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# F12a

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Staff: C. Teufel-SF
Staff Report: 10/19/2018
Hearing Date: 11/9/2018

## STAFF REPORT: REGULAR CALENDAR

| | |
|---|---|
| **Application No.:** | **9-18-0278** |
| **Applicant:** | **Grassy Bar Oyster Company, Inc.** |
| **Location:** | Morro Bay, San Luis Obispo County. |
| **Project Description:** | Application for proposed 0.65 acre expansion of oyster aquaculture operations and after-the-fact authorization for two nursery rafts; a 1200 sq.ft. work platform; and approximately five acres of oyster and clam aquaculture operations on State water bottom leases M-614-01 Parcel 1 & M-614-02, Morro Bay, San Luis Obispo Co. |
| **Staff Recommendation:** | Approval with conditions. |

## SUMMARY

Grassy Bar Oyster Company, Inc. (GBOC) requests after-the-fact approval for the shellfish aquaculture operation it has carried out in Morro Bay since 2009. During this time, GBOC has installed and used a variety of different types of shellfish cultivation equipment for the growth and harvest of non-native Pacific oysters and Manila clams within over five and a half acres of intertidal mudflats and has moored and used a roughly 1,200 square foot floating work barge and

two oyster nursery rafts. As part of its application, GBOC also proposes to continue using this existing aquaculture equipment and expand its operations to include installation and use of new oyster cultivation gear (up to 20 150 foot long elevated lines of hanging plastic mesh bags or baskets) within a roughly 0.65 acre area of intertidal mudflats that is not currently being used for shellfish cultivation. With the exception of the two oyster nursery rafts secured to docks within the Tidelands Park Marina, the entirety of GBOC's existing and proposed shellfish cultivation operation in Morro Bay would be located within two areas of state tidelands that GBOC leases (State Water Bottom Lease Nos. M-614-01 Parcel 1 and M-614-02).

As a result of GBOC's failure to obtain the necessary authorizations prior to carrying out development activities, violations of the Coastal Act exist within the project area. These include, but are not limited to, installation and use of a 1,200 square foot work barge; two oyster nursery rafts; tethered, untethered and elevated bottom bags; PVC cultivation racks; and roughly 7,700 square feet of ¼ inch mesh netting. In response to notification by Commission permitting and enforcement staff about these Coastal Act violations – as well as its desire to carry out additional proposed development - GBOC prepared and submitted this CDP application. Approval of this application pursuant to the staff recommendation, issuance of the permit, and the applicant's subsequent compliance with all terms and conditions of the permit will result in resolution of the above described violations.

The key Coastal Act issues raised by the project are associated with its potential to result in adverse impacts to marine resources. The continued use of bottom bags, longlines, racks, mesh nets, and a work barge as well as the proposed installation and use of elevated cultivation lines would result in fill and disturbance to benthic habitat and its associated species. The presence of the gear and growth of the cultivated shellfish could: (1) contribute to excessive organic enrichment of the sediment; (2) limit or displace sensitive habitat and wildlife foraging opportunities; (3) alter the composition of the community of organisms that relies on the benthic habitat beneath and adjacent to the aquaculture equipment; and/or (4) contribute to disturbance, displacement, loss or injury to protected species such as harbor seals, sea otters, steelhead trout and tidewater gobies. In addition, the use of roughly 7,000 plastic mesh bottom bags, 500 PVC posts and stakes, floatation buoys, and 7,700 square feet of plastic nets within Morro Bay has the potential to contribute to marine debris within the bay and larger environment. Some of this material could escape or disperse into and smother nearby areas of eelgrass or salt marsh, thus contributing to the displacement or loss of these sensitive habitats.

Commission staff recommends **Special Conditions 1** through **11**, to reduce impacts to marine resources such that the project can be found consistent with the terrestrial and marine resources policies of the Coastal Act. **Special Condition 1** would establish a permit term limit to ensure that GBOC's operation continues to be carried out under a valid lease of state tidelands. **Special Condition 2** would require GBOC to demarcate the boundaries of specific cultivation areas in order to prevent the displacement or movement of gear into nearby sensitive habitat areas such as eelgrass beds. **Special Conditions 3 and 7** would also help provide protection for eelgrass habitat by requiring GBOC to (1) avoid placement of structures or gear on or adjacent to eelgrass; (2) limit cultivation activities to those sites identified in **Exhibit 1**; and (3) develop and implement an access plan for these sites that includes establishment of vessel and personnel transit routes and landing sites outside of eelgrass beds as well as updates to these routes if

eelgrass habitat expands or shifts. **Special Condition 4** would require GBOC to develop and submit an annual report to the Executive Director with information about its operation and marine debris reduction and response efforts. **Special Condition 5** would require GBOC to implement a variety of marine debris reduction and response efforts, including participation in clean-up events and staff trainings, and marking its high-volume gear with its company name or other identification. **Special Conditions 6 and 9** would provide protection for sensitive wildlife species by requiring GBOC to: (1) avoid chasing, flushing, or directly disturbing marine mammals, waterfowl and shorebirds; (2) minimize the use and coverage area of active bird deterrent systems; and (3) install screening on its intake systems that is consistent with CDFW and NMFS guidelines for the protection of salmonid fish such as steelhead. **Special Condition 8** would reduce habitat disturbance and alteration by requiring clam cultivation to be carried out using confined or contained cultivation gear (such as bags or trays). **Special Conditions 10 and 11** would require GBOC to develop and implement a hazardous material spill prevention and response plan and to obtain all necessary regulatory approvals prior to implementing its proposed expansion.

Commission staff therefore recommends that the Commission **APPROVE** coastal development permit application 9-18-0278, as conditioned. The motion for this is on page 5. The standard of review is Chapter 3 of the Coastal Act.

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## APPENDICES



## EXHIBITS

# I. MOTION AND RESOLUTION

**Motion:**

*I move that the Commission **approve** Coastal Development Permit 9-18-0278 subject to the conditions set forth in the staff recommendation specified below.*

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 July 1, 2027. If the term of GBOC's leases (State Water Bottom Lease Nos. M-614-01 Parcel 1 and M-614-02) – both also currently set to expire on July 1, 2027 - are amended or new leases are issued by the California Fish and Game Commission, GBOC may submit an application for a permit amendment requesting an extension of the permit term. GBOC shall, no less than 60 days prior to permit expiration or the cessation of its operations on Lease No. M-614-01 Parcel 1 and/or M-614-02, submit a complete application to amend this permit to remove all cultivation equipment and accumulations of oyster shell and return the lease areas to a natural condition.

2. **Bottom Bag Cultivation Areas.** The outer perimeter of all untethered bottom bag areas shown on **Exhibit 1** shall be clearly marked. To prevent loss of bottom bags and displacement outside of cultivation sites, placement of untethered bottom bags shall be limited to the area within these marked perimeters and all untethered bottom bags shall be stocked with no less than two gallons of large oysters.

3. **Cultivation Site Access Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, GBOC shall submit, for Executive Director review and written approval, a Cultivation Site Access Plan that includes: (1) a map showing the travel routes and landing or cultivation bed access sites that GBOC's vessels and personnel shall use to access the cultivation sites and work barge; (2) procedures (such as employee training, use of lookouts and/or speed restrictions) to limit herding or flushing of black brant, shorebirds, or marine mammals within Morro Bay; (3) procedures to avoid injury or disturbance to sensitive habitat areas such as eelgrass beds and marine mammal haul outs, including avoiding passage through and landing in such areas during lower tides and updates of vessel and personnel access routes if sensitive habitat areas expand or shift. Upon approval by the Executive Director, GBOC shall implement the Cultivation Site Access Plan.

4. **Annual Report.** By December 31 of each year, GBOC shall submit to the Executive Director an annual report with information regarding the results of quarterly cleanup events carried out as described in **Special Condition 5** and the date of training, training materials, meeting minutes, and list of attendees from the Marine Debris Reduction Training described in **Special Condition 5(C)**. 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 expanded 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 (such as bird roosting).

5. **Marine Debris Reduction and Management.** GBOC shall carry out operations consistent with the following marine debris reduction and management practices:

**A. Storm Damage and Debris**. As soon as safely and reasonably possible following storm or severe wind or weather events, GBOC 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 disposed of at an appropriate onshore facility. In addition, GBOC shall retrieve or repair any escaped 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 on land.

**B. Gear Marking.** GBOC shall mark shellfish culture bags (bottom bags and floating 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, etc.). Existing bottom bags and floats currently in use shall be marked or replaced with marked versions when replanted and all unmarked gear shall be replaced in this way within 18 months of the Commission's approval of this permit amendment. In the event that its shellfish culture gear or equipment becomes displaced or dislodged from culture beds, it shall be GBOC'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 Training.** WITHIN 30 DAYS OF ISSUANCE OF THIS PERMIT, GBOC shall implement 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. This training shall be repeated on an annual basis throughout the term of the permit. During trainings, GBOC's employees shall be encouraged to consider and implement field and management practices that 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.** GBOC shall carry out quarterly cleanup events in Morro 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 of the Commission. If persistent discoveries of certain gear types are made, GBOC shall evaluate (and if feasible, implement use of) alternative gear types or practices that would reduce these consistent sources of debris.

**E. Ongoing Operations.** With the exception of materials securely stored on its barge, GBOC shall not leave or temporarily store tools, loose gear, or construction materials on its leased tidelands or surrounding areas. The barge shall not be used for long-term (months to years) storage or stockpiling of shellfish cultivation gear and temporarily (days to weeks) stored or stockpiled gear shall be minimized and secured or maintained in covered containers whenever feasible. All aquaculture gear installed on and in use in active cultivation sites shall be kept neat and secure and maintained in functional condition. GBOC 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.

**F. Bed Cleaning at Harvest.** At the time of harvest of each cultivation area, GBOC shall carry out a thorough inspection to locate and remove loose, abandoned or out of use 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 GBOC is responsible for consistently extensive loss of aquaculture equipment (including bottom bags or cultivation baskets) into the marine environment or is consistently failing to maintain its equipment in an intact and serviceable condition, GBOC shall, within 60 days of the Executive Director's written notification, submit a permit amendment to modify its cultivation equipment and/or operational practices to address the issue.

**6. Wildlife Disturbance.** During vessel transit, harvest, maintenance, inspection, and planting operations, GBOC shall avoid approaching, chasing, flushing, or directly disturbing shorebirds, waterfowl, seabirds, or marine mammals. GBOC's use of active bird deterrent devices (such as the "BirdX" sonic repellant system) within its shellfish cultivation areas shall only occur if (1) documentation of bird roosting on elevated cultivation equipment is first provided to the Executive Director and (2) use is minimized to the extent feasible by being limited to (a) periods when California Department of Public Health allows direct shellfish harvesting; (b) times when surrounding mudflats are submerged; and (c) areas in which elevated cultivation equipment is in place.

**7. Eelgrass Protection.** Placement and use of shellfish cultivation equipment shall be limited to the existing and proposed cultivation sites identified in **Exhibit 1.** In addition, shellfish cultivation equipment, anchors, vessels or other structures, gear or equipment shall not be placed on or directly adjacent to areas in which eelgrass is growing.

**8. Clam Cultivation.** All future plantings of Manila clams shall be carried out using confined cultivation gear such as trays or bottom bags. To prevent escape of Manila clams from cultivation areas and to minimize excavation and disturbance of benthic habitat during harvest, direct planting of Manila clams into mudflat areas shall be prohibited. To limit turbidity and dispersal of disturbed sediments during harvest of existing clams, harvest shall be carried out using hand tools at tidal heights when the cultivation areas are fully exposed out of the water and all harvest areas shall be fully encircled with a perimeter turbidity

curtain. The turbidity curtain shall be maintained in place for two tidal cycles or until the water within the harvest area is visually similar to surrounding waters, whichever is longer.

9. **Intake System Design.** All intake systems used by GBOC to supply water from Morro Bay for maintenance or shellfish cleaning, sorting or washing shall be designed with intake screens designed consistent with California Department of Fish and Wildlife and National Marine Fisheries Service guidelines for protection of juvenile salmonids by having: (a) mesh openings of no more than 3/32 inches; and (b) a maximum intake water velocity of 0.33 feet per second.

10. **Hazardous Material Spill Prevention and Response Plan.** WITHIN 60 DAYS OF PERMIT ISSUANCE, GBOC shall submit for Executive Director review and written approval, a project specific Spill Prevention and Response Plan (SPRP) for work vessels, barges, and gasoline powered machinery that will be used during project construction and operational activities. GBOC and its personnel shall be trained in, and adhere to, the emergency procedures and spill prevention and response measures specified in the SPRP during all project installation and operations. The SPRP shall provide for emergency response and spill control procedures to be taken to stop or control the source of the spill and to contain and clean-up the spill. The SPRP shall include, at a minimum: (a) identification of potential spill sources and quantity estimates of a project specific reasonable worst case spill; (b) identification of prevention and response equipment and measures/procedures that will be taken to prevent potential spills and to protect marine and shoreline resources in the event of a spill. Spill prevention and response equipment shall be kept onboard project vessels and barges at all times; (c) a prohibition on vessel fueling/refueling activities outside of designated fueling stations and limitation on equipment refueling to no more than five gallons, carried out with spill prevention and response protocols in place; and (d) emergency response and notification procedures, including a list of contacts to call in the event of a spill.

