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STAFF REPORT: REGULAR CALENDAR

Application No.:	**9-21-0561**
Applicant:	**Hog Island Oyster Company**
Location:	Arcata Bay, Humboldt Co.
Project Description:	Install and operate 27-acre oyster aquaculture facility within 110-acres of intertidal lands.
Staff Recommendation:	Approval with Conditions.

SUMMARY OF STAFF RECOMMENDATION

Hog Island Oyster Company (HIOC) proposes to carry out cultivation of three oyster species on approximately 27-acres of intertidal lands on a 110-acre area in northwest Arcata Bay. The project would be carried out within two separate subleases currently held by HIOC adjacent to the Mad River Slough channel (**Exhibit 1**). HIOC would grow non-native Pacific oysters (*Crassostrea gigas*) and Kumamoto oysters (*Crassostrea sikimea*) as well as the native Olympia oyster (*Ostrea lurida*). Young oysters would originate from HIOC's Humboldt Bay hatchery facility located on the Samoa peninsula (authorized by the Commission through CDP No. 9-13-0500), south of the proposed aquaculture area. Over a period of five years, HIOC proposes to install two types of "off-bottom" oyster cultivation equipment. Elevated longlines equipped with plastic mesh cultivation baskets or bags would be installed on approximately 24-acres, and raised rack and bag gear would be installed and used on approximately 3-acres of the site.

Harvested oysters from the proposed cultivation area would be brought to the existing HIOC hatchery facility in Samoa for processing. During equipment installation, gear would be brought from this facility to the project site through the use of several vessels, including low draft, 20-foot and 24-foot skiffs and/or a custom 40-foot vessel equipped with a hydraulic crane for assisting in planting and harvest operations during higher tides.

Primary Coastal Act concerns raised by the proposal include potential adverse effects to marine biological resources as well as public access and recreation. Regarding marine resources, eelgrass surveys conducted in 2020 indicated that eelgrass habitat is present within the proposed cultivation area, which provides a variety of important habitat benefits for marine wildlife. HIOC has proposed to minimize impacts to eelgrass by avoiding placement of cultivation structures within eelgrass habitat, including a 5-meter wide unvegetated perimeter surrounding it. To avoid eelgrass habitat, HIOC proposes to conduct annual eelgrass surveys during the growing season (May through September) prior to the installation of new gear. **Special Condition 7** would require these survey results to be provided to the Executive Director for review and the Executive Director may require follow-up independent third-party surveys if the results are inconclusive. These eelgrass surveys would be used to establish the areas in which gear can be installed.

The proposed project may also result in adverse impacts to green sturgeon. HIOC proposes to minimize these risks through a combination of a 10-foot buffer between cultivation gear and all subtidal channels where sensitive sturgeon may be within and adjacent to the cultivation area (as reflected in Mitigated Negative Declaration (MND) mitigation measure Mit-5, included in **Exhibit 2**). In addition, **Special Condition 9** would require that all cultivation gear be raised off the bottom outside of low tides. To minimize potential adverse impacts to ecologically and economically important Pacific herring, **Special Condition 8** requires survey measures and coordination with California Department of Fish and Wildlife (CDFW) staff during seasons when herring spawn and eggs may be present. The project also has the potential to adversely impact shorebirds, which rely heavily on Humboldt Bay during their migration. To minimize disturbance to roosting and foraging birds, HIOC proposes to establish a 200-foot to 400-foot wide buffer from the Mad River Slough Wildlife Area (**Figure 6**), a CDFW designated saltmarsh and wetland area located along the edge of the project site to the northwest. In addition, **Special Condition 6** would require HIOC to avoid wildlife disturbance through reductions in vessel speed and a 1,000 foot buffer from known black brant grit sites (**Exhibit 3**) along the transit route of its vessels between its onshore base of operations and the proposed cultivation area.

There are several recreational activities, such as hunting and boating, that occur in Arcata Bay and may be negatively affected by the proposed project. To help minimize these effects, **Special Conditions 4 and 5** require HIOC to avoid disrupting waterfowl and implement a geographic limitation on operational activities during peak brant hunting times. Through the mitigation measures required by the project's CEQA review (**Exhibit 2**) and proposed configuration and layout of the cultivation area (which

includes boat channels), safe navigation and boating through the site at high tide would continue to be available. HIOC also proposes to use its facility in Samoa as a commercial launch site to avoid interfering with the launch and use of recreational vessels (small boats and kayaks) at the informal boat ramp near the proposed cultivation area. With the implementation of HIOC's proposed mitigation measures and those included in the project CEQA document (**Exhibit 2**) as well as **Special Conditions 1-12**, adverse impacts to marine biological resources and coastal access and recreation would be avoided and the proposed project would be consistent with the applicable policies of the Coastal Act.

The Commission staff therefore recommends **APPROVAL** of coastal development permit application 9-21-0561, as conditioned. The motion for this is on page 4 of this document. The standard of review is the Chapter 3 policies of the Coastal Act.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit 9-21-0561 pursuant to the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

The Commission hereby approves the Coastal Development Permit for the proposed project and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by the applicant or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration**. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation**. Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment**. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land**. These terms and conditions shall be perpetual, and it is the intention of the Commission and the applicant to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

1. **Permit Term Limit.** This permit shall expire on November 5, 2029, the current expiration date of the subleases for the project site held by Hog Island Oyster Company (HIOC). If the terms of the applicable subleases are extended, the Permittee may submit an application for a permit amendment requesting an extension of the permit term. NO LESS THAN 120 DAYS PRIOR TO THE EXPIRATION OF THIS PERMIT (unless an extension is granted by the Executive Director for good cause), the Permittee shall submit a plan for (a) the timely removal of all oysters, cultivation structures, anchoring posts, equipment, debris, and materials associated with the cultivation facility, and (b) the conduct of a thorough inspection of the facility site by a qualified independent third party to verify the completion of removal activities. Upon approval by the Executive Director of the plan, the Permittee shall implement the removal and inspection plan in accordance with the schedule specified therein and shall completely remove the cultivation structures, including all posts, lines, ropes, buoys, cultivation containers (bags and baskets) and associated equipment, materials, debris and infrastructure.

2. **Annual Report**. By December 31 of each year, the Permittee shall submit to the Executive Director an annual report that includes the results of quarterly cleanup events carried out as described in **Special Condition 3** and the date of staff trainings, training materials, meeting minutes, and list of attendees from the Marine Debris Reduction and Permit Compliance Training, as described in **Special Condition 3.** In addition, the annual report shall include information on the estimated number of cultivation bags and/or baskets lost, replaced, and recovered throughout the course of the year, as well as any design, management, or operational changes implemented to address issues that have arisen with the use of elevated cultivation bags and/or baskets. The annual report shall also include a description of any significant changes to the type, quantity and configuration of cultivation equipment that are being considered and any resource or operational challenges that are emerging. Furthermore, the annual report shall include any documented instances of herring spawn as required in **Special Condition 8.**

3. **Marine Debris Reduction and Management.** The Permittee shall carry out operations consistent with the following marine debris reduction and management practices:
    A. **Storm Damage and Debris**. In the event that its shellfish culture gear or equipment becomes displaced or dislodged from culture beds, it shall be the Permittee's responsibility to retrieve the material from the shoreline, open water, eelgrass beds, mudflat, or submerged bottom with minimal damage to the resources affected. Once located, such material shall be removed as soon as feasible and properly disposed of, recycled, or returned to use. As soon as safely and reasonably possible following storm or severe wind or weather events, the Permittee shall patrol all of its active cultivation areas for escaped or damaged aquaculture equipment. All equipment that cannot be repaired and placed back into service shall be properly recycled or properly disposed of at a certified onshore waste disposal facility. In addition, the

Permittee shall retrieve or repair any escaped, collapsed or damaged aquaculture equipment that it encounters while conducting routine daily and/or monthly maintenance activities associated with shellfish culture (e.g. bed inspections, shellfish harvest and planting). If the escaped gear cannot be repaired and replaced on the shellfish bed, it shall be properly recycled or disposed of at a certified onshore waste disposal facility.

B. Gear Marking. The Permittee shall mark shellfish culture bags, baskets, and floats in an easily identifiable manner with identification information including its company name. Markings shall be securely attached and robust enough to remain attached and legible after an extended period in the marine environment (e.g. heat transfer, hot stamp, etching). In the event that its shellfish culture gear or equipment becomes displaced or dislodged from culture beds, it shall be the Permittee's responsibility to retrieve the material from the shoreline, open water, eelgrass beds, mudflat, or submerged bottom with minimal damage to the resources affected. Once located, such material shall be removed as soon as feasible and properly disposed of, recycled, or returned to use.

C. Marine Debris Reduction and Permit Compliance Training. WITHIN 30 DAYS OF ISSUANCE OF THIS PERMIT and no less than once per year thereafter, the Permittee shall conduct an employee training regarding marine debris issues, including covering how to identify culture gear or associated materials (marking stakes, support posts, longlines, label tags, clasps, etc.) that are loose or at risk of becoming loose, proper gear repair methods, and how to completely remove gear from out-of-production areas. Particular focus shall be placed on management and maintenance practices to reduce the loss of any gear type that is frequently lost or consistently found during bay cleanup and inspection activities. In addition, the training shall include information on all conditions of this permit and the environmental impact avoidance and minimization measures they require the Permittee to implement and adhere to. This training shall be repeated on an annual basis throughout the term of the permit. During trainings, the Permittee's employees shall be encouraged to consider and implement field and management practices that help ensure permit compliance and reduce the amount of small plastic gear (such as zip-ties, tags and fasteners) and non-biodegradable material (such as PVC stakes and nylon or polypropylene rope) used in its operations.

D. Cleanup Events. The Permittee shall carry out quarterly cleanup events in Humboldt Bay in coordination with other interested parties or organizations. Cleanup events shall include walking different portions of the bay and shorelines to pick up escaped shellfish gear and other trash (regardless of whether it is generated by the project). The volume and type of shellfish gear collected and the cleanup location (marked on a map) and duration of cleanup activity shall be recorded and documented in the annual report submitted to the Executive Director. If persistent discoveries of certain gear types are made, the Permittee shall evaluate (and if feasible, implement use

of) alternative gear types or practices that would reduce these consistent sources of debris.

