Ventura Shellfish Enterprise: Strategic Permitting Initiative to Substantially Increase Shellfish Farming in Southern California

2015 NOAA Sea Grant Aquaculture Extension and Technology Transfer
Task 1 Deliverable: Strategic Permitting Plan

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Strategic Permitting Initiative to Substantially Increase Shellfish Farming in Southern California

TABLE OF CONTENTS

Section **Page No.**

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

APPENDIX

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
BA	Biological Assessment
BE	Biological Evaluation
BMP	best management practice
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers
CZMA	Coastal Zone Management Act
EIR	environmental impact report
EMB	Environmental Management Branch
ESA	Endangered Species Act
FDB	Food and Drug Branch
MND	mitigated negative declaration
ND	negative declaration
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NSSP	National Shellfish Sanitation Program
NWP	nationwide permit
OHP	Office of Historic Preservation
PATON	Private Aids to Navigation
RWQCB	Regional Water Quality Control Board
SLC	California State Lands Commission
SWRCB	State Water Resources Control Board
USFWS	U.S. Fish and Wildlife Service
VPD	Ventura Port District
VSE	Ventura Shellfish Enterprise

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Strategic Permitting Initiative to Substantially Increase Shellfish Farming in Southern California

INTRODUCTION

Increasing the supply of safe, sustainably produced domestic seafood is a priority for NOAA and the Department of Commerce, as well as the State of California and the California Department of Fish and Wildlife (CDFW). In 2015, the Ventura Port District (VPD), in cooperation with volunteer partners identified as the Ventura Shellfish Enterprise (VSE), received a substantial sub-award from a $300,000 NOAA 2015 Sea Grant Aquaculture Extension and Technology Transfer Grant to California Sea Grant in support of a strategic permitting and planning initiative to facilitate and substantially increase shellfish farming in Southern California. The project seeks to secure all required federal, state, and local permits and entitlements to support a commercial mussel farm in open state waters proximate to Ventura Harbor, California (Project). The VPD received this 2015 Sea Grant award to support this innovative project creating and permitting leases for farming the Mediterranean mussel, *Mytilus galloprovincialis*. As a member of VSE, the VPD will hold all required federal, state, and local permits and entitlements.

The NOAA 2015 Sea Grant provides funding and support of three discrete tasks: Task 1 provides for a Strategic Permitting Plan. Task 2 provides for completion and submittal of all requisite permit applications along with analyses necessary and sufficient to comply with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Task 3 is an extension plan that includes two education and outreach components: (1) launch of an open-access project website and social media initiatives, and (2) a series of educational workshops that covers a broad spectrum of Project-related issues, including the need for safe and sustainable aquaculture, site selection, mussel growing technology and equipment choices, Project environmental effects and best management practices (BMPs), shellfish quality and safety assurance, economic projections and the process for becoming a Project shellfish grower/producer.

Task 1 of the NOAA Sea Grant provides funding to support a Strategic Permitting Plan. Chapter 1 of the Strategic Permitting Plan provides a detailed summary of the commercial mussel farm, which will consist of twenty 100-acre parcels to be located in the open state waters proximate to Ventura Harbor, California. Chapter 2 identifies the necessary federal and state permits and approvals, including those that trigger review under NEPA and CEQA. A focused summary of each of these approvals is provided, together with a permit review timeline and critical path elements. Chapter 3 provides the strategic plan to securing these approvals, along with a proposed permit schedule and critical permit path.

The Strategic Permitting Plan will allow for meaningful and early consultation with agency staff, as well as other stakeholders and the public. This in turn will ensure that Project permitting and land use analyses will be accurate and complete, and that the review of these materials will be

efficient, thorough, and streamlined to the extent practical. It is also intended to support others in their independent efforts to secure approvals for similar commercial mussel projects in open state waters off California's coast.

1 PROJECT DESCRIPTION

1.1 Project Applicant

The Ventura Port District (VPD) is the project applicant. VPD is what is known as an Independent "Special District." State law defines a special district as "any agency of the state for the local performance of governmental or proprietary functions within limited boundaries." A special district is a separate local government entity that delivers public services. VPD is the owner/operator of the Ventura Harbor.

1.2 Project Summary

The Project will establish a commercial offshore bivalve aquaculture operation based from the Ventura Harbor to create economic opportunities for community and marine stakeholders, produce a high value and sustainable seafood product, and advance collaborative evaluation of permit applications among regulators.

The Project consists of twenty 100-acre plots in state waters of the Santa Barbara Channel in sandy bottom areas located northwest of Ventura Harbor, as shown on Figure 1, Location of Project in Santa Barbara Channel. The sites will be used for growing the Mediterranean mussel (*Mytilus galloprovincialis*) via submerged long lines. The mussels will be grown and harvested by Project growers/producers and landed at Ventura Harbor. A portion of one plot will be set aside for research and education purposes.

Initial plantings of juvenile seed mussels, commonly referred to as spat, will be purchased from onshore hatcheries certified by the California Department of Fish and Wildlife (CDFW). If approved by the appropriate regulatory agencies, including CDFW and the California Coastal Commission (Coastal Commission), subsequent plantings may include wild collected spat. At the hatcheries, mussels adhere directly to special textured ropes that promote mussel attachment and growth. These ropes will be suspended beneath the surface in open coastal waters of the Channel via lines and buoys anchored to the sandy bottom. Cultivated mussels grow by filtering naturally occurring phytoplankton from the ocean.

Harvesting involves separating the mussels from the ropes, followed by cleaning, sorting, and bagging. All of these activities will take place aboard the harvesting vessel. The bagged mussels will be transported to Ventura Harbor for offloading, sale, and distribution.

This Project will serve to diversify the catch and stabilize the fishing fleet home-ported at Ventura Harbor, provide a locally cultivated, sustainably raised food source, and significantly advance state and national goals and objectives for increased domestic aquaculture and a secure food supply.

This Project is supported, in part, through the NOAA Sea Grant program, the goal of which is to contribute to "a safe, secure and sustainable supply of seafood to meet public demand."

The Project is a unique approach to developing environmentally and economically sustainable shellfish commerce with product landed at the Ventura Harbor. This initiative is novel in several ways. First, the Project proposes to produce bivalve shellfish in the offshore marine environment, cultivation practices that, although well established worldwide, are in their infancy in the United States, particularly on the West Coast. Second, the Project is working cooperatively in an open-source format with state and federal regulators to establish a template for additional future shellfish growing operations in California. The proposal to permit a group of twenty 100-acre growing plots allows for participation in the Project by potential growers who might otherwise be precluded because of the significant regulatory burden of obtaining the required government approvals. The scale of the Project also allows the individual grower/producers to benefit from centralized environmental monitoring, product safety testing, and product marketing. This Project as it is scaled is also intended to bolster the working waterfront in Ventura Harbor, providing economic benefits to VPD, its tenants, and the community.

The Project offers a number of other benefits related to food supply, because at present the mussel market in the United States and locally is dominated by imports from Canada, Chile, New Zealand, and Europe. The Project will supply a locally grown mussel product to an established market with the potential for expansion. Cultivating mussels off the California coast is also in keeping with federal policy to improve domestic food security. And at the same time, mussels provide a high-protein, low-fat source of human nutrition. Compared with other cultivated protein sources, mussels use far less of our limited freshwater resources.