11. **Other Agency Review and Approval.** PRIOR TO COMMENCEMENT OF PROPOSED CONSTRUCTION AND/OR INSTALLATION ACTIVITES, GBOC shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the approved project have been granted, including those from the Regional Water Quality Control Board, California Fish and Game Commission 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.

# IV. FINDINGS AND DECLARATIONS

### A. BACKGROUND AND PROJECT DESCRIPTION

Morro Bay has a long history of oyster aquaculture, beginning in the mid-1930s and continuing to the present day. At one time, over 70% of the 2,300 acre estuary was allotted for oyster growing (MBNEP 2016). Companies such as El Moro Oyster Company and Browns Oyster Farms grew and harvested significant numbers of non-native Pacific oysters within the leased state tidelands in the bay during the late 1950s and early 1960s and for several years during

World War II, Morro Bay led the state in oyster cultivation (Barrett 1963). These early efforts in Morro Bay relied on very simple "on bottom" cultivation techniques that primarily involved filling large areas of intertidal mudflats with oyster shell that larval oysters had been seeded onto and then returning months or years later to hand collect, dredge, or excavate the shell and harvest the oysters that had grown to maturity. Because the oysters were grown in loose exposed piles across the mudflats, one of the primary challenges was controlling predation from shellfish predators such as bat rays. Significant efforts were made to exclude these species from the oyster beds, including by installing an extensive network of wooden fences and actively culling or attempting to eradicate bat rays (Barrett 1963).

In more recent decades, however, the oyster aquaculture industry in California began to rely on less environmentally damaging cultivation methods. Gear and equipment were developed that kept oysters contained and protected them from predation while simultaneously eliminating the need to repeatedly cover and dredge mudflats with loose shell or install exclusionary fencing. Although information is limited about the specific oyster farming methods and techniques used in Morro Bay in the 1970s through the early 2000s, it appears that oyster aquaculture companies such as the Qualman Oyster Farm, Inc., Williams Shellfish Farms and Tomales Bay Oyster Company used a range of different techniques that evolved from unconsolidated on-bottom culture (loose oyster shell on mudflats) to the use of PVC stakes and metal wires to more modern methods such as bottom bags (oyster shell contained within mesh bags placed directly on the mudflats or hung above them). As discussed in more detail below, GBOC has exclusively used these modern cultivation methods since it began operations in 2009 and has continued to integrate the latest techniques with its recent addition of elevated bottom bag longlines (PVC posts used to support cables on which mesh bags or baskets are hung above the mudflats).

Since it began operations, GBOC has also dedicated significant time and energy to the collection and removal of derelict aquaculture gear that was abandoned within its lease area by previous operators. This gear includes nearly 6,000 short PVC stakes; several dozen feet of narrow gauge wire; approximately 200 feet of decaying wooden fence posts; an iron car axle that had been used as an anchor; two roughly 300 square foot wooden rafts; and approximately 450 plastic mesh bottom bags. Despite these efforts, several thousand more PVC stakes (dispersed across approximately two acres and partially or entirely buried), at least six additional large masses of narrow gauge wire, and hundreds of feet of wooden fence posts remain embedded within the mudflats of GBOC's lease areas.

The area dedicated to oyster cultivation in Morro Bay and its overall production has changed significantly over the past several decades. One of the primary drivers for these changes is the bay's water quality. Because oysters are filter feeders that can accumulate contaminants from the surrounding waters, the water quality of oyster cultivation areas is closely monitored and regulated by the California Department of Public Health (CDPH). Beginning in the late 1970s, failed water quality sampling events in Morro Bay periodically triggered temporary closures for oyster harvesting as CDPH actively worked to allow the aquaculture operations to remain in place while simultaneously safeguarding public health (CDPH 2018). These short-term closures presented an ongoing challenge to aquaculture operations in Morro Bay and eventually contributed to a permanent reduction in its aquaculture lease areas from over 700 acres in 1988

to less than 300 in 1991. Even with this reduction in acreage, regular water quality and contaminant sampling and active management by CDPH has continued to be necessary.

The Central Coast Regional Water Quality Control Board, CDPH, Morro Bay National Estuary Program, Cal Poly State University and others have carried out extensive investigations of Morro Bay's water quality issues over the years (including studies, survey reports, comprehensive sampling efforts or evaluations in 1979, 1984, 1985, 1986, 1987, 1996, 1999, 2002, 2007, 2013 and 2018). Currently, shellfish cultivation is prohibited on over half of the 300 acres of remaining aquaculture lease areas in Morro Bay and the remaining areas are carefully regulated by CDPH as "conditionally approved," as shown in **Exhibit 3**. Of the lease areas held by GBOC, approximately 57 acres are conditionally approved for cultivation and harvest. This designation has been used by CDPH in Morro Bay since 1979 and means that harvesting oysters there is prohibited seasonally or following rainfall and storm events (CDPH 2018). Consistent with this designation, GBOC is prohibited from harvesting on the conditionally approved portions of its two lease areas – M-614-01 Parcel 1 and M-614-02 – during the months of October through December and October through February, respectively.

**Shellfish Cultivation Methods**

Although GBOC's aquaculture leases include a total of roughly 57 acres of intertidal mudflats that are conditionally approved by CDPH for cultivation (42 acres in M-614-01 Parcel 1 and 15 acres in M-614-02), GBOC's existing operation makes use of only about five and a half of these acres. These approximately 5.5 acres are divided between 15 separate cultivation sites, as shown in **Exhibit 1**. Within these sites, GBOC carries out different types of shellfish growing activities that involve different suites of gear and equipment. The following table provides a summary of these uses, and **Appendix B** provides representative photographs of each type of area and gear, along with a more detailed description of each growing method.

| Site | Species | Gear | Layout | Est. Area |
|---|---|---|---|---|
| 1 | Pacific oyster | Bottom Bag Longlines | 19 lines/1983 bags | 1.45 acres |
| 2 | Pacific oyster | Bottom Bag Longlines | 8 lines/835 bags | 0.28 acres |
| 3 | Pacific oyster | Bottom Bag Longlines | 10 lines/1044 bags | 0.22 acres |
| 4 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 1.80 acres |
| 5 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 0.19 acres |
| 6 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 0.35 acres |
| 7 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 0.77 acres |
| 8 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 0.13 acres |
| 9 | Pacific oyster | Untethered Bottom Bags | Rows of 15-40 bags | 0.10 acres |
| 10 | Pacific oyster | PVC racks with bottom bags | 280 linear feet | 888 sq. ft. |
| 11 | Pacific oyster | PVC racks with bottom bags | 60 linear feet | 190 sq. ft. |
| 12 | Manila clam | Mesh nets | 14ft x 50 ft nets | 0.13 acres |
| 13 | Manila clam | Mesh nets | 14ft x 50 ft nets | 555 sq. ft. |
| 14 | Manila clam | Mesh nets | 14ft x 50 ft nets | 0.04 acres |
| 15 | Pacific oyster | Hanging bags/tumble culture | 1 line of 48 bags | 480 sq. ft. |
| 16* | Pacific oyster | Hanging bags/tumble culture | 20 lines of 64 bags | 0.65 acres |
| *proposed | | | **TOTAL AREA** | **~6.16 acres** |

Installation, replacement and maintenance of the PVC racks, bottom bag lines, clam nets, and untethered bottom bags listed in the table above would all be carried out by GBOC personnel using hand tools. Support from one of GBOC's three flat bottom vessels would also be provided periodically as needed. Each of these vessels is powered with outboard motors, and they are 15 feet, 23 feet, and 38 feet long, respectively.

**Shellfish Species**

As noted in the table above, the majority of GBOC's operation is focused on planting, growing and harvesting the Pacific oyster (*Magallana gigas* /*Crassostrea gigas*). This species is considered to be native to Japan but is one of the most popular shellfish species for aquaculture in California and many other coastal areas worldwide. Based on historic records, the Pacific oyster has been cultivated nearly continuously in Morro Bay since the 1930s. Although in several locations in southern California this species is known to be able to escape cultivation and establish wild populations, there is no record or evidence that this has occurred in Morro Bay or surrounding areas.

The other species proposed to be cultivated by GBOC is the Manila or Japanese littleneck clam (*Venerupis philippinarum/Ruditapes philippinarum*). This species is also native to Japan and the southern coast of the western Pacific Ocean and joins the Pacific oyster as a globally important aquaculture species. Although there is little record of its commercial cultivation in Morro Bay, deliberate plantings were made by the California Department of Fish and Game in Morro Bay between 1953 and 1967 in an attempt to promote economic growth by establishing a wild population there (Fofonoff et al. 2018). These plantings were considered to have failed at that time and its presence has not been recorded since. However, surveys carried out over the past several decades have recorded wild populations of Manila clams in several other bays and estuaries in California.

**Proposed Expansion**

In addition to requesting after-the-fact approval for the shellfish cultivation activities it has carried out for the past nine years, GBOC is also proposing to continue and slightly expand its operations. This expansion would involve the addition of 20 lines of hanging mesh bags or baskets to an approximately 0.65 acre area within lease M-614-01 Parcel 1.

GBOC refers to these lines as "tumble culture" because wind and wave action causes the affixed bags or baskets to move in a manner that tumbles the oysters growing within them. The lines would be installed with a similar configuration as the single existing line at Site 15, and each would include an approximately 150 foot length of ¼ inch steel cable suspended 30 inches above the ground by PVC posts every nine feet and used to support up to 64 bottom bags or plastic mesh baskets hung vertically with attached floats. The floats would be heat branded with the initials "GBOC" to aid in identification and recovery in case one or more of the bags break free. The new area proposed to be used for the 20 lines of hanging bags would be directly adjacent to Site 15, and its approximate boundaries are shown in **Exhibit 1** as Site 16. The lines would be spaced nine feet apart across this area to facilitate access and allow free movement of the attached bags or baskets.

Proposed installation of the hanging bag lines would be carried out by hand, and would involve the exclusive use of non-mechanized hand tools such as post drivers and augers to place helical earth anchors into the mud at either end of the 150 foot lines, as well as approximately 18 PVC posts at equally spaced intervals along its length. These posts would be three inches in diameter and extend approximately three feet into and above the mudflat. They would support a ¼ inch stainless steel cable upon which the mesh cultivation bags or mesh baskets would be affixed. The equipment would be brought to the site by hand at low tide or using one of GBOC's vessels at higher tide, and it would be temporarily kept in place until installed. GBOC anticipates carrying out the installation of the hanging bag lines in a single effort spread across several low-tide cycles when the mudflats are exposed and accessible on foot. Photos and diagrams of this system are provided in the Visual Resources section of this report and **Appendix B**.

Planting, inspection and harvest of the cultivation bags or baskets along these lines would be carried out by GBOC personnel on foot at low tide or at high or mid-tide, using paddleboards or one of GBOC's flat bottom vessels.

In the approximate center of the tumble culture lines, GBOC also proposes to install an approximately 11 foot high steel post equipped with a four square foot solar panel and auditory bird deterrent system. The bird deterrent system would be made up of a playback device and series of small speakers used to emit bird distress calls and predator cries. The goal of this system would be to keep seabirds such as gulls, terns and pelicans from landing or resting on the elevated tumble culture lines at higher tides when the surrounding mudflats are submerged. Large numbers of roosting seabirds have been known to negatively affect the water quality of surrounding areas and their suitability for growing filter feeding shellfish such as oysters (CDPH 2018). GBOC proposes to use the bird deterrent system on an as-needed basis throughout the year if bird roosting becomes a consistent issue.

**Work Barge**

In addition to the proposed expansion area and nine cultivation sites summarized in the table above, GBOC also proposes to continue using an approximately 1,200 square foot work platform/barge within Parcel 1 of lease area M-614-01. Photographs and design sketches of this equipment are also provided in **Appendix B**.

A unique aspect of GBOC's operation (compared to most other shellfish aquaculture operations carried out in California) is that it is not supported by a nearby onshore facility or base of operations. Nearly all activities that would typically take place at an onshore site – such as shellfish sorting, culling, cleaning, packing for sales, and equipment storage – are instead carried out within Morro Bay itself on GBOC's work platform/barge. This facility is located within GBOC's lease area in close proximity to its cultivation beds, and it is anchored in place on the intertidal mudflats with three large Danforth-type anchors. Power on the facility is provided by a gasoline generator, water is provided through a seawater intake system and gasoline powered pump, and it is equipped with a portable restroom and handwashing station. Additionally, the barge has an electric tube sorter/tumbling machine and two large tables used to sort oysters by size, wash them, and package them for sale or re-planting. The barge is also used to store commonly used equipment such as bottom bags, PVC posts, tools, paddleboards, and storage containers.

The work barge is made up of three 20 foot wide by 20 foot long wooden plank covered rafts that are connected in an "L" shape. Floatation for the rafts are provided by 30 air filled polyethylene barrels and 20 three foot wide by eight foot long expanded polystyrene foam filled dock floats (as shown on the design sketches provided in **Exhibit 2**). The platform has two small shed structures – one for the portable restroom and one for the seawater intake pump and secure storage – that extend approximately nine feet above the barge's decking.