E. **Ongoing Operations.** The Permittee shall not leave or temporarily store tools, loose gear, or construction materials on its leased tidelands or surrounding areas. All aquaculture gear installed in active culture beds shall be kept neat and secure and maintained in functional condition. The Permittee shall carry out regular bed inspections and maintenance activities to help ensure that broken, collapsed, fallen, or buried gear is fixed or removed in a timely manner. Collapsed or out of place cultivation gear or cultivation bags or baskets lying directly on mudflat areas shall not persist for more than 30 days.

F. **Bed Cleaning at Harvest.** At the time of harvest of each cultivation bed, the Permittee shall carry out a thorough inspection to locate and remove loose or abandoned equipment, tools, and accumulations of oysters from the surrounding substrate. Oyster shell shall not be intentionally placed or deposited within the lease outside of cultivation gear, and oysters or oyster shell accidentally spilled during harvest shall be immediately collected and removed.

G. **Excessive Gear Loss or Maintenance Failures.** If the Executive Director determines that the Permittee is responsible for consistently extensive loss of aquaculture equipment (including SEAPA or tipping bags or raised baskets) into the marine environment or is consistently failing to maintain its equipment in an intact and serviceable condition, the Permittee shall, within 60 days of the Executive Director's written notification, submit a complete permit amendment application to modify its cultivation equipment and/or operational practices to address the issue, unless the Executive Director determines that no such amendment is necessary to implement the necessary changes.

4. **Brant Hunting.** Except for emergency situations, activities to ensure the safety of its operations or operations required for regulatory compliance, such as water quality/shellfish testing and marine debris response after storm events, HIOC shall avoid on-water operations within its cultivation areas as depicted on **Exhibit 6** from one hour before sunrise until noon on days that are designated by the California Department of Fish and Wildlife as brant hunting days on Arcata Bay, including season opening and closing days (typically brant hunting within the bay is limited to early November through mid-December).

5. **Protection of Brant Grit Sites.** Between the months of November and June, no vessel transit or cultivation activities shall be carried out within 384 meters (1,000 feet) of the black brant grit site at Tuluwat Island shown in **Exhibit 3**. Marine debris collection efforts and water quality sampling required by the California Department of Public Health shall be exempt from this requirement.

6. **Wildlife Disturbance.** During vessel transit, harvest, maintenance, inspection, and planting operations, the Permittee shall avoid approaching, chasing, flushing, or directly disturbing shorebirds, waterfowl, seabirds, or marine mammals. Between the

Samoa Bridge and cultivation site, the Permittee shall minimize vessel speed (not to exceed 10 knots) along the vessel transit route from April 1 to April 30 (typical season of peak migratory bird presence).

7. **Eelgrass Habitat and New Cultivation Areas.** No shellfish cultivation equipment, anchors, or other structures, gear or equipment shall be installed or placed on, in, or over eelgrass habitat, as determined by the Executive Director using the definition of eelgrass habitat in the National Marine Fisheries Service's October 2014 California Eelgrass Mitigation Policy (CEMP). Prior to placing or installing structures or equipment on any shellfish cultivation area, the Permittee shall submit, for Executive Director review and approval, information collected within the most recent eelgrass growing season (May through September) demonstrating that no eelgrass is present within the area in which installation or placement is proposed. If eelgrass is present or the Executive Director does not approve the information (for example, because it is inconclusive, out of date, of inadequate resolution, or improperly collected), the Permittee shall retain the services of a qualified, independent third party to carry out an eelgrass survey of that area. The survey shall be carried out consistent with the methodology and protocols established in the CEMP and shall be carried out during the eelgrass growing season in which installation activities will occur (or the previous growing season if installation will occur after the completion of one growing season and prior to the start of the next). Within 30 days of survey completion, the results of the eelgrass survey shall be provided to the Executive Director for review and approval along with a map or diagram showing the footprint and location of proposed cultivation structures and equipment relative to nearby eelgrass habitat and demonstrating that installation within eelgrass habitat, as defined in the CEMP, will not occur. The Executive Director shall make reasonable efforts to review the eelgrass surveys and issue a decision within 60 days of receipt of the survey. While installation of shellfish cultivation structures and equipment shall be prohibited within eelgrass habitat, as defined in the CEMP, if such eelgrass habitat moves or expands into areas with existing cultivation structures and/or equipment, the Permittee may continue to maintain and use these areas for shellfish cultivation.

8. **Herring Spawn**. During the months of December, January and February, the Permittee shall visually inspect beds prior to planting and/or harvesting, to determine if Pacific herring (Clupea pallasi) has spawned on eelgrass, culture materials, or substrate. Visual inspections shall be conducted in accordance with the survey protocols developed by the California Department of Fish and Wildlife (CDFW). In addition, at the beginning of the three month herring spawning period, the Permittee shall provide staff of the CDFW Eureka Marine Region office a schedule of planting and/or harvesting activities anticipated to occur during the period and shall provide weekly updates to the planting and harvesting schedule to CDFW during the spawning period.

   If herring spawning has been recently observed by Permittee or CDFW staff on or in the immediate vicinity of planned planting and/or harvesting activities, the Permittee shall: 1) postpone planting and/or harvesting activities on any culture beds in those

areas for two weeks, or until CDFW staff confirm herring eggs have hatched, and 2) notify the CDFW Eureka Marine Region office of the spawn within 24 hours. The Permittee shall keep records of when CDFW was notified of planting and harvest scheduling and observed spawning events, and those records shall be included with the annual report described in **Special Condition 2**.

9. **Gear.** All tipping bags used within the Permittee's cultivation area shall contain floats installed as necessary to ensure no bottom contact occurs outside of low tides.

10. **Hazardous Material Spill Prevention and Response Plan.** The permittee shall implement the "Hog Island Spill Prevention and Response Plan" (dated September 15, 2021) as provided in **Exhibit 4.**

11. **Other Agency Review and Approval.** PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION AND/OR INSTALLATION ACTIVITES, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the project have been granted, including those from the Humboldt Harbor, Recreation and Conservation District, Regional Water Quality Control Board (if necessary) and U.S. Army Corps of Engineers. Any changes to the approved project required by these agencies shall be reported to the Executive Director. No changes to the approved project shall occur without an amendment to this permit unless the Executive Director determines that no amendment is legally necessary.

12. **Performance Bond.** PRIOR TO ISSUANCE OF THIS PERMIT, the applicant shall provide a surety bond or other security device guaranteed by the applicant and acceptable to the Executive Director of the Commission, for $50,000, and naming the Commission as the assured, to guarantee the faithful observance and performance of the applicant of the terms and conditions of this permit. The surety bond or other security device shall be maintained in full force and effect at all times until the expiration of this permit or until operations cease and no aquaculture gear remains on the project site. Within 60 days of the Commission obtaining all or a portion of the bond, the Permittee shall provide the Executive Director with evidence that it has established a new surety bond (or other similar security device acceptable to the Executive Director) in an amount sufficient to continue to guarantee faithful observance and performance of all the terms and conditions of this permit (i.e., the combined total of any bonds must be for $50,000). If the new surety bond (or other similar security device) is not established within 60 days, this permit shall be terminated.

IV. FINDINGS AND DECLARATIONS

A. Background and Project Description

Figure 1: Proposed project area (photo: IS/MND)

The proposed project would be carried out within a total leased area of 110-acres (**Figure 1**) in northwestern Arcata Bay. Within this area, Hog Island Oyster Company (HIOC) seeks to cultivate oysters on approximately 27-acres. The elevation of the majority of the remaining acreage is anticipated to be too high to support oyster cultivation and is not proposed to be used. HIOC proposes to grow three species of oyster that are currently and have been historically cultivated in Arcata Bay: the non-native Pacific oyster (*Crassostrea gigas*) and Kumamoto oyster (*Crassostrea sikamea*) and the native Olympia oyster (*Ostrea lurida*). HIOC's existing hatchery and nursery facility on the Samoa Peninsula (previously approved by the Commission in CDP No. 9-13-0500) would be HIOC's onshore base of operations and used to produce oyster seed that would then be planted at the proposed cultivation area. HIOC plans to exclusively use off-bottom culture methods, specifically, tipping bags or SEAPA[1] style baskets installed on elevated longlines (across ~24-acres) and raised rack and bag structures (across ~3-acres). These structures would be installed over a five year period, at approximately 5-10 acres per year on intertidal mudflats that have been subleased from two entities.[2] As proposed, installation of culture areas would avoid pedestrian transit through or on eelgrass beds by relying on the use of vessels at higher tidal elevations ranging from +1.6 feet to +4.6 feet mean lower low water (MLLW). HIOC also proposes to carry out eelgrass surveys prior to gear installation and to avoid installation of gear in mapped eelgrass beds.

HIOC proposes to use its existing hatchery facility, located to the southwest of the project area, to provide seed and vessel staging for this aquaculture area. HIOC proposes to take two to four vessel trips per week to the proposed cultivation area from its existing hatchery facility. HIOC has designed vessel corridors within its cultivation area to allow its personnel to access individual cultivation beds and also allow the public to transit safely through the area.

[1] Both SEAPA and VEXAR are brands/styles of mesh oyster growing baskets

[2] HIOC has subleased two parcels at this site from Humboldt Oyster Company and CEU IV, LLC. The lease agreements allow for subletting with Harbor District approval. The HBHD approved HIOC's application for carrying out cultivation activities at this site in July 2021.

Shellfish Cultivation Methods

Longline Culture Gear

Intertidal longline systems (as shown in **Figures 2 and 3**) proposed to be used by HIOC would be 100-300 feet long, where possible, with PVC anchor posts at both ends and supporting posts typically every eight feet. Individual lines would be spaced at approximately three feet, with an additional space of 15-feet between grouped blocks of four lines to provide boat access. The anchor posts are proposed to be galvanized steel pipe T-stakes, or other suitable materials, and would be used to maintain line tension. The supporting posts in between are proposed to be made of 2-inch diameter PVC pipes. Hanging from the elevated longlines would be individual plastic mesh cultivation bags ("tipping bags") or baskets (SEAPA type) filled with oysters. These would be suspended between one and four feet above the ground. Across the entire site, HIOC proposes to use a maximum of approximately 69,000 bags. Lines between the posts would be plastic coated with a steel core. Covering that inner line would be an outer sleeve to reduce wear.

Figure 2: Intertidal longline baskets in Humboldt Bay at low tide. Photo: Hannah Coe, HSU.