The Project is consistent with California's Aquaculture Development Act (California Public Resources Code, Sections 826–828), which encourages the practice of aquaculture to augment food supplies, expand employment, promote economic activity and protect and better use the land and water resources of the state, and Assembly Joint Resolution 43 (2014), wherein the State Legislature states its support "to protect existing shellfish beds and access to additional acreage for shellfish farming and restoration." The Project is also consistent with NOAA's National Shellfish Initiative (NOAA 2013) and National Marine Aquaculture Policy (NOAA 2011), which seek to increase populations of bivalves in coastal waters through commercial aquaculture production and acknowledge the multiple benefits of shellfish aquaculture, including providing new jobs and business opportunities, meeting the growing demand for seafood, and providing habitat for important species. Finally, the Project furthers the goals of the National Ocean Policy Implementation Plan (National Ocean Council 2013), one of which is to increase efficiencies in the permitting process and encourage agency coordination to facilitate additional marine aquaculture development.

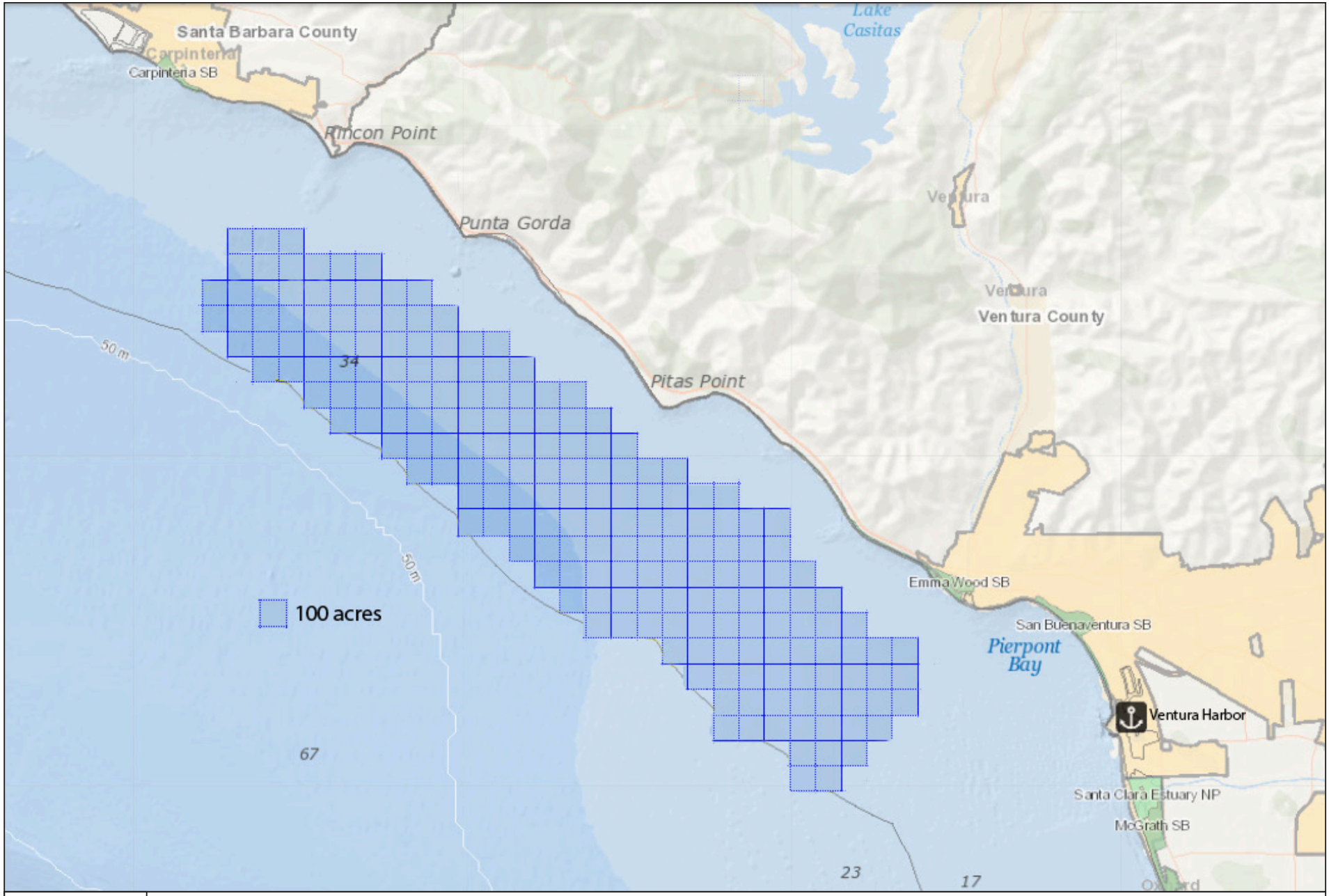

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FIGURE 1

Location of Project in Santa Barbara Channel

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1.3 Project Objectives

1. To increase the supply of safe, sustainably-produced, and locally-grown shellfish while minimizing negative project impacts

The Project responds to federal and state priorities to increase the supply of safe, sustainably produced domestic seafood.

California is the third-largest consumer of shellfish in the United States, and current state production lags far behind demand. Shortfalls are met by importation, which contributes to the state and national seafood deficit and increases our carbon footprint by the need to transport shellfish into the state from around the world. The Project at buildout would produce 9,000 to 11,000 tons of mussels for market per year. Further, per Objective 3, by serving as a template for additional offshore shellfish-growing projects, this Project aims to increase the efficiency of shellfish permitting and thus bring additional shellfish growing operations online in California.

Shellfish aquaculture is environmentally sustainable relative to other forms of animal protein in the human diet (see Table 1). Mussel production requires no feed and very little freshwater, and it uses ocean areas rather than land for production. Shellfish cultivation cleans ocean water of pollutants from land-based agriculture (e.g., nitrogen and phosphorous), and mussels are a low-carbon footprint food product compared to other sources of animal protein.

Table 1
Comparison of Sustainability Indicators among Animal Production Systems

Animal Type	Food Conversion (kg feed/kg edible weight)	Protein Efficiency (%)	Nitrogen Emissions (kg/ton protein produced)	Phosphorous Emissions (kg/ton protein produced)	Land (tons edible product per HA)	Consumptive Freshwater Use (m^3/ton)
Beef	31.7	5	1,200	180	0.24–0.37	15,497
Chicken	4.2	25	300	40	1.0–1.20	3,918
Pork	10.7	13	800	120	0.83–1.10	4,856
Finfish (average)	2.3	30	360	48	0.15–3.70	5,000*
Bivalve mollusks	Not fed	Not fed	-27	-29	0.28–20	0

Source: Aquaculture Workshop 2015.
Notes: kg = kilogram; HA = hectare; m3/ton = cubic meters per ton.
* Consumptive water use is difficult to compare across finfish aquaculture production systems because of variability in feed sources and depending on whether the system is freshwater or saltwater.

To minimize conflicts with other ocean uses and ensure location away from pollution sources, the Project location was selected using a marine spatial planning tool developed at the University of California, Santa Barbara, and described further in Section 1.4, Project Location.

2. To enhance and sustain Ventura Harbor as a major west coast fishing port and support the local economy

The VPD, which owns and operates Ventura Harbor, will receive lease revenues and and landing fees for mussels brought to the harbor for off-loading plus ancillary economic benefits of having producer/farmers based at the harbor. These new funds will assist the VPD in continuing to meet its mission, which includes providing a safe and navigable harbor and a seaside destination that benefits residents, visitors, fisherman, and boaters with harbor facilities, events, and services.

The Project will also serve to diversify the catch and stabilize the fishing fleet home-ported at Ventura Harbor. Project participation opportunities may be available for existing local commercial fishermen based in Ventura Harbor, existing commercial shellfish businesses, and startups. The Project will employ specific outreach efforts to target small businesses and encourage their participation in the project.