Because the barge is located on an area of intertidal mudflats, it floats at high- and mid-tides and rests on the mudflats at low tide.

**Floating Upwelling Systems (FLUPSYs)**
FLUPSYs or nursery rafts are used to quickly grow shellfish seed to the size needed for outplanting on an aquaculture farm. These are in-water floating structures designed to upwell nutrient rich water through upwelling bins to provide a consistent source of nutrients to growing shellfish. The two FLUPSYs that GBOC proposes to continue operating would be held by mooring lines within two of the most landward slips of the existing dock structure at Tidelands Park Marina. The FLUPSYs would be constructed of wood and each would have eight submerged square mesh-bottom bins attached to a 12 foot long central fiberglass trough that is continually drained by an electric pump and allowed to naturally refill from surrounding bay waters. The trough and bins for each FLUPSY would be built into an approximately 12 foot wide by 16 foot long raft, as shown in **Appendix B** and **Exhibit 2**.

Within the FLUPSY bins, small oysters and clams (referred to as "seed") would be placed after purchase from an offsite shellfish hatchery. This seed would be grown and sorted by size every several weeks using a sorting table and seawater filled tank on one of the FLUPSYs. Sorting would be done using a series of hand-held screens and the largest oysters or clams would be brought to GBOC's lease areas for planting and further grow-out.

To maintain a consistent flow of water through the growing bins on the FLUPSY, they would be hoisted out of the water approximately four times per year and cleaned with a gasoline powered pressure washer to remove algae and other fouling organisms. GBOC would carry out these cleanings between 8AM and 5PM to limit the effects of noise disturbance to nearby areas.

**Planting, Harvest and Maintenance Activities**
GBOC's planting, harvest and maintenance activities would primarily be carried out on its intertidal lease areas during low tides when the cultivation equipment is exposed and its personnel can walk among it. To move personnel and equipment between its cultivation areas and work barge, GBOC would typically use large paddleboards but would also use one or more of its flat bottom vessels (particularly during large plantings or harvests or on cultivation sites such as those at M-614-02 that are not located near the work barge). Maintenance activities on the lease areas include flipping, shaking, inspecting and collecting bottom bags for sorting approximately every two weeks. This activity is carried out using hand labor at low tides.

**Vessel Use and Transit Route**
GBOC's operations on its lease areas would be primarily reliant on the use of paddleboards, its 15 foot aluminum skiff and its 23 foot flat-bottomed outboard motor powered barge. These

vessels would access the various cultivation sites up to several times per week and would frequently move between the cultivation sites and work barge. Depending on the tidal height, vessels would be temporarily anchored adjacent to cultivation sites or at the edge of available deeper water channels.

Vessel transit would also frequently occur between Tidelands Park Marina (the area used for staff parking, vessel storage and FLUPSY operation) and the work barge. On a typical week, GBOC estimates between 10 and 12 roundtrips for its vessels along this roughly 1.5 mile route. These trips would be used to transport personnel and equipment from shore to the work barge. Two of GBOC's vessels would also be used to support planting and harvesting operations at higher tides and to transport loads of shellfish or equipment between the cultivation sites and work barge.

## B. OTHER AGENCY APPROVALS

**U.S. Army Corps of Engineers**
Grassy Bay Oyster Company, Inc. (GBOC) is working with the U.S. Army Corps of Engineers (ACOE) regarding its permit requirements under the Clean Water Act and Rivers and Harbors Act of 1899. On September 6, 2018, GBOC provided ACOE staff with a description of its operations and background information. In response, ACOE staff informed GBOC of its permit requirements and procedures, alerted GBOC that it was operating in violation of Section 10 of the Rivers and Harbors Act, and directed GBOC to submit an application for a Department of the Army permit. Commission staff has provided opportunities for input and regular updates to ACOE staff throughout its review of this CDP application.

**National Marine Fisheries Service**
As part of the ACOE permit review process, it would consult with the National Marine Fisheries Service (NMFS) to evaluate potential issues associated with Essential Fish Habitat and Protected Species. Commission staff also reached out to NMFS during the review of this permit application regarding the project's potential to adversely affect eelgrass habitat and the application of appropriate protection measures.

**Central 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 are also required to obtain authorization from the Regional Water Quality Control Board (RWQCB) under Clean Water Act Section 401. GBOC is currently in communication with staff of the Central Coast RWQCB regarding its permitting process and requirements. Commission staff has provided opportunities for input and regular updates to RWQCB staff throughout its review of this CDP application.

**California Fish and Game Commission**
GBOC's operation is carried out within State Water Bottom Lease Nos. M-614-01 Parcel 1 and M-614-02. These leases were issued for a period of 15-years by the Fish and Game Commission and unless renewed, will terminate on July 1, 2027. These leases include the shellfish species and cultivation methods currently used by GBOC and require GBOC to obtain and adhere to

permits and authorizations from all other relevant agencies. During the course of this permit review, Commission staff reached out to and solicited input from California Department of Fish and Wildlife staff to confirm that the ongoing and proposed aquaculture activities were consistent with the leases.

**California Department of Fish and Wildlife**
GBOC's aquaculture operations are required to be registered annually with the California Department of Fish and Wildlife (CDFW) and to adhere to a variety of protocols related to introduced species and the importation of oyster seed. GBOC has a consistent compliance record with these regulations and has a valid registration for 2018. In addition, CDFW is the primary state agency responsible for management and enforcement of California's network of marine protected areas (MPAs). GBOC's lease areas and the majority of the proposed work areas are within one of these MPAs, the Morro Bay State Marine Recreational Management Area. Within this MPA, the "take" or removal of marine life is prohibited with several exceptions. Among these exceptions is take associated with the aquaculture of shellfish carried out pursuant to a valid State water bottom lease and permit. Commission staff reached out to and solicited input from CDFW Marine Region and Aquaculture and Bay Management Project staff during the course of this permit review to confirm that the proposed shellfish aquaculture operations would be carried out consistent with the relevant MPA regulations.

**Tribal Outreach and Consultations**
During the process of reviewing GBOC's CDP application for this project and developing this recommendation, Commission staff reached out to representatives from Native American Tribes understood to have current and/or historic connections to the project area. These Tribes include the Northern Chumash Tribal Council, the yak tityu tityu yak tiłhini – Northern Chumash Tribe, and the Salinan Tribe of Monterey and San Luis Obispo Counties. Contact information for these Tribal Representatives was gathered from the Native American Heritage Commission's Native American Contact Lists dated July 23, 2018 and October 19, 2018.

Initial feedback on the CDP application received from representatives of the Northern Chumash Tribal Council (NCTC) indicated that its primary areas of interest and potential concern included protection of Morro Bay Estuary's environmentally healthy living balance, eelgrass and Sacred Viewshed. Specifically, NCTC was concerned about "structural above water View Impediments," "introducing a nonnative species into our Sacred Estuary," and consideration of "emergency plan for gas or oil spills, cleaning solvents, noise or exhaust pollutions, effect on endangered spices, plans for cooperating with the recreational uses, motor rotors effect on Eel Grass, self-regulation plans, [and] long-term effects on the back bay." In response to this input, Commission staff provided additional information and background to NCTC about these issues and their consideration as part of the Commission staff's process of reviewing the CDP application and developing a recommendation. As that recommendation was developed, Commission staff additionally reached out to NCTC to provide an update and summary of the results of the staff's evaluation. At the time of publication of this staff report and recommendation, no additional questions or concerns had been brought to the attention of Commission staff by representatives of NCTC or the other two Tribes that were contacted.

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. In addition, because the GBOC is required to obtain authorization for the proposed project from the U.S. Army Corps of Engineers, a federal Tribal consultation will also be carried out by that agency.

### 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.*

The installation and maintenance of cultivation bags, longline anchoring posts, elevated longline posts, clam nets, work platform moorings, and PVC racks would involve the placement of up to 7,000 two by three foot plastic mesh cultivation bags, over 500 small diameter PVC posts, 7,700 square feet of plastic mesh netting, up to 45 helical screw anchors, an eleven foot high steel post and three Danforth anchors within Morro Bay tidelands. These materials constitute "fill" as defined by the Coastal Act. 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**
Grassy Bar Oyster Company, Inc. (GBOC) proposes to place – and seeks after-the-fact authorization for - fill in coastal waters for the purpose of cultivating oysters and clams. As discussed above, GBOC'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 investigated project alternatives that would reduce or eliminate the need for fill. Due to the force of tides and currents within the proposed project areas, the presence of shellfish predators, as well as the design of the structures and gear associated with the cultivation methods and activities employed by GBOC, a system of anchoring and support posts, anchors, bottom bags and other cultivation gear is an essential element. For on-bottom cultivation, use of mesh bags allows the shellfish being grown to remain contained and consolidated during grow-out so they may be fully recovered at harvest with minimal habitat disturbance (particularly in comparison to unconsolidated placement of oysters directly on the substrate, which can significantly alter the substrate and require mechanical or hydraulic dredging techniques to harvest). Therefore, eliminating fill is not a feasible alternative for this type of oyster culture operation.

The Commission considered several alternative anchoring and post systems to those proposed by GBOC for its elevated longlines and bottom bag longlines, including different types of posts and stakes and different post spacing configurations. While a wider spacing of support posts would be possible, to maintain the oyster cultivation equipment above the substrate and within the target area of tidal influence would result in high levels of tension and weight on the horizontal line and would therefore require larger posts, more substantial support cables, and/or anchoring systems on each end of the lines. These larger, more permanent structures would require more substantial installation methods, including the possible need for mechanized equipment (such as powered augers, water jets, or pile drivers). This would likely result in the installation of fewer larger structures rather than more numerous smaller structures, thereby not likely reducing the overall amount of fill required. Further, the larger structures would be more difficult to remove or adjust in the future and may require more intensive extraction methods, thus increasing the amount and severity of habitat disturbance that would occur during these activities.

Alternative anchoring methods for the floating work platform were also considered. GBOC's proposed method of mooring this platform in place relies on three Danforth-type anchors deployed in a triangular configuration. These anchors are commonly used marine moorings and rely on both a weighted section and a section that digs into or self-buries in the substrate when pulled laterally. Accordingly, these types of anchors can remain small while being just as effective as much larger moorings that rely on mass alone. This smaller size helps reduce the disturbance footprint associated with each individual anchor. While other anchoring options –

such as helical screw-type anchors – are also available that would have an even smaller disturbance footprint, because such anchors need to be drilled into the substrate, they function as more permanent moorings and are more difficult to install and remove. Because GBOC periodically relocates its floating work platform and associated anchors, use of helical screw anchors would be impractical.

Alternatives to the use of bottom bags were also considered, including the elimination of the bags and the use of support posts or racks to elevate a greater number of them above the mudflats. As noted above, elimination of the bags entirely would not reduce the total amount of proposed fill and would result in the placement of loose oysters and shell directly on the mudflats, increasing the loss and dispersal of shell, altering the physical makeup of the mudflats themselves, and requiring the use of harvest techniques that result in substantial disturbance and displacement of benthic habitat. As such, this alternative would not be less environmentally damaging than the proposed use of bottom bags.

While the use of posts or racks to elevate more of the bottom bags off of the mudflats would reduce the amount of direct fill, the environmental benefits of such efforts are not clear. These types of elevated alternatives may facilitate access to the mudflats for foraging wildlife such as fish, bat rays, and shorebirds when compared to the use and placement of mesh bottom bags directly on the substrate, but even this is not certain. Some species of birds have been shown to largely avoid elevated structures, and the interaction of other species of birds and marine animals with them has yet to be carefully evaluated. As such, it cannot be stated with confidence that the use of elevated gear in place of on-bottom gear would significantly increase foraging activity or opportunities. Additionally, a greater number of more robust, elevated structures may have shading effects and affect currents, hydrology, and sediment transport/deposition in ways that bottom bags do not. Other effects are likely to be similar between the two alternatives. For example, oyster feeding and the deposition of organic material onto the underlying substrate is likely to occur at similar rates between the two cultivation methods. While elevated gear in some locations may facilitate flushing, water movement, and dilution of organic materials, in other locations, the more substantial and robust gear in the water column associated with elevated gear may alter current speeds and directions in ways that would concentrate organic wastes.

Based on current scientific understanding, 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.

Finally, alternatives to GBOC's use of plastic mesh clam nets were also considered due to the potential for the use of these nets to result in adverse environmental effects. GBOC proposes to continue using approximately 7,770 square feet of netting placed as a cover over approximately eleven 14 foot wide by 50 foot long areas of mudflats that would be seeded with Manila clams. While light and thin, these nets would cover large contiguous areas of benthic habitat, limiting or

precluding foraging by marine species ranging from shorebirds to fish, rays, skates and small sharks. Additionally, the nets would pose a potential entanglement risk for small fish and invertebrates that may become trapped while trying to swim or burrow through the nets. While some of these potential adverse impacts may also be associated with other types of cultivation gear such as bottom bags, bottom bags are intentionally shifted, moved and collected on a frequent and regular basis by GBOC personnel as part of the cultivation process and as such, do not affect any particular area of benthic habitat for more than two or three weeks. In contrast, the clam netting would be in place and static for a year or more. This would result in long-term lost or limited foraging opportunities and entanglement risk over up to eleven 700 square foot sections of intertidal mudflat habitat within the Bay. These large contiguous areas would be distinct from the much smaller (six square foot) areas covered by individual bottom bags and would therefore result in a more significant suite of effects.