Longline support posts and anchors would be driven using sledgehammers, hand-held post pounders, and/or a gas or pneumatic hand-held post pounder. Material used in end posts would have a serviceable life of at least 15 years. Tipping bags (**Figure 3**) attached on longlines would be made of durable plastic and would typically be 2-foot by 3-foot with ½-inch mesh. These bags would be attached to the line using a stainless-steel snap hook or plastic clip that connects to a plastic bearing. Floats would be attached to the bag using 3/8-inch polyline. Other types of bags/baskets that may be used include SEAPA baskets, which are typically 2-foot by 4-foot by 1.5-foot in diameter and made of high-density polyethylene (**Figure 2**).

Raised Rack and Bag Gear

HIOC also proposes to install and operate up to 3-acres of raised rack and bag structures (see **Figure 4**). Rebar racks would consist of a 2-foot by 8.5-foot rebar frame that may contain up to approximately 7,800 bags. Each frame would be stocked with four plastic mesh bags of similar dimensions as the tipping bags described above. After racks are stocked with bags of oysters, they would be placed into the rows by a work vessel during a high tide. On the next low tide series (usually the same or following day), the racks would then be mounted to four PVC pipe legs. The PVC pipe legs would typically extend 12-24 inches

Figure 3: Tipping Bags with Floats at low tide. Photo: IS/MND.

above the ground. A row of racks would typically extend 100-300 feet with 2.5 feet between each rack (front to back). In HIOC's proposed configuration, there would be two rows of racks with three feet of space in between them (left to right) and then a 12-15 feet space in between the next two rows. HIOC estimates using a combined total of approximately 29,000 PVC pipes across the site for both longline and rack and bag structures.

Figure 4: Rack and Bag equipment at low tide. Photo: IS/MND.

When in use, racks would be monitored and tipped monthly during their grow-out period. On a quarterly basis after initial planting, the oysters within the racks would be culled and graded. The harvest of racks entails a work crew removing the racks from their PVC legs and placing them on a vessel for transport. This would often be carried out with 2-3 feet of water to allow the support vessel to come up alongside the rows of racks for easier handling by the crew. All culling and grading would take place at HIOC's existing hatchery facility. Final harvest of oysters grown on racks would typically be 9-12 months after initial planting.

Production Cycle

The typical production cycle proposed to be used by HIOC for its cultivation area would include "planting out" tipping bags, racks or baskets of seed oysters; bi-weekly to monthly checks on equipment condition and shellfish growth and health; and harvest. To maintain optimal stocking densities, bags, baskets or racks would be periodically collected, returned to HIOC's existing onshore hatchery facility, graded, and redistributed to additional grow-out containers. Harvest would involve a final collecting of cultivation containers, which would then be processed, graded, and prepared for distribution at HIOC's onshore facility. Depending on the species, harvest may occur anywhere from one year (*C. gigas*) to two or three years (*C. sikimea* and *O. lurida*) after planting.

HIOC intends to provide young seed oysters for its proposed cultivation area from its existing Samoa hatchery facility, which is certified by CDFW and approved by the Commission through CDP No. 9-13-0500. To prevent the introduction of shellfish diseases to Humboldt Bay, HIOC has stated that it would maintain its operations independent from activities in other estuaries, that it would not move equipment between sites and that any equipment that is put into use in Humboldt Bay would be thoroughly decontaminated and cleaned prior to use.

Planting, Harvest and Maintenance Activities

After stocking cultivation containers (bags or baskets) with oysters, they would be transported to the proposed growing area via work vessel. The vessel would run alongside the longlines and bags/baskets would be clipped directly onto the line. Once gear is installed, bags or baskets would be maintained during a combination of high and low tide periods. Approximately half of the site visits are expected to occur during tides

exceeding +4 feet MLLW. During these tidal conditions, HIOC employees would be able to traverse from the channel edges across areas of eelgrass habitat without engine operations to avoid loss or damage to eelgrass vegetation due to propeller contact. Once within the boat lanes, HIOC staff would either anchor vessels outside of eelgrass areas and maintain lines on foot or use the boat to move between lines.

Vessel Use and Transit Route
HIOC would make use of several vessels, including low draft, 20-foot and 24-foot skiffs and possibly a custom 40-foot vessel equipped with a hydraulic crane for assisting in planting and harvest operations during higher tides. All vessels would be low draft, shallow-bottom skiffs able to access intertidal areas without grounding at low tides. HIOC estimates that these vessels would make two to four round trips weekly between HIOC's existing onshore hatchery facility and the project site (**Exhibit 3**). Not all of these trips would occur during a low tide because some maintenance or harvest trips would be done during a higher tide when the vessel does not need to anchor or ground for access. Vessel transit would begin at the hatchery facility where the vessels would be kept and use the main channel to transit north to the aquaculture site.

HIOC Permitting Background
HIOC operates one of the largest shellfish aquaculture business in the state of California, with cultivation and production operations in Tomales Bay and Humboldt Bay and several restaurant and retail sites in the San Francisco Bay Area. In Tomales Bay, HIOC holds roughly 168-acres across four state aquaculture leases and four CDPs for approximately 54-acres of shellfish cultivation within those leases. All four permits were amended in 2019 (CDP Amendment Nos. 2-81-40-A1; 2-84-2-A1; 2-84-10-A1; 1-94-55-A1) to authorize expanded operations and to address alleged Coastal Act violations as well as long-standing permit compliance issues. These issues included installation and use of shellfish cultivation structures and equipment for many years without CDP authorization; use of species and cultivation methods not authorized in its state aquaculture leases; installation and use of cultivation equipment outside of lease areas; operation of all-terrain vehicles (ATVs) within intertidal mudflats; installation of cultivation equipment within sensitive eelgrass habitat; direct planting of non-native clams into mudflat areas and operation of mechanical shellfish harvesting equipment to excavate mudflats.

As noted above, HIOC also operates a hatchery facility in Humboldt on the Samoa Peninsula. This facility was approved by the Commission in 2014 through CDP No. 9-13-0500 and later amended in 2019 through CDP Amendment No. 9-13-0500-A2 to address after-the-fact, unpermitted development involving the installation and use of a 3,000 gallon underground sewage holding system in close proximity to bay waters instead of the onsite treatment system approved by the Commission as part of the facility's initial CDP.

Despite these compliance issues, HIOC has consistently worked cooperatively with Commission staff to address them. However, additional permit and permit condition compliance matters have arisen over the past three years, requiring additional oversight by Commission staff and coordination with HIOC to establish pathways to resolution

after the fact. For example, Commission staff recently notified HIOC that it was approximately six months past the allotted two year timeframe provided in Special Condition 5 of CDP No. 1-94-55-A1 and had yet to complete the required mitigation for past unpermitted activities by carrying out the removal of abandoned cultivation structures from Tomales Bay. Upon notification by Commission staff, HIOC acted quickly to resolve the situation by carrying out the required removal work. In response to these ongoing compliance challenges, **Special Condition 3(C)** would require HIOC to carry out an annual staff training focused on all conditions of this permit and the environmental impact avoidance and minimization measures they require HIOC to implement and adhere to. In addition, **Special Condition 12** would require HIOC to establish a surety bond or other financial security device (such as those required by the Commission for offshore aquaculture projects) to help ensure that compliance with permit conditions occurs in a timely and thorough manner and to establish a method for the Commission to obtain funds to undertake work needed to maintain the site or otherwise rectify environmental damage caused by a failure to comply with all permit conditions. For example, if HIOC's leases and permit expire without HIOC's adherence to **Special Condition 1**, which requires the development and implementation of a removal plan for the cultivation area that includes clean-up of all cultivation structures, containers, posts, ropes, cables and associated equipment, the funds provided through **Special Condition 12** would be used to hire a third party to clean up and remove abandoned equipment and debris from the site. This would prevent this abandoned material from spreading throughout the bay and into the ocean as marine debris and facilitate the site's timely recovery to a natural condition.

B. Other Agency Approvals

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Corps) has permitting authority under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The Corps anticipates issuance of an individual permit in February 2022, pending the Commission's approval of a CDP. Commission and Corps staff have coordinated closely during each of their review processes to help ensure they have the same project information and to prevent potential conflicts in how individual issues are addressed.

Pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act ("CZMA") the Corps cannot issue an individual permit until the Commission either concurs or is conclusively presumed to concur in a federal consistency certification. Commission approval of this CDP application constitutes concurrence under the CZMA.

National Marine Fisheries Service

The National Marine Fisheries Service (NMFS) was consulted by the ACOE under requirements of the Endangered Species Act, Section (7)(a)(2). The service received a written request for concurrence that the proposed permitting of the project would not likely adversely affect listed species. Additionally, this request also provided consultation for essential fish habitat (EFH) provisions in Section 305(b) of the

Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)). Concurrence and EFH conservation recommendations were received by the Corps from NMFS staff on December 7, 2021. Commission staff also reached out to NMFS during the review of this application, specifically, regarding the project's potential to adversely affect eelgrass habitat and green sturgeon and the application of appropriate protection measures for these sensitive species.

Humboldt Bay Harbor, Recreation & Conservation District
The Humboldt Bay Harbor, Recreation & Conservation District (Harbor District) was the lead agency for HIOC's initially proposed project under CEQA. At a hearing on July 8, 2021, the Harbor District certified a Final Initial Study and Mitigated Negative Declaration for the project and issued a permit for HIOC's cultivation operations in Arcata Bay.

North Coast Regional Water Quality Control Board
Projects involving discharges of dredged or fill material to waters of the United States that require permits from the U.S. Army Corps of Engineers under Clean Water Act Section 404 may also be required to obtain authorization from the Regional Water Quality Control Board (RWQCB) under Clean Water Act Section 401.

California Department of Fish and Wildlife
The California Department of Fish and Wildlife (CDFW) is a resource agency with trustee responsibility over many of the biological resources of Humboldt Bay, including eelgrass, fisheries, and waterfowl. As such, CDFW staff were deeply engaged throughout the project's CEQA review in evaluating the project's potential to adversely affect these resources and they provided the lead agency (the Harbor District) with extensive technical comments, input, and suggestions regarding the project design and evaluation. Commission staff drew on this technical input and have coordinated closely with CDFW staff during the review of HIOC's permit application. The staff recommendation reflects and incorporates a range of technical feedback received from CDFW staff, in particular regarding impacts to sensitive avian and fish species and habitat.