Additionally, Ventura Harbor depends upon the U.S. Army Corps of Engineers (Corps) for annual dredging. There is a strong nexus between the continued receipt of federal support and the vitality of the harbor's commercial fishing operations and landings.

The Project as proposed will positively impact the economic health of the Ventura Harbor community through lease revenues and direct landing values, indirect secondary benefits, and economies of scale built into the project design.

Cultivated mussels landed by the Project will contribute significantly to the economic base of commercial seafood landings at Ventura Harbor. Each of the 20 proposed growing areas will accommodate an estimated 36 longlines. Each of these longlines is designed to support 8,000 feet of growing line, which in turn can produce 4 pounds of harvest size mussels per foot of line, or 32,000 pounds of harvest mussel per longline. It is reasonable to project each parcel producing 900,000 to 1,100,000 pounds of market-size mussels per year with a dockside wholesale value of $2.2 million to $2.8 million at current market rates of $2.50 per pound. Therefore, at full cultivation of all 20 sites, 18 million to 22 million pounds of high-value, sustainably produced mussels with a value of $45 million to $55 million could be landed and distributed from the Ventura Harbor.

Secondary economic benefits may include but are not limited to: direct retailing of mussel product within the harbor seafood restaurants and retailers; commercial boatyard activity related to maintenance of a producer vessel fleet; storage sales and maintenance of producer gear;

secondary contracts related to installation and maintenance of mussel lines; and indirect benefits related to the tenancy of producers and support industry associated with the Project.

3. To provide economies of scale and technical support to small producers who would not otherwise be able to participate in shellfish aquaculture

Designed economies of scale will maximize the previously described direct and indirect secondary benefits of the Project. Significant expenses are associated with permitting, environmental review, compliance with shellfish health regulations, and environmental monitoring; therefore, leasing and permitting the Project as one will provide economies of scale and eliminate a significant impediment to market diversification and participation by small shellfish companies or new investors. This is one of the central organizing components of the Project: 20 separate production parcels are pre-permitted within the umbrella of the larger project, and the parallel operation of these parcels will create operating efficiencies. By permitting all the growing areas as a single Project, individual growers/producers benefit from the collective upfront permitting effort of VPD.

As a specific example of a regulatory economy of scale, certification of shellfish growing grounds by the California Department of Public Health (CDPH) is multi-step, multi-year process. Before an application for a Shellfish Growing Area Certification can be filed with CDPH, an individual grower must first identify and clearly define the proposed growing area, make a preliminary inquiry with CDPH to assess feasibility, obtain legal authorization to grow/harvest, and secure the appropriate law enforcement agency for patrol support of growing waters. Once an application is accepted by CDPH (but prior to classification and certification), the grower must then develop a comprehensive sampling and monitoring plan that includes mandatory participation in a CDPH-conducted sanitary survey for the evaluation of pollution impacts with a minimum duration of one year. Upon analysis of the sampling data, CDPH will classify (and certify, if appropriate) the growing area. If approved, the grower will bear continued responsibility for the regular sampling, monitoring, and analysis of shellfish product harvested from the certified growing area.

In contrast, Project growers/producers will have access to a pooled, centralized and comprehensive shellfish sanitation, monitoring and reporting program for all the growing plots. The CDPH certification will have been obtained along with all necessary permits and entitlements, making participation by the grower/producer "turn-key." The costs to the grower/producer associated with ongoing water quality sampling and monitoring will be reduced by the efficiency of a centralized pooled program, which will in turn reduce operating cost and increase the direct benefit to the grower/producer.

Further, growers/producers will also have access to technical expertise and the accepted best management practices (BMPs) developed through the permitting process Similarly, Project grower/producers will enjoy access to centralized marketing and branding of a Ventura-specific premium seafood product grown and harvested in the Project area.

Each of these elements of the Project design contributes cumulatively to a total package, which in turn contributes positively, and materially to the ongoing operational health and vitality of the Ventura Harbor community.

4. To provide an entitlement and permitting template for aquaculture projects state-wide

A major goal of the Project is delineation of a streamlined strategic permitting pathway that will not only facilitate the establishment of a Ventura Harbor-based shellfish operation promoting sustainable economic development, but that will more generally serve as a model to help other entities address regulatory barriers and planning challenges that currently create impediments to the expansion of the shellfish aquaculture industry in California.

The Project seeks to significantly improve the interagency review and permitting process for offshore shellfish aquaculture and create a comprehensive and efficient permitting process that is cost effective for both review agencies and applicant alike. In doing so, the overarching Project objective is to establish a viable and replicable permitting pathway model that satisfies the requirements of the review and permitting agencies and may be used by any prospective shellfish growers/producers to facilitate project design and aid in the evaluation of future offshore aquaculture proposals.

5. To enhance public knowledge and understanding of sustainable shellfish farming practices and promote community collaboration in achieving VSE objectives

Realizing the vision of an improved permitting process requires coordinated planning among all stakeholders to attain the full environmental and economic benefits. VPD and other VSE partners are committed to transparency, open communication, and comprehensive public education and outreach efforts. To this end, VPD and other VSE partners will host an ongoing series of informational public meetings to discuss the social, economic, environmental, scientific, and technological variables encompassed by the Project. These interactive, workshop-style meetings will provide a forum for open dialog among all interested members of the general public, state and federal agency representatives, shellfish industry leaders, and environmental and scientific leaders to discuss the policy, planning, and scientific issues surrounding the establishment of a Ventura Harbor-based offshore shellfish aquaculture operation. This is a critical first step toward productive collaboration and ultimately, overall Project success.

It is also anticipated that the shellfish leases, in particular the research and education plot, will be used as open-water classrooms for local students and the public to educate students and the public about shellfish aquaculture practices and benefits through field trips and guided tours.

6. To advance scientific knowledge and state of the art aquaculture practices through research and innovation

The project is envisioned to include both research and education components. The project includes as partners researchers and educators with the following institutions:

- University of California, Santa Barbara, Bren School of Environmental Science and Management
- University of California, San Diego, Scripps Institution of Oceanography
- Woods Hole Oceanographic Institute

The project will serve an in situ working laboratory for improving shellfish aquaculture techniques and will be used as an open-water classroom.

1.4 Project Location

Project growing plots will be located in open water within the 3-mile limit for state waters northwest of Ventura Harbor. The Project is proposing twenty 100-acre growing sites occupying a total Project area of 2,000 acres. A portion of one site will be set aside for research and education purposes. These individual sites will fall within a broader area. The area of interest, or candidate area, is 18,533 acres (300 cells, as shown on Figure 1, each cell 25 hectares (62 acres)). This area is generally located between the Ventura Harbor entrance and the Ventura County–Santa Barbara County line to the north and south, and between the 60-foot depth contour inshore and the 3-mile state water boundary offshore. The specific location of the 20 individual 100-acre growing parcels within the larger candidate area will be developed collaboratively with regional marine stakeholders in recognition of the need for state water bottom to accommodate multiple interests and natural functions. In addition to the 20 growing sites that will be identified for operation, 5 potential growing sites will be vetted as pre-approved backup options in the event any of the 20 operational sites need to be closed. The pre-approved backup sites can then be converted to operational sites per an adaptive management protocol. No more than 20 sites will be operational at any time.