As a result, alternative cultivation methods for Manila clams were considered that would not require the long-term placement of large contiguous netting on mudflat areas. These methods include confining the clams within mesh bottom bags or trays in place of the unconfined placement of clams directly into mudflats that must then be covered by netting. In addition to limiting entanglement risk and loss of foraging opportunities for marine wildlife, the use confined cultivation gear for clams would also significantly reduce the chance of non-native clams escaping from cultivation and establishing wild populations (it would be nearly impossible to collect and remove all of the seeded clams once they are allowed to burrow freely into mudflats but if they are contained within trays or bags, their complete removal can be assured). Additionally, growing clams in confined gear would eliminate the need for excavating and digging up benthic habitat during harvest. Cultivation of clams using confined gear is a less environmentally damaging alternative to the method proposed by GBOC. **Special Condition 8** would therefore require the use of confined gear such as bags or trays for future Manila clam cultivation.

The remainder of the proposed project includes a mix of contained bottom culture (mesh bottom bags) as well as off-bottom culture techniques (elevated longlines) using a support system with a minimal footprint that does not include the permanent placement or pile driving of anchors or supports. These project elements reduce the amount of fill compared to the alternative types and configurations of posts and stakes that the Commission considered. In addition, other than the clam cultivation alternative discussed above, there do not appear to be other alternative cultivation methods that would be less environmentally damaging. The Commission therefore finds that with the implementation of **Special Condition 8,** the proposed project minimizes the amount of fill to the maximum extent feasible, so that the project is the least environmentally damaging feasible alternative and is therefore consistent with the second test of Section 30233(a).

**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 fill. As discussed in the Marine Resources section below, the placement of several hundred individual PVC support posts and anchoring stakes on bay sediment is expected to result in loss of benthic habitat and mortality and disturbance to associated organisms. However, given the small total amount of this fill and its

dispersion over a large number of very small individual sites (less than four square inches each), as well as the abundance of benthic habitat in Morro Bay similar to that which would be filled, adverse impacts associated with the installation and presence of the proposed oyster cultivation support and anchoring systems would be minimal.

The proposed project would also include a more substantial amount of fill associated with the placement onto the substrate of the oyster bottom bags themselves - approximately 7,000 six-square foot bags for a total of roughly one acre covered by bottom bags. These bottom bags are typically in place, lying on the intertidal mudflats, for 12 to 24 months at a time as the oysters within them grow to harvestable size. While the placement of these mesh bags on top of the substrate would not result in the loss or removal of this substrate from the bay, the presence of the oyster shell filled mesh bags and the biological processes of the living oysters themselves may have localized effects on the underlying and adjacent benthic habitat and influence the type and abundance of organisms that it supports. These effects are associated with physical smothering or displacement from the bags and shells, as well as organic enrichment due to the deposition of biological waste from oyster filtration and feeding. By affecting benthic ecology (species composition, richness, abundance and dominance) in these ways, this fill may also affect other larger species such as fish, rays, sharks and shorebirds that forage on intertidal mudflats. In addition to effects on foraging associated with changes in the type and abundance of species present within the habitat below and adjacent to the bottom bag cultivation areas, foraging would also be affected by the presence of the plastic mesh bags themselves which in some cases may block access to prey.

To help reduce the potential for adverse impacts associated with these ecological effects, the Commission is requiring in **Special Condition 7** that GBOC install and maintain all cultivation equipment within the 16 sites identified in **Exhibit 1**. With the addition of this mitigation measure, the placement of fill would be concentrated within three primary areas located in state water bottom leases that have a long history of use for oyster cultivation. This would limit the area of the bay that would be occupied with fill to sites of historic use and disturbance. Further, **Special Condition 8** would restrict the use of unconfined cultivation methods and thereby limit the amount of habitat disturbance associated with the proposed fill. In addition, **Special Conditions 2 and 7** would also limit the potential loss and dispersal of cultivation gear by requiring that all untethered bottom bags be appropriately weighted and placed within designated areas and by preventing the placement and use of cultivation equipment within eelgrass habitat. **Special Condition 3** would require the development and implementation of a cultivation site access plan that includes mapped transit corridor to prevent the loss and disturbance of eelgrass habitat due to prop-cutting or interactions with outboard motors. **Special Condition 6** prohibits wildlife disturbance during operations and vessel transit. Finally, **Special Condition 5** would create a variety of marine debris prevention and response protocols that would reduce the likelihood of debris loss and increase opportunities for its recovery.

The Commission finds that with the addition of **Special Conditions 2, 3, 5, 6, 7 and 8**,feasible mitigation measures have been provided to minimize any adverse effects of fill, and, therefore, that 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 is located on three separate areas of intertidal mudflats totaling approximately six acres within the central portion of the Morro Bay estuary (**Exhibit 1**). As described by the Morro Bay National Estuary Program in its 2012 Comprehensive Conservation and Management Program:

> *The Morro Bay estuary is a 2,300 acre semi-enclosed body of water where freshwater flowing from the land mixes with the saltwater of the sea. The estuary environment encompasses the lower reaches of Chorro and Los Osos creeks, a wide range of wetlands, salt and freshwater marshes, intertidal mud flats, eelgrass beds, and other subtidal habitats. Morro Bay hosts one of the most significant and least disturbed wetland systems on the central and southern California coast.*

In addition to this range of subtidal and intertidal marine and marsh habitats, Morro Bay also supports a wide variety of wildlife species. Huge flocks of resident and migratory seabirds and shorebirds rest and forage within the bay's waters, mudflats and marshes along with harbor seals, sea otters and sea lions. Two rare fish species, the tidewater goby and south-central California coast steelhead, can also be found within the bay's waters. The tidewater goby is federally listed as endangered and has been observed from near the mouth of Morro Bay to its central reaches while the south-central coast steelhead is federally listed as threatened and is known from populations that spawn and rear in tributaries to Morro Bay and use the bay itself as migratory and rearing habitat.

**Protective Designations**
In recognition of the number, diversity and rarity of species and habitats that are found in Morro Bay and its overall ecological importance, the Morro Bay estuary has received several protective designations. Its waters and marshes are divided between two state marine protected areas and are included within the National Estuary Program.

*Morro Bay National Estuary Program*
The National Estuary Program (NEP) was established in 1987 by amendments to the Clean Water Act, with the intent to protect and restore estuaries of national significance. The program focuses not only on water quality but also on the integrity of the entire estuarine system, including its physical, biological, economic, and recreational values. The Morro Bay National Estuary Program is one of 28 NEPs working to safeguard and improve the health of some of the nation's most important coastal waters. Within California, Morro Bay joins San Francisco Bay and Santa Monica Bay in the National Estuary Program. Although the NEP is a non-regulatory program within the U.S. Environmental Protection Agency (EPA) and individual NEPs are eligible to receive some annual grant funding, national guidance and technical assistance from EPA, primary management of the country's NEPs is carried out by state and local agencies, universities and non-profits. In Morro Bay, a non-profit organization called the Morro Bay National Estuary Program (MBNEP) is the local management entity. The MBNEP and its ongoing research and restoration, education and outreach, and stakeholder and community engagement efforts and programs provide a significant asset for the protection and restoration of the bay's resources.

*Marine Protected Areas*
The upper reaches of the Morro Bay estuary and its extensive salt marshes are included within the Morro Bay State Marine Reserve. This designation provides the highest level of protection of any state marine protected area designation and prohibits the take of all marine life from within the reserve borders. The remainder of the bay – including the entirety of the Grassy Bar Oyster Company's operations – are included within the Morro Bay State Marine Managed Area. This designation also conveys protection for marine species and habitats but includes exemptions for several specified activities, including shellfish aquaculture carried out pursuant to a valid state water bottom lease and permit.

**Benthic Habitat and Eelgrass**
Benthic habitat at the project sites (a total of roughly 5.7 acres within State Water Bottom Lease No. M-614-01 Parcel 1 and 0.5 acres within State Water Bottom Lease No. M-614-02) is comprised almost entirely of intertidal mudflats made up of fine sands and silts. These mudflats also periodically support a variety of fast growing algae species, primarily the green sea lettuce (*Ulva spp*.) and red algae (*Gracilaria spp*.).

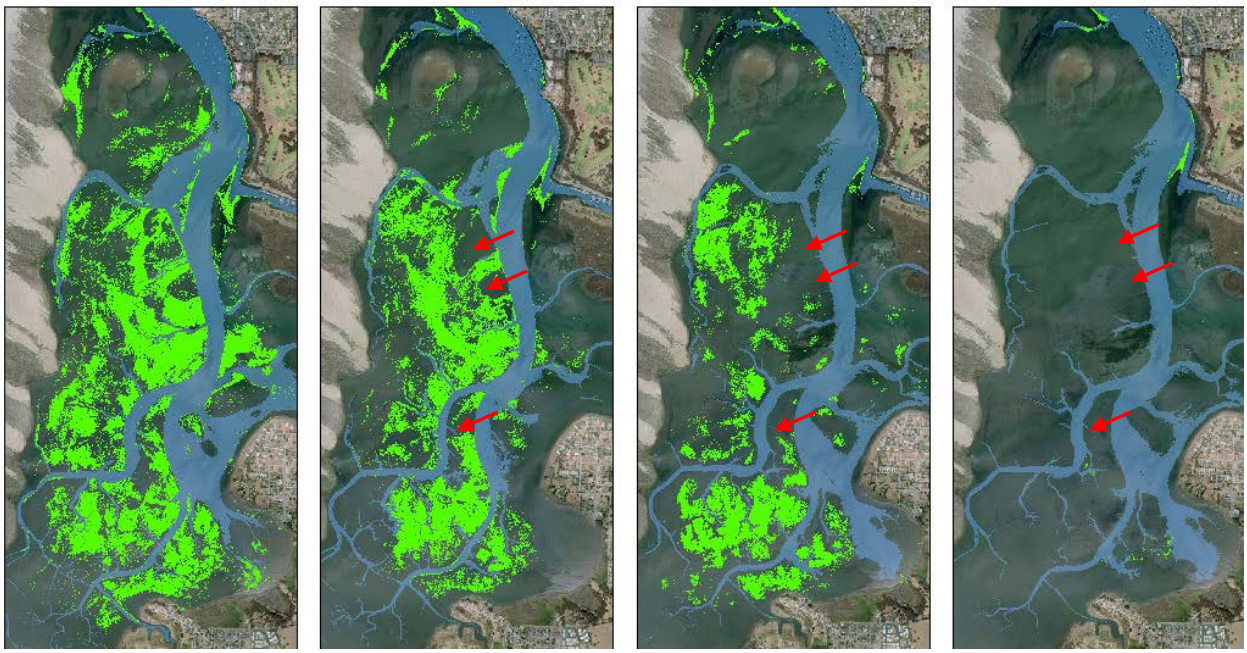
Historically, eelgrass was also abundant on and around many of the mudflats that GBOC proposes to use for shellfish cultivation. Eelgrass is known to form extensive beds and meadows in Morro Bay and these have traditionally been recognized as the largest and least impacted of any in central and southern California (MBNEP 2016). This ecologically valuable habitat has traditionally provided an essential role as wildlife refuge and nursery habitat, forage for

migratory birds such as black brant, and protection for water quality by stabilizing sediments and filtering and removing excess nutrients. Eelgrass is also considered to be a resource of cultural importance to the Native American Tribes of the Morro Bay area.

However, in the year prior to the start of GBOC's operations in the summer of 2009, eelgrass habitat within Morro Bay began to sharply decline. From a near historic peak of roughly 344 acres in 2007, mapped eelgrass beds in Morro Bay had declined to cover less than 20 acres by 2013 (MBNEP 2014). This reduction of over 90% affected all parts of Morro Bay but was most dramatic in the central and "back bay" portions of the estuary – those upper reaches located farthest from the bay's entrance to the open ocean (Walter, Rainville and O'Leary 2018). Although eelgrass is known to expand and contract from year to year, this level of loss had not before been recorded in Morro Bay[1]. The cause of this loss has yet to be conclusively determined.

The figure below, adapted from the Morro Bay National Estuary Program's 2014 State of the Bay report, shows this decline graphically as intertidal areas that once supported extensive eelgrass meadows transition to open mudflats. In this figure, eelgrass beds are represented in green, deeper water subtidal channels are shown in blue and the approximate location of GBOC's three principal cultivation areas are indicated with red arrows (these arrows start in 2009, the year GBOC's operations began):

**Loss of Eelgrass in Morro Bay from 2007 to 2013**



2007 2009 2010 2013

[1] From 1960 to 1994 eelgrass acreage in Morro Bay was relatively stable, fluctuating between roughly 300 and 400 total acres. In late 1994, however, a large fire within the bay's watershed and heavy winter rains led to significant sediment erosion into the bay, smothering eelgrass beds and leading to a several years of declining acreage. By 1999, this declining trend reversed and by 2004, eelgrass was again approaching 300+ acres and pre-1994 levels.

