercial and recreational purposes, including hunting, fishing and kayaking. Woodley Island Marina provides berths for permanent and transient vessels used for commercial/recreational fishing, research, sailing and general boating. In addition to the marina, Woodley Island has a restaurant and open-space wildlife area. All project sites have potential for the presence of fish species listed under the Federal and California Endangered Species Acts, including salmonids, green sturgeon (*Acipenser medirostris*) and longfin smelt (*Spirinchus thaleichthys*).

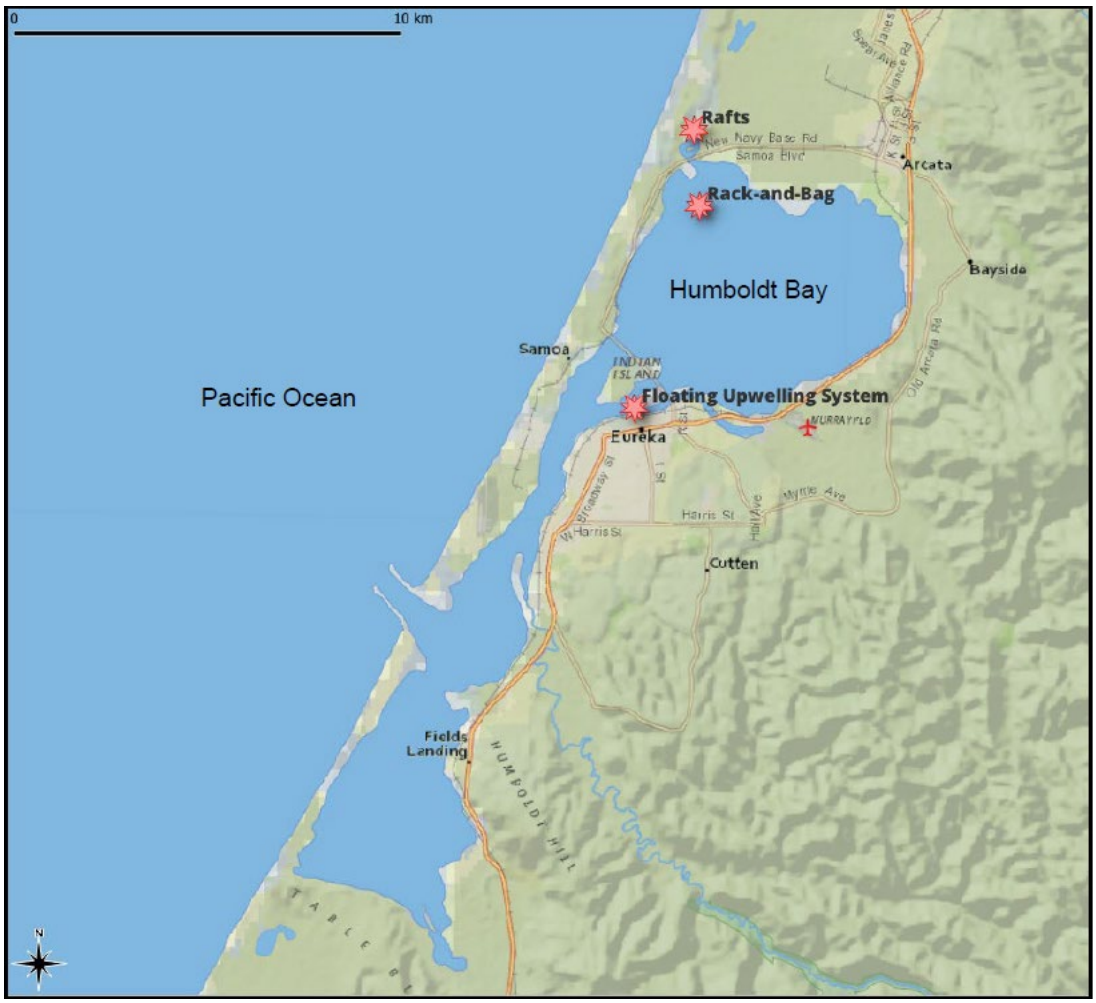


Figure 1. Location of Humboldt Bay Oyster Company's existing culture rafts, rack-and-bag culture and floating upwelling system.

Section 3.0 Project Description

3.1 Project Scope and Objectives

The project objectives are to:

- Receive approval for the existing FLUPSY, raft culture, and rack and bag culture methods in existing culture areas.
- Expand existing rack & bag culture and/or longline culture methods within two proposed expansion areas.
- Culture Pacific oysters (*Crassostrea gigas*), Kumamoto oysters (*Magallana sikimea*), and Manila clams (*Venerupis philippinarum*). Manila clams will only be cultured as seed and not grown to adult/market size. These species are abundantly cultured in Humboldt Bay.

3.2 Proposed Culture Species

The Project would culture Pacific oysters (*Crassostrea gigas*), Kumamoto oysters (*Magallana sikimea*), and Manila clams (*Venerupis philippinarum*). Manila clams will only be cultured as seed and not grown to adult/market size. There are existing shellfish nurseries and grow-out areas in Humboldt Bay that culture these species.

3.3 Floating Upwell System Culture

The FLUPSY is located at Woodley Island Marina (Figures 1 and 2). It consists of a 20′ X 30′ picture frame flotation raft with tanks suspended through the open center (12′ X 24′) (Figure 3). It has a 14″ profile above the water's surface and 42″ below it. The FLUPSY draws water through 1 mm mesh-bottom bins utilizing a 1-horsepower propeller pump. The pump continuously evacuates water from a center trough creating a draft through 10 seed bins (30″L X 30″W X 36″D) arranged "piggybacked" on the trough's outer edge. Water drawn up through the bins and out through the trough delivers a constant supply of clean water and phytoplankton for seed oysters to feed on, contributing to accelerated, uniform growth.

Figure 2. Location of existing floating upwelling system at Woodley Island Marine, Eureka, California.

Figure 3. HBOC's floating upwelling system operated at Woodley Island Marina, Eureka, CA.

FLUPSY bins are lifted and rinsed three times each week to flush silt, stir the seed bed, and assess growth and density. As seed grows it is sorted by hand screens and split volumetrically to keep like-sized groups together and reduce seed densities in each bin. HBOC cycles approximately 2.5 -3 million seed oysters through the FLUPSY annually. Seed is introduced to the FLUPSY at 1.5 – 2 mm in size. As seed achieves 6 – 10 mm it is graduated and moved to rafts in Mad River Slough as further described below.

3.4 Raft Culture

The raft nursery is in Mad River Slough (Figures 1 and 4). Up to twenty 24' X 12' rafts (Figures 5, 6 and 7) are utilized. Ten are wooden and ten are aluminum. Four of the rafts are used to harvest and sort shellfish. The remaining sixteen are used for shellfish culture. Each of the culture rafts has 2'x2' openings within which trays holding shellfish seed are stacked and submerged up to 4' into the water column. The rafts are used within the 9.2 acre area shown in Figure 4. Water passively flows through the system with tides, feeding the growing shellfish.

Figure 4. Existing raft culture in Mad River Slough.

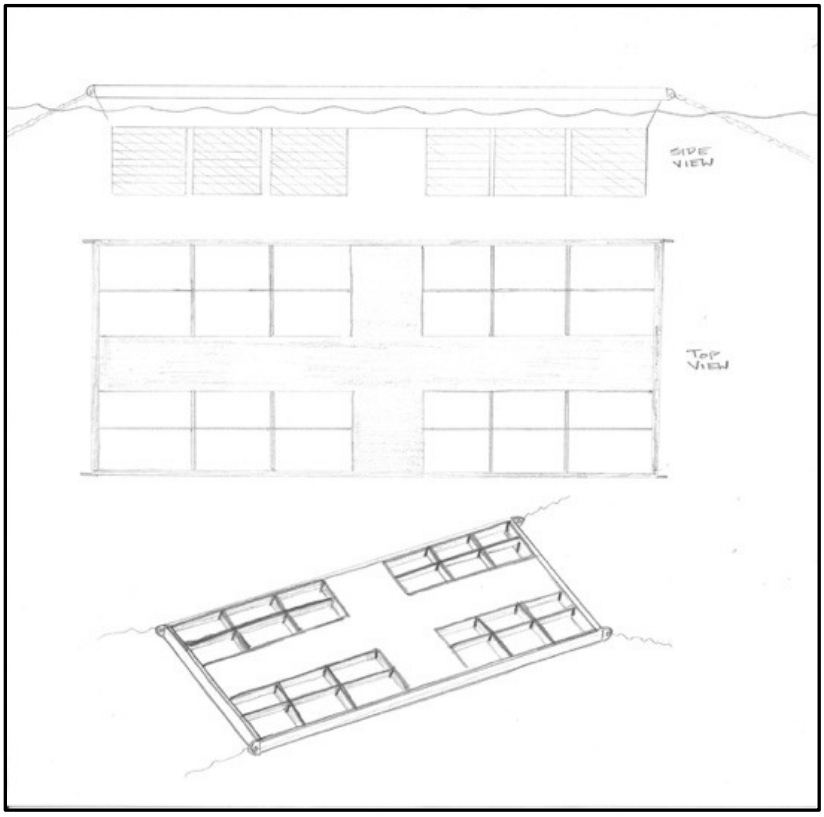


Figure 5. Nursery raft design.

Groups of rafts are connected with rope and anchored on each end. The rafts are held in place by a total of 16 anchors that are 24″ diameter and 18″ high concrete cylinders attached with ¾″ rope, and heavy gauge hardware.

Figure 6. Rafts in Mad River Slough

Figure 7. Plastic Nestier Trays with nursery raft size seed.

The trays are lifted out of the water once a week for inspection and rinsing of accumulated silt (Figure 7). To conduct this regular maintenance a crane barge is pushed from raft to raft with a work skiff. The hydraulic crane lifts the modules from their raft spots and places them on the deck of the raft so they can be disassembled and rinsed with bay water.

If continued oyster seed growth is needed then the modules are retied and placed back in the water until the following week. If the seed has grown enough or exceeded healthy densities, they are dumped out of the trays and loaded into 1/8″ mesh polyethylene bags (2′X3′) to be planted in the intertidal part of the farm using rack & bag methods as described below.

3.5 Rack & Bag Culture

Figure 8 shows the area in Mad River Slough where oysters are currently farmed and areas where expansion is proposed. HBOC is seeking approval for the existing rack & bag culture method and/or the longline culture method described below within the Existing Rack and Bag Culture area (17.8 acres) and proposed Expansion Area 1 (3.1 acres) and Expansion Area 2 (10.8 acres). Oyster seed leaves the nursery rafts and is loaded at densities of about 1.5 liters per mesh bag for growout. Three oyster bags are strapped onto racks that keep the oysters off the bay bottom. Each rack is 6′ long, 32″ deep and 18″ tall and constructed of 1/2″ welded steel rebar (Figures 9 and 10). Elevating the bags off bottom reduces benthic impacts, minimizes oyster siltation and aids in maximizing water flow to the oysters for faster, more uniform growth. Bags are secured with large rubber straps with stainless steel wire hooks. To access the sites, vessels pass over eelgrass at higher tides and are anchored at the sites shown in Figure 8. Use of multiple boat landing sites reduces the extent of mudflat trampling by farm workers.