Tribal Outreach and Consultations
During the CEQA process, the following tribes were contacted by the Harbor District: Wiyot Tribe, Bear River Band of Rohnerville Rancheria, and Blue Lake Rancheria. No formal consultation was undertaken; however, HIOC has committed to comply with the protocol agreed upon by the Harbor District and the aforementioned Tribes regarding the inadvertent discovery of archaeological resources, cultural resources, human remains or grave goods.

Commission staff conducted outreach via both mail and email to the Tribes noted above as well as the Cher-Ae Heights Indian Community of the Trinidad Rancheria, Big Lagoon Rancheria, Hoopa Valley Tribe, Karuk Tribe, Round Valley Reservation/Covelo Indian Community, Shasta Indian Nation, Tsnungwe Council and Yurok Tribe. Contact information for these tribes was provided by the Native American Heritage Commission,

and a negative sacred lands file search was also returned. No response from this outreach was received by Commission staff at the time of this report.

Any concerns raised subsequent to the publication of this report will be brought to the attention of the Commission through the development of an addendum to this staff report and recommendation.

C. Fill of Open Coastal Waters

Section 30233(a) of the Coastal Act states, in part:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
>
> *(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
>
> *(6) Restoration purposes.*
>
> *(7) Nature study, aquaculture, or similar resource dependent activities.*

HIOC proposes to develop its proposed cultivation site with a combination of approximately 24-acres of longline equipment and 3-acres of rack and bag structures. Images of this type of gear can be seen above in **Figures 2 through 4**. According to HIOC, the proposed development of this type to cultivation would be accomplished through the placement of several thousand 2-inch diameter PVC pipes that would total approximately 15-cubic yards of fill. Section 30108.2 of the Coastal Act states:

> *"Fill" means earth or any other substance or material, including pilings placed for the purpose of erecting structures thereon, placed in a submerged area.*

Coastal Act Section 30233(a) permits fill in coastal waters if three tests are met: (1) the fill constitutes an allowable use under 30233(a); (2) there is no feasible less environmentally damaging alternative; and (3) feasible mitigation measures have been provided to minimize any adverse effects.

Allowable use
Hog Island Oyster Company (HIOC) proposes to place fill material in coastal waters for the purpose of cultivating oysters. As discussed above, HIOC's proposed project is an aquaculture project, and as such qualifies as an "allowable use" under 30233(a)(7). The project is therefore consistent with the first test of Section 30233(a).

Alternatives
The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed placement of fill in estuarine waters. Coastal Act Section 30108 defines "feasible" as "…capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors."

HIOC's proposed project minimizes the fill of estuarine waters at the project site through the use of floating and elevated intertidal shellfish cultivation equipment that would be maintained above the mudflats. The Commission has previously agreed that alternative designs, such as piles or larger mooring posts are generally more environmentally damaging, as the installation of such facilities would create adverse impacts to marine life (for example, through elevated levels of underwater noise or increased sedimentation).

Commission staff has also considered other shellfish cultivation methods and project configurations to determine if any of them would require less fill or be less environmentally damaging than the proposed project. Other techniques considered include placement of loose shell on tidal flats (bottom culture), placement of mesh cultivation bags filled with oysters on the tidal flats and use of floating cultivation rafts or barges in subtidal areas. However, most of these methods would involve more fill in coastal waters when compared to the proposed project or would result in the conversion or loss of additional natural habitat. In addition, these methods can necessitate the use of mechanical or hydraulic dredging equipment during harvest, occupation and use of subtidal habitat areas that support sensitive wildlife species such as green sturgeon, and displacement of shorebird foraging from mudflat areas due to the presence of aquaculture gear.

There are also some potential benefits associated with other culture types. For example, on-bottom cultivation with mesh bags can reduce the visual profile of a cultivation area, potentially resulting in less displacement of shorebirds and waterfowl, and allow the placement and use of stakes and posts to be avoided.

Overall, however, it appears that the use of bottom bags versus elevated gear at similar densities simply results in trading some effects for others with no clear overall advantages in impact potential or magnitude. The critical considerations appear to be with the density of cultivated oysters and installed equipment (lower densities have lower potential for adverse effects), as well as maintenance and operational practices. Assuming similar densities and practices, it does not appear to be less environmentally damaging to replace bottom culture gear with elevated culture gear or vice versa.

Therefore, these alternatives were rejected as not being less environmentally damaging than the proposed project.

For the reasons described above, the Commission therefore finds that the proposed project is the least environmentally damaging feasible alternative and therefore the second test of Coastal Act Section 30233(a) is satisfied.

Mitigation Measures

The final test of Coastal Act Section 30233(a) requires that feasible mitigation measures have been provided to minimize any adverse effects of the proposed fill. Mitigation measures established through the Harbor District's Mitigated Negative Declaration (MND) are included as **Exhibit 2** and will be discussed in greater detail in the marine resources section of this report along with additional measures specifically focused on coastal resources. In general, these measures consist of: marine wildlife protection measures, marine debris management, location specific vessel anchoring guidance (i.e.; only anchoring adjacent to the site in Mad River Slough Channel and never within areas containing eelgrass), cultivation bed access and vessel transit routes, and a 200 to 400 foot wetland buffer (**Figure 6**) where vessel and cultivation activities would be prohibited.

The Commission finds that with the BMPs proposed by HIOC, the mitigation measures established by the MND (such as the buffer to protect wetlands and roosting birds, avoidance of herring spawn, guidance to avoid anchorage on the intertidal project area), and the addition of **Special Conditions 1-10** (which address the flushing and disturbance of birds, provide for protective measure for black brant at grit sites, requires comprehensive marine debris management, seasonal herring survey and reporting to CDFW, and a requirement to float gear to ensure free passage of green sturgeon), feasible mitigation has been provided to minimize any adverse effects of fill. Therefore, the third and final test of Coastal Act Section 30233(a) has been met.

Conclusion

Because the three tests have been met, the Commission finds the proposed project, as conditioned, is consistent with Section 30233(a) of the Coastal Act.

D. Marine Resources

Section 30230 of the Coastal Act states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 of the Coastal Act states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

The proposed project site is located in northwestern Humboldt Bay (also referred to as Arcata Bay or North Bay) in an intertidal area that is defined predominantly by open mudflats. As shown in **Exhibit 1**, limited areas of eelgrass habitat is also present, primarily in channels and lower elevation ponded areas. These habitats support a variety of fishes and birds, including several special status species. Notably, Humboldt Bay is one of the most important places for birds along the Pacific Flyway, which is the route up the Pacific coast that migratory birds fly from spring breeding grounds in the north to wintering grounds in the south.[3] The wetlands adjacent to the project site and the eelgrass beds and mudflats on the project site support a high diversity and abundance of shorebirds, including migrating waterfowl, sea and shorebirds, and sea ducks. Humboldt Bay also provides important habitat for fish species such as salmon, sturgeon, and Pacific herring.

The project, which is proposed to be carried out on approximately 27-acres of a 110-acre site, has the potential to negatively impact water quality, as well as sensitive and biologically important eelgrass habitat through disturbance and displacement. It may also negatively impact specific species such as green sturgeon (through displacement from foraging grounds), Pacific Herring (through impacts to spawning habitat), and avian species such as black brant (disturbance at grit sites due to vessel transit) as well as migratory shorebirds, which rely heavily on Humboldt Bay's wetlands for roosting.

[3] At present, WHSRN recognizes over 100 sites within 16 countries, of which 22 sites are of highest importance (i.e. Hemispheric; https://www.whsrn.org/). Humboldt Bay, on the Pacific coast of northern California, was recognized as a Western Hemisphere Shorebird Reserve Network site of International Importance in 1998.

Furthermore, the proposed project may also impact eelgrass and mudflat habitats, as well as provide an influx of marine debris into the environment.

Water quality
Direct impacts to water quality from the proposed project could occur due to the generation of suspended sediment by project personnel walking throughout the proposed culture bed areas during installation of cultivation equipment, oyster harvesting, eelgrass monitoring, maintenance activities, and vessels anchoring. The project also contains some elements with the potential to result in positive effects on water quality. For example, filter feeding shellfish such as oysters can remove nutrients and other matter from the water column, increasing its clarity and removing contaminants. However, Arcata Bay in general - and the proposed site specifically – are not known to have issues of poor water quality, excess nutrient pollution or other similar issues that would need to be addressed through the use of filter-feeding shellfish as a remediation technique. In fact, the site has been selected due to its current high water quality and potential to support shellfish cultivated for human consumption. Therefore, some of the potential benefits of shellfish cultivation on water quality are not relevant to the proposed project.

The short-term concentration of suspended sediments produced as a result of the proposed project is not expected to reach levels significantly above normal or baseline conditions. In addition, the duration of exposure would be temporary, which would reduce the duration of any negative impacts to water quality. Elevated suspended sediment concentrations (SSC) in Humboldt Bay are a relatively frequent occurrence. SSC levels can naturally increase due to wave action on shallow mudflats, from storm runoff delivered from local tributaries, and from turbid water from the Eel River entering Humboldt Bay on incoming tides (the Eel River is located adjacent to Humboldt Bay, immediately to the south). It is common for SSCs in Humboldt Bay to range from 40 to 100 milligrams per liter or more during the year. Significant increases in turbidity usually begin to occur in September or October with the onset of the wet season, and SCC often peaks between December and February (Swanson et al. 2012).

Other potential project impacts to water quality include those associated with the regular operation of vessels in and around the proposed project area. Vessels contain numerous types of fuels and oils that could contaminate the marine environment. As such, HIOC has incorporated into its proposed project several best management practices such as the regular maintenance of vessels, personnel training, and refill of fuel containers on land. In addition, HIOC has also developed and included in its CDP application a spill prevention and response plan. **Special Condition 10** would require HIOC to implement this plan, which includes staff training on spill prevention, the addition of response materials on project vessels and emergency notification protocols.