Successful shellfish projects depend foremost on location in an appropriate growing area. In order to identify the previously described large candidate area, the Project uses methodology developed at the University of California, Santa Barbara, Bren School for Environmental Science

and Management for quantitative marine spatial planning specific to the needs of shellfish aquaculture (Lester et al., in press). This methodology was used to evaluate the marine environment adjacent to the Ventura Harbor. This model maps the marine environment with respect to suitability for a shellfish operation using stacked layers of mapping data. Areas constrained for use, such as navigation pathways, Marine Protected Areas, areas of hard rocky bottom representing essential fish habitat (EFH), oil and gas leases, and existing infrastructure such as telecommunication cables and municipal wastewater discharge pipelines, were identified and these areas removed from consideration. Biological and abiological ocean data layers of temperature, chlorophyll concentration, and current were applied to remaining areas as a proxy for shellfish production suitability. New maps with finer resolution created candidate zones, which were evaluated for suitability as a Project site with respect to proximity to Ventura Harbor, known bathymetric survey data, minimization of interaction with recreational traffic and activities, and total site contiguity.

The large candidate area meets all criteria for successful bivalve shellfish aquaculture and does not interact with constraints. The described area is a gradually sloping sandy/soft bottom ideal for the installation of sand screw mooring systems, which are the preferred method for deployment, removability, and holding power necessary for offshore mussel cultivation.

The marine spatial planning model (Lester et al., in press) further described a trade-off analysis used to create a tool for opportunities lost due to the siting of a shellfish aquaculture project and to quantitatively weigh those potential losses against potential gains from shellfish aquaculture. The primary identified area of concern associated with potential use conflicts was interaction with commercial fishing. Through analysis of fish landing data by harbor, gear type, and by fishing area (block), a possible interaction with the halibut trawl fishery was identified; all other landed species activities are not expected to interact with shellfish aquaculture in the general candidate area. Further analysis and modeling is expected to describe the possible interaction between shellfish aquaculture and the halibut trawl fishery for this specific large candidate area and will be used to develop the final proposal for siting of the twenty 100-acre production sites within the larger zone.

The suitability of potential growing areas will be further validated through the deployment of a set of six sentinel research buoys. These sentinels consist of a single strand of mussel grow-out line suspended from a buoy, anchored to the bottom at six locations defining the inshore and offshore boundaries of the greater candidate production area. Periodic sampling of mussels stocked to these sentinel lines will produce an early data set relative to site suitability with respect to site-specific animal growth and health, and for state shellfish sanitation plan development and certification, among other data that can inform site conditions.

Ocean bottom in the proposed project area is owned by the State of California with leasing authority vested in the California Fish and Game Commission. Studies of individual growing areas will provide information that characterizes the general hydrographic and benthic characteristics of the area and identifies any sensitive or important habitats that are present locally within the likely impact zone of the mussel farm.

1.5 Project Approach

The Project will focus on cultivation of Mediterranean mussels.[1] The Mediterranean mussel is established and naturalized within the Santa Barbara Channel. It is currently approved for cultivation in Southern California, and there is an established market for its distribution and sale. Mussel species, and specifically Mediterranean mussels, have been successfully cultivated worldwide for centuries. Forty percent of modern world mussel production occurs in China. Other significant producers include Canada, Chile, New Zealand, and European countries.

1.5.1 Cultivation Methods

The Project proposes to use established protocols and gear for offshore cultivation referred to as the submerged long line method. A general depiction of the submerged long line deployment is shown on Figure 2, Detailed Plan for Shellfish Longlines near Ventura Harbor. This consists of a horizontal structural header line, or "backbone," that is attached to the seafloor by sand screw anchors at each end, and is marked and supported by a series of buoys along the central horizontal section. Buoys marking the location of the sand screw anchors describe the total cultivation area for navigational safety and will comply with all regulations for height, illumination, and visibility, including radar reflection. Buoys attached to the central horizontal portion of the backbone line support the line, provide means via lifting of the backbone line to access the cultivation ropes, and determine the depth of the submerged backbone. The depth of the backbone will vary seasonally from 15 to 45 feet below the surface. All surface buoys will be uniquely colored for each operator and marked with the grower/producer name and phone number.

The long line configuration produces a fairly rigid tensioned structure from which the cultivation ropes, or "fuzzy ropes" are attached. Fuzzy ropes are characterized by extra filaments, which provide settlement substrate for mussels to attach. Fuzzy ropes may be attached to and suspended from the backbone rope either as individual lengths or as a continuous looping single length that drapes up and down over the backbone. The length of each section or loop of fuzzy cultivation

[1] VPD may seek approval to cultivate other species in addition to Mediterranean mussels, which may include Pacific oysters (*Crassostrea gigas*), rock scallops (*Crassadoma gigantea*), or marine algae. Any such additional species and their proposed cultivation methods will be included in the project applications submitted to regulatory agencies.

loop will be approximately 20 feet but will depend on the lifting capacity of the servicing vessel. The length of the central horizontal section of backbone line will be approximately 600 feet, which will support approximately 8,000 to 10,000 feet of fuzzy cultivation line.

The shape of each of the 100-acre cultivation parcels will be a function of the geometry of the submerged backbone line and anchoring. Each horizontal section of the longline will be approximately 600 feet long and will require an anchor scope of approximately 2.5 times depth. Therefore, in 100 feet of water depth, scope from the horizontal section of backbone to the sand screw anchor will require 250 feet on each end of the line, making a total length of 1,100 feet from sand screw to sand screw. A 100-acre parcel with rectangular dimensions of 1,200 by 3,600 feet will therefore accommodate up to 36 individual longlines, with spacing between longlines of 100 feet.

The submerged longline growing gear configuration will be specifically engineered for open ocean conditions with respect to size and strength of all line, anchoring, hardware, and buoyancy.

Juvenile mussels, also known as “seed” or “spat,” will initially be provided by certified hatchery production. Competent spat are settled to the fuzzy cultivation ropes in the hatcheries. When the seed are firmly settled to ropes, the ropes are covered with cotton socking material to protect them from shaking off the ropes during transport to the offshore growing site and deployment. The socks hold the spat next to the rope until the mussels naturally attach with their byssal threads, after which the cotton material naturally degrades. If approved by the appropriate regulatory agencies, including CDFW and the Coastal Commission, subsequent plantings may include wild spat recruited on existing longlines. Juvenile mussels will grow on lines until an intermediate size where the density of mussels on the fuzzy rope becomes limiting. At this point, a servicing vessel will lift the backbone line in order to access the fuzzy rope stocked with juvenile mussels and pulls the fuzzy rope through vessel based equipment designed to strip the mussels from the fuzzy rope and then clean, separate, and grade the juvenile mussels by size. Juvenile mussels are then restocked to clean fuzzy rope at a reduced density for their second stage of grow out to market size. At market size, which is expected to occur in about one year of total production time, the submerged backbone lines are again lifted in order to access the fuzzy cultivation ropes, and mussels are again stripped from the line, cleaned, and separated, and this time size-graded and bagged for landing at the Ventura Harbor as market-ready product. All husbandry activities related to harvesting, grading, and restocking of mussels to cultivation lines occur onboard the servicing vessel using specialized equipment for that purpose.

Purchased spat will be from CDFW-approved hatcheries. The hatcheries are not part of this Project.