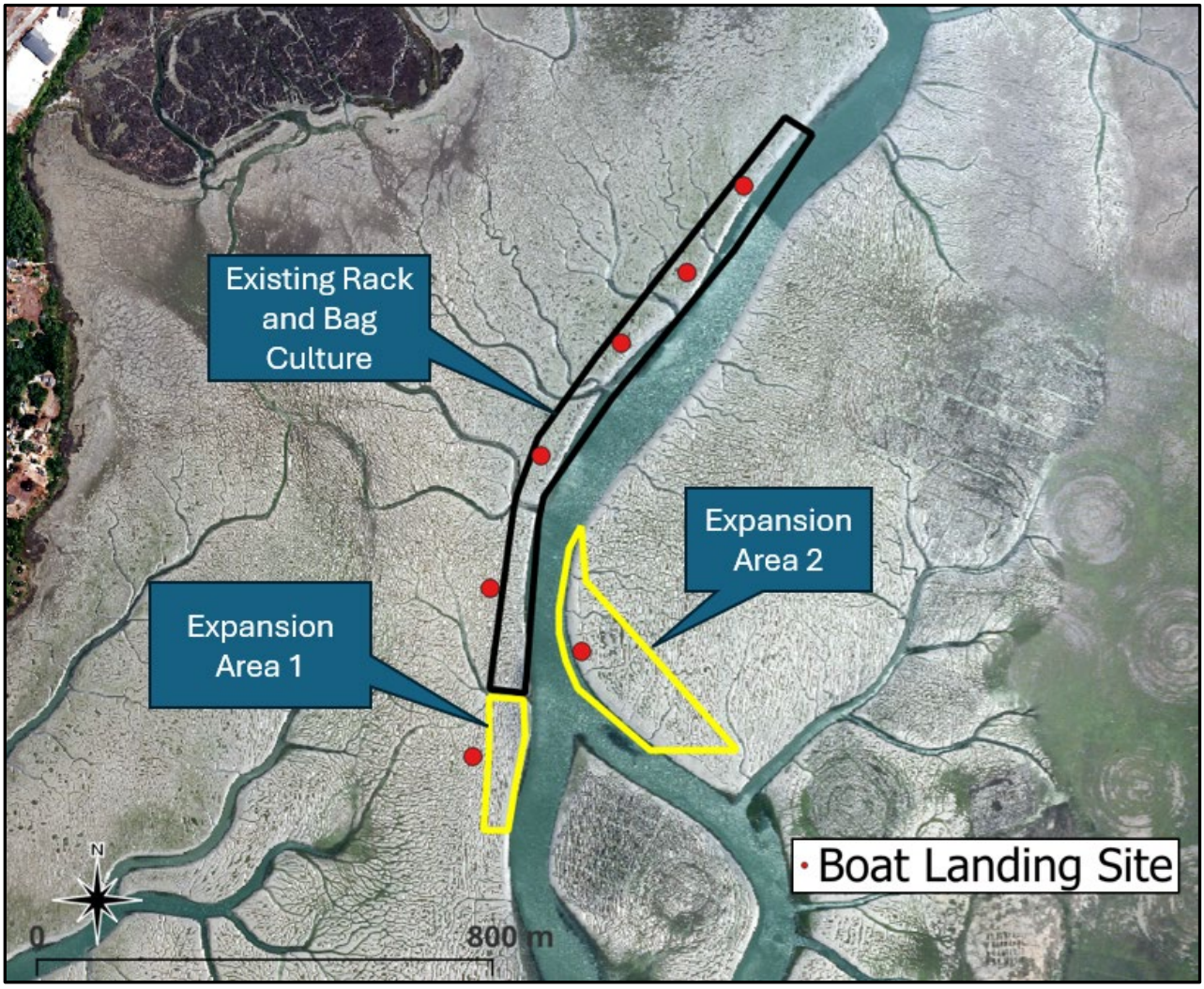


Figure 8. Existing and proposed expansion areas of rack & bag culture and boat landing sites. Longline culture is also proposed as a potential method within these areas.

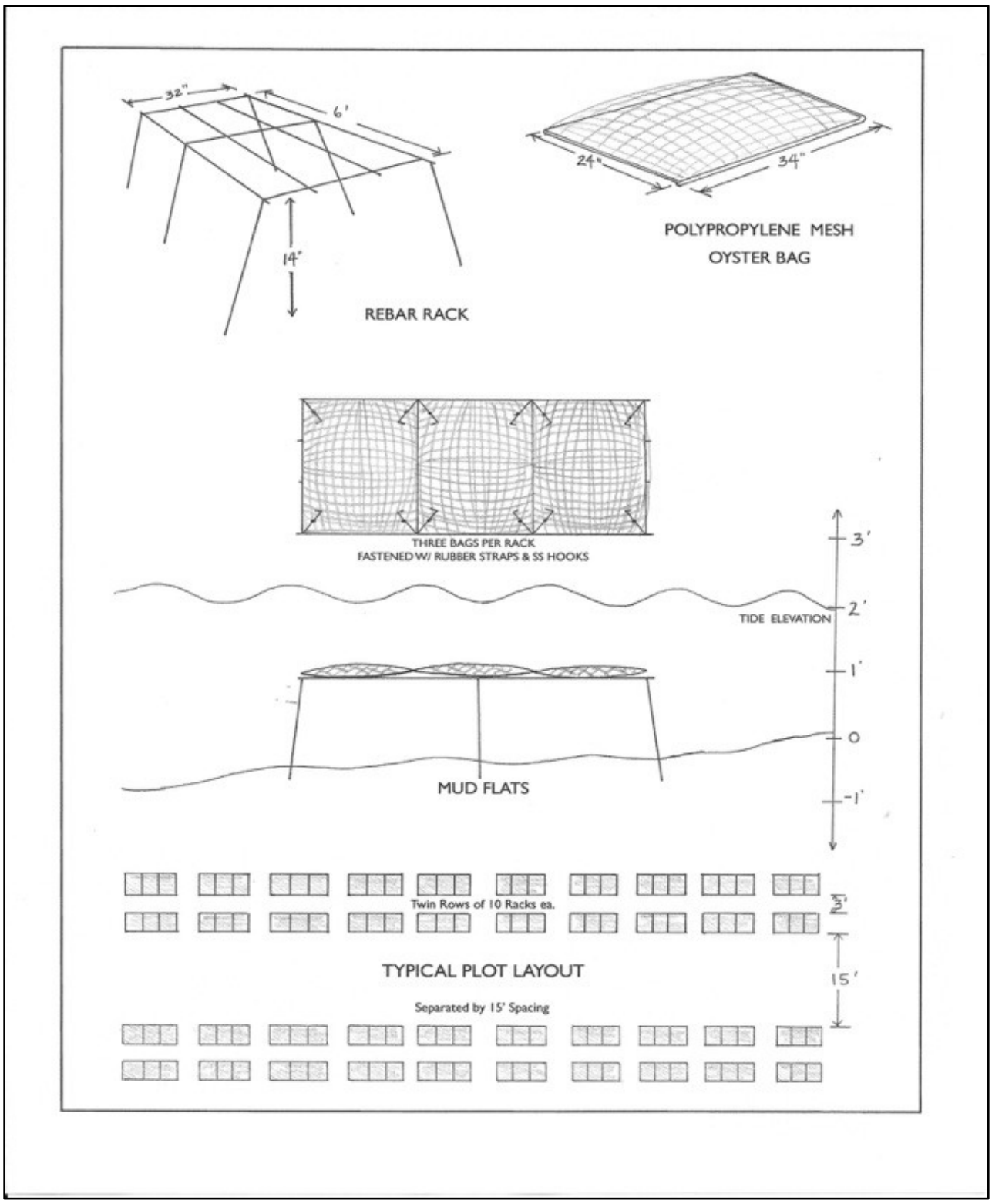


Figure 9. Rack & bag method used to culture oysters to market size on the Humboldt Bay Oyster Company farm.

Oyster harvesting is performed during low tides with a small (approximately 20') flat bottom skiff with a dropping bow door. Bags are transported to an onshore facility three miles up Mad River Slough for rinsing and sorting, packing, icing and shipping. Culled oysters that don't make the grade or are too small are reloaded into bags and returned to the growing area for additional growout. Final packing, icing and shipping/delivery takes place onshore in Arcata. From there the oysters are either delivered by truck to local businesses or taken to a trucking company for distribution to out of area seafood counters, restaurants, and oyster bars. Humboldt Bay Oyster Company currently has 874 rebar racks that at full capacity can hold 2,622 oyster bags to grow ¾" seed oysters and market sized oysters for the half shell market.

Figure 10. Rack and Bag Culture.

3.6 Intertidal Longline Culture

The proposed intertidal longline method includes either SEAPA-type culture baskets (Figure 11) or tipping bags (Figure 12). These intertidal longline systems may be deployed with or without floats that harness tidal energy to "tumble" the oysters. HBOC proposes the use of intertidal longlines within existing rack & bag culture areas and within the proposed expansion areas (Figure 8).

Figure 11. Intertidal longline systems with SEAPA-style baskets at low tide (photo from Hog Island Oyster Company operations in Tomales Bay, CA).

Figure 12. Tipping bags with floats at high tide (photo from Hog Island Oyster Company operations in Tomales Bay, CA).

Intertidal Longline systems will be 100 to 300 feet long, where possible, with anchor posts at both ends and supporting posts typically every 8 feet. Individual lines will be spaced at approximately 3 feet, with an additional space of 15 feet between grouped blocks of 4 lines to provide space for boat access. The anchor posts are proposed to be galvanized steel pipe T-stakes, or other suitable materials, and are used to maintain line tension. The supporting posts in between are proposed to be made of schedule 80, 2-inch PVC. Intertidal longline systems will be 1 foot to 4 feet in elevation above the ground. Lines between the posts will be plastic coated with a steel core. Covering that inner line will be an outer sleeve that reduces wear.

Intertidal longline systems can hold either bags or baskets, with or without floats. Longline support posts and anchors (endposts) are driven using sledgehammers, hand-held post pounders, and/or a gas or pneumatic hand-held post pounder. Posts are removed by first loosening them by twisting with a pipe wrench and then tying a clove hitch around pipes and pulling them out using a boat-mounted crane.