For the most part, this collapse and disappearance of eelgrass beds throughout central Morro Bay – including the areas in and around GBOC's aquaculture leases – has eliminated the potential for spatial competition, disturbance or other negative interactions between the aquaculture operation and eelgrass. However, as shown in the figure above, when GBOC began its operations in July of 2009, eelgrass was still abundant in the central bay. According to personal communications with GBOC's president, George Trevelyan, when he started placing bottom bags and other oyster cultivation equipment within GBOC's lease areas, he intentionally avoided areas in which eelgrass was present. A review of eelgrass mapping data collected by the Morro Bay National Estuary Program in the summer of 2009 corroborates this information and suggests that eelgrass beds and patches were present adjacent to and around the sites GBOC chose for its operations but could have easily been avoided within the sites themselves. As the decline in Morro Bay's eelgrass persisted and accelerated into subsequent years – quickly resulting in its near complete disappearance from the central bay - GBOC's efforts to avoid eelgrass as it continued to develop and build up its operations became unnecessary. Eelgrass was no longer present in these areas and has remained absent for most of the past five years. Commission staff found no evidence suggesting that GBOC's operations since 2009 have resulted in or contributed to the loss of eelgrass within Morro Bay.

Despite its long absence, beginning in 2017 and continuing into this year eelgrass beds and patches have begun to return to and expand within areas of historic eelgrass habitat that have been unoccupied for many years. Although its coverage and total acreage remain far from historic levels (including those from 2007 through 2010), this current expansion of eelgrass within Morro Bay may indicate the beginning of a recovery trend. Based on the mapped location of historic eelgrass habitat as well as the sites it currently occupies and has expanded into over the past two seasons, if this recovery trend continues, GBOC's cultivation areas may once again be located in close proximity to large areas of eelgrass. As such, it is possible that GBOC's continued operations and uses of these areas may negatively affect eelgrass and other benthic habitats.

Potential adverse impacts to benthic habitat and eelgrass from the proposed project include: (1) smothering of organisms and loss or disturbance of habitat due to the presence of bottom bags, PVC racks, anchors, support posts, mesh nets, and a work barge on the bay tidelands; and (2) disturbance to sediments and organisms from longline post and anchor installation, removal activities, and ongoing operations (planting and harvest of Pacific oysters and Manila clams and equipment maintenance).

*Smothering and Disturbance*

The three elements of the proposed project that would primarily result in smothering and disturbance of benthic habitat are (1) the presence of the PVC anchoring stakes and support posts that would be used for the oyster cultivation equipment (racks, bottom bag longlines and elevated longlines/tumble culture lines); (2) the presence of the bottom bag cultivation gear; and (3) the presence and maintenance of mesh netting over mudflat areas planted with Manila clams and the excavation of those clams during harvest.

PVC Posts and Anchors

Placement of the PVC post support and anchoring systems for the 340 linear feet of racks, 37 bottom bag longlines and 21 elevated longlines/tumble culture lines is expected to result in the long-term displacement and loss of roughly 15-square feet of benthic habitat known to support marine invertebrate communities and foraging habitat for shorebirds and marine wildlife. In addition, this activity would result in the short-term disturbance of mudflat areas adjacent to each line, due to the foot traffic and trampling associated with the installation of the support and anchoring posts.

However, the lost and displaced habitat would be spread across roughly 500 sites – each with an area of approximately three square inches – and would therefore be insignificant. Additionally, in the context of the larger 6.2 acre project area and the 2,300 acre Morro Bay as a whole, the loss of less than 15-square feet of mudflat habitat and short-term disturbance of adjacent areas due to foot traffic and trampling is not anticipated to adversely affect the biological productivity of the bay or measurably reduce populations of the marine organisms that inhabit and rely on this habitat. Habitat mapping and aerial surveys of Morro Bay have shown that benthic habitat comprised of fine sand and silt sediment similar to the habitat present at the project site is extensive (covering hundreds of acres) and many of these areas support similar species and populations of marine life. Given the small size of the benthic footprint and associated disturbance areas relative to the abundance of similar benthic habitat in Morro Bay, as well as the dispersion of this footprint over several hundred very small individual sites, adverse impacts associated with the installation and presence of the system of PVC support and anchoring posts and stakes associated with the proposed oyster cultivation gear would be minimal.

Further, the benthic habitat that would be lost through the proposed placement of PVC stakes associated with GBOC's operation would be offset several times over by the benthic habitat that was made available through the aquaculture clean-up operations GBOC has carried out since it began operations. The former holders of GBOC's lease areas abandoned a wide range of material and equipment in the bay, including nearly 6,000 PVC posts, dozens of linear feet of metal wire and wooden fence posts, two large wooden rafts, an iron car axle, and approximately 450 untethered bottom bags. Over the past several years, GBOC has been steadily collecting and removing this debris and derelict equipment from the bay, thus adding to and improving the quality of benthic habitat available for marine life. The total footprint of this removed equipment greatly exceeds the total area that would be occupied by the anchors and support posts that GBOC proposes to install and maintain in the bay for the duration of its operations.

Bottom Bags

Other elements of the cultivation gear GBOC proposes to use would also involve the placement of fill on benthic habitat. For example, the placement and use for oyster culture of the approximately 7,000 six-square foot bottom bags GBOC is proposing to use would also result in the smothering and disturbance of benthic habitat. The total area proposed to be covered by these bags would be approximately 1 acre, spread across five sites and several hundred rows of bags, each between 150 and 450 feet long and three-feet wide. As discussed in a variety of studies, use of mudflats in this way may affect it in several ways, including by altering the chemical condition of the sediment and influencing the type, abundance, and diversity of species

it supports. These effects result from sedimentation and organic enrichment caused by the oysters, as well as predator exclusion and current dampening from the presence of the aquaculture equipment on the surface of the mudflats.

Because the feeding activity of bivalve filter-feeders such as oysters results in the packaging of fine suspended material into larger feces that can rapidly settle to the seabed (especially under conditions with slow or poor water flushing and exchange) in areas of intensive shellfish cultivation, primary production and energy flow can be diverted from planktonic to benthic food webs. While the dynamics of bivalve feces deposition (settling velocity, disaggregation rate and resuspension) are poorly understood, enhanced sedimentation under areas of cultured shellfish is well documented (Castel et al. 1989; Mojica and Nelson 1993; Nugues et al. 1996; Spencer et al. 1996; Drake and Arias 1997; Spencer et al. 1997; Spencer et al. 1998; De Grave et al. 2001; Kaiser 2001; Crawford et al. 2003; Forrest and Creese 2006; Mitchell 2006; Bouchet and Sauriau 2008). As is the case for fin fish aquaculture, the accumulation of organic material beneath shellfish aquaculture facilities may result in the generation of an anaerobic environment that promotes ammonification and sulfate reduction, increased sediment bacterial abundance, and changes in benthic community structure and biomass.

The magnitude and extent of these effects is strongly influenced by several factors, including stocking density (the number of oysters within the cultivation gear), current speed, coverage area (the total amount of contiguous area occupied by cultivation gear), coverage duration (length of time cultivation gear is in place before being moved) and fallowing frequency. In general, studies suggest that cultivation at low densities in areas with strong currents and with more separation between cultivation equipment, more frequent shifting of equipment and use of fallowing (rest periods between uses of an area) is likely to result in less substantial and more localized effects. In contrast, high density, long-term, extensive, fixed cultivation in more enclosed areas is likely to exacerbate environmental effects and lead to more severe disturbance to benthic habitat and communities. However, as a series of studies by Spencer et al. (1996, 1997, 1998) demonstrate, some benthic communities can be resilient to these types of disturbances and can return to reference conditions within months of an aquaculture harvest and removal of aquaculture equipment, even after significant changes have taken place.

Although the total area proposed to be used for oyster bottom cultivation by GBOC is not insignificant, several key features of GBOC's proposed operation would limit the amount and extent of disturbance to benthic habitat that would result from it. These features include (1) the division of its 16 cultivation sites between three separate smaller areas (as shown in **Exhibit 1**) rather than one large contiguous area; (2) the location of the various cultivation sites near deeper water subtidal channels (such as those that surround M-614-02 and separate the two primary growing areas on M-614-01 Parcel 1); (3) the modest stocking density of the bottom bags (roughly 150 oysters per bag); (4) the configuration of longlines and untethered bags in rows with gaps of six to ten feet between them; (5) the frequent (approximately every two weeks) flipping and shifting of bags (which includes relocating them from one side of the longline to the other, thus exposing previously covered areas of substrate); and (6) the weeks to months long fallowing of areas that occurs as production, harvest and planting volume fluctuates throughout the year and between years (for example, due to an unexpected oyster mortality event and loss of product last season, over three acres of GBOC's cultivation area is currently fallow).

In combination, these features of GBOC's operation would minimize the magnitude of any effects that the oyster cultivation gear and oysters may be having on the benthic habitat and its associated species. Although some negative effects may occur, they would be limited as well as spatially and temporally dispersed. Therefore, the levels of disturbance to benthic habitat (changes to the community of organisms it supports and sediment chemistry) within the area of GBOC's operation would not result in significant or long-lasting reductions to its biological productivity. Although specific testing and detailed analysis of the benthic habitat within GBOC's cultivation sites has not been carried out, available information from research carried out in other areas suggests that the effects to benthic habitat from GBOC's oyster cultivation operation would be - at most - modest, localized and not likely to persist once the area is left fallow or returned to a natural condition.

GBOC's proposed use of bottom bags may also smother, disturb, or displace areas of more sensitive benthic habitat such as eelgrass beds. While much of GBOC's shellfish cultivation gear would be maintained in relatively fixed locations (for example, its elevated tumble culture lines and anchored bottom bag longlines) that would be likely spatially restrict or limit the movement or expansion of eelgrass under and around it, GBOC also proposes to use roughly 3,000 untethered bottom bags. These bags would be placed in rows within six sites with a total area of approximately 3.3 acres, and because the number and specific location of these rows would change over time as a result of GBOC's production levels and operational practices, it would be possible for eelgrass to expand into these sites during times of low use by GBOC. As an example, one of these sites has been fallow for much of the past season and now supports several small patches of eelgrass. In addition, eelgrass is also currently growing in a variety of locations around the edges of sites GBOC uses for untethered bottom bags.

While it is unlikely that these untethered bottom bags sites would support extensive eelgrass beds – particularly because these sites were established by GBOC during a time of relative eelgrass abundance in Morro Bay and intentionally selected because of their lack of eelgrass – GBOC has nevertheless committed to avoiding any eelgrass that has or does establish within them. Because of the large size of the sites GBOC has designated for untethered bottom bags and the modest size of its operation, GBOC has expressed confidence that it would be able to honor this commitment without significantly restricting or limiting its operations. Recognizing the rarity and imperiled status of eelgrass in Morro Bay at the moment and the location of GBOC's cultivation areas within an estuary of national significance and one of the state's marine protected areas, **Special Condition 7** would memorialize this commitment by requiring GBOC to limit its placement and use of cultivation equipment to within the 16 sites identified in **Exhibit 1** and prohibit it from placing cultivation equipment, anchors, vessels or other gear, structures or equipment on or directly adjacent to areas in which eelgrass is growing. **Special Condition 2** would facilitate compliance with this by requiring GBOC to mark the outer perimeter of its designated untethered bottom bag areas.

To additionally help minimize the effects of GBOC's oyster cultivation gear on benthic habitat and eelgrass, the Commission is also requiring in **Special Conditions 5 and 7** that GBOC remove all cultivation equipment and accumulations of oyster shell from the lease area upon

expiration of this permit and avoid and address the accidental loss and displacement of oyster shell and cultivation gear.

Mesh Netting and Clam Harvest

GBOC's proposed use of large areas of mesh netting for clam cultivation and the subsequent excavation of benthic habitat to harvest those clams has the potential to result in more significant adverse impacts to benthic habitats than its use of bottom bags. GBOC proposes to continue using eleven nets with ¼ inch mesh to cover the surface of mudflats over a total area of approximately 7,700 square feet. This total area would be spread between three sites (Sites 12, 13 and 14 on **Exhibit 1**) and each of the eleven individual nets would measure 700 square feet (14 feet wide by 50 feet long). Before the nets would be rolled and staked in place, tens of thousands of young Manila clams would be spread across the mudflats below them and allowed to burrow below the surface. Unlike the bottom bags used for growing oysters that would be lifted and moved every two weeks, these mesh sheets or nets would be maintained in place for a year or more as the clams planted into the mudflat below them grow to harvest size.

The purpose of the netting is to protect the growing clams by keeping away all fish, birds, large invertebrates and marine mammals such as sea otters that may feed on them. Due to the small size of the mesh in the netting, however, and its coverage of large areas of mudflats, the nets would also prevent a wide range of biological uses and activities that would typically occur in mudflats. For example, in addition to preventing foraging on clams, the nets would also prevent foraging on most of the native shellfish and invertebrates that live within mudflats. In addition, the nets would also limit or prevent many species from burrowing into or gaining access to the habitat within the covered mudflat areas. Those animals that try to burrow or forage through the netting may risk injury or entanglement due to contact with the netting and those that are able to gain access may face competition for food and habitat from the large number of planted clams. As a result of this exclusion, competition and limitation on foraging activity, the covered mudflats would likely support a reduced or significantly altered community of species and would not maintain the biological productivity typical of mudflat habitats within the Morro Bay estuary.