Benthic Habitat
The installation of aquaculture gear (stakes and posts for elevated longlines and rack legs for the raised rack and bag structures) would reduce the amount of infaunal benthic habitat available in the bay by filling a small area with stakes or posts (i.e.; 2-inch diameter support pipes). However, the infrastructure installed into the benthic

environment is a relatively narrow diameter and represents a very small overall area of approximately 15 cubic yards spread across roughly 27-acres. In addition to this limited loss of benthic habitat, the proposed cultivation structures that would be installed as part of the project would also add structure to water column habitat at higher tides and convert areas of existing natural habitat to include artificial vertical structures. This new vertical structure would affect fish and wildlife species in different ways, depending on their foraging and movement patterns, body sizes and habitat preferences. As discussed in the Letter of Concurrence prepared for the U.S. Army Corps of Engineers by NMFS:

> *The aquaculture gear, including the longlines and living oysters themselves, add structured habitat into the water column and represents change or conversion of how the water column would function as habitat for various species. The conversion to structured habitat represent variable changes to habitat function for different species. Effects to pelagic species, such as northern anchovy, which are managed under the Coastal Pelagic Species FMP will be different than those species more oriented to the bottom (such as species managed under the Pacific Coast Groundfish FMP). NMFS expects these changes to be generally favorable for EFH of Pacific Coast Groundfish, with the exceptions potentially being for the larger species managed under the Pacific Coast Groundfish FMP, such as leopard sharks and bat rays, who may experience impediments to navigation if the flip bags are installed without floats and hang along the bottom rather than float.*
>
> *One of the most common species in Humboldt Bay is the northern anchovy. During repeated benthic trawl surveys conducted by D.R. Reed and Associates in 2019 (DR Reed and Associates 2020), northern anchovy were the most abundant of the 42 species captured and comprised over 65% of the total catch. Despite how the addition of structured habitat changes the habitat functions of the water column, there is evidence that shellfish aquaculture gear and oyster habitats can result in an increase in invertebrates (prey for species managed by both Coastal Pelagic Species and Pacific Coast Groundfish FMP's).*

In summary, the structures associated with the proposed aquaculture cultivation site represent some changes to the way that species may behave within the water column and are expected to provide potential positive effects to some species and potential negative effects to others. As such, the proposed conversion of some areas of benthic habitat within the project site would not result in cumulatively significant adverse impacts.

Eelgrass

The greater project area, Humboldt Bay, is one of the most biologically rich and significant marine ecosystems in California. Humboldt Bay alone supports the majority of the state's total amount of eelgrass habitat, including some of its largest and most dense continuous beds. Eelgrass beds are globally recognized as rare and critically important marine habitats and are designated for protection by the National Marine

Fisheries Service and Pacific Fisheries Management Council as Essential Fish Habitat and Habitat Areas of Particular Concern. The eelgrass beds of Arcata Bay support populations of a wide variety of sensitive and protected marine species including special status species of fish (such as those listed as threatened under the federal Endangered Species Act - green sturgeon, steelhead, and coho and chinook salmon), Pacific herring, and migratory shorebirds and waterfowl such as the black brant (a state species of special concern). The dominant habitat of Arcata Bay is native eelgrass (*Zostera marina*), closely followed by open, unvegetated mudflats. Eelgrass in Arcata Bay appears to be primarily limited by substrate elevation – intertidal areas that are too high cannot support eelgrass due to desiccation stress and subtidal areas that are too low do not receive sufficient sunlight to support photosynthesis. Surveys conducted at the project site in 2009 (NOAA, 2009) and 2020 (Lummis, 2020) did not document significant areas of eelgrass growing at higher elevations where the majority of HIOC's cultivation beds are proposed, however, there were small patches located in low elevation ponded areas and nearby deeper channels, as shown in **Figure 5** below. While the dense contiguous eelgrass beds found in channels are widely known to be important to numerous species for forage, spawning and nursery habitat, the small patches of eelgrass habitat found on the intertidal areas also provide some of these same ecosystem services, and are therefore important to recognize at the proposed cultivation site.

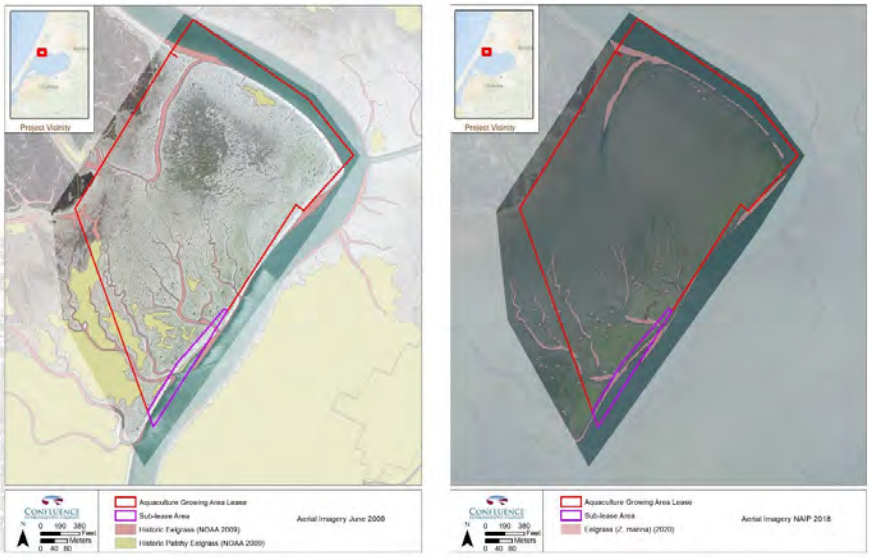

Figure 5: 2009 and 2020 eelgrass survey. Photo: IS/MND.

HIOC has proposed to place equipment between +1.6 feet and +4.6 feet Mean Lower Low Water (MLLW). This is higher than the typical upper limit of continuous eelgrass beds in Arcata Bay (+1.0 feet to +1.3 feet MLLW). Placement of equipment is an important consideration when developing aquaculture cultivation sites. Improper placement around eelgrass, both dense and patchy habitat, can result is deleterious effects such as shading, in which eelgrass receives insufficient light to thrive, trampling from human access (due to placement too close to eelgrass beds), and physical

smothering from cultivation gear and equipment, which would damage eelgrass and hamper growth.

As part of the project, HIOC proposes to conduct annual eelgrass surveys prior to gear placement and to avoid placing cultivation gear within all areas of eelgrass habitat. In the National Marine Fisheries Service's California Eelgrass Management Policy (CEMP) eelgrass habitat includes all areas that support eelgrass vegetation as well as a five-meter wide surrounding perimeter without above-ground vegetation. Although HIOC has frequently referred to this unvegetated area as a "buffer," it instead is defined as eelgrass habitat in the CEMP and represents the area of belowground eelgrass biomass and area in which eelgrass beds can expand into as part of seasonal fluctuations. **Special Condition 7** would memorialize HIOC's commitment to avoid placing new cultivation gear in eelgrass habitat and build on it by specifying that eelgrass survey results would be provided to the Commission's Executive Director for review and approval prior to the initiation of gear installation activities. If those initial results from HIOC are unclear, **Special Condition 7** would also allow the Executive Director to require a more comprehensive survey be carried out by an independent third party and provided for review and approval. These survey results would then be used to determine the areas of eelgrass habitat that HIOC would avoid during placement of cultivation structures.

Wildlife

Marine Mammals

The following marine mammals have the potential to occur within or near the proposed project area:

- Harbor porpoise (*Phocaena phocaena):* Federally protected under the Marine Mammal Protection Act (MMPA).
- California sea lion (*Zalophus californiaus):* Federally protected under MMPA.
- Harbor seal (*Phoca vitulina):* Federally protected under MMPA.

Harbor seals occur in Humboldt Bay and are known to haul out on mudflats in Arcata Bay. Primary haul-out locations are located in south Humboldt Bay and are associated with pupping locations. According to the IS/MND document, 88% of seals foraged within eight miles of their primary haul-out sites. The closest primary haul-out location to the HIOC project is approximately one mile away near Tuluwat Island, which indicates that while the HIOC project area does not include a primary haul-out location, it could be support foraging. California sea lions also occur in Humboldt Bay and occasionally are observed hauled out and resting on artificial structures.

These marine mammals are expected to primarily use channels for movement and foraging rather than the intertidal areas where shellfish aquaculture would be placed. Thus, the placement of aquaculture gear is not expected to occur in areas that would affect their movement. Additionally, these species are likely to be able to easily navigate amongst aquaculture gear during higher tides. To help ensure that disturbance of marine mammals is minimized during proposed project activities, **Special Condition 6**

would require HIOC to and avoid chasing, flushing or disturbing observed wildlife during vessel transit and cultivation operations.

Placement of lines, ropes, and cables in the marine environment, such as those associated with the proposed cultivation area, also has the potential to contribute to marine mammal entanglement. Existing information on gear entanglements with aquaculture structures demonstrates that some interaction between marine mammals and facilities can occur, however, these examples are associated with off-shore shellfish aquaculture operations in deep-water habitat. Gear for intertidal longline systems and rack and bag culture is not designed to capture organisms or provide for extensive gear movement. There are no reports of entanglement within Humboldt Bay from at least 25 years of using near-bottom culture methods.

However, loss or displacement of cultivation lines introduces another potential source of entanglement. Gear lost from the proposed cultivation area can subsequently end up in an area where there is a higher potential for interaction with marine mammals, birds, or other wildlife. To address this risk, **Special Condition 3** requires HIOC to follow a series of comprehensive marine debris reduction and management measures to minimize loss of marine debris into the environment and to maximize the recovery of debris that is unintentionally released.

Shorebirds, Seabirds and Waterfowl
Apart from eelgrass, Humboldt Bay also includes large areas of open intertidal mudflats that attract such significant proportions of overwintering and migratory shorebird populations that the bay is recognized as a Site of International Significance by the Western Hemisphere Shorebird Reserve Network and an Audubon Society Important Bird Area with global recognition. Although exact numbers vary by season, more than half a million birds can occupy the area during peak migration times.[4] More than two dozen species of shorebirds including American avocets, sandpipers, dowitchers, plovers, godwits and dunlin make use of Humboldt Bay's mudflat habitats for feeding, resting and/or roosting. Many of these species are listed under the Migratory Bird Protection Act and also through listing by the U.S. Fish and Wildlife Service as Birds of Conservation Concern.[5]

These seabirds, shorebirds, and waterfowl have the potential the be adversely impacted by the proposed project. According to the Western Hemisphere Shorebird Reserve Network, Humboldt Bay and adjacent habitats host more than 500,000 shorebirds of 26 species during spring migration alone, raising its importance to migratory shorebirds along the Pacific Flyway and warranting increased conservation efforts. This section will list the special status and other species that have the potential to be present in or near

[4] Year round, Humboldt Bay supports a population of approximately 850,000 birds (52 species).
[5] The US Fish and Wildlife Service's Birds of Conservation Concern list is made up of species, subspecies, and populations of migratory birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. These species make up the USFWS' highest conservation priorities and their inclusion on the list is intended to stimulate coordinated and proactive conservation actions among the USFWS' Federal, State, Tribal, and private partners.

the project area. In addition, it will specifically discuss the species with the potential to be negatively impacted by the proposed aquaculture gear installation and oyster cultivation activities. These species include:

- California brown pelican (*Pelecanus occidentalis californicus*): Federally protected.
- Western snowy plover (*Charadrius nivosus*): Federally threatened, state species of concern.
- Marbled murrelet (*Brachyramphus marmoratus*): Federally threatened, state endangered.
- Black brant (*Branta bernicla nigricans*): State species of concern.