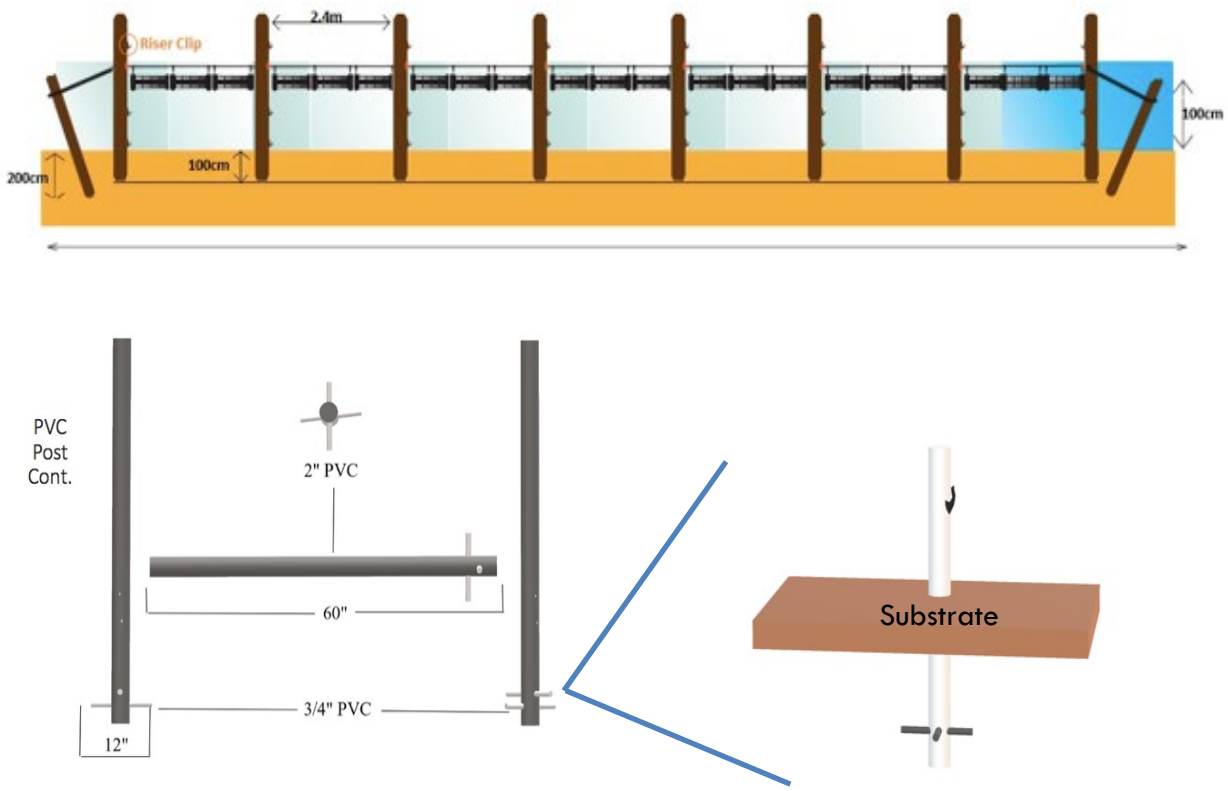


Figure 13: Longline Schematic with Anchor System and Pole Spacing between Anchors

Tipping bags attached on longlines are made of durable VEXAR and are typically 2-foot by 3-foot with ½-inch mesh. These bags are attached to the line using a stainless-steel snap hook or plastic clip that connects to a plastic bearing. Bags attached to long lines may have a small crab float attached to them opposite of the attachment to the long line. Floats are attached to the bag using 3/8-inch poly line. SEAPA baskets are typically tube shaped and approximately 4-foot by 1.5-foot in diameter and are made of HDPE. After stocking the bags or baskets with oysters they are transported to the

growing areas via work vessel. The vessel runs alongside the longlines and bags/baskets are clipped directly onto the line. Additional details of intertidal longline systems can be found in Figure 13.

3.7 Mitigation Measures and Best Management Practices

Mitigation measures and best management practices that will be followed are summarized in Table 1 and discussed in the individual resource category sections where applicable.

Table 1. Proposed Mitigation Measures.

#	Topic	Mitigation Measure
Mitigation Measure – 1 (BIO)	Biological Resources	To minimize and avoid impacts to eelgrass beds the following measures are proposed: • New cultivations structures will not be placed within 5-meters of eelgrass habitat. • Existing equipment will not be moved into areas within 5 meters of eelgrass habitat. • Annual eelgrass surveys will be conducted prior to the installation of any new gear in any new area. • Vessel routes will avoid eelgrass beds by using channels or vessel transit will occur at higher tides to avoid loss or damage of eelgrass vegetation due to propeller contact. • Anchoring will not occur in areas with eelgrass.
Mitigation Measure – 2 (CUL)	Cultural Resources	The Project will comply with the Harbor District Protocol agreed upon between the Harbor District and the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria, and Wiyot Tribes regarding the inadvertent discovery of archaeological resources, cultural resources, or human remains or grave goods (Attachment A). In coordination with the Wiyot Tribe THPO, a qualified cultural resource monitor will be present if ground disturbing activities related to this Project occur in areas that are within 100 ft of a recorded site and/or involve ground disturbance beyond what is currently proposed.
Mitigation Measure – 3 (HYD)	Vessel Maintenance and Fueling	Project personnel will maintain all vessels used in culture activities to limit the likelihood of release of fuels, lubricants, or other potentially toxic materials associated with vessels due to accident, upset, or other unplanned events. Project personnel will use marine grade fuel cans that are refilled on land, and personnel will carry oil spill absorption pads for use in the event of a spill.
Mitigation Measure – 4 (TRANS)	Debris Management	During farming operations, loose equipment/debris will be surveyed for and immediately removed or secured. Additionally, as feasible, culture equipment will be marked with Humboldt Bay Oyster Company's name and phone number to allow for tracking of the source of debris.

Section 4.0 Checklist and Evaluation of Environmental Impacts

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" or "Less than Significant Impact with Mitigation Incorporated" as indicated by the checklist on the following pages.

❑ Aesthetics	❑ Agricultural and Forestry Resources	❑ Air Quality
X Biological Resources	X Cultural Resources	❑ Energy
❑ Geology/Soils	❑ Greenhouse Gas Emissions	❑ Hazards & Hazardous Materials
X Hydrology/Water Quality	❑ Land Use/Planning	❑ Mineral Resources
❑ Noise	❑ Population/Housing	❑ Public Services
❑ Recreation	X Transportation	X Tribal Cultural Resources
❑ Utilities/Service System	❑ Wildfire	❑ Mandatory Findings of Significance

DETERMINATION: On the basis of this initial evaluation:

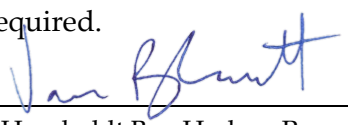
❑ I find that the proposed Project **would not** have any significant effects on the environment, and a **NEGATIVE DECLARATION** will be prepared.

✓ 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.



Humboldt Bay Harbor, Recreation and Conservation District

2/2/2026

Date

4.1 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) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point." If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?)				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: Humboldt Bay Oyster Company Shellfish Farm is an existing shellfish farm. The only new structures that will be added by the project are new rack and bag and/or intertidal longline culture in the proposed expansion areas. These would be located in Mad River Slough channel and adjacent to existing rack and bag culture areas. These structures, with the exception of longline floats, would not be visible at mid-to-high tides. At lower tides they would be viewable from passing watercraft. Given that the proposed structures would be located more than ½ mile from shore, it is unlikely that they would be visible from the shoreline, including private residences and public roadways. Furthermore, there are other raft structures in Mad River Slough channel. The structures would add to the working landscape character at the site and would not have a substantial adverse effect on a scenic vista. There will be no impact.

Aes-B: The project site is not located adjacent to a state-designated scenic highway and no scenic resources would be damaged. Therefore, there will be no impact.

Aes-C: The only new structures that will be added by the project are new rack and bag and/or intertidal longline culture in the proposed expansion areas. These would be located in Mad River Slough and adjacent to existing rack and bag culture areas. These structures, with the exception of longline floats, would not be visible at mid to high tides. At lower tides they would be viewable from passing watercraft. Given that the proposed structures would be located more than ½ mile from shore, it is unlikely that they would be visible from the shoreline including private residences and public roadways. The structures add to the working landscape character at the site and would not have a substantial adverse effect on a scenic vista. There will be no impact.

Aes-D: No permanent lighting will be installed as part of the project. Nursery workers may use flashlights and lanterns to conduct work during nighttime. This occurs under existing conditions.

This limited use of light would have a minor (not substantial) impact on nighttime views in the area and no impact on daytime views. There would be no impact.

4.2 AGRICULTURAL AND FORESTRY RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	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) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
D) Result in the loss of forest land or conversion of forest land to non-forest use?				X
E) 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-E: The Project will have a beneficial effect on agricultural resources by increasing the footprint of shellfish culture in Humboldt Bay and providing seed for other shellfish growers. There would be no negative impacts on agricultural resources, and the proposed land use is consistent with existing zoning designated by the Humboldt County Code (Section 313-5.4). The Project will not convert forest or farmland. Additionally, the Humboldt Bay Management Plan (HBHD 2007) calls for the "continued use of Arcata Bay for aquaculture or mariculture" and notes that it is one of the most promising opportunities within Humboldt Bay. There will be no impact.

4.3 AIR QUALITY Where available, the significance criteria established by the applicable air quality management district 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) 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?			X	
C) Expose sensitive receptors to substantial pollutant concentrations?			X	
D) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

DISCUSSION

Air-A and Air-B: The Project is located in the North Coast Air Basin and is under the jurisdiction of the North Coast Unified Air Quality Management District (NCUAQMD). The North Coast Air Basin is in "nonattainment" status with respect to particulate matter smaller than 10 microns in diameter (PM10) under California regulations, but is in attainment of all other State and federal ambient air quality standards.

Small vessels associated with shellfish aquaculture operations have combustion engines that generate particulate matter. Humboldt Bay Oyster Company Shellfish Farm is an existing farm, one small vessel is used to support existing operations. In addition, the existing FLUPSY uses a small 1 horsepower submersible pump for water intake. Changes to existing operations that have the potential to generate new emissions include the two expansion areas in Mad River Slough Channel. Expansion Area 1 would be 3.1 acres and Expansion Area 2 would be 10.8 acres. Up to a total of two small vessels would be used to support existing and expanded operations. There would be approximately four boat trips per week and approximately 3 gallons of fuel consumption per trip. All internal combustion engines that will be used have a power rating of 150 horsepower or less. The vessels use ultra-low emission, 3-star California Air Resources Board rated engines. The vessel engines and pump would contribute to a minor and negligible increase in emissions of particulate matter. The construction of the rack and bag and/or intertidal longline culture structures in the two expansion areas would be completed using hand tools that would have negligible impact on air quality.