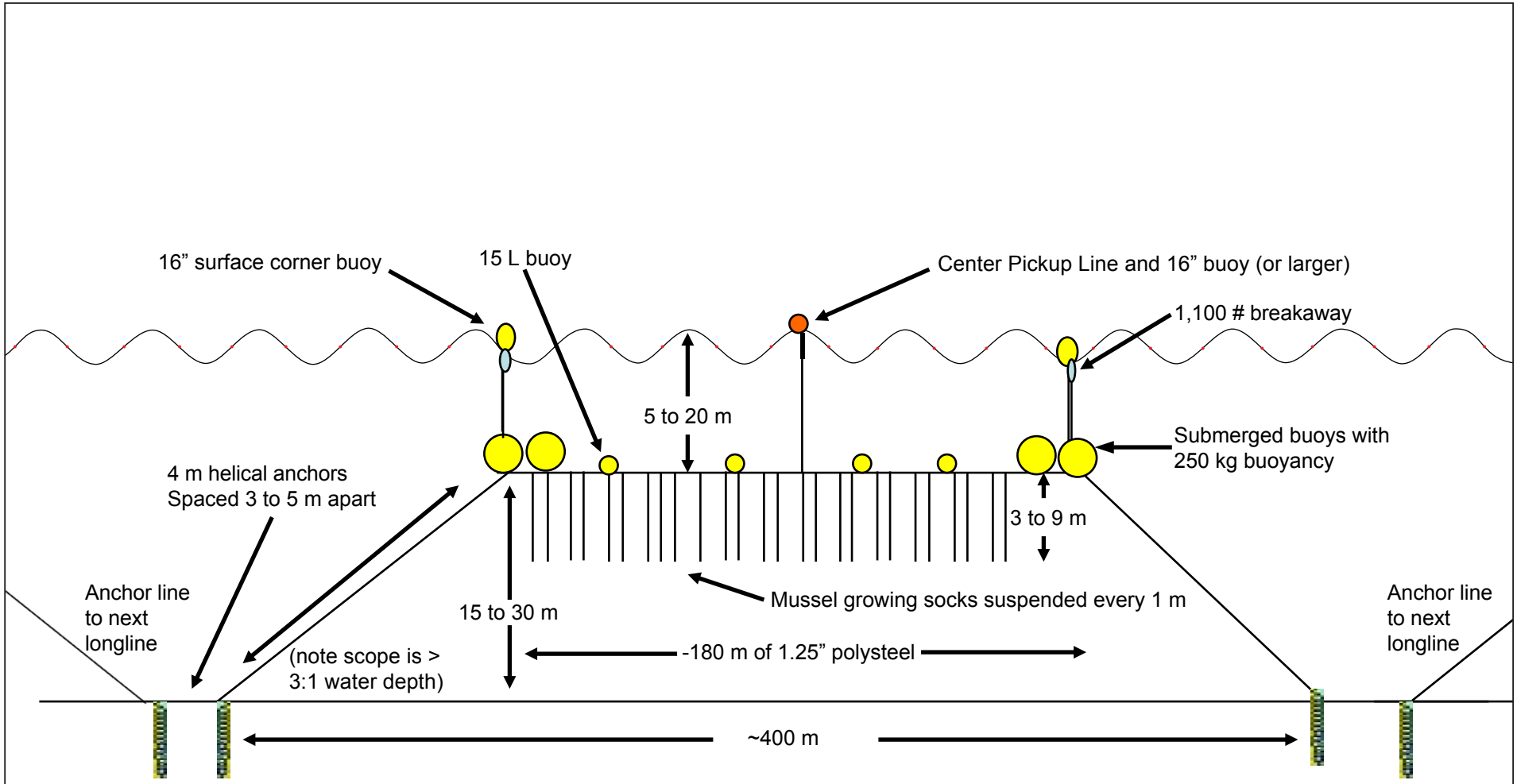

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FIGURE 2

Detailed Plan for Shellfish Longlines near Ventura Harbor

Strategic Permitting Initiative to Substantially Increase Shellfish Farming in Southern California

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Gear and planted ropes will be inspected regularly as part of a comprehensive monitoring plan, but generally the planted ropes will only be manipulated during initial stocking, intermediate harvest and restocking, and final harvest. Inspection will involve monitoring the all hardware and rigging and surface buoys and their tension, and checking for escaped gear and potential entanglements. Examples of possible observations that would trigger concern and further investigation are (1) gaps or tangling of dropper ropes detected on depth finder or other structural anomalies, (2) fouling by objects or other marine debris detected in support buoys or buoy deployment lines, and (3) loss of function or damage to devices related to navigational safety.

Watercraft used for planting, inspections, and harvesting will be home ported at Ventura Harbor. On average, between 20 and 40 boats will be traveling to the specific lease sites to conduct these activities on a three-times-per-week to daily basis. The maximum distance traveled will be between Ventura Harbor and the farthest potential lease area, which could be up to 16 miles.

All mussel product from the Project will be landed at Ventura Harbor. Ventura Harbor is one of the primary offloading sites in California for commercial squid. As a consequence, Ventura Harbor has significant commercial fishing infrastructure. However, there may be a need to make some modifications or improvements to these existing harbor landing facilities to accommodate mussel offloading.

Landed product will comply with all testing and labeling regulations as part of the CDPH Shellfish Sanitation plan.

1.5.2 Project Construction

Submerged backbone lines will be attached to the seafloor using sand screw anchors. Sand screw anchors have been shown to exhibit superior holding power and are removable. The deployment of sand screw anchors will require specialized workboat equipment. This requirement will necessitate staged deployment of long lines in order to accommodate the installation process across all sites.

The Project will include a decommissioning plan, which will provide for the removal of all equipment and structures in each lease area associated with project activities when activities in that lease are terminated. The Project will provide financial assurance for decommissioning.

1.5.3 Protected Species Conservation Measures

Project design specifications are intended to minimize protected marine mammal and sea turtle entanglement. Additional design features may be incorporated as identified through the environmental review process.

The architecture of the longline is a thick (1-inch-diameter) tensioned (to approximately 800 pounds) rope that is not conducive to wrapping around or entangling protected species. The mussel grow-out ropes themselves are typically planted with seed 3 inches thick and may grow to be stiff with byssus at diameters of 10 inches or more at harvest, thus making them very unlikely sources of entanglement. As an additional precaution, grow-ropes will be attached to the headrope with a low-breaking-strength twine (4-millimeter (0.16-inch) diameter; <1,000 pounds), which will facilitate rapid detachment in the unlikely event of any interaction with the longline.

Potential entanglement points include (1) two vertical lines to the surface buoys marking each end of the headrope and (2) one pull-up buoy line for servicing at the midpoint. To minimize the entanglement hazard, a 1,100-pound breakaway link will be installed between the buoys and the vertical lines, similar to strategies used to mitigate potential entanglement in trap fisheries in the northeastern United States (NOAA 2008). Buoy lines between the surface and headrope are generally under tension partially equivalent (0 to 10 kilograms (0 to 22 pounds)) to their full buoyancy (42 kilograms (93 pounds)).

As noted in the Nationwide Permit (NWP) 48 Decision Document recently approved by the Corps, which considered shellfish aquaculture uses nationwide, “Compared to the disturbances and degradation caused by coastal development, pollution, and other human activities in coastal areas, commercial shellfish aquaculture activities present relatively mild disturbances to estuarine and marine ecosystems.” The Decision Document concludes that impacts from most aquaculture projects would be *de minimis* on the surrounding environment. This determination is generally reaffirmed in the Corps’s 2015 Programmatic Biological Assessment (BE) that considered new and existing shellfish aquaculture in Washington State, as well as the 2016 Programmatic Biological Opinions from NOAA’s National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) evaluating the same, which concluded that impacts would be minor upon imposition of identified conservation measures. Notably, the above analyses evaluated shellfish aquaculture at a larger scale than that proposed by the Project. NWP 48 covers most shellfish aquaculture projects nationwide and the Programmatic BE evaluated environmental impacts associated with a total of 38,400 commercial aquaculture acres in Washington.