The black brant, identified in 2008 by the California Department of Fish and Wildlife (CDFW) as a California bird species of special concern, is a migratory sea goose that relies on coastal habitats along the Pacific coast. Brant nest in the arctic, including areas in Alaska and western Canada during the summer nesting season. The majority of the brant population (over 75%) migrate directly to wintering areas in Baja California and mainland Mexico, but approximately 10% of the population use coastal bays from Alaska to California for wintering (i.e., the Pacific Flyway). Black brant are a part of the Pacific Flyway and are managed as a hunted species with a population objective of 162,000 birds (Pacific Flyway Council, 2018). The Pacific Flyway Management Plan, a joint management plan prepared for the Pacific Flyway Council, the Commonwealth of Russian States, the Dirección General de Conservación Ecológica de Recursos Naturales, the U.S. Fish and Wildlife Service, and the Canadian Wildlife Service, for the Pacific population of brant, recommends protecting critical brant habitat in the species' range, including pursuing mitigation (i.e., avoidance, minimization, and/or compensatory mitigation) for loss or degradation of eelgrass beds, grit sites, and loafing sites.

Humboldt Bay is an important wintering area and spring staging site for brant in the Pacific Flyway. Stillman et al. (2015) report that nearly 60% of the brant wintering in Mexico rely on Humboldt Bay as a spring staging site for northward migration. In the bay, black brant feed most commonly on native eelgrass. Eelgrass varies in quantity and quality throughout the bay and is unavailable to brant during two high tides per day, making the achievement of energy demands challenging (Clausen, 2000; Moore and Black, 2006). Brant have been documented repeatedly returning to eelgrass beds that are relatively high in quality (high density, biomass, and nutrient content), and have been seen waiting over eelgrass beds until tides recede (Moore and Black, 2006), suggesting that brant are making foraging decisions based on prior experience and performance. This observation also suggests that eelgrass quality is important to the ability of brant to meet energetic demands for migration. According to the management plan for black brant, aquaculture gear presents an impediment to brant feeding: birds were observed to not feed in areas where gear posed an obstacle to accessing eelgrass.

Thus, potential impacts to black brant from HIOC's proposed operations primarily take three forms: loss of foraging opportunity due to potential reductions in the amount of

eelgrass (the principal food for black brant) within cultivation beds; potential exclusion of brant from eelgrass beds where cultivation beds are installed due to brant's potential avoidance of structure; and disturbance from vessel and pedestrian activity associated with HIOC's proposed planting, harvesting, and maintenance operations. Another key issue to brant is its use of specialized sites within the bay for the ingestion of sandy grit (i.e.; grit sites), a substance necessary to its diet. The nearest grit site to the HIOC project is at Tuluwat Island in Arcata Bay, which is east of the proposed vessel transit route.

To address potential adverse impacts to black brant, HIOC has proposed to avoid placing cultivation gear within eelgrass habitat by carrying out a survey prior to each proposed construction phase and avoiding all areas observed to support eelgrass. **Special Condition 7** would ensure that these surveys take place within the growing season for eelgrass and are conducted in accordance with CEMP recommended survey procedures. In addition, the survey results would be required to be submitted to the Executive Director for review prior to gear placement. This would help ensure cultivation gear and structures would not be placed within eelgrass habitat. In addition, HIOC proposed in the IS/MND to avoid grit sites from December 15- April 30 by implementing a no wake zone along its vessel transit route approximately 1,000 feet from Tuluwat island **(Exhibit 3)**. **Special Condition 5** expands this requirement from November to June when black brant are most likely to be in Arcata Bay (Moore et. al, 2004). Additionally, **Special Condition 6** would require HIOC to avoid approaching, chasing, flushing or directly disturbing birds and mammals in the course of its operations and require HIOC's vessels to minimize their speed in Arcata Bay during the typical season of peak migratory bird abundance (April 1-April 30). Furthermore, HIOC has proposed to implement a 200- to 400-foot buffer between its proposed cultivation beds and the Mad River Slough wildlife area. Within this buffer area, HIOC would not install cultivation structures and it would avoid transit of personnel and vessels within it.

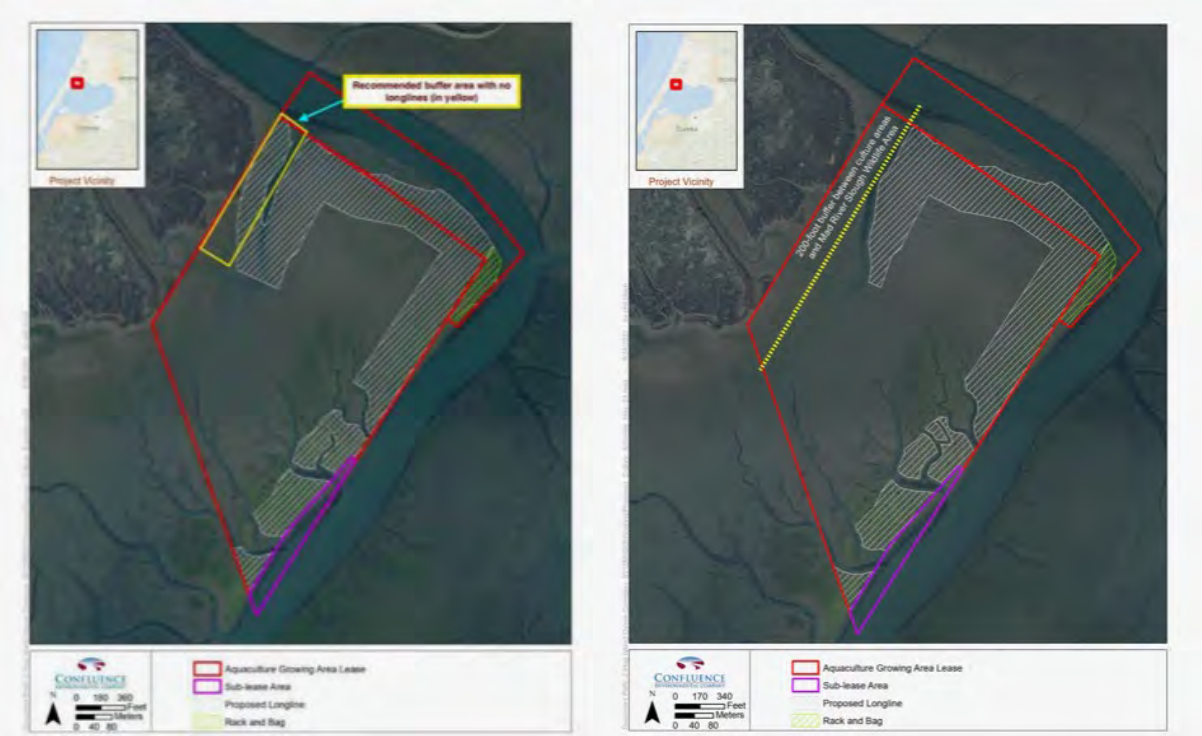

Figure 6: Audubon recommended wetland buffer (L) and HIOC proposed buffer (R). Photos: IS/MND.

- Dunlin (*Calidirs alpine pacifica*): protected under MBTA.

Dunlin are amongst the most populous migrating birds that transits from the arctic through Humboldt Bay. According to a population survey from Colwell (2018), western sandpipers and dunlins were the numerically dominant species observed in the bay, with estimates from individual surveys representing 14–86% and 5–22%, respectively, of total shorebirds (during the spring surveys/peak migration). Although the total size of the local wintering population is not known (estimates range from 5,000–10,000; Colwell 1994), researchers assume that Humboldt Bay and San Francisco Bay collectively host the majority of the Alaskan subspecies of dunlin.

A recent study from Colwell (2018) describes that in general, migratory birds reach an annual maximum in Humboldt Bay during the month of April. Cowell additionally describes how threats to shorebird populations at Humboldt Bay have increased, principally owing to loss and degradation of intertidal habitats. Spilled oil from two shipping accidents (1997 and 1999) damaged habitats, sea level rise is forecast to reduce the temporal and spatial extent of intertidal foraging habitats, and several proposals have been made to expand oyster cultivation areas. Each of these activities may compromise foraging habitats or directly cause mortality, which in turn can affect populations.

One specific protective measure that was is incorporated into the IS/MND as a response to comments raised by the public regarding potential risks to shorebirds and

the project's location adjacent to the Mad River Slough Wildlife Area (a CDFW managed area that is important as a recreational area and for bird habitat) is a variable 200-400 ft buffer along the northwest side of the proposed project site. Gail Kenny, president of the Redwood Region Audubon Society (RRAS) provided the following comment (excerpt from the IS/MND), which contributed to the establishment of this protective buffer area:

> *Disturbance of Roosting Shorebirds*
> *Shorebirds regularly roost at high tide in the vegetated wetlands adjacent to the northwest section the proposed shellfish longline culture area, as shown in Figure 4 of the Initial Study. This is based on observations by wildlife biologists, including from the 2018-2019 Humboldt Bay Shorebird Survey Project, led by shorebird expert Dr. Mark Colwell of Humboldt State University. In addition, a study of shorebird high tide roosts in the Humboldt Bay documented a number of roosts in the HIOC Project vicinity (Colwell and others, 2003). While the study found many such roosts around Humboldt Bay, we believe it appropriate to include measure to protect high-tide roosts to protect the bay's importance to migratory and wintering shorebirds (see: https://whsrn.org/whsrn_sites/humboldt-bay-complex/), and more so given the potential cumulative impacts of the many existing and proposed project in and around Humboldt Bay.*
>
> *While the HIOC Project includes a measure – BMP-3 – to reduce disturbance, we find that this measure, however well-intentioned, would likely not prevent disturbance to roosting shorebirds near the HIOC project. BMP-3 relies on HIOC personnel to spot and avoid disturbing birds. Shorebirds are often inconspicuous when roosting in wetland vegetation, making it easy for HIOC operators to miss.*
>
> *We recommend, as a more reliable way to avoid and minimize disturbance to roosting shorebirds, that the project provide a 300-foot buffer from the wetland vegetation, where no longlines or other activities occur. Based on Figure 4 of the initial study, this would affect a strip of proposed longline area located just west of a narrow tidal channel in the northwest corner of the proposed lease area, of about 3 to 4 acres. Perhaps an equivalent area of longlines could be added elsewhere within the lease area. The attached figure shows the suggested buffer area.*
>
> *We use 300 feet as a buffer size based on the relevant examples we could find. In Maine, 250 ft is the recommended buffer for shorebird roosts (Maine Department of Inland Fisheries and Wildlife, 2010: page 2). Also, a study of 11 shorebird species (Koch and Paton 2014), a 300-ft buffer would exceed the observed flushing distance for all species (for >95% of observations). The Koch and Paton study recommended buffers of up to 185 meters (about 600 ft) for most of the sensitive species in their study (Black-bellied Plover – which also winters on Humboldt Bay), but as noted 300 feet would exceed their observed flushing distances in nearly all cases.*