Further, when the Manila clams buried within these mudflat areas are ready to be harvested, GBOC would excavate and sift through the mud with rakes in order to collect and remove the cultivated clams. This harvest activity would result in significant additional disturbance to the mudflat habitats - churning them up, injuring, displacing or exposing to predation the other species living within them, and leaving large areas with disturbed and altered sediments that would be prone to dispersing into surrounding areas and releasing clouds of turbidity as the bay's tides enter and withdraw. Although GBOC's three Manila clam cultivation sites cover a small area relative to the size of the bay and GBOC's overall operation, the movement of sediment and turbidity away from these areas as a result of harvest activities has the potential to adversely affect a much larger area of surrounding habitat as well, including sites in which eelgrass appears to be recovering and returning.

While it is no longer possible to prevent the adverse impacts to mudflat habitats and their biological productivity by prohibiting GBOC from planting Manila clams within the mudflats and covering them with netting (these activities were carried out over a year ago), because these sites have yet to be harvested or replanted, additional future impacts may still be avoided and

minimized. Therefore, **Special Condition 8** would require GBOC to implement several measures to reduce habitat loss and disturbance during future Manila clam harvesting and cultivation efforts. These measures would include a prohibition on cultivating Manila clams outside of confined equipment, a requirement that harvest activities be carried out exclusively during low tides and within a perimeter of turbidity curtains to prevent the dispersal of sediment and turbid water away from the cultivation sites and into surrounding habitat areas. Finally, **Special Condition 8** would also require that clam harvest be carried out exclusively with non-motorized hand tools in order to minimize habitat disturbance.

*Benthic Disturbance from Operations*
Movement of personnel and equipment to the proposed project site, as well as ongoing maintenance and use of the proposed aquaculture structures, also have the potential to result in disturbance of benthic habitats and eelgrass. This disturbance would be most likely to occur during the transit of project vessels and personnel to and from the cultivation sites, the staging of equipment and supplies for periodic repair and replacement of cultivation structures, and operations on the mudflats such as planting, harvest, and maintenance activities. These activities are proposed to be carried out during a range of high and low tides and would involve the landing of one or more small project vessels on the mudflats near the cultivation areas, the loading or offloading of equipment and shellfish, and the movement of project personnel by foot among the bottom bags, longlines, or other aquaculture sites. Each row of untethered bottom bags, bottom bag longlines and tumble culture lines would be separated from adjacent lines by between four and nine feet to allow access along its length. Mooring of project vessels, offloading of equipment, and movement of GBOC's employees among these access corridors on foot would result in the disturbance, crushing, and damage to benthic habitats and species. Assuming that the majority of planting, harvest, and maintenance activities would be focused within these corridors along each of the 150- to 450-foot bottom bag and longline rows, roughly 1 acre of sediment would be adversely affected during the initial installation of the proposed cultivation structures, and periodically disturbed as a result of their ongoing maintenance and use. Additional areas would also be disturbed during the transit of project vessels to and from the lease, their mooring on tidelands, and the loading and offloading of equipment associated with the installation of the proposed elevated tumble culture lines.

To address the potential adverse impacts to marine biological resources and species of special biological significance, such as eelgrass, associated with this amount of disturbance to benthic habitats, GBOC has integrated several resource protection measures into its operations. For example, its personnel typically move between sites and carry out maintenance, planting and harvest activities with the assistance of non-motorized paddleboards – thus limiting its use of vessels and their associated outboard motors, repeated landings, launchings and movement through sensitive habitat areas. In addition, GBOC typically uses consistent vessel access routes when coming and going from its work barge and cultivation areas. Because fairly extensive eelgrass habitat is present adjacent to GBOC's work barge and within the deeper water channel that separates its two primary growing areas (those located on M-614-01 Parcel 1), GBOC's use of a consistent route limits the amount of eelgrass habitat that its vessel passes through. Because the use of outboard motors through eelgrass habitat at some tidal heights can cause the eelgrass to be cut or uprooted, limiting vessel transit to a single area would protect eelgrass in other surrounding areas.

To memorialize this aspect of GBOC's operations and further establish consistent vessel and personnel transit routes that avoid sensitive habitat areas such as eelgrass beds and marine mammal haul-outs, the Commission is requiring in **Special Condition 3** that GBOC develop and implement a Cultivation Site Access Plan that includes a map and protocols to minimize disturbance of areas of sensitive marine habitat. Additionally, to prevent benthic disturbance associated with the onsite storage/staging of materials on the lease area – and the potential loss or displacement of equipment into surrounding habitat areas due to current and tidal action - **Special Condition 5** would prohibit the staging and storage of equipment, tools, and materials on GBOC's cultivation sites (with the exception of materials securely stored on the work barge) and require that GBOC implement a variety of measures to avoid and address the accidental loss and displacement of cultivation gear and equipment. Such measures would include regular maintenance inspections during harvest to identify and correct worn or weathered gear at risk of breaking or escaping; clean-up events to recover materials that are accidentally lost; staff training to ensure best management practices are understood and used; and gear marking to help prevent loss and facilitate recovery. Prevention of gear loss and gear movement into sensitive habitat areas would be additionally required through the requirement in **Special Condition 2** that GBOC mark the perimeter of its untethered bottom bag sites and only use properly weighted bags in order to help prevent movement of bottom bags into nearby eelgrass habitat where they could displace and smother it. Further, **Special Condition 7** also requires that GBOC avoid placement of gear, structures, or equipment on or directly adjacent to areas occupied with eelgrass and make use of only those cultivation areas identified on **Exhibit 1**. The installation and use of cultivation equipment within these sites would concentrate GBOC's activities within those portions of its lease areas that are already periodically disturbed by ongoing aquaculture activities and that have historically supported limited eelgrass habitat.

**Marine Debris**

GBOC's proposed oyster aquaculture operation includes the placement and maintenance of several thousand individual pieces of plastic and PVC in Morro Bay. This material is associated with the several hundred linear feet of nylon rope that would be used for the bottom bag longlines, the roughly 500 PVC posts that would be used to support the elevated tumble culture longlines and anchor the bottom bag lines, approximately 7,000 two-foot wide by three-foot long plastic mesh bottom bags and up to 1,200 two-foot long by one-foot wide plastic mesh cultivation baskets. As has been well documented in parts of Tomales Bay and Humboldt Bay near shellfish aquaculture operations, some of this material can disperse into the environment as debris – either due to inadequate maintenance and inspection operations or challenging oceanographic conditions (currents, tides, and wave action).

While these issues are less well known in Morro Bay and GBOC appears to have a strong record of careful maintenance and marine debris prevention, the similarities between GBOC's operation and cultivation equipment and those within other areas of California that are known to be more problematic suggests that a cautious, proactive approach would be appropriate here. The need for such an approach is further strengthened by the lack of consistent and available data on marine debris collection efforts and recovered materials in Morro Bay and the significant amount of aquaculture debris GBOC found left behind on its lease areas when it began operations. In addition, the use of common gear types, such as similarly designed bottom bags, and the historic

lack of identifying marks or tags between the two existing shellfish aquaculture operations in Morro Bay, would make it difficult to determine in the future which operation is contributing the most and least to this issue. In other locations, cultivation equipment, bottom bags in particular, are known to have been recovered substantial distances from cultivation areas and examples are available from Morro Bay of aquaculture gear found smothering eelgrass habitat, buried in mudflats, and dispersed among the tidal salt marshes of Morro Bay State Park. The durability of the HDPE plastics used for much of the common cultivation equipment means that if it escapes, it can persist in the environment for many decades.

Even once it degrades, 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.

To address the potential ongoing and future release and distribution of marine debris resulting from GBOC's oyster cultivation operations, the Commission is requiring in **Special Condition 5** that GBOC implement or continue a variety of best practices, including those focused on inspections following storm events; debris reduction trainings for field employees; quarterly cleanup events; gear marking; field storage of tools and construction materials; and comprehensive debris cleaning and removal activities carried out on each bed at the time of its harvest. Although GBOC currently carries out a number of these practices voluntarily – including recently committing to mark the floatation buoys used on its tumble culture lines – memorializing these practices through operational requirements would help further ensure that they continue in the future. These requirements would reduce the long-term accumulation of debris within cultivation beds, prevent debris generation and loss, and promote recovery of materials lost due to storm action or other unavoidable causes. To further limit potential loss of one of the most commonly encountered types of large aquaculture debris – bottom bags – **Special Condition 2** would require GBOC to demarcate in the field the boundaries of those sites in which untethered bottom bags would be used and to only use untethered bottom bags that have been stocked with no less than two gallons or large oysters. This requirement would help prevent these bags from dispersing into surrounding areas and ensure that they are initially placed in the appropriate locations. Although the Commission has in past permits also required all bottom bags to be tethered to anchored longlines in order to prevent their movement and loss, GBOC has expressed concerns to Commission staff about the operational challenges that such a requirement would result in (primarily due to the time required to affix, maintain and detach bags from anchor lines) and has instead committed to continuing its practice of only placing untethered bottom bags in the bay if they are first found to meet a minimum weight threshold (measured as no less than two gallons of large oysters). In this way, GBOC would help ensure that all of its untethered bottom bags are heavy enough to remain in place during all but the most extreme conditions.[2]

[2] Based on information from GBOC staff, the only time its untethered bottom bags were found to have been displaced was following a rapid series of extreme tides associated with the March 2011 tsunami. These tides also displaced more securely anchored fixed gear and tethered bottom bags as well.

An additional source of aquaculture related marine debris in Morro Bay and several other areas with long histories of shellfish cultivation has been associated with businesses that have ceased operations and left behind large quantities of equipment, cultivation structures, and gear within intertidal or subtidal lease areas. To address this issue and help ensure that funding is available to carry out clean-up of abandoned operations, the California Fish and Game Commission requires – as part of its leasing of state tidelands – that the lessees deposit funds into escrow accounts so that funding is available to be used in the event that an operation ceases prior to recovering and fully removing its equipment. However, the funds deposited into these accounts have often been based on only rough approximations of clean-up, removal, and disposal costs that do not include an accurate or transparent accounting showing how they were estimated. As such, the funds in the escrow accounts for many aquaculture leases do not appear sufficient to cover actual clean-up costs. While staff of the California Fish and Game Commission and California Department of Fish and Game are working to address this issue, some lessees – including GBOC - have taken steps to proactively develop and document more accurate clean-up cost estimates or simply to augment the funds in the escrow accounts for their leases. The availability of these funds - in combination with the requirement in **Special Condition 1** that GBOC seek a permit amendment to remove its cultivation equipment from the bay prior to the expiration of its permit and cessation of its operations – would help ensure that GBOC's existing and proposed cultivation equipment is ultimately removed from the bay and does not become marine debris. In other words, these measures would help prevent any subsequent holder of GBOC's lease areas from encountering the same type of debris nuisance that GBOC inherited when it began its operations.

**Wildlife Disturbance**

The Morro Bay estuary has received state and federal recognition and protection as a critically important ecological resource. In addition to supporting a range of rare and sensitive habitat types, it is also home to an abundance of large and small wildlife from harbor seals, sea lions and sea otters to over 200 species of resident and migratory birds. GBOC's proposed operation has the potential to negatively affect a number of these species through disturbance and interference with natural behavior such as foraging and resting.

*Marine Mammals*

In addition to providing opportunities for commercial shellfish cultivation, the intertidal mudflats of central Morro Bay are also used as haul-out and resting sites by the bay's resident population of harbor seals. During a recent site visit by Commission staff, two such sites were observed in the vicinity of GBOC's operations. While both of these sites were located much farther away from the cultivation sites than the 150 foot minimum buffer distance recommended by the National Marine Fisheries Service, some aspects of GBOC's operations would occur outside of its cultivation areas and may therefore come within closer proximity of the haul outs. For example, the movement of GBOC's personnel and vessels to and from shore and between cultivation sites may bring them within or adjacent to marine mammal haul out areas. In addition, both harbor seals and sea otters have been observed throughout the waters of Morro Bay and may be encountered there at any time.

To ensure these species and their critical use areas are appropriately protected, **Special Conditions 6 and 7** would restrict GBOC from installing and using cultivation equipment

outside of the cultivation sites identified on **Exhibit 1** – all of which are located beyond the NMFS minimum recommended 150 foot buffer distance – and would prohibit GBOC and its personnel from chasing, flushing, or directly disturbing marine mammals during vessel transit, harvest, maintenance or inspection activities.

*Shorebirds, Seabirds and Waterfowl*
In order to protect its proposed elevated tumble culture lines from becoming a consistent roosting site for large numbers of seabirds and shorebirds such as gulls, terns, and pelicans that may adversely affect the surrounding water quality and its suitability for shellfish cultivation, GBOC is proposing to install a bird deterrent system. This system would be affixed to an 11 foot tall steel post within the center of the proposed tumble culture site and would include a four square foot solar panel for power as well as three cables that would extend outward from the post and be anchored into the substrate to support the post. The bird deterrent system itself would rely on four speakers to emit naturally recorded bird distress calls and predator cries. The system is designed to have a maximum coverage area of six acres and maximum volume of 110 dB[3] (roughly equivalent to the sound of a car horn at a distance of 1m).