The District lacks direct regulatory jurisdiction over air quality, and thus lacks direct authority to require mitigation for potential air quality impacts. However, the NCUAQMD 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 NCUAQMD, with respect to pollutant regulation. The NCUAQMD has adopted several air quality management plan elements, including a *PM10 Attainment Plan* (NCUAQMD 1995).

The Project will comply with the *PM10 Attainment Plan* adopted by the NCUAQMD and all attendant regulations. Vessel trips associated with operation and maintenance of the existing and proposed expansion areas would not result in substantial long-term operational emissions of criteria air pollutants. Therefore, project-generated operational emissions would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Hence, the impact will be less than significant.

Air-C and Air-D: The Project will 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 area. Therefore, the impact will be less than significant.

4.4 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 state or federally protected wetlands (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

DISCUSSION

Bio-A-1: Direct Effects on Candidate, Sensitive, or Special-status Species. The following species may occur in the Project vicinity and are identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, by the California Department of Fish and Wildlife (CDFW) as state-listed species, or are listed under the Endangered Species Act (ESA).

Common Name	Scientific Name	Status[1]
Fish		
Pacific lamprey	*Entosphenus tridentatus*	SSC
Green sturgeon, southern DPS	*Acipenser medirostris*	FT/CSSC. Designated critical habitat in Humboldt Bay.
White sturgeon	*A. transmontanus*	SSC
Coho salmon, southern Oregon, northern California ESU	*Oncorhynchus kisutch*	FT/ST
Chinook salmon, California coastal ESU	*Oncorhynchus tshawytscha*	FT
Steelhead, Northern California DPS	*Oncorhynchus mykiss*	FT
Coastal cutthroat trout	*Oncorhynchus clarki*	CSSC
Tidewater goby	*Eucyclogobius newberryi*	FE
Longfin smelt	*Spirinchus thaleichthys*	ST
Birds		
California brown pelican	*Pelecanus occidentalis californicus*	FP

Marine Mammals		
Harbor seal	*Phoca vitulina*	Protected under the Marine Mammal Protection Act (MMPA)
California sea lion	*Zalophus californiaus*	Protected under the MMPA
Notes: DPS = Distinct Population Segment; ESU = Evolutionarily Significant Unit. [1] Status abbreviations: FE = Federally listed as endangered; FT = Federally listed as threatened; ST = State-listed as threatened; CSSC = California Species of Special Concern; FP = Fully protected in California.		

Bio-A1. Direct Effects.

Following is a description of species identified above and certain potential Project effects. Other potential effects are described in Bio-A2 through Bio-A4.

Fish

Pacific Lamprey. Pacific lamprey spend most of their life in fresh or marine water, rather than estuaries. Estuaries are important to Pacific lamprey for foraging, holding, and transitioning from freshwater to marine waters. There are numerous tributaries to Humboldt Bay which Pacific lamprey may use to spawn. However, Project activities will not occur in these tributaries. Pacific lamprey would not be significantly impacted by the Project. They could swim around or under culture equipment.

Green Sturgeon. Moser and Lindley (2007) indicated that green sturgeon may use coastal bays as foraging habitat due to their high productivity. Based on acoustic tagging data conducted in 2007 and 2008 (USFWS unpublished data), green sturgeon move in channels, as would be expected for larger fish. However, 97% of observations occurred at two detection locations: Arcata Channel and North Bay Main Channel near the Samoa Bridge. Relatively few observations occurred in the Mad River Slough Channel which extends to Mad River Slough. A follow-up survey of sturgeon use of Humboldt Bay by National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) (Goldsworthy et al. 2016) indicated that green sturgeon primarily use the Arcata Channel and were observed feeding on northern anchovy (*Engraulis mordax*). Sturgeon were also observed in the intertidal zone for short forays, potentially following anchovies into shallower habitat. These fish were originally tagged in the Sacramento River in 2011, and are considered part of the Southern Distinct Population Segment.

The project is located in Mad River Slough, Mad River Slough channel and at Woodley Island Marina. The Project does not occur in Arcata Channel or the North Bay Main Channel where green sturgeon have been primarily documented to occur. Given existing sighting data, there is a low potential for green sturgeon to occur in substantial numbers in the area foraging. Regardless, green sturgeon would not be significantly impacted by the Project. They could swim around or under culture equipment without risk of entanglement.

White Sturgeon. The only known self-sustaining spawning population of white sturgeon in California is in the Sacramento River, although spawning is believed to also occur in the San Joaquin, Klamath, and Eel rivers (Israel et al. 2009). While white sturgeon are not expected to spawn in any of the Humboldt Bay tributaries, adults and sub-adults likely use the bay for foraging habitat.

The species may use the area for foraging. However, white sturgeon would not be significantly impacted by the Project. They could swim around or under culture equipment without risk of entanglement.

Coho and Chinook Salmon, Steelhead, and Coastal Cutthroat Trout (Salmonids). Salmonid life history is characterized by periods of adult upstream migration, spawning and egg development, fry and juvenile development, juvenile downstream migration, and stream-estuary rearing. Adult salmonids are primarily in Humboldt Bay from November to April, and juveniles can be present year-round. There are smaller spawning streams in Humboldt Bay, and a critical salmonid spawning area located in the Eel River, which is south of Humboldt Bay along the coast. There are no river mouths near the Project area.

Salmonids use Humboldt Bay for foraging and migration. The Project is primarily located in Mad River Slough and Mad River Slough channel which would be a "detour" from migratory paths between spawning habitat (rivers) and the Pacific Ocean. However, the species could swim around or under culture equipment without risk of entanglement.

In water bodies other than Humboldt Bay, placement of overwater structures can attract predatory fish such as striped bass (*Morone saxatilis*), which predate on juvenile salmonids and other species. However, fish species such as striped bass, that have this predatory behavior and are attracted to overwater structure, are not known to be present in Humboldt Bay and if they are present then they are not abundant. Hence, there would be a less than significant impact to salmonids.

Longfin Smelt. Longfin smelt are known to occur in Humboldt Bay, but little is known regarding their distribution, abundance, or life history. Longfin smelt forage on small organisms in the water column (e.g., phytoplankton, barnacle larvae, euphausids) and other small crustaceans (Gustafson et al. 2010), and are primarily pelagic fish.

Threats to longfin smelt include: reductions in freshwater inflow to the estuaries they inhabit; loss of larval, juvenile and adult fish at agricultural, urban, industrial, and local water diversions (usually located in freshwater areas of estuaries used by the species for spawning); direct and indirect impacts of non-native species on the longfin smelt food supply and habitat; lethal and sub-lethal effects of toxic chemicals; physical disruption of their spawning substrates and the habitat of their prey species (e.g., by dredging); and warming of estuary waters resulting from global climate change. The project site does not contain areas of freshwater inflow nor will the project contribute to any of the identified threats to longfin smelt.

The Project area may be used by longfin smelt. However, larval longfin smelt would not occur in the Project area because they cannot survive the high salinities at the site or between the site and spawning habitat (i.e., larval longfin smelt occur in water with low salinities and gradually move into areas with higher salinity as they grow).

In water bodies other than Humboldt Bay, placement of overwater structures can attract predatory fish such as striped bass, which predate on longfin smelt and other species. However, fish species such as striped bass, that have this predatory behavior and are attracted to overwater structure, are

not know to be present in Humboldt Bay and if they are present then they are not abundant. Hence, the impact would be less than significant.

Tidewater Goby. Tidewater goby rarely exceed two inches in length. They inhabit the freshwater/saltwater interface where salinity is less than 12 parts per thousand. Tidewater goby are known to occur in Humboldt Bay, but the Project area is not habitat for Tidewater goby as it is too saline with too strong currents. There would be no impact to tidewater goby.

Birds

California Brown Pelican. The California Brown Pelican feeds in estuaries and nearshore ocean waters, plunge-diving to capture small schooling fishes near the water's surface. Pelicans roost on sandbars, pilings, jetties, breakwaters, and offshore rocks, sometimes in large communal roosts that can number in the thousands. In Humboldt Bay, roosting has been reported on Sand Island, oyster racks, jetties, mudflats, and manmade structures (Jaques et al. 2008).

Project personnel will not undertake any activity that would be defined as take or harassment of any protected species, including brown pelicans. The impact would be less than significant.

Marine Mammals

Harbor Seal and California Sea Lion. Harbor seals are widely distributed throughout the northern Atlantic and Pacific oceans. They occur along coastal waters, river mouths, and estuaries. Harbor seals consume a variety of prey, but small fishes are predominate in their diet (Tallman and Sullivan 2004). Foraging occurs in a variety of habitats, from streams to bays/estuaries to the open ocean (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 (Ougzin 2013). There are no haul outs near the Project site.

California sea lions feed on fish and cephalopods, some of which are commercially important species such as salmonids, Pacific sardines (*Sardinops sagax*), northern anchovy, Pacific mackerel (*Scomber japonicus*), Pacific whiting (*Merluccius productus*), rockfish, and market squid (*Loligo opalescens*)). California sea lions do not breed along the Humboldt County coast. However, non-breeding or migrating adults may occur in Humboldt Bay year-round.

No seal haul out or pupping areas exist in the vicinity of the Project site. Project personnel will not undertake any activity that would be defined as take or harassment of any protected species, including marine mammals.

Based on the above analysis, the Project would have a less than significant impact 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.

Bio-A2: Fouling Organisms and Nonnative Species. Fouling and non-indigenous species (NIS) concerns are associated with either the introduction of new NIS organisms to Humboldt Bay or providing habitat for and supporting the continuing expansion for NIS that are established in

Humboldt Bay. There is also a concern that the cultured species themselves are non-native and could lead to naturalization into the bay.

During a previous survey in Humboldt Bay (Boyd et al. 2002), the nonnative species identified were from nine different groups: (1) marine algae, (2) sponges, (3) anemones, (4) limpets, (5) Pacific oysters (cultured), (6) copepods, (7) amphipods, (8) bryozoans, and (9) tunicates. The majority of introductions in Humboldt Bay were from the long history of maritime commerce, including both commercial shipping and shellfish aquaculture (e.g., introductions from ballast water or in marine algae historically used as packing material for oysters). Boyd et al. (2002) indicated that most organisms were likely present in Humboldt Bay for over 100 years, except for more recent introductions of some tunicates. This is consistent with the more recent introductions reported from Ruiz and Geller (2018). New introductions that were identified are primarily associated with commercial shipping activity, especially from vessels that transit between San Francisco Bay and Humboldt Bay.

One of the main ways in which historic oyster operations contributed to NIS in Humboldt Bay was from the shells of oyster spat imported from Japan. Beginning in the 1930's, the California Department of Fish and Game (now CDFW) helped to introduce Pacific oysters from Japan to revive the oyster industry in Humboldt Bay (Barrett 1963). Legacy introductions from this activity are evident from the pattern of exotic marine algae species found in Humboldt Bay.