Both Koch and Patton (2014) and the justification provided for the buffer area implemented around shellfish cultivation areas in Maine for roosting birds demonstrate

that these species should be protected from disturbance due to human activities (including aquaculture operations). However, as both of these examples are from coastal New England, it is difficult to determine the exact buffer width or protective area that would be appropriate to implement in Humboldt Bay for the species known to be present there. No specific research is available for the habitats and species present in Humboldt and no assessment has been carried out of the efficacy of different buffer distances at minimizing disturbance from oyster cultivation activities. Until such information is available, the cited research from New England represents the best available science and provides a reasonable protective approach to this issue of disturbance to roosting shorebirds from aquaculture activities. Hog Island has proposed to implement the buffer requested by the RRAS (as shown in **Figure 6**) and would not install gear in or transit through that area. This commitment, memorialized through BMP-6 in the IS/MND, supports the intent of the buffer to minimize disturbances on sea and shorebirds, particularly during those times of high migration where hundreds of thousands of birds rely on the wildlife area to roost. Inclusion of this buffer into HIOC's initially proposed the site configuration adjusted the original project size from approximately 30-acres of cultivation equipment longline and rack and bag to approximately 27-acres.

Comments from the National Audubon Society also focused on minimizing potential project effects on shorebirds and recommended that the HIOC's proposed vessel transit route be adjusted from starting at HIOC's existing hatchery site on the Samoa Peninsula to starting at the nearby Mad River Slough informal public boat ramp, as it would result in a much shorter trip. However, adding this commercial use to the public recreational asset may cause additional impacts to recreational activities by increasing the demand on the small, informal public access point. In addition, it would frequently place HIOC's project vessel transit very close to the wildlife area which they are seeking to avoid with the previously described wetland buffer. Further, the bridge between the informal launch and project site has a vertical clearance of five feet, which would prohibit HIOC's larger work vessels from accessing the site at anything but low tidal hours. As such, the use of the boat ramp is not considered to be a fully feasible option given its practical limitations as well as potential negative impacts to recreation and proximity to sensitive wildlife areas. Additionally, **Special Conditions 4 through 7** would require HIOC to implement a variety of protective measures such as those to minimize the flushing and disturbance of wildlife, in particular by reducing vessel speed north of the Samoa Bridge during the peak migratory season, avoiding black brant grit sites, and to survey and place gear outside of eelgrass (an important forage area) in order minimize the potential adverse impacts to avian species.

Special Status Fish
Several special status fish species are known to be present at the project site. These include:

- Southern Oregon/Northern California coast coho salmon (*Oncorhyncus kisutch*) evolutionary significant unit (ESU): Federally threatened and Essential Fish Habitat (EFH) present.

- California coastal chinook salmon (*O. tshawytscha*) ESU: Federally threatened and EFH present.
- Northern California steelhead (*O. mykiss*) distinct population segment (DPS): Federally threatened and EFH present.
- Pacific lamprey (*Entosphenus tridentatus*): State species of concern.
- Coastal cutthroat trout (*O. clarki*): State species of concern.
- Longfin smelt (*Spirinchus thaleichthys*): State threatened.
- White sturgeon (*A. transmontanus*): State species of concern; not documented in the project area: the only known spawning population of white sturgeon in California is in the Sacramento River, although it is believed to also occur in other areas including the Eel River, which is south of the project area. They are similar in lifecycle as green sturgeon.
- North American green sturgeon (*Acipenser medirostris*) southern DPS: Federally threatened and EFH present.

According to the Letter of Concurrence submitted by the National Marine Fisheries Service (NMFS) to the U.S. Army Corps of Engineers as part of its formal consultation, the anadromous southern distinct population segment (SDPS) green sturgeon inhabit estuaries along the west coast during the summer and fall months and are known to heavily use northern Humboldt Bay. Juvenile SDPS green sturgeon rear in their natal streams in California's Central Valley, so only sub-adult and adult SDPS green sturgeon are present in Humboldt Bay and are the only life stages of SDPS green sturgeon that could be exposed to the effects of the proposed project. Sub-adults range from 25-59 inches total length from first ocean entry to size at sexual maturity. Sexually mature adults range from 59-98 inches total length. Maturity is typically achieved around 15 years old for males and 17 years old for females.

The project area is located in the northern portion of Humboldt Bay, where SDPS green sturgeon are known to occur more frequently. Most SDPS green sturgeon are expected to reside within a recognized high use area of northern Humboldt Bay and are expected to transit the project area routinely. Most SDPS green sturgeon enter and reside in Humboldt Bay from April through October and are absent during the fall and winter seasons. Documented observances of sturgeon in northern Humboldt Bay can be seen in **Figure 7** and **Exhibit 4**.

Figure 7: Sturgeon occurrences. Photo: IS/MND.

USFWS (unpublished) tagging data from 2007 and 2008 indicate that green sturgeon primarily use channels, as would be expected of larger fish. However, the large number of detections in channels also likely indicates that feeding is occurring on the mudflats in some capacity. As such, ensuring that this species continues to be able to move throughout both mudflat and channel areas during foraging is likely essential to its health and persistence.

To help ensure this type of free movement, NMFS has recommended that all proposed cultivation containers used on HIOC's elevated longlines (tipping bags and baskets) be raised or floating at high tides when the mudflats are flooded to ameliorate any potential negative bottom impacts to foraging species such as green sturgeon and their associated habitats. . To achieve this, NMFS developed the following recommendation and included it in its December 7, 2021, Letter of Concurrence to the U.S. Army Corps of Engineers:

> *1. The proposed action suggested that not all of the tipping bags installed would be equipped with floats. As previously described, if tipping bags are not equipped with floats they would hang along the bottom and likely create impediments for the larger species managed under the Pacific Coast Groundfish FMP. In order to avoid and minimize any adverse effects to Pacific Coast Groundfish EFH and HAPC, NMFS recommends that all tipping bags installed are equipped with floats as described in the proposed action.*

To help ensure the implementation of this important recommendation, it has been incorporated as **Special Condition 9**.

Other species that have the potential to be present in or near the proposed project area include:

- Pacific Herring (*Clupea pallasii*): No designation.

Pacific herring are small, pelagic fish (also considered forage fish, but not a special status species as defined above). However, these fish represent an important fishery in California. Herring use Humboldt Bay primarily for spawning and nursery habitat, in particular, this species relies on eelgrass beds within the bay for spawning. Herring are present along the coast and make some exploratory excursions into the entrance of the bay until they are ready to reproduce. Adults will stay in deep channels of estuaries to

ripen for up to two weeks and then move to shallow areas to spawn. Overall, there are not many deep areas in Humboldt Bay for adult herring to remain long-term, but the bay is used extensively for nursery habitat of larval and juvenile fish.

Pacific herring spawn in both the north and south bay, but most spawning occurs in the northern end of the bay. This is likely due to an interaction between herring and freshwater inflows where low-salinity conditions may stimulate herring spawning. A typical spawning event involves the deposition of herring eggs on approximately 300 acres of eelgrass in North Bay (Mello and Ramsay 2004). This represents approximately 10% of available bay eelgrass used in each spawning event. Because of the importance of eelgrass to spawning for this species, HIOC (through the IS/MND) has incorporated into its proposed BMPs (**Exhibit 2**) visual surveys for herring spawn during the spawning season (October through April) and suspension of activities in the area for two weeks if herring spawn is observed (until the spawn is no longer present). This BMP has been memorialized through **Special Condition 8**, which also requires that HIOC coordinate with CDFW on surveys and installation activities during the herring spawning season.

Marine Debris

HIOC's proposed shellfish aquaculture operation includes the placement and maintenance of numerous individual pieces of plastic and PVC in Arcata Bay. This gear would be associated with the up to 185,057 feet of plastic-coated line (calculated with 24-acres of proposed longline at 300-feet each with 8x300 foot longlines per acre block) HIOC is proposing to install for its elevated longlines. Specifically, HIOC would hang from these lines a total of approximately 69,833 mesh baskets or tipping bags, as described below. Below is a table provided by HIOC in its initial study that outlines quantities of gear for each acres of its 24-acres of proposed longline cultivation areas.

Longline Units	# of SEAPA Baskets	# of Tipping Bags	# of Vertical Support Pipes (2" diameter)
100-foot Longline	40	80	12
300-foot Longline	120	240	37
A block of 8x300-foot Longlines (~one acre)	960	1,920	296

For the proposed 3-acres of rack and bag cultivation areas (**Figure 4**), HIOC would not install elevated lines but would construct and install approximately 39,000-feet of 2x8.5-foot rebar frames to which 4 mesh bags measuring 2x3-foot would be attached and placed into the notch on their 4 PVC pipe legs. HIOC has proposed to use approximately 330 mesh bags in this area. A conceptual design can be seen in **Exhibit 1**.