The mudflats and intertidal areas of Morro Bay – including those at and around GBOC's cultivation areas – are widely regarded as critically important foraging habitat for a wide range of resident and migratory seabirds, shorebirds, and waterfowl such as black brant, least tern, dunlin, and several species of plover and sandpiper. Because many of these species are small and prone to predation by raptors and other predatory bird species, they are likely to be affected by the proposed bird deterrent device. As a result, they may be displaced or excluded from foraging in this area, thus losing a portion of their habitat.

However, as discussed in its CDP application, GBOC proposes to limit its use of the device to an as-needed basis:

> *We will use the device on an as needed basis and limit its range to the tumble culture area. The device will be used only when we have a problem with bird roosting. In addition, it will be turned on only when the tide is in, which should also reduce habituation. A float switch will be installed on the base of the post which will turn the device off at low tide. The frequency of the randomly arranged distress calls and predator cries will be adjusted, using the time off interval setting, to a minimum. The speakers can be set to operate in sequence rather than simultaneously.*
>
> *The Super BirdXPeller PRO has a stated maximum coverage of 6 acres. But the volume, which has a maximum of 110 db at 1m, will be adjusted down to the minimum that we find to be effective on the 0.65 acre tumble culture area.*
>
> *We think the sonic deterrent approach is humane, can be effective and given our remote location will not disturb people living in Los Osos or Morro Bay. For kayakers visiting our farm area, we think the sporadic bird calls will not be objectionable. If however we get a*

[3] Air standard (i.e, dB re 20 μPa).

*complaint from a visitor, we will try to educate them of the importance of bird control to our operation.*

*We will also use visual scares and predator decoys in conjunction with the sonic device. We plan to use the Prowler Owl (also from Bird-X) which has wings that move in the breeze. We will mount the owl on a stake that is moved around the field each week.*

While these measures would reduce the frequency and duration of adverse impacts to resident and migratory birds within the project area, additional minimization measures and protocols are also available to further reduce these impacts. **Special Condition 6** would require GBOC to implement these measures by only using the deterrent device if (1) documentation of bird roosting on elevated cultivation equipment is first provided to the Executive Director and (2) use is minimized to the extent feasible by being limited to (a) periods when California Department of Public Health allows direct shellfish harvesting; (b) times when surrounding mudflats are submerged; and (c) areas in which elevated cultivation equipment is in place. These measures would help ensure that the deterrent devices are used only when a documented need is present and during seasons and time periods when bird roosting would be most problematic.

**Seawater Intakes**

The removal of seawater through intake structures is known to result in the impingement and entrainment of marine life. The type and quantity of marine life that may be adversely affected in this way is related to the size and velocity of the intake structures. Larger, high-velocity structures can cause the impingement and entrainment of larger organisms that can include adult fish, while smaller low-velocity structures can typically only impinge and entrain smaller larval and juvenile organisms. While impingement (capture of fish and marine organisms against an intake screen due to suction) can often result in the injury or mortality of the affected organism, adverse effects of entrainment (capture of fish and marine organisms in the intake stream) vary based on the type of intake system (configuration of pipes, pressure changes, temperatures) and ultimate use of the entrained water.

As part of its proposed operations, GBOC would carry out a variety of activities that would require the use of seawater extracted from Morro Bay. These activities include (1) shellfish cleaning and sorting operations on the work barge; (2) operation of the FLUPSYs; and (3) maintenance cleaning of the rafts and equipment. GBOC proposes to pump out seawater from Morro Bay for these activities.

Seawater use associated with operation of the FLUPSYs would be limited to the water drawn-in to upwelling tanks and troughs and immediately discharged back into the bay, and would therefore not include permanent removal, heating, or the pressure changes and mechanical stress that comes with movement through a long series of pipes. Because removal, heating, and mechanical stress are the primary causes of mortality for entrained organisms, the type of proposed water use associated with operation of the FLUPSYs would not be expected to result in entrainment impacts to juvenile fish and the larval and planktonic organisms within the water.

Seawater use associated with the shellfish cleaning, sorting and maintenance operations on GBOC's work platform/barge would include use of gasoline powered intake equipment and thus

more substantial mechanical stress, however, and would be likely to cause mortality to juvenile fish and a portion of the larval and planktonic organisms in the water extracted from the bay for these uses. Among the juvenile fish known to be present within Morro Bay's waters are two species recognized with federal protection – the federally endangered tidewater goby (*Eucyclogobius newberryi*) and federally threatened south central California coast steelhead (*Oncorhynchus mykiss*).

Both the California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS) have developed guidance and technical specifications for the use of intake structures located within water bodies in which juvenile salmonids such as steelhead are found. These guidelines are intended to protect these fish species by ensuring that intake screens are small enough to prevent their entrainment and intake velocities are low enough to not overwhelm their swimming abilities. Specifically, intake velocities are not to exceed 0.33 feet per second and mesh screening on intake structures is to be limited to 3/32 inch. The Commission has previously found these standards to reduce the potential impingement and entrainment of protected species of juvenile and adult and has required their use on a variety of shellfish aquaculture operations that include seawater intake structures (for example, CDP No. E-11-029). **Special Condition 9** would establish these intake standards for the seawater intake systems that GBOC proposes to use for maintenance or shellfish cleaning, washing, or sorting operations.

**Conclusion**

Although the Commission finds that the proposed project has the potential to adversely impact marine resources and the biological productivity of coastal waters, with implementation of **Special Conditions 1** through **9**, the project would be carried out in a manner in which marine resources are maintained, species of special biological significance are given special protection, the biological productivity of coastal waters is sustained, and healthy populations of all species of marine organisms will be maintained. In addition, the proposed project, as conditioned, is expected to maintain the biological productivity of coastal waters appropriate to maintain optimum populations of marine organisms. 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. 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 up to three vessels 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. In addition, proposed operational activities also include the use of a gasoline powered generator and intake pump on a floating work barge. Spills could occur during fueling of this equipment or the machinery could fail or leak and discharge oils into marine waters.

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, GBOC has incorporated into its operations a number of practices that reduce the risk and consequences of an oil spill. For example, GBOC only operates vessels during daylight hours, uses safe navigation and vessel handling practices, stows fuel and oil in sealed compartments, and maintains only the minimum quantity of hazardous materials on board its vessels and barge.

Notwithstanding implementation of the above-described prevention measures, accidental spills can and do 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 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.

Because neither of these requirements have been met, **Special Condition 10** would provide that GBOC submit, for Executive Director review and approval, a Hazardous Material Spill Prevention and Response Plan that includes identification of potential spill sources and quantity estimates of a project specific reasonable worst case spill; identification of prevention and response equipment and measures/procedures that will be taken to prevent potential spills and to protect marine and shoreline resources in the event of a spill; the provision of spill prevention and response equipment onboard project vessels at all times (including the work barge); and emergency response and notification procedures, including a list of contacts to call in the event of a spill. This Hazardous Material Spill Prevention and Response Plan would complement the practices described above that GBOC has already integrated into its operations and would take the form of a more typical stand-alone Plan that would be made available on each vessel deck for reference in the event of an incident. Such a plan would include the requisite spill notification number (the State Warning Center number 1-800-852-7550) in an easy to find location on the front page, along with the appropriate list of specific local contact names and numbers that will be called. Additionally, the plan required in **Special Condition 10** would also specify the total, worst-case volume of hazardous materials on the vessels and detail the type and quantity of response equipment that would be kept available on the vessel to address such a worst-case spill.

With implementation of the measures described above and in **Special Condition 10**, the Commission finds that GBOC would be undertaking 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 the second test of Coastal Act Section 30232.

**F. VISUAL RESOURCES**

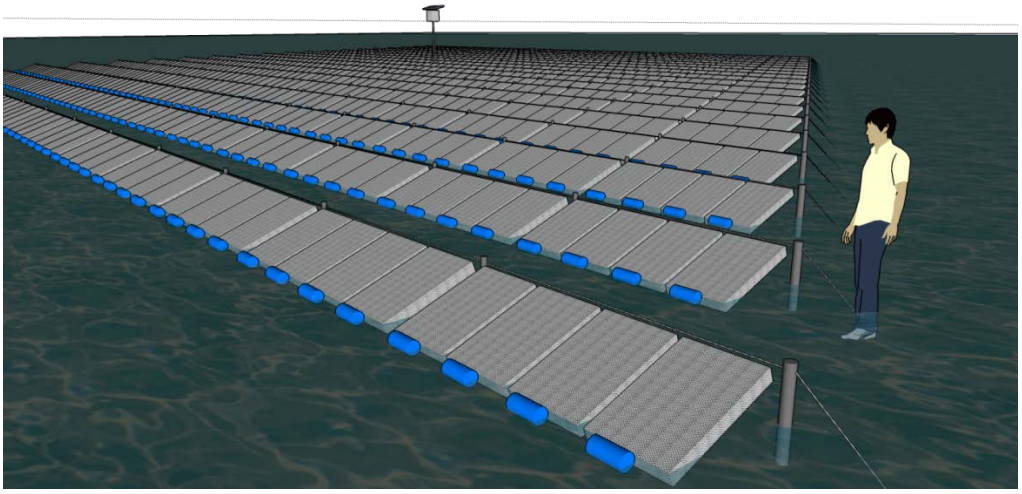
Section 30251 of the Coast Act states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of*

*natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

The majority of GBOC's cultivation equipment within its lease areas in the central part of the bay (such as the bottom bags longlines, untethered bottom bags, and clam nets) would lay on the substrate with a vertical profile of only several inches – meaning that it would be submerged during many tidal elevations and only slightly visible when exposed. However, two elements of the operation would be more clearly visible from shore and within the bay. This equipment includes the approximately 1,200 square foot work barge (and the associated gear and structures it supports) and the twenty-six 120 foot long elevated longlines and affixed mesh cultivation gear.

*Elevated Longlines*
The one existing elevated longline and additional 20 proposed elevated longlines would be 120 feet long and extend approximately 30 inches above the substrate. The single existing longline is shown in the following image along with a rendering of the proposed build-out with 20 additional lines (shown at an average tidal height with a human figure to provide scale).



Each of these lines would include two to three inch diameter vertical PVC posts every nine linear feet as well as hanging bottom bags or plastic mesh cultivation baskets. Viewed at a distance during low tides, these lines would resemble a series of short fences or walls configured in parallel rows within an approximately 0.65 acre area of mudflats. Due to the low vertical height of these longlines, they would be partially submerged during all tides greater than approximately one foot (MLLW) and fully submerged (with the exception of the blue floats) during all tides greater than approximately 3.5 feet. The lines would be installed on a mudflat that is exposed at tidal elevations lower than approximately one foot. Although it fluctuates throughout the year, the typical tidal range in Morro Bay is between zero and five feet.

Tidal submersion of the aquaculture gear combined with its proposed location near the center of Morro Bay – approximately ½ mile from the nearest easily accessible shoreline area and ¾ mile from the nearest residential area – would make the proposed elevated longlines difficult to see during most conditions.

*Barge/Work Platform*
The most obvious visual element of GBOC's aquaculture operation would be the 1,200 square foot barge/work platform that is permanently moored within its cultivation area to facilitate its operations.

As shown in the image above of the existing barge (and the design schematics provided in **Exhibit 2**), a variety of types of machinery, materials and equipment are proposed to be used and stored on this barge. The barge would also support several raised tables and two small shed structures. The smaller of these structures includes a portable restroom and hand wash station and is covered on the outside by an approximately nine foot high by 12 foot wide plywood constructed sign designed in the shape of a sail. The larger shed structure also extends approximately nine feet above the surface of the barge or 12 feet above the water surface when the barge is afloat during higher tides. This shed is used for gear storage and to contain a gasoline pump used to draw-in seawater for use in the oyster sorting, cleaning, and packing operations that GBOC carries out on the work platform.

Although the sail-like shape and design of the GBOC sign affixed to the barge provides it with somewhat of a maritime aesthetic when viewed from a certain angle and distance, views from the other three sides and up close reveal the barge to be simply a work platform and not a ship or sailboat. Additionally, the location of the work platform near the center of Morro Bay's shallower "back bay" – an area avoided by most vessels not associated with the aquaculture operations due to the abundance of shoals and shallow mudflats – and its permanent fixed position makes it frequently stand out among the empty natural features of the bay and surrounding shoreline.

As shown in the figure below - taken in 2018 from one of the public access trails at Morro Bay State Park above the adjacent marina - the work platform can often be the only man-made element within the southern portion of the bay.

As noted in input received on the project from representatives of the Northern Chumash Tribal Council, views of the Morro Bay estuary are considered part of the Tribe's Sacred Viewshed. Accordingly, the Tribe considers impediments to this view to be a matter of concern.