While there are legacy introductions from oyster operations in Humboldt Bay, current operations involve several stringent management measures to avoid introductions. The hatcheries that export shellfish seed which will be used by the Project submit inspection reports on a regular basis to CDFW, and the importation of seed from established hatcheries is allowed only if the hatchery has a minimum 2-year history of documented absence of disease. The Project will only use new equipment or equipment that has only been used in Humboldt Bay. Given these management measures to control for disease and NIS, it is unlikely that current oyster operations would result in new NIS introductions.

In terms of naturalization of the cultured species into Humboldt Bay, the proposed Project only involves culture of species that are already cultured in abundance in Humboldt Bay and would not increase the risk of naturalization beyond what already exists.

Therefore, the Project would have a less than significant impact related to NIS.

Bio-A3: Effects to Carrying Capacity. Carrying capacity, also termed "ecological carrying capacity," is defined by Ocean Studies Board and NRC (2010) as:

> *The stocking or farm density above which 'unacceptable ecological impacts' begin to manifest. From a practical standpoint, this process begins with the level of culture that can be supported without leading to significant changes to ecological processes, species, populations or communities in the growing environment.*

The most robust carrying capacity analysis conducted in Humboldt Bay was created for the Humboldt Bay Mariculture Pre-Permitting Project (District and SHN 2015). This included an analysis of up to 1,202 acres of shellfish aquaculture operations in Arcata Bay (or 55.02 metric tons dry tissue weight), which were all modeled as adults to maximize potential filtration pressure. According to the analysis, filtration pressure was shown to range between 5% and 9%, which indicates that the "vast majority of carbon fixed by phytoplankton remains available to non-cultured species." In addition, the phytoplankton turnover rate was calculated to replace itself several times per day. Overall, the analysis concluded that the existing and proposed culture would have some cumulative effect on Humboldt Bay food resources, but there is an abundance of food available and cultured species will not significantly affect the food resources in the bay. This was considered a conservative result, given that the analysis only calculated change to phytoplankton and did not account for other sources of carbon productivity (e.g., detritus, benthic microalgae, biodeposits). Note that this analysis was based on significantly more shellfish aquaculture operations than currently exist or are proposed in Humboldt Bay.

Other indicators of ecological carrying capacity include poor growth and high mortality of cultured shellfish. There have been no reports of poor growing conditions for the existing cultured oysters in Arcata Bay. Impacts associated with carrying capacity reduction are less than significant.

Bio-A4: Effects to Water Quality. No additions (e.g., antibiotics) will be added to bay water used by the facility. Cultured shellfish will remove a small portion of the organic material and detritus in the water. The effect is less than significant.

Bio-B: Effects to Habitats. Humboldt Bay Oyster Company Shellfish Farm is an existing shellfish farm. The only new structures that will be added by the project are new rack and bag and/or intertidal longline culture in the proposed expansion areas. These would be located in Mad River Slough channel and adjacent to existing rack and bag culture areas. The existing structures and proposed structures in the expansion area provide in-water and overwater structure which may serve as habitat for some aquatic species (e.g., perch).

Benthic disturbance would be limited to the placement of steel rebar racks and the installation of an anchoring/post system for the intertidal culture. Each rack is 6′ long, 32″ deep and 18″ tall and constructed of 1/2″ welded steel rebar. The longline culture will consist of anchor posts at both ends and supporting posts that would be placed every 8 feet. The anchor posts are proposed to be galvanized steel pipe T-stakes, or other suitable materials, and are used to maintain line tension. The supporting posts in between are proposed to be made of schedule 80, 2-inch PVC.

Eelgrass (*Zostera marina*) occurs in the existing intertidal culture area as well as the proposed expansion areas (Figure 14). In accordance with the California Eelgrass Mitigation Policy (CEMP), eelgrass habitat is defined as areas of vegetated eelgrass cover (any eelgrass within 1 m^2 quadrat and within 1 m of another shoot) bounded by a 5 m wide perimeter of unvegetated area (NOAA 2014). An eelgrass surveys will be conducted during the growing season (May through September) prior to the installation of any new gear. Eelgrass surveys will be conducted in accordance with the methodology and protocols in the CEMP (NOAA 2014). Existing rack and bag culture equipment

may remain in its existing location, but additional equipment will not be added unless the equipment is located at least 5 meters from eelgrass habitat. In addition, existing equipment will not be moved, unless the new location is at least 5 meters from eelgrass habitat. Operational activities will be planned to avoid impacts to eelgrass beds. Vessel routes will avoid eelgrass beds by using channels or vessel transit will occur at higher tides to avoid loss or damage of eelgrass vegetation due to propeller contact. Anchoring will also not occur in eelgrass areas. With implementation of Mitigation Measure 1, the impact to habitat would be less than significant.

Mitigation Measure 1. Biological Resources: To minimize and avoid impacts to eelgrass beds the following measures are proposed:

- New cultivation structures will not be placed within 5-meters of eelgrass habitat.
- Existing equipment will not be moved into areas within 5 meters of eelgrass habitat.
- Annual eelgrass surveys will be conducted prior to the installation of any new gear.
- Vessel routes will avoid eelgrass beds by using channels or vessel transit will occur at higher tides to avoid loss or damage of eelgrass vegetation due to propeller contact.
- Anchoring will not occur in eelgrass areas.

Bio-C: Effect on state or federally protected 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 contribute to water quality by removing/converting nutrients and other matter in the water column. However, this is most beneficial in systems other than Humboldt Bay that are experience eutrophication. As stated by the US Army Corps of Engineers (2020; 85 FR 57336), "Oyster mariculture [aquaculture] activities may not provide identical ecological functions and services and functions as natural oyster reefs, but cultivated oysters do provide some of these functions and services without substantial investment of public funds that may be needed for restoration activities." Additionally, as described in other sections of this Initial Study document, certain wildlife species benefit from the habitat provided by shellfish culture equipment and cultured shellfish. The HBOC Project does not include the removal of any wetlands, placement of fill, or any other interruption or impact to wetland areas. Therefore, the HBOC Project will have a less than significant impact on wetlands.

Bio-D: Interfere substantially with the movement of native species. The movement of native aquatic and terrestrial species would not be significantly impacted. All species will be able to easily move through, under and/or over the aquaculture facilities with a less than significant impact.

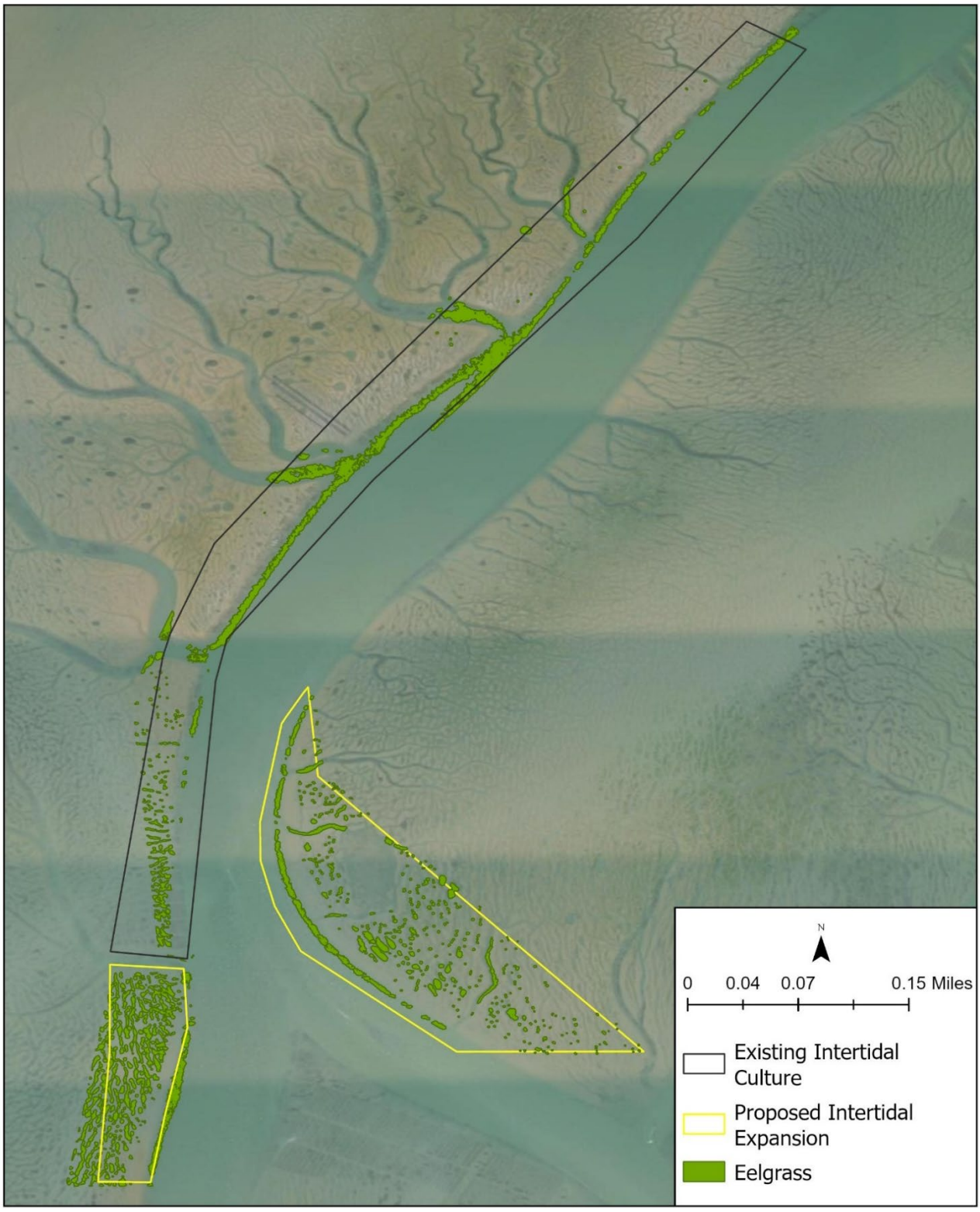


Figure 14. Existing Eelgrass Beds, Existing Culture Areas, and Proposed Intertidal Expansion.

Shorebirds. Studies have found that bird responses to the presence of shellfish aquaculture gear have been variable, with the abundance and density of some species being higher while other species numbers are lower. For example, Connolly and Colwell (2005) observed 17 different bird species using the intertidal habitat in Humboldt Bay associated with oyster cultch-on-longline culture. Most species (7 shorebirds and 4 wading birds) were shown to be more abundant on oyster longline plots compared to adjacent mudflat habitat not containing culture, and three species (marbled godwit [*Limosa fedoa*], long-billed curlew [*Numenius americanus*] and dunlin) showed mixed results depending on location. A consistent observation by shellfish growers on the West Coast for a variety of culture gear types is that dunlin often roost on top of shellfish aquaculture gear. Connolly and Colwell (2005) concluded their study by indicating: "Overall, birds did not appear to avoid longline areas as compared to adjacent tidal flats. Rather, many species were more abundant and diversity was greater on longline plots."