1.5.4 Best Management Practices

In addition to the design features associated with minimizing impacts on marine mammals and sea turtles, the Project will incorporate a number of other resource protection measures that avoid and minimize impacts on the aquatic environment. These resource protection measures will include BMPs related to carrying capacity, seed supply, sediment quality, predator and wildlife

interactions, and storage and disposal of aquaculture gear. The BMPs will be incorporated in Project permit conditions and/or mitigation measures and implemented by individual growers/producers. The aquatic environment will benefit from a cumulative beneficial effect of these BMPs resulting from the programmatic nature of the Project. For example, there will be unique opportunities for a programmatic monitoring plan among the 20 lease areas that will provide a more comprehensive data set compared to project-by-project permitting and will also reduce individual efforts. Proposed BMPs are described in Table 2.

Table 2
Ventura Shellfish Enterprise BMPs

Measure	Description of Measure
Carrying capacity – 1	Make use of best available data to define the location of a farm and its maximum stocking density.
Carrying capacity – 2	Include in overall management plan a component that describes the corrective or collaborative actions to be taken when production carrying capacity at the farm or ecosystem level is exceeded.
Seed supply – 1	Initial plantings will only use hatchery-reared mussel spat certified by CDFW. Wild spat will only be used for subsequent plantings upon approval from the relevant agencies, including CDFW and the Coastal Commission.
Sediment quality – 1	Monitor sediment conditions according to the requirements of all permits.
Sediment quality – 2	Adopt corrective actions in cases where significant adverse impacts are identified by the sediment monitoring program.
Wildlife – 1	Produce a written Marine Wildlife Entanglement Plan that identifies policies and procedures that will be followed to monitor for marine wildlife entanglements and report and remedy any such entanglements if they occur.
Wildlife – 2	Use humane methods of predator deterrence and actively favor non-lethal methods.
Wildlife – 3	No controls, other than non-lethal exclusion, shall be applied to species that are listed as threatened or endangered.
Storage and disposal of supplies – 1	Fuel, lubricants, and chemicals shall be labeled, stored and disposed of in a safe and responsible manner, and marked with warning signs.
Storage and disposal of supplies – 2	Precautions shall be taken to prevent spills, fires and explosions, and procedures and supplies shall be readily available to manage chemical and fuel spills or leaks.
Storage and disposal of supplies – 3	Include in overall management plan an aquaculture gear monitoring and escapement plan. Any farm gear that has broken loose from the farm location shall be retrieved.

Source: Adapted from Global Aquaculture Alliance 2013.
Notes: BMP = best management practice; CDFW = California Department of Fish and Wildlife.

Organization and Governance

Mussel farming opportunities will be available to Project growers/producers, anticipated to include existing commercial fishermen based in Ventura Harbor, existing commercial shellfish businesses, and startups that otherwise would be disinclined to embark on the lengthy and expensive mandatory regulatory pathway. As a requirement of their participation, growers/

producers will be obligated to operate under robust environmental monitoring guidelines and BMPs incorporated into Project entitlements and adopted from third-party certification agencies. CDFW personnel will be responsible for growing area patrol and enforcement. They will collaborate with CDPH on defining the specifics of patrol activities.

1.5.5 Monitoring Program

Conditions within the Project area will be monitored throughout Project implementation to ensure compliance with all permit requirements and to evaluate all effects, including beneficial effects, of the growing areas. Monitoring will be conducted according to a robust monitoring program designed to evaluate the Project's potential effects on the following factors:

- The seafloor and benthic environment beneath and in the vicinity of the facilities, including biological, physical, and chemical conditions
- Wildlife interactions including marine mammals, sea turtles, fish, and seabirds
- Marine debris, including lost and broken gear

The monitoring program and protocols will be vetted with input and coordination among the regulatory agencies and will include annual reports summarizing the previous year's implemented Project activities, all activities that have been implemented since the start of the Project, all activities that have been implemented within the designated monitoring period, and all monitoring results.

2 REQUIRED PERMITS AND ENTITLEMENTS

Based on current understanding of the Project, including its offshore location, the following list of federal and state permits and approvals has been developed.

2.1 Federal Requirements and Associated Agencies

2.1.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Corps) exercises regulatory jurisdiction over certain activities within waters of the United States. The Corps receives its statutory authority from Section 404 of the Clean Water Act, which regulates placement of dredged or fill material in jurisdictional waters of the United States, and Section 10 of the Rivers and Harbors Act of 1899, which regulates the construction of any structure in or over any navigable water of the United States or any work affecting the course, location, condition, or capacity of such waters.

The Project would involve the placement of structures located in offshore waters, and would not be subject to Corps regulatory authority under Section 404 of the Clean Water Act, because there will not be a discharge of dredged and/or fill material into waters of the United States. The proposed project would be required to obtain authorization under Section 10 of the Rivers and Harbors Act for structures and work in navigable waters.

General permits are authorizations that are issued for a category or categories of activities that are similar in nature and do not cause more than minimal individual and cumulative adverse environmental effects. Nationwide permits (NWPs) are a type of general permit designed to regulate certain activities having minimal impacts. The NWPs are proposed, issued, modified, reissued (extended), and revoked from time to time after an opportunity for public notice and comment. An activity is authorized under an NWP if that activity and the permittee satisfy all of the NWP's terms and conditions.

NWP 48, Commercial Shellfish Aquaculture Activities, authorizes discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States necessary for new and continuing commercial shellfish aquaculture operations in authorized project areas. The project area is the area in which the operator is authorized to conduct commercial shellfish aquaculture activities, as identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any easement, lease, deed, contract, or other legally binding agreement that establishes an enforceable property interest for the operator. A "new commercial shellfish aquaculture operation" is an operation in a project area where commercial shellfish aquaculture activities have not been conducted during the past 100 years. This NWP authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers,

and other structures in navigable waters of the United States. This NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. Rafts and other floating structures must be securely anchored and clearly marked.

Regional general permits are a type of general permit issued by a division or district engineer and can improve regulatory consistency and enhance program efficiency.

Letters of Permission are another type of Corps permit issued through an abbreviated processing procedure which includes coordination with federal and state fish and wildlife agencies and a public interest evaluation, but without the publishing of an individual public notice. A Letter of Permission can be used when the proposed work would be minor, would not have significant individual or cumulative impacts on environmental values, and should encounter no appreciable opposition.

Standard individual permits are evaluated on a case-by-case basis for activities that do not qualify for a general permit or a Letter of Permission. Individual permits are processed through the Corps's public interest review procedures, including public notice and receipt of comments. The approach for the Project would be to obtain an NWP 48 or an individual permit for the entire Project.

Permitting Process

- **Data Required:** For all activities requiring permits and associated notification to the Corps, an application must be submitted, using standard ENG Form 4345. The application must include a complete description of the proposed activity including necessary drawings or plans; the location, purpose and need for the proposed activity; scheduling; the names and addresses of adjoining property owners; the location and dimensions of adjacent structures; and a list of authorizations required by other federal, state, or local agencies.
- **Analysis Required:** In order to write up the necessary decision document (Environmental Assessment including Public Interest Determination) and make a permit decision, the Corps may require additional information be provided by the applicant for the Corps's analysis. This information could include an alternatives analysis of alternate sites, methods, and project scales; information necessary to complete the required public interest review evaluating such factors as potential impacts to navigation, economics (impacts to fisheries), fish and wildlife values, and general environmental concerns; and a compensatory mitigation plan in cases where the Corps determines mitigation is required to offset unavoidable impacts to aquatic resources. The Corps will need to determine that the project is not contrary to the public interest in order to issue a permit.