This gear represents a significant quantity of plastic materials not currently present within Arcata Bay. As has been observed in all other existing shellfish cultivation areas in California (including HIOC's operations in Tomales Bay) and discussed in the initial

study excerpt below, some of this material is expected to break free and disperse into the environment as marine debris:

> *The HIOC Project may also result in accidental loss of shellfish aquaculture gear or other debris into Humboldt Bay. Because the equipment is placed in intertidal areas, it 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 shellfish aquaculture gear may pose a hazard to users of the bay, including boaters (kayakers, stand-up paddle boarders, canoers, wind surfers) and scuba divers. 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.*

At its operations in Tomales Bay, HIOC has carried out marine and shoreline debris collection and removal events aimed at addressing the marine debris impacts of its operation and other current and historic shellfish aquaculture practices. HIOC consistently performs or exceeds the required amount of shoreline cleanups (typically removing aquaculture materials and trash and debris from fishing activities and litter from the general public) and has made equipment changes that reduce the amount of plastic debris entering the ocean from its operations. However, due to the challenging nature of the marine environment and the gear intensive nature of modern cultivation practices, shellfish aquaculture operations continue to be a known and potential source of marine debris.

Plastic in the ocean is increasingly understood to pose a threat to a wide range of marine organisms as it slowly breaks into smaller and smaller pieces over time. At each step in this process, plastic debris can be ingested by, entrap, or entangle marine wildlife from whales, dolphins, and seals down to sea turtles, seabirds, and fish. Because it often relies on the placement of large quantities and numbers of plastic equipment pieces in the dynamic, challenging, and powerful marine environment, shellfish aquaculture operations are acknowledged in some locations as primary contributors to marine debris. While HIOC's proposed operation in Arcata Bay is currently limited in size and is not predicted to be such an operation, the fact remains that it can generate waste that may enter the marine environment.

To address the potential release and distribution of marine debris resulting from proposed aquaculture operations, the Commission has consistently adopted special conditions requiring the removal of unused or retired gear as well as requirements for proper marking, maintenance and more broadly, implementation of a marine debris management plan that address the prevention, response, and management of marine debris by requiring aquaculture operators to implement a variety of best practices, including those focused on inspections following storm events; debris reduction

trainings for field employees; quarterly bay-wide cleanup events; gear marking; and field storage of tools and construction materials. HIOC would be required to implement these marine debris best management practices through **Special Conditions 2 and 3.**

Conclusion
Although the Commission finds that the proposed project may negatively impact marine resources and the biological productivity of coastal waters, with implementation of **Special Conditions 2 through 10**, the project would be carried out in a manner in which marine resources would be maintained, species of special biological significance would be protected, and the biological productivity of coastal waters is sustained so that healthy populations of all species of marine organisms will be maintained. The Commission therefore finds that the proposed project, as conditioned, is consistent with the marine resource sections (Sections 30230 and 30231) of the Coastal Act.

E. Public Access and Recreation

Section 30210 of the Coastal Act states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30220 of the Coastal Act states:

> *Protection of certain water-oriented activities Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.*

Humboldt Bay is a complex ecosystem and valuable resource for the state and nation because of its natural resources, aesthetic appeal, ecological and economic benefits, vital transportation links, and recreational opportunities. The upland area adjacent to the proposed HIOC project is relatively undeveloped but contains several important recreational areas (**Figure 8**) such as the Ma-le'l Dunes Park (owned by the Bureau of Land Management), which is located to the west and south of the project area, and the Humboldt Bay National Wildlife Refuge, which is to the north of Ma-le'l Dunes park and owned by the USFWS. Northeast approximately 0.8 miles from the project area is the Mad River Slough Wildlife Area and McDaniel Slough Restoration project, which are owned by CDFW. This area connects to the Arcata Marsh and Wildlife Sanctuary. The proposed project provides no new recreational facilities and would not likely increase the burden on existing recreational facilities.

Figure 8: Recreational Areas. Photo: IS/MND.

However, there are certain recreational activities that may be adversely impacted by the project. Water-oriented activities in and around Arcata Bay include recreational boating (e.g., canoes, kayaking, and stand-up paddleboards), bird watching, and recreational fishing (including for shellfish). Additionally, recreational hunting for waterfowl and wintering black brant also occurs throughout Arcata Bay during the permitted season.

Hunting on Humboldt Bay is generally conducted using boats, sculling in a low-profile skiff, walking along levees, and using temporary or permanent blinds along the shoreline. Hunting is allowed during the State of California waterfowl hunting season, which currently runs from October 23 – January 31 for ducks and is variable between October and February for geese depending on the species. Hunting for black brant varies based on population levels but currently begins on November 9 and extends 37 days in the project area.[6] Commonly used public access boating points are limited to three locations in the southeast area of the bay near Eureka and in the northwest near Mad River slough, one in particular is an informal public boat launch approximately 1,500 feet from the northern corner of the proposed HIOC aquaculture site.

Of the water-oriented activities just described that take place in Arcata Bay, the most susceptible to negative impacts from HIOC proposed aquaculture site are boating and navigation, waterfowl hunting, and black brant scull hunting.

Figure 9: Scull hunting. Photo: Denson, 1964.

As has been previously described in the Commission's findings associated with the Coast Seafood Expansion project (CDP No. 9-17-0646), scull boats were developed on Humboldt Bay and have been a popular sport for more than 100 years. The boats themselves incorporate specific design features to approach birds for hunting: they are not motorized and are designed to allow a person to row lying down. The profile of the boat is made to be as low to the water as possible to minimize the potential for disturbing or flushing birds prematurely. Often, in order to achieve a successful hunt, persons row long distances in low-light conditions. Given the timing of the hunting season, weather is often marginal and can

[6] Approved 2021-22 Waterfowl Hunting Regulatory Language - Effective June 29,2021 (ca.gov)

change quickly. As the Commission previously found, aquaculture equipment can pose a safety threat to scull hunters in the area. However, Commission also found (based on analysis and public input on this type of hunting) that not all areas of the bay are of equal value and importance to recreational users. For example, subtidal channels, deeper intertidal areas, and productive hunting areas are not equally and abundantly spread throughout the bay.

The measures that were incorporated into the Coast Seafoods permit to minimize adverse impacts to recreation appear to have been successful (although concerns have recently been raised - and are being investigated - about adherence to these conditions during the most recent hunting season). As such **Special Conditions 4 and 6** would address potential adverse impacts to hunters from HIOC's operation. Specifically, to ensure that recreational opportunities are protected with respect to the proposed aquaculture site, **Special Condition 4** requires that HIOC avoid an important recreational boating access channel during morning hours on CDFW approved brant hunting days for Arcata Bay (see **Exhibit 6**), and **Special Condition 6** would minimize overall waterfowl disturbance during peak migration season (April) through reductions in vessel speed on HIOC's vessel transit route north of the Samoa Bridge. In addition, to help address concerns raised by members of the public regarding safe navigation and hunting activities in or near the proposed cultivation area, HIOC, through its BMPs and the mitigation measures included in the IS/MND, would provide updated maps of locations of gear associated with its farm to help educate boaters through the Humboldt Bay Harbor District's website about areas where gear may be present. It would also properly mark the locations of cultivation beds. Furthermore, **Special Condition 3** requires that the gear be marked in an easily identifiable manner including with HIOC's name and they will be securely attached and robust enough to remain attached and legible after an extended period in the marine environment should they become lost outside of the site. Next, HIOC would incorporate vessel navigational channels into the design of its cultivation area and avoid main and subsidiary channels by a buffer of 10 or 15-feet (5-meters). HIOC would also not use the existing boat launch at Mad River slough in order to reduce any conflict between its commercial operation and recreational boating activities. Additionally, HIOC has incorporated boat lanes into the proposed layout of its cultivation beds to help ensure access through the area remains available to recreational users at appropriate tidal elevations (**Exhibit 1**).

Therefore, with implementation of HIOC's commitments, the relevant mitigation measures included in the IS/MND and **Special Conditions 3, 4, and 6,** the Commission finds the proposed project consistent with Sections 30210 and 30220 of the Coastal Act.

F. Oil Spills

Section 30232 of the Coastal Act states:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or*

> *transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The proposed project includes the operation of 2-4 vessel trips/week that could potentially increase the chance of a vessel collision, equipment failure, breach or leak leading to a release of fuel oil into marine waters during project construction/installation and operational activities.

The first test of Coastal Act Section 30232 requires an applicant to "protect against the spillage of crude oil, gas, petroleum products, or hazardous substances..." In this case, HIOC has incorporated vessel fueling and maintenance procedures (**Exhibit 2**) into its list of management practices in order to minimize the likelihood of spills, thereby meeting the first test of 30232.

Notwithstanding implementation of the above-described prevention measures, accidental spills may still occur. The second test of Section 30232 requires that effective containment and cleanup facilities and procedures be provided for accidental spills that do occur. To meet this test the Commission typically requires an applicant to submit an oil spill contingency plan (**Exhibit 4**) that demonstrates that the applicant has sufficient oil spill response equipment and trained personnel to contain and recover a reasonable worst case oil spill, and to restore the coastal and marine resources at risk from a potential oil spill. To meet this requirement HIOC has further described its incorporation of an oil spill response kit tailored to the scope and size of project vessels, and a spill prevention plan into its proposed mitigation and operational requirements. With these measures in place, the second test of 30232 has been met.

With implementation of the measures described above and incorporation of **Special Condition 10**, which requires HIOC to incorporate the plan as provided, the Commission finds that HIOC has incorporated appropriate measures to prevent a spill from occurring and effectively contain and respond to accidental spills that may occur. Therefore, the project is consistent with Coastal Act Section 30232.

G. California Environmental Quality Act

On July 8, 2021, the Harbor District certified a Mitigated Negative Declaration for the project. The Commission has reviewed and considered the information contained in the Negative Declaration on the project and has relied on some of this information in the findings above.

Section 13096 of the California Code of Regulations requires Commission approval of a coastal development permit application to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would

substantially lessen any significant adverse effect which the activity may have on the environment. The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. The proposed project has been conditioned in order to be found consistent with the Chapter 3 policies of the Coastal Act. As conditioned, there are no feasible alternatives or additional feasible mitigation measures available which would substantially lessen any significant adverse effect which the development may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, is the least environmentally damaging feasible alternative, has no remaining significant environmental effects, and complies with the applicable requirements of CEQA.

Appendix A: Substantive File Documents

Hog Island Oyster Company Shellfish Farm in Arcata Bay (application number 2020-03) Final initial study/mitigated negative declaration and attachments. Lead agency: Humboldt Bay Harbor, Recreation, and Conservation District. Dated July 1, 2021.

Hog Island Oyster Company CDP application 9-21-0561, first notice of incomplete application. Dated August 31, 2021.

Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Hog Island Oyster Company Arcata Bay Shellfish Farm (Corps File No. SPN-2021-00070). Lead Agency: National Marine Fisheries Service. Dated December 7, 2021.

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