The only shorebird from the Connolly and Colwell (2005) study that showed lower abundance in longline plots was the black bellied plover. The authors concluded that the greater bird abundances on longline plots were likely in response to increased foraging opportunities or greater prey diversity present because shorebird densities are commonly correlated with the densities of their principal prey. The impact to shorebirds would be less than significant.

Black Brant. Black brant (*Branta bernicla*) feed primarily on eelgrass. The HBOC Project will avoid eelgrass. While there may be portions of the mudflat that would be unavailable to black brant during low tides, these areas are not considered optimal foraging habitat for black brant.

This is supported by studies of black brant and shellfish aquaculture interactions in Humboldt Bay which evaluated shellfish farming activities within dense eelgrass cover. HT Harvey & Associates (HTH) conducted a survey in April 2015 (HTH 2015) within oyster longline aquaculture (aquaculture plots) and adjacent reference plots. The oyster longline aquaculture gear studied extends up to 3 feet above the sediment surface and occurs in eelgrass cover.

The HTH (2015) survey indicated that tidal height is the most influential driver in black brant use of an area. During high tides, black brant were observed at similar densities in aquaculture plots (mean density=1.0 birds/acre) and reference plots (mean density=1.3 birds/acre). During low tides, black brant were consistently observed at higher densities in reference plots (mean density=2.6 birds/acre) compared to aquaculture plots (mean density=0.1 birds/acre). Supplemental time-lapse recordings demonstrated that black brant forage in both aquaculture and reference plots when water is sufficiently high to swim but are less abundant in plots with oyster longlines at lower tides when the gear is exposed. The study authors postulated that the presence of lines during low tide interfered with black brant movement and led to the birds preferentially using areas with eelgrass cover that were adjacent to near-bottom culture plots.

Monitoring in Humboldt Bay during the 2017-2018 wintering and migratory period found no significant difference in black brant usage in culture and adjacent reference plots (HTH 2018), suggesting that earlier observations may be the result of eelgrass abundance within culture areas rather than the presence of culture gear. HTH (2018) found that black brant use is comparable or

higher within culture areas compared to adjacent areas, particularly during higher tides when feeding in eelgrass beds may not be available to black brant. It appears that brant may occur at higher concentrations in areas with aquaculture gear where feeding opportunities may exist during higher water levels.

The study was conducted again in 2020 (HTH 2021). This study's results suggest that "three seasons of sampling [show] that optimal combinations of tide direction and water depth are the primary drivers of brant activity patterns, with newly exposed moderate and low water conditions optimal for foraging. Existing narrow cultch aquaculture plots often appear to attract brant as much or more than similar, nearby plots that lack aquaculture gear, and all three culture plot types [narrow cultch, wide cultch and wide baskets] have attracted more brant than the Control plots at high water depths." The authors suggest that brant use aquaculture areas at similar rates to non-aquaculture areas, and that at high tide aquaculture areas provide dual foraging opportunities where brant may forage on eelgrass wrack or fouling communities associated with culture gear in addition to rooted eelgrass resources.

Collectively, this evidence suggests that black brant's preferred method of foraging is in shallow water when tidal height provides sufficient access to rooted eelgrass. The presence of shellfish gear can affect their foraging only during relatively short periods when the gear impedes their ability to easily swim through aquaculture plots (i.e., when the gear starts to be exposed). All other times, feeding can occur in and around shellfish gear. The effect to feeding from the presence of shellfish culture is less than significant, in fact, the culture may increase feeding.

Schmidt (1999) found that brant in Humboldt Bay spend less than 2% of time on alert or flying behaviors compared to 36% of time spent feeding. Schmidt (1999) noted that "there were many times when large slow-moving boats elicited no apparent response from brant." Schmidt (1999) also noted that "Habituation was apparent at the mid-channel, where people digging clams often approached to within 20 m while brant continued to feed." These observations clearly suggest that there is a degree of habituation to boat traffic by brant in Humboldt Bay.

HBOC will only be using two vessels, a minor increase in existing boat traffic by bay recreational and commercial users. Brant are utilizing portions of North Bay near aquaculture gear and near channels with significant existing vessel traffic. This is evidence that brant have become habituated to these conditions in a manner where a slight increase in vessel activity is unlikely to result in significant additional flushing or create additional energetic demands for brant. Therefore, impacts to blank brant are considered less than significant

Bio-E: Local Policies. There are numerous riparian habitats and other sensitive natural communities that have been identified by local governments, CDFW, and USFWS in the vicinity of the Project area. 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. https://www.fws.gov/refuge/humboldt_bay/
- The Arcata Marsh and Wildlife Sanctuary, owned and managed by the City of Arcata. https://www.cityofarcata.org/340/Arcata-Marsh-Wildlife-Sanctuary
- CDFW Ecological Reserves and Wildlife Areas: https://wildlife.ca.gov/Lands/Places-to-Visit: Including the following areas in Humboldt County: Big Lagoon Wildlife Area, Eel River Wildlife Area, Elk River Wildlife Area, Fay Slough Wildlife Area, Headwaters Forest Ecological Reserve, Mad River Slough Wildlife Area, and South Spit Wildlife Area

Plans protecting biological resources in the vicinity of the Project include the Local Coastal Programs, the Open Space Element of the *Humboldt County General Plan*, comprehensive conservation plans (CCPs), and recovery plans for listed species.

Local Coastal Programs and other relevant documents include:

- Humboldt Bay Management Plan, HBHRCD http://humboldtbay.org/sites/humboldtbay2.org/files/documents/hbmp2007/HumBayMgmtPLAN_print.pdf
- California Coastal Commission Sea Level Rise Policy Guidance, https://www.coastal.ca.gov/climate/slrguidance.html
- Humboldt Bay Sea Level Rise Adaptation Planning Project, HBHRCD http://humboldtbay.org/humboldt-bay-sea-level-rise-adaptation-planning-project
- Humboldt County Humboldt Bay Area Plan Sea Level Rise Vulnerability Assessment, https://humboldtgov.org/DocumentCenter/View/62872/Humboldt-Bay-Area-Plan-Sea-Level-Rise-Vulnerability-Assessment-Report-PDF
- Humboldt Bay Area Plan of the Humboldt County Local Coastal Program, https://humboldtgov.org/1678/Local-Coastal-Plan-Update
- Humboldt Bay National Wildlife Refuge Comprehensive Conservation Plan, https://www.fws.gov/refuge/Humboldt_Bay/what_we_do/planning.html
- California Eelgrass Mitigation Policy (CEMP), https://www.cakex.org/sites/default/files/documents/cemp_oct_2014_final.pdf
- Humboldt Bay Eelgrass Comprehensive Management Plan, http://humboldtbay.org/eelgrass-management-plan

These plans and 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 District's Humboldt Bay Management Plan includes objectives to expand the amount of sustainable aquaculture within Humboldt Bay (District 2007).

The *Humboldt County General Plan* was adopted October 23, 2017. 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.

The Project would not conflict with these plans and policies. Therefore, there would be no impact.

Bio-F: Conservation Plans. There are no habitat conservation plans (HCPs) or other community plans in the Project vicinity and the Project would not conflict with any such plan. Therefore, there would be no impact.

4.5 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 pursuant to §15064.5?			X	
B) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		X		
C) Disturb any human remains, including those interred outside of formal cemeteries?		X		

DISCUSSION

CR-A through CR-C: The Project would be implemented in an intertidal and subtidal area where no cultural or historic resources are known to be present. No excavation would occur as part of the Project. Soil disturbance would be limited to the placement of steel rebar racks on top of the mudflats, and the installation of an anchoring/post system for the intertidal longline culture. Each rack is 6′ long, 32″ deep and 18″ tall and constructed of 1/2″ welded steel rebar. The longline culture will consist of anchor posts at both ends and supporting posts that would be placed typically every 8 feet. The anchor posts are proposed to be galvanized steel pipe/T-stakes (up to 2-inch diameter), or other suitable materials, and are used to maintain line tension. The supporting posts in between are proposed to be made of schedule 80, 2-inch PVC. Although cultural and historic resources are not expected to occur, there are measures in place to provide an inadvertent discovery plan in the event that a resource is discovered. Specifically, the Project would comply with the following mitigation measure:

> **Mitigation Measure 2. Cultural Resources:** The Project will comply with the Harbor District Protocol agreed upon between the Harbor District and the Blue Lake Rancheria, Bear River Band of Rohnerville Rancheria, and Wiyot Tribes regarding the inadvertent discovery of archaeological resources, cultural resources, or human remains or grave goods (Attachment A). In coordination with the Wiyot Tribe THPO, a qualified cultural resource monitor will be present if ground disturbing activities related to this Project occur in areas that are within 100 ft of a recorded site and/or involve ground disturbance beyond what is currently proposed.

Potential impacts to cultural resources would be less than significant with Mitigation Measure 2 incorporated.

4.6 ENERGY Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				X
B) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

DISCUSSION

Energy-A and Energy-B:

Humboldt Bay Oyster Company Shellfish Farm is an existing farm and one small vessel is used to support existing operations. In addition, the FLUPSY uses a small 1 horsepower submersible pump for water intake. Changes to existing operations that have the potential to require additional energy include the two expansion areas in Mad River Slough channel. The same small vessel would be used to support these expansion areas. Up to a total of two small vessels would be used to support existing and expanded operations. There would be approximately four boat trips per week and approximately 3 gallons of fuel consumption per trip. The vessels use ultra-low emission, 3-star California Air Resources Board rated engines. Additionally, the construction of rack and bag and intertidal longline culture structures will be completed using hand tools. The use of hand tools for these short-term construction activities would have a negligible impact on energy use. The amount of fuel required for existing operations as well as the fuel required to support the proposed expansion is a negligible increase in regional demand. This fuel use will not result in the need for new or expanded sources of energy or infrastructure to meet the energy demands of the Project. Energy use by the Project will not be wasteful or inefficient and it is necessary to produce food. The use also will not conflict or obstruct any state or local plan for renewable energy or energy efficiency. Therefore, the Project will have no impact.

4.7 GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Directly or indirectly cause 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 direct or indirect 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
F) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?				X

DISCUSSION

Geo-A i – iv: Risks to People or Structures. The Project is located in Humboldt Bay and Mad River Slough. The project area is relatively flat with regional geology likely influenced by seismic activity as a result of the relatively close proximity of the Mendocino Triple Junction to the Project. A spur of the Mad River Fault Zone is located approximately 3.5 miles northeast of the Project, and a spur of the Little Salmon Fault Zone is located approximately five miles south of the Project as mapped by the California Geological Survey. 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 is located in a mapped liquefaction hazard zone (Humboldt County Web GIS). Implementation of the Project would not exacerbate potential liquefaction, rather the potential for liquefaction would remain unchanged following Project implementation. The sediment could be subject to liquefaction, which would pose a minor risk to workers. With the exception of the rack and bag and intertidal longline culture areas, the area is subtidal and workers or equipment would not be standing on the bay floor (they would be on boats, or rafts). The project area does not include steep slopes or hillsides and thus, does not have the potential for landslides. Impacts related to seismic risks are less than significant.