However, because most public vantage points on both the eastern and western shores of the bay are located roughly a ½ mile away from GBOC's work platform, it typically comprises a very small and easily overlooked visual feature, even when one of GBOC's vessels is moored to it. In its current size, location and configuration, the barge does not block, impede or restrict any views of the bay nor does it significantly change the character of the bay or views onto it. The

proposed continuation and modest expansion of aquaculture operations that GBOC is pursuing would not change the size, use, or location of the work barge.

Therefore, the Commission finds that the scenic and visual qualities of this area shall be protected and therefore the proposed development is consistent with Section 30251 of the Coastal Act.

### G. ALLEGED VIOLATION

As noted above in the Summary, violations of the Coastal Act exist on the subject property, including, but not limited to, installation and use of bottom bags, bottom bag longlines, elevated PVC racks, mesh nets, FLUPSYs, and work barges. In response to notification by Commission permitting and enforcement staff about these Coastal Act violations, as well as its desire to carry out additional proposed development, GBOC submitted this CDP application. Approval of this application pursuant to the staff recommendation, issuance of the permit, and the applicant's subsequent compliance with all terms and conditions of the permit would result in resolution of the above described violations.

Although development has taken place prior to the submission of this Coastal Development Permit application, consideration of this application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Commission review and action on this permit does not constitute a waiver of any legal action with regard to the alleged violations, nor does it constitute an implied statement of the Commission's position regarding the legality of development, other than the development addressed herein, undertaken on the subject site without a coastal permit or permit amendment. In fact, approval of this permit is possible only because of the conditions included herein and failure to comply with these conditions would also constitute a violation of this permit and of the Coastal Act. Accordingly, the applicant remains subject to enforcement action just as it was prior to this permit approval for engaging in unpermitted development, unless and until the conditions of approval included in this permit are satisfied.

Failure to comply with the terms and conditions of this permit may result in the institution of enforcement action under the provisions of Chapter 9 of the Coastal Act. Only as conditioned is the proposed development consistent with the Coastal Act.

### H. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096 of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as modified 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 approval of a proposed development if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant impacts that the activity may have on the environment. The project as conditioned herein incorporates measures necessary to avoid any significant environmental effects under the Coastal Act, and there are no less environmentally damaging feasible alternatives or mitigation measures. Therefore, the proposed project is consistent with CEQA.

## Appendix A: Substantive File Documents

*Coastal Development Permits and Application Materials:*

Coastal Development Permit Application No. 9-18-0278 and associated file.

Coastal Development Permit Nos. E-11-029; E-12-012-A1; 9-17-0646; 9-18-0002-A1

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## Appendix B: Shellfish Cultivation Methods

The following photographs and detailed descriptions of shellfish cultivation methods used by Grassy Bar Oyster Company (GBOC) are excerpted or adapted from GBOC's CDP application.

Floating Upwelling Systems (FLUPSYs)

A FLUPSY is an in-water floating structure designed to upwell nutrient rich seawater through submerged plastic or fiberglass bins to provide a consistent source of nutrients to growing very young shellfish (also called seed). FLUPSYs are used by GBOC to quickly grow shellfish seed to the size needed for planting on its tidelands leases.

As described in its CDP application:

*GBOC operates 2 FLUPSYs located at slips HF1 and HF2 at Tidelands Park Marina in Morro Bay near the Public Boat Launch Ramp. The slips are rented from the City of Morro Bay Harbor Department.*

*The FLUPSYs each have 8 bins that are 2 ft by 2 ft, attached to a 12 ft central fiberglass trough that is continually drained by an electric pump. The trough and bins for each FLUPSY are built into a 12.5'x16.5' raft.*

*The FLUPSYs are stocked with small (3 mm) single Pacific oyster or Manila clam seed and tended daily by manually stirring each bin with a paddle.*

*The bins are hoisted up out of the water every month or so for cleaning and size sorting using a pulley system hanging from an overhead wooden trellis structure.*

*One of the FLUPSYS has a hand sorting station for size-sorting small seed (3-10mm). This station consists of a wooden table that supports a round 80 gallon fiberglass tank that is filled with seawater. Hand-held screens of various mesh sizes sit in the tank and are used to manually sift the seed into different size classes.*

*Empty bins are cleaned there at the FLUPSYs with a gasoline powered pressure washer that is supplied with potable water. The pressure washer is noisy so we only do this between 8am and 5pm. Each bin gets pressure washed about 4 times per year.*

*After about 6 months, when the oyster seed in a bin has reached about 25 mm in length, the bin is brought out to the Raft at State Water Bottom M-614-01-Parcel 1 (referred to here as Parcel 1) for size sorting using the tube sorter. Seed that falls through the 16mm hole size on the tube sorter is returned to the FLUPSYs for additional growth.*

*The central trough of each FLUPSY is cleaned weekly with the pressure washer or with the paddle.*

*GBOC stocks the FLUPSYs by purchasing approximately 2 million Pacific oyster seed each year from several hatcheries and importing them into Morro Bay after obtaining an importation*

*permit from CDFW. GBOC also purchased 400,000 Manila clam seed in 2017 as an experiment, and if successful, would purchase more beginning in 2019.*

Bottom Bag Longlines

The primary gear used by GBOC for oyster cultivation is referred to as a "bottom bag." These roughly two foot by three foot polyethylene mesh bags are stocked with a pre-determined number of individual oysters and laid directly on intertidal mudflats for months at a time while the enclosed oysters grow to harvestable size. To help maintain some of these bags in place, GBOC makes use of "longlines," a series of several hundred foot long ropes anchored to the substrate that the bags are affixed to. GBOC maintains a total of 37 of these longlines to support an estimated 3,500 to 3,900 bottom bags.

As GBOC describes in its CDP application:
*The bins of Pacific oyster seed from the FLUPSYs are passed through a tumbling sorting machine or tube sorter (QuickTube Sorter, Chesapeake Bay Oyster Company) located on the Raft at Parcel 1. The tube sorter is powered by a Honda 2000 portable gasoline powered inverter. The seed that graduates on the tube sorter is stocked into ½"mesh black polyethylene grow-out bags, 38"x24" (Norplex, Inc) at a rate of 150 per bag. These bags are closed with HG-1 galvanized pig rings (Decker Manufacturing Co.) and then tethered to long lines, using 5" branch hangers, sometimes called long line snaps, (Blue Ocean Tackle, Inc) and are spaced about 4" apart.*

*GBOC operates 37 long lines, covering a total of 2.0 acres of intertidal mud flat at approximately a +1 ft tidal level. Twenty seven long lines are located at Parcel 1 and 10 are located at State Water Bottom M-614-02 (known as Lease 02). The 27 at Parcel 1 are divided into 2 separate areas: 19 are in the Upper Terrace area and are designated UT1-UT19, and 8*

*are in the Central Farm area and are designated CF1- CF8. The 10 at Lease 02 are designated L1-L10. These different areas can be seen on* [**Exhibit 1**].

*These long lines vary in length from 169 ft to 455 ft, are spaced 6-10 ft apart, and are made of 3/8" polypropylene line stretched across and lying directly on the intertidal mud, and tied to anchors.*

*Each anchor consists of a 5 ft length of 2" diameter Schedule 40 pvc pipe driven all the way down into the mud manually with a sledge hammer, so that only a few inches protrude up out of the mud. The anchors are spaced about 120 ft apart along the length and one at each end of the line. There are a total of 114 anchors deployed, 88 at Parcel 1 and 26 at Lease 02.*

*…*

*Every 2 weeks on a low tide all the bags on every long line are flipped over or shaken in order to dislodge oysters stuck in the mesh, to improve growth and to control fouling. Bag flipping is done by hand, sometimes with a hand held rake by a crew of 3-5 employees walking up and down the rows.*

*After 4 to 8 months, the bags are unclipped from the long line and the oysters are sorted on the tube sorter again, but this time using a tube with larger holes. The smaller size class is returned in bags to these same long lines.*

Untethered Bottom Bags

In addition to the bottom bag longlines described above, GBOC also places bottom bags within its lease areas without the accompanying anchor lines. These bottom bags are used for larger, heavier oysters that are less likely to be displaced or moved by tidal or current action. Currently, GBOC's operation does not include enough of these oysters to warrant the use of untethered bottom bags and the areas set aside for this use remain fallow. The following is a description from GBOC's CDP application materials that details how these areas are used when needed:

*The larger size classes from this sorting procedure are returned to bags that are placed in rows on the intertidal mud, untethered. There are 3.4 acres that are used for untethered bottom bags: 3.17 at Parcel 1 and 0.23 at Lease 02. Like the nearby long line areas, the untethered bottom bag areas are at approximately a +1 ft tidal level. Currently only about 1 acre of this 3.4 acres is planted. As a young crop of oysters grows, it gets spread out onto more acreage until we may use all 3.4 acres.*

*We have learned that the grow-out bags are heavy enough to stay put untethered when the 150 oysters used to stock a bag fills a 2 gallon bucket. Every 2 weeks on a low tide, as with the long line bags, a group of 3 to 5 employees walk up and down the rows, flipping the bags over, using a hand held rake.*

*After several weeks to months, we begin harvesting these bottom bags. Harvesting is done at higher tides by a person wading in the water and manually lifting a bag off the mud and placing it onto the boat or onto a paddleboard.*

*At the Raft, these bags are sorted by hand at the sorting table into different size classes, which are marked with differently colored flagging tape to indicate the different sizes that we sell. Those oysters that are unsuitable to sell are returned to the bottom bag area.*

Racks with bottom bags

Within its tidelands leases, GBOC also maintains and uses a series of elevated racks made of PVC tubing for the temporary storage of oyster filled bottom bags.

As GBOC describes in its CDP application:
*The oysters that are suitable to sell are returned to grow-out bags and then placed on racks that hold the oysters a few inches up off the bottom so that they can purge themselves of any sand or silt. After 24 hours, these racked oysters are ready to sell. There are 280 ft of racks at Parcel 1 and 60 ft at Lease 02.*

*A rack consists of a parallel pair of horizontal 1" pvc pipes, or alternatively, a pair of parallel 5/8" reinforcing rods. These parallel pairs of pipes or rods are spaced 18" apart, and held about 4" above the mud by vertical legs spaced 30" apart. The legs are 1"pvc pipes, 30" long and driven into the mud about 26". The legs are attached to the horizontal pipes or rods with pvc T's. In all, there are 209 legs deployed, 164 at Parcel 1 and 45 at Lease 02. The legs can be removed from the mud using the post puller tool.*

*The racks that are made with horizontal pvc pipe have 1/8" diameter stainless steel screws screwed into them every 12 inches along their length. The screws are not screwed all the way in, but instead they protrude upward from the pipe about a half inch. Bags of oysters that are placed on these racks are prevented from slipping off the racks by these screws that catch in the bag material.*

Elevated Longlines/Tumble Culture Lines

The final method GBOC uses to cultivation Pacific oysters involves hanging bottom bags from lines of elevated stainless steel cables. The bottom bags are equipped with small buoys to provide floatation and increase movement of the bags during higher tides. The steel cables are approximately 120 feet long and support up to 48 bottom bags. Each cable is elevated approximately two and a half feet above the mudflats. GBOC has currently installed one of these elevated longlines and is proposing to install an additional 25 lines to the east and west of the existing line.

As GBOC describes in its CDP application:

*This tumble culture line consists of a single 120 ft length of ¼" stainless steel cable suspended 30" above the intertidal mud at Parcel 1 by posts made of 2" or 3" diameter grey pvc pipe spaced 9 ft apart.*

*The ends of the cable are attached to 66" galvanized steel screw anchors at either end. Forty eight grow-out bags are attached with 5" branch hangers to the cable. Each bag is equipped with an 11" blue floatation buoy that causes the bag to tilt up with the incoming tide. The grow-out bags are each stocked with 150 seed oysters from the FLUPSY. We anticipate harvesting these bags after about 12 months of growth.*

Manila clam nets

In addition to Pacific oysters, GBOC also cultivates Manila clams. The method of cultivation is very different with this species, however. Instead of containing the clams within bags or other gear, they are dispersed directly onto the mudflats where they burrow into the ground and are covered by a sheet of mesh netting to protect them from predation.

As GBOC describes in its CDP application:

*In 2017* [GBOC] *experimented with 400,000 3mm seed which were grown in the FLUPSYs to 10 mm and then planted under nets on Parcel 1 intertidal mud flats.* [GBOC] *experimented with different types of nets and currently have 0.17 acres of nets deployed, all at approximately a +1 ft tidal level. The net that works best is a heavy duty ¼" mesh, 14 ft x 50 ft net, Product Number OV-7822 from Industrial Netting, MN.*

*One of these nets is planted with 50,000 manila clams by sprinkling the clams under the net as the net is rolled out onto the mud. Then the perimeter is pinned down with 18" steel stakes spaced 18" apart and then stones are placed between the stakes.*

[GBOC] *anticipates harvesting one year after planting the nets. Harvesting will be done by hand, using hand rakes. All stakes and stones and netting will be removed and re-used for the next crop.* [GBOC] *plans to use stainless steel stakes in the future and to not use stones, which slide around in the currents.*

*The nets are brushed at low tide every month with a broom to discourage fouling organisms (mainly macroalgae) from getting established.*