- **Related Laws**
  - **Endangered Species Act:** If the project may affect federally listed species or their critical habitat, a consultation with U.S. Fish and Wildlife Service (USFWS) and/or the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS) will be required. The applicant would need to provide the Corps with a Biological Assessment (BA) or Biological Evaluation (BE) identifying and analyzing the potential impacts to these listed species.
  - **Coastal Zone Management Act:** Activities affecting the coastal zone require approval of a certification from the California Coastal Commission (Coastal Commission) that the proposed activity complies with and will be conducted in a manner consistent with the California Coastal Act (Coastal Act).
  - **Section 401 Water Quality Certification:** If water quality certification is necessary for the proposed project, the Corps permit cannot be issued until the required certification has been obtained.
  - **Historic Properties:** If the proposed activity would involve any property listed or eligible for listing in the National Register of Historic Places, a consultation will be required with the State Historic Preservation Officer. The applicant would need to provide the Corps with a cultural resources report identifying and analyzing the potential effects to historic properties.
  - **Timing:** The Corps's goal is to complete Individual Permits in less than 120 days. The actual time between application submittal and permit issuance is often much longer, often between 1 and 2 years, but this length of time can be reduced substantially with effective pre-application coordination and project planning.
  - **Fees:** A fee of $100.00 will be charged with the purpose of the project is commercial or industrial in nature and is in support of operations that charge for the production, distribution, or sale of goods or services.

2.1.2 U.S. Fish and Wildlife Service

USFWS has jurisdiction over federally listed wildlife and plant species under the federal Endangered Species Act (ESA). Section 7(a)(2) of the ESA requires federal agencies to consult with USFWS to ensure that actions authorized, funded, or undertaken by the agency are not likely to jeopardize the continued existence of any federally listed species or result in the adverse modification of designated critical habitat.

The Corps, as the lead federal agency, would be required to consult with the USFWS Region 8 to ensure that the issuance of the Corps permit would not jeopardize any federally listed species or adversely modify critical habitat. It is anticipated that the Project will have no effect on USFWS-regulated federally listed species or adversely modify designated critical habitat, because none are expected to occur in the Project lease area, which is located within the open-ocean environment. For a project that may affect but is not likely to adversely affect any USFWS-regulated federally listed species or adversely modify designated critical habitat, the Corps may request an informal consultation with USFWS to receive a Not Likely to Adversely Affect concurrence letter.

It is not anticipated that any federally listed species under the jurisdiction of the USFWS would be affected by the proposed project. A separate discussion of potential impacts to state-listed species is included below. In the event a determination is made that the project might affect federally listed species, the consultation process would occur as follows:

Consultation Process

- **Data Required**

  The applicant typically prepares and submits a BA or BE to the Corps for the Section 7 consultation. The BA/BE should contain the following elements:

  1. Cover Letter
     a. Briefly specify the proposed action. Include a description of both the federal action (e.g., issue Section 10 Rivers and Harbors Act permit) and the applicant's action (e.g., establish and operate shellfish aquaculture).
     b. Make a determination for each listed species and designated critical habitat (i.e., no effect; may affect, not likely to adversely affect; or may affect, likely to adversely affect).
  2. Project Description
     a. Provide a detailed description of the proposed action, including secondary project features such as staging areas. Subdivide proposed action into project elements (e.g., construction, operation, and maintenance).
     b. Describe the where, when, and how for each project element.
     c. Include a map delineating the location of each project element.
     d. Delineate the geographic area that will be affected; i.e., the area where the physical, chemical, and biotic effects will occur.

e. Delineate the specific areas that will be affected by each of the project elements.

3. Species, Suitable Habitat, and Critical Habitat Description(s)
   a. Identify the species or critical habitat that may be present.
   b. Provide a description of the habitat and/or plant communities on site and within the project vicinity.
   c. Document how you identified these habitats and species occurrences.
   d. Describe the current population and habitat conditions (status and trend, if known) in the action area for each protected resource that may be present.
4. Effects Analysis
   a. For each species or critical habitat parcel, explain how it will or will not be exposed to the project elements; be sure to consider effects to all life stages.
   b. Describe the anticipated response (e.g., none, abandoned the area, decreased foraging success, reduced fecundity, injury, death) from any likely exposure.
   c. Describe and analyze all direct and indirect effects of the action.
   d. Describe and analyze all effects of interdependent and interrelated actions.
   e. *Cumulative Effects Analysis:* Identify any future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area. Describe how such activities will affect listed resources within the action area.
5. Conservation Measures
   a. Describe actions incorporated into the design of the proposed action to avoid or reduce adverse effects to and incidental take of listed species.
   b. Conservation measures may be alterations in the proposed activity such as timing restrictions, access closures, or changes in project features or location.
6. Conclusion and Determination of Effects
   a. For each protected resource, make a Section 7 determination and include rationale.
   b. For a "may affect, but not likely to adversely affect" finding, request USFWS concurrence. For a "may affect, likely to adversely affect" finding, request initiation of formal consultation.
7. Literature Cited
8. List of Preparers

- **Analysis Required:** The USFWS will review the BA/BE and determine whether or not it concurs with the effects conclusions presented. For a "not likely to adversely affect" finding, the USFWS will write a concurrence letter and complete the informal consultation. For a "may affect, likely to adversely affect" finding, the USFWS will need to determine whether an action will result in jeopardy. The USFWS will begin by looking at the current status of the species, or baseline. Added to the baseline are the various effects—direct, indirect, interrelated, and interdependent—of the proposed action. USFWS also examines the cumulative effects of other non-federal actions that may occur in the action area. USFWS's analysis is then measured against the definition of jeopardy, which occurs when an action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced.
- **Timing:** Formal consultations are expected to take 90 days, after which USFWS will prepare a biological opinion within 45 days after completion of formal consultation. Informal consultations are expected to take approximately 1 month.
- **Fees:** None.

2.1.3 NOAA National Marine Fisheries Service

NMFS is an organization within NOAA with jurisdiction over federally listed marine and anadromous fish, sea turtles, and marine mammals, as well as economically important fisheries and fish habitat. Section 7(a)(2) of the ESA requires federal agencies to consult with NMFS to ensure actions authorized, funded, or undertaken by the agency are not likely to jeopardize the continued existence of any federally-listed species or result in the adverse modification of designated critical habitat. Listed species that could potentially occur within the Ventura Shellfish Enterprise (VSE) Project lease areas include green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), leatherback turtle (*Dermochelys coriacea*), blue whale (*Balaenoptera musculus*), humpback whale (*Megaptera novaeangliae*), and fin whale (*Balaenoptera physalus*).

Additionally, NMFS has authority under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), which is the primary law governing marine fisheries management in U.S. federal waters. Under the Magnuson-Stevens Act, federal agencies must consult with NMFS on all actions that may adversely affect essential fish habitat (EFH). The Project occurs within EFH for various federally managed fish species within, potentially, Coastal Pelagic Species, Highly Migratory Species, and Pacific Coast Groundfish Fisheries Management Plans.

The Corps as the federal lead agency would be required to consult with NMFS under Section 7 of the ESA and under the Magnuson-Stevens Act for EFH. It is anticipated that the Project may affect but is not likely to adversely affect any NMFS-regulated federally listed species or adversely modify designated critical habitat and that the Corps may therefore request an informal consultation with NMFS to receive a Not Likely to Adversely Affect concurrence letter.