Geo-B: Erosion. The Project by its nature will not result in any erosion or loss of topsoil. Therefore, there will be no impact.

Geo-C: Instability. The Project will not involve the construction of any permanent structures, and will not affect the potential for onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, there will be no impact.

Geo-D: Expansive Soils. There may be expansive soils in the Project area; however, the project will not add enclosed or habitable structures (buildings) to the landscape. There will also be no substantial risk to life or property from Project development. Therefore, there will be no impact.

Geo-E: Wastewater Disposal. The Project does not involve the development of new wastewater disposal systems. Workers employed through the Project would use existing facilities (restrooms). Therefore, there will be no impact.

Geo-F: Unique Paleontological Resource. The Project is located in intertidal and subtidal areas. While there may be paleontological resources, soil disturbance would be limited to the placement of steel rebar racks and the installation of an anchoring/post system for the intertidal longline culture (if proposed). Therefore, there will be no impact.

4.8 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. Humboldt Bay Oyster Company Shellfish Farm is an existing farm and one small vessel is used to support existing operations. In addition, the FLUPSY uses a small 1 horsepower submersible pump for water intake. Changes to existing operations that have the potential to generate new emissions include the two expansion areas in Mad River Slough. Expansion Area 1 would be 3.1 acres and Expansion Area 2 would be 10.8 acres. Up to a total of two small vessels would be used to support existing and expanded operations. There would be approximately four boat trips per week and approximately 3 gallons of fuel consumption per trip. The vessels use ultra-low emission, 3-star California Air Resources Board rated engines. The vessel engines would contribute to a minor and negligible increase in GHG emissions. The construction of the rack and bag and/or intertidal longline culture structures in the two expansion areas would be completed using hand tools that would have negligible impact on GHG emissions. The amount of greenhouse gases generated to support existing conditions as well as the greenhouse gases generated to operate and construct the two expansion areas would be less than significant.

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 California Air Resource Board (CARB) 2022 Scoping Plan identifies a path to meet the SB 32 GHG emission reduction goals, as well as reducing anthropogenic GHG emissions to 85 percent below 1990 levels by 2045, and achieving carbon neutrality by 2045 or earlier, consistent with Assembly Bill 1279 (AB 1279). The 2022 Scoping Plan includes measures to move to a zero-emissions (decarbonized) transportation sector and phasing out the use of natural gas in residential and commercial buildings. The measures are statewide and programmatic in nature. The 2022 Scoping Plan is largely advisory, as CARB does not directly regulate many of the sectors identified by the plan's measures. The Project does not include any upland construction or mobile sources (other than the vessels and pumps described above) that could be a potentially significant source of greenhouse gas emissions. The Project would not conflict with plans, policies, or regulations on greenhouse gas emissions including SB 32, AB 1279, or the 2022 Scoping Plan. Therefore, there will be no impact.

4.9 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 or excessive noise for people residing or working in the project area?				X
F) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
G) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X

DISCUSSION

Haz-A through Haz-C: The only hazardous materials that would be associated with the Project are fuel and lubricants for small vessels, handtools, and pumps. 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.

Impacts from hazardous materials used by the Project will be less than significant. There will be no impact for *Haz-C* because the Project area is not within one-quarter mile of an existing or proposed school.

Haz-D: The Project will occur in intertidal and subtidal areas. Soil disturbance would be limited to the placement of steel rebar racks and the installation of an anchoring/post system for the intertidal longline culture. As such, it will not mobilize any hazardous materials, if they are present. The Project does not pose a significant threat to the public or environment and the impact will be less than significant.

Haz-E: The only nearby airport is Murray Field, which is a public airport approximately 2 miles from the FLUPSY in Woodley Island Marina, 3.5 miles from the existing rack and bag culture and proposed expansion areas in Mad River Slough, and 6 miles from the existing raft culture area in Mad River Slough. Airplanes landing and departing from this airport are not expected to be a hazard for Project workers. Therefore, there will be no impact.

Haz-F and Haz-G: The Project will not have any effect on an adopted emergency response plan or emergency evacuation plan because it will not impede emergency response or evacuation routes or procedures. Also, the Project nature (farming shellfish) does not create any risk of wildfires. Therefore, there will be no impact.

4.10 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 or otherwise substantially degrade surface or ground water quality?		X		
B) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				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 or through the addition of impervious surfaces, in a manner, which would:				X
i) Result in substantial erosion or siltation no- or off-site;				X
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;				X
iii) 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; or				X
iv) Impede or redirect flood flows?				X
D) In flood hazard, tsunamic, or seiche zones, risk release of pollutants due to project inundation?			X	
E) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

DISCUSSION

Hyd-A: Water Quality and Discharge Standards. The Project involves existing and expanded shellfish aquaculture operations in Humboldt Bay. The proposed expansion areas are in Mad River Slough channel, adjacent to existing shellfish operations. No additives, feed, or chemicals will be used in shellfish aquaculture operations (other than fuel for the work vessels). Mitigation Measure 3 will further reduce the risk of fuel spills. With this mitigation, the potential impact is less than significant.

> **Mitigation Measure - 3. Vessel Maintenance and Fueling:** Project personnel will maintain all vessels used in culture activities to limit the likelihood of release of fuels, lubricants, or other potentially toxic materials associated with vessels due to accident, upset, or other unplanned events.
>
> Project personnel will use marine grade fuel cans that are refilled on land, and personnel will carry oil spill absorption pads for use in the event of a spill.

Hyd-B: The Project would not involve the use of groundwater or interfere with groundwater recharge. Therefore, there will be no impact.

Hyd-C i-iv: The placement of steel rebar racks and the installation of an anchoring/post system for the intertidal longline culture will not substantially alter drainage patterns or result in erosion or siltation. There will be no impact.

Hyd-D: The project site is within Mad River Slough, Mad River Slough channel and at Woodley Island Marina. These sites are in a tsunami hazard area. The Project will follow current standards for storage and use of potential pollutants, including hazardous material (i.e., fuel and lubricants) to minimize the risk release of pollutants due to project inundation. Hence, the potential impact will be less than significant.

Hyd-E: The nature of the Project will not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Hence, there will be no impact.

4.11 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) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X

DISCUSSION

Land-A: The Project involves existing and expanded shellfish aquaculture operations in Humboldt Bay. The proposed expansion areas are in Mad River Slough Channel. There is no construction that would create a physical barrier to movement dividing an established community. Therefore, there will be no impact.

Land-B: The Humboldt County General Plan states: "At the present time the North Bay is the heart of the local aquaculture industry, and the resource protection policies in this section and elsewhere in this plan are designed to foster the expected growth of this industry" (Humboldt County 2017). The Project is consistent with the *Agricultural Exclusive*, *Natural Resources/Water* zoning of the site, as the Project is a form of agriculture. The Project is also consistent with the Humboldt Bay Management Plan's goal of supporting commercial aquaculture and the plan's policy to identify additional aquaculture activities (Policy HFA-5). Therefore, there will be no impact.

4.12 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: The Project will authorize and expand existing shellfish aquaculture operations in Humboldt Bay. It will have no effect on mineral resources. Therefore, there will be no impact.

4.13 NOISE Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
B) Generation of excessive groundborne vibration or groundborne noise levels?				X
C) For a project located within the vicinity of a private airstrip or 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

DISCUSSION

Noise-A through Noise-C: The Project involves existing and expanded shellfish aquaculture operations in Humboldt Bay. Its primary noise effect would be caused by additional boat trips with an internal combustion engine. This would generate noise similar to that generated by other small vessels on the bay. The Project vessels would not be heard from sensitive receptors as there are no nearby sensitive receptors. The short-term use of handheld construction tools would have negligible impacts. There is not an airstrip or airport within two miles that would expose people working in the project area to excessive noise levels. There will be no impact.

4.14 POPULATION AND HOUSING Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Induce substantial unplanned 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 people or housing, necessitating the construction of replacement housing elsewhere?				X

DISCUSSION

Pop-A through Pop-B: The Project will increase shellfish aquaculture operations in Humboldt Bay. Two full time employees support existing operations. Up to one additional full time new employee may be employed to support the proposed expansion. No housing currently exists within the project area; therefore, no people or housing units would be displaced necessitating the construction of

replacement housing. The effect on population and housing would not be substantial. Therefore, there will be no impact.

4.15 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: The Project would not create increased demand for public services. Two full time employees support existing operations and up to one additional full time new employees may be employed to support the proposed expansion. They would likely already live in the local community and so would not represent a new burden on public services. The effect would not be substantial. Therefore, there will be no impact.

4.16 RECREATION Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Would the project 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) Does the project 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: The Project will not increase use of existing neighborhood and regional parks or other recreational facilities. Two full time employees support existing operations. Up to one additional

full-time new employee may be employed to support the proposed expansion. Individuals that are employed for operation would likely already live in the local community and so would not represent a new burden on recreational facilities. There would be no impact to existing neighborhood and regional parks or other recreational facilities from the Project.

Rec-B: Recreational Facilities. The Project does not include recreational facilities. Up to 3 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. The additional people employed by the Project would not result in an expansion of a recreational facility. Hence, there will be no impact.

4.17 TRANSPORTATION Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?				X
B) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?				X
C) Substantially increase hazards due to a geometric design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		X		
D) Result in inadequate emergency access?				X

DISCUSSION

Trans-A, Trans-B, and Trans-D: The Project would likely not increase the local population. Two full time employees support existing operations. Up to one additional full time new employees may be employed to support the proposed expansion. The Project is not expected to increase vehicle traffic on local streets and would not conflict with effective circulation system performance. Pursuant to SB 743 and the current CEQA Guidelines, evaluation of a project's potential transportation impact requires consideration of vehicle miles traveled (VMT), which refers to the amount and distance of automobile travel attributable to a project. Projects that reduce or have no impact on VMT are presumed to cause a less than significant transportation impact (OPR 2018). The Project would not add additional motor vehicle capacity to the roadway network and would not lead to additional vehicle travel. There would not be a conflict with circulation system, transit, roadways, pedestrian facilities, CEQA guidelines, or emergency access. Therefore, there will be no impact.

Trans-C: The Project does not change roadway features (e.g. sharp curves or dangerous intersections), but does add aquaculture gear to the intertidal and subtidal environment in Humboldt Bay and there is potential for interaction with vessels. In intertidal areas this interference would only occur when the tides are high enough for vessels to move through the intertidal areas, but so low that that the vessels couldn't move readily over the gear. When the intertidal area is

inundated, shallow-draft vessels could access the Project area and empty space among the gear would allow smaller watercraft (e.g., kayaks) to move about. Vessel movement in Mad River Slough would be minimally affected because the channel is substantially wider than the rafts, allowing vessels to readily move past.

The Project may also result in accidental loss of shellfish aquaculture gear or other debris into Humboldt Bay. The equipment is subject to various natural forces including tide, wind, waves and ultraviolet radiation. As a result, there is potential for equipment to become loose, wash away or otherwise escape into the environment. Escaped aquaculture gear may pose a hazard to users of the bay, including boaters (motorboaters, kayakers, stand-up paddle boarders, canoers, wind surfers). When encountered, marine debris associated with shellfish gear may damage boat bottoms or engines, snag on trailing lines or otherwise impair navigation. Recreational users of the bay may encounter escaped gear in shallow intertidal areas, which may then make transit of these areas more hazardous, particularly if escaped gear is wholly or partially buried in the substrate and thus hidden from view. As described in Mitigation Measure 4, loose equipment will be immediately removed from the bay or secured and all equipment will be marked with Humboldt Bay Oyster Company's name and phone number. The impact will be less than significant with mitigation.

Mitigation Measure 4. Debris Management: During farming operations, loose equipment/debris will be surveyed for and immediately removed or secured. Additionally, as feasible, culture equipment will be marked with Humboldt Bay Oyster Company's name and phone number to allow for tracking of the source of debris.

4.18 TRIBAL CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Would the project cause substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in the local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or				X
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

DISCUSSION

CEQA requires lead agencies to determine if a proposed Project would have a significant effect on tribal cultural resources. The CEQA Guidelines define tribal cultural resources as: (1) a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American Tribe that is listed or eligible for listing on the California Register of Historical Resources, or on a local register of historical resources as defined in Public Resources Code Section 5020.1(k); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant according to the historical register criteria in Public Resources Code Section 5024.1(c), and considering the significance of the resource to a California Native American tribe.

Tribe-Ai: The Project sites are not listed or eligible for listing in the California Register of Historic Resource. There would no impact.

Tribe-Aii: The Project would be implemented in intertidal and subtidal areas where no cultural or historic resources are known to be present. No excavation would occur as part of the Project. Soil disturbance would be limited to the placement of steel rebar racks on top of the mudflats, and the installation of an anchoring/post system for the intertidal longline culture. Each rack is 6′ long, 32″ deep and 18″ tall and constructed of 1/2″ welded steel rebar. The longline culture will consist of anchor posts at both ends and supporting posts that would be placed typically every 8 feet. The anchor posts are proposed to be galvanized steel pipe/T-stakes (up to 2-inch diameter), or other suitable materials, and are used to maintain line tension. The supporting posts in between are

proposed to be made of schedule 80, 2-inch PVC. These same methods are currently used on adjacent sites by another oyster company.

Part of the Project would be implemented in intertidal areas (mudflats). While there is very little soil disturbance that would occur (i.e., the only soil disturbance would involve the installation of stakes and posts to support shellfish gear), there is the potential that placement of gear could disturb unknown cultural or archeological resources.

Under Assembly Bill (AB) 52, notification letters were sent to the Wiyot Tribe, Blue Lake Rancheria, and the Bear River Band of the Rohnerville Rancheria on November 25, 2024. The Wiyot Tribe THPO responded on December 3, 2024, no other responses were received. No specific tribal cultural resources were identified within the Project sites, however the area is known to be culturally sensitive and the Wiyot THPO noted the Project site is near cultural sites. In addition to standard inadvertent archaeological discovery protocols, a tribal monitor for ground disturbing activities was requested. The Harbor District requested clarification from the Wiyot Tribe THPO on the types of ground distributing activities where a tribal monitor would be recommended. Emails were sent on Dec. 15, 2025 and Jan. 9, 2026; acknowledgement of receipt was received, however no additional clarification has been provided to date.

Given existing adjacent uses are the same as the proposed project; no excavation or grading will occur and the Project involves very limited soil disturbance (i.e. installation of up to 2-inch diameter stakes and posts to support shellfish gear); and because no specific tribal cultural resources have been identified within the Project sites, implementation of Mitigation Measure 2 Cultural Resources will reduce potential impacts to less than significant.

4.19 UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas facilities, the construction or relocation of which could cause significant environmental effects?				X
B) Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
C) 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
D) Generate solid waste in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				X
E) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

DISCUSSION

Util-A through Util-C: The proposed Project does not involve the use or construction of any facilities that would require new water, wastewater, electrical, natural gas, or telecommunications utilities. Project employees would use existing land based restrooms. The Project would not discharge wastewater or stormwater or involve consumption of water. Therefore, no impact is expected.

Util-D and Util-E: The Project would not generate any substantial amount of solid waste. The only waste would be items used in the process of farming shellfish such as rags and rope. 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. Therefore, there will be no impact.

4.20 WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
A) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
B) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?				X
C) require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				X
D) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

DISCUSSION

Wildfire-A through Wildfire-D: The Project area is not located in or near a State Responsibility Area (SRA) or on lands classified as very high fire severity zones. The proposed Project occurs in intertidal and subtidal areas. The nature of the Project (farming shellfish) does not pose a risk of creating wildfires. The proposed Project would not impair emergency response activities nor established evacuation routes; is not anticipated to exacerbate wildfire risks; and would not expose people or structures to significant wildfire risks. There will be no impact.

4.21 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 substantially 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, substantially 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: No. With the mitigation measures described above, the Project would not 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.

Findings-B: No. As generally described above, shellfish aquaculture activities do not intrinsically have significant environmental effects. The assessment above is applicable within the context of current and other planned activities in Humboldt Bay. The impacts associated with the proposed Project analyzed in this IS would not add appreciably to any existing or foreseeable future significant cumulative impact. Incremental impacts, if any, would be negligible and undetectable. Improvements to water quality by having an industry that is dependent on excellent water quality conditions is a benefit to the bay overall. Additionally, shellfish farming removes carbon from the environment and can reduce eutrophication. With the mitigation measures described throughout this IS document, the potential cumulative impacts will be less than significant.

Findings-C: No. The Project would increase the amount of shellfish aquaculture in Arcata Bay 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

Barrett, EM. 1963. The California oyster industry. Fish. Bull. 123:2–103

Boyd, M. J., T.J. Mulligan, and F.J. Shaughnessy. 2002. Non-indigenous marine species of Humboldt Bay, California.

Connolly, L.M. and M.A. Colwell. 2005. Comparative use of longline oysterbeds and adjacent tidal flats by waterbirds. Bird Conservation International 15:237-255.

District and SHN (Humboldt Bay Harbor, Recreation and Conservation District and SHN Consulting Engineers and Geologists). 2015. Humboldt Bay mariculture carrying capacity analysis. District, Eureka, California and SHN, Eureka, California. 18 pp.

Eguchi T, J.T. Harvey. 2005. Diving behavior of the Pacific harbor seal (*Phoca vitulina richardii*) in

Goldsworthy, M. B. Pinnix, M. Barker, L. Perkins, A. David, and J. Jahn. 2016. Field Note: Green sturgeon feeding observations in Humboldt Bay, California. National Marine Fisheries Service, Northern California Office, Arcata, California. U.S. Fish and Wildlife Service, Arcata Field Office, Arcata, California.

Gustafson, R.G., M.J. Ford, D. Teel, and J.S. Drake. 2010. Status review of eulachon (*Thaleichthys pacificus*) in Washington, Oregon, and California. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-105, 360 p.

(HBHD) Humboldt Bay Harbor District. 2007. Humboldt Bay Management Plan. Humboldt Bay Harbor District, 601 Startare Drive, Eureka, CA 95501.

HTH (H. T. Harvey & Associates). 2015. Black brant surveys for the Humboldt Bay Shellfish Culture Permit Renewal and Expansion Project. Memorandum to Greg Dale, Coast Seafoods Company. 23 June 2015.

HTH. 2018. Draft black brant monitoring plan: baseline assessment annual report 2018. Prepared for California Coastal Commission. October 6, 2018.

HTH. 2021. Coast Seafoods Company Humboldt Bay Shellfish Aquaculture Operations Black Brant Monitoring Plan: Annual Report 2020. Draft black brant monitoring plan: baseline assessment annual report 2020. Project 3225-12. Prepared for California Coastal Commission. January 27, 2021. 53 pp.

Humboldt County General Plan. 2017. Humboldt County General Plan for the Areas Outside the Coastal Zone [online document]. Adopted October 23, 2017. Available at: https://humboldtgov.org/DocumentCenter/View/61984/Humboldt-County-General-Plan-complete-document-PDF.

Israel, J.A., A.M. Drauch, M. Gingras, and M. Donnellan. 2009. Life history conceptual model for White sturgeon (*Acipenser transmontanus*). CDFG Delta Regional Ecosystem Restoration and Implementation Program. FINAL, 55 pp.

Jaques, D.L., H.R. Carter, and P.J. Capitolo. 2008. A brown pelican roost site atlas for northern and Central California. Unpublished report. Pacific Eco Logic, Astoria, Oregon and Carter Biological Consulting, Victoria, British Columbia.

Moser, M.L. and S.T. Lindley. 2007. Use of Washington estuaries by subadult and adult green sturgeon. Environmental Biology of Fishes 79:243-253.

Ougzin, A.M. 2013. Foraging behavior of the Pacific harbor seal (*Phoca vitulina richardsi*) in Humboldt Bay, California. Master's Thesis, Humboldt State University, Arcata, California.

Ruiz, G.M. and J. Geller. 2018. Spatial and temporal analysis of marine invasions in California, Part II: Humboldt Bay, Marina del Rey, Port Hueneme, and San Francisco Bay [online report]. Prepared by Smithsonian Environmental Research Center and Moss Landing Marine Laboratories. Prepared for Office of Spill Prevention and Response, Marine Invasive Species Program California Department of Fish & Wildlife. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=168904&inline

Schmidt, P.E. 1999. Population counts, time budgets, and disturbance factors of black brant (*Branta bernicla nigricans*) at Humboldt Bay, California. Master of Science Thesis. Humboldt State University.

Sullivan, R.M. 1980. Seasonal occurrence and haul-out use in pinnipeds along Humboldt County, California. Journal of Mammalogy 61(4):754-760.

Tallman J. and C. Sullivan. 2004. Harbor seal (*Phoca vitulina*) predation on a male harlequin duck (*Histrionicus histrionicus*). Northwestern Naturalist 85(1):31-32.

U.S. Census Bureau. 2020. Arcata and Eureka population [online resource]. Available at: https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-cities-and-towns.html#tables.

Section 6.0 List of Preparers

Adam Wagschal, GHD

Vanessa Blodgett, Humboldt Bay Harbor, Recreation and Conservation District

Taylor Myers, Moffatt & Nichol