Consultation Process

- **Data Required:** The applicant will prepare a BA or BE, similar to that written for USFWS species, for consultation under Section 7 of the ESA. For NMFS, the BA/BE will include additional information in the form of an EFH Assessment regarding potential adverse effects to EFH, for consultation pursuant to the Magnuson-Stevens Act. The level of detail in an EFH Assessment should be commensurate with the complexity and magnitude of the potential adverse effects of the action. At a minimum, an EFH assessment must contain a description of the proposed action; an analysis of the potential adverse effects of that action on EFH and the managed species; the federal action agency's conclusions regarding the effects of the action on EFH; and proposed mitigation, if applicable. If appropriate, the assessment should also include the results of on-site inspections, the views of recognized experts on affected habitat or fish species, a review of pertinent literature, an alternatives analysis, and any other relevant information.
- **Analysis Required:** In addition to making an ESA determination under a similar process as the USFWS's determination process, NMFS will assess the potential adverse effects to EFH. NMFS will provide EFH Conservation Recommendations to the lead federal agency (the Corps), and the Corps will make a determination as to whether those Conservation Recommendations will be incorporated into the Corps's permit conditions.
- **Timing:** Formal consultations are expected to take 90 days, after which USFWS will prepare a biological opinion within 45 days after completion of formal consultation. Informal consultations are expected to take approximately 1 month.
- **Fees:** None.

NOAA also regulates the Marine Mammal Protection Act of 1972, and is charged with protecting whales, dolphins, porpoises, seals, and sea lions by prohibiting, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. NMFS authorizes incidental take under the Marine Mammal Protection Act to U.S. citizens and U.S. based companies, if there is a finding that the taking would be of small numbers, would have no more than a negligible impact on those marine mammal species or stocks, and would not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses.

It is anticipated that the VSE Project would not result in the take of any marine mammals. Should NMFS determine there might be a potential for take, the Project could apply for a Letter of Authorization. NMFS issues Letters of Authorization for actions that have the potential to result in harassment (i.e., injury or disturbance) and that are planned for multiple years.

Letter of Authorization Process

- **Data Required:** The Project would apply for an Incidental Take Authorization, and the application would need to include the following elements:
  1. Description of specified activity
  2. Dates and duration, specified geographic region
  3. Species and numbers of marine mammals
  4. Affected species status and distribution
  5. Type of incidental taking authorization requested
  6. Take estimates for marine mammals
  7. Anticipated impact of the activity
  8. Anticipated impacts on subsistence uses
  9. Anticipated impacts on habitat
  10. Anticipated effects of habitat impacts on marine mammals
  11. Mitigation measures
  12. Arctic Subsistence Plan of Cooperation
  13. Monitoring and reporting
  14. Suggested means of coordination
- **Analysis Required:** In looking at the effects of activities, NMFS will use information from the application, monitoring reports for previous similar activities, National Environmental Policy Act (NEPA) documents, the ESA consultation (when required), and additional scientific literature. NMFS will then analyze how the proposed project may impact marine mammals in the area, their habitats, and the availability of marine mammals for subsistence uses.
- **Timing:** Applications should be submitted 18 months in advance of the intended project start date.
- **Fees:** None.

NOAA Office of National Marine Sanctuaries

The National Marine Sanctuaries Act designates and protects areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or aesthetic qualities as national marine sanctuaries. The branch of NOAA responsible for management of national marine sanctuaries is the Office of National Marine Sanctuaries.

The National Marine Sanctuaries Act requires federal agencies whose actions are likely to destroy, cause the loss of, or injure a sanctuary resource to consult with the program before taking the action. NOAA will then recommend reasonable and prudent alternatives to protect sanctuary resources.

The nearest national marine sanctuary to the proposed project is the Channel Islands National Marine Sanctuary. The sanctuary encompasses 1,110 square nautical miles (1,470 square miles) of water from mean high tide to 6 nautical miles offshore of Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands. The proposed VSE Project location is at least 12 nautical miles from the nearest border of the sanctuary. There is a network of Marine Protected Areas within the nearshore waters of the Channel Islands National Marine Sanctuary. Within this Marine Protected Area network are 11 marine reserves, within which all take and harvest is prohibited, and 2 marine conservation areas, which allow limited take of lobster and pelagic fish. The proposed location of the Project lease areas would not fall within the Channel Islands National Marine Sanctuary boundaries and as a result, the Project would not be required to consult with the Office of National Marine Sanctuaries.

2.1.4 U.S. Coast Guard

The U.S. Coast Guard (Coast Guard) has regulatory authority over Private Aids to Navigation (PATON) under Title 33 of the Code of Federal Regulations, Part 66. PATONs include buoys, lights, or day beacons owned and maintained by any individual or organization other than the Coast Guard and require a Coast Guard permit. PATONs are designed to allow individuals or organizations to mark privately owned marine obstructions or other similar hazards to navigation and must be maintained by the owner as stated on the Coast Guard permit. All aquaculture leases must be clearly marked with a minimum of one buoy anchored on each of the four corners and one buoy, possessing radar-reflecting capabilities, anchored in the center of each aquaculture lease. All buoys used to define the boundaries of an aquaculture lease must be marked in conformance with the International Association of Lighthouse Authorities Maritime Buoyage system regulations (33 CFR Sections 62.33 and 66.01-10). The proposed Project would be required to obtain a PATON Permit from the Coast Guard.

PATON Application

- **Data Required:** Submit an application (Form CG-2554) that specifies information about the buoys, including light flash period, light flash length, and light color; position, depth of water, candela, and focal plane height; and structure type, color, and height above ground.
- **Analysis Required:** The Coast Guard will evaluate the navigational safety of the object placed in the water, and will determine if it should be lighted and/or placed on the chart. PATONs are required to be maintained by the owner as stated on the Coast Guard permit.
- **Timeline:** Applications should take 60 to 90 days or less to process.
- **Fees:** None.

2.2 NEPA Requirements

NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA includes making decisions on permit applications, adopting federal land management actions, and constructing highways and other publicly owned facilities. Under NEPA, federal agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations. NEPA requires federal agencies to incorporate environmental considerations in their planning and decision making through a systematic interdisciplinary approach. All federal agencies must prepare detailed statements assessing the environmental impact of and alternatives to major federal actions affecting the environment. These statements are in the form of an Environmental Assessment and/or an environmental impact statement.

The Corps is likely to be the lead federal agency for the Project's NEPA document. It is anticipated that the Corps will require an Environmental Assessment-level assessment. The Project may undergo a combined NEPA/California Environmental Quality Act (CEQA) review process.

2.3 State Requirements and Associated Agencies

2.3.1 California Fish and Game Commission

The California Fish and Game Commission (Fish and Game Commission) is the decision-making body that establishes regulations pertaining to wildlife conservation in California. The Fish and Game Commission consists of a five-member board that meets at least 11 times each year to publicly discuss various proposed regulations, permits, licenses, management policies,

and other subjects within its areas of responsibility. It establishes the regulations that are enforced by the California Department of Fish and Wildlife (CDFW).

The Fish and Game Commission has authority over the leasing of state water bottoms or the water column for aquaculture under California Fish and Game Code Sections 15400–15415. Pursuant to the Submerged Lands Act of 1953, the Fish and Game Commission has exclusive jurisdiction over all ungranted tidelands and submerged lands. The Fish and Game Commission considers "tidelands" as "those lands lying between the lines of mean high tide and mean low tide" and "submerged lands" as "lands seaward of the line of mean low tide to three geographical (nautical) miles seaward from the coast."

Applications for an aquaculture lease for state water bottoms or an aquaculture agreement (an aquaculture agreement is an agreement for the establishment of an aquaculture area on private water bottoms contiguous to state water bottoms, which may include a permit for relaying or depuration of shellfish) shall be made to the Fish and Game Commission. The Fish and Game Commission may approve, condition, or deny any application based upon factors or issues raised during the application review process.

The proposed project would occur offshore, within submerged lands. Therefore, the Fish and Game Commission would serve as the lead agency for the leasing of those lands.

Aquaculture Lease or Agreement Application Process

- **Data Required:** The proposed project must submit an application for an aquaculture lease for state water bottoms to the Fish and Game Commission. Applications for an aquaculture lease shall be made to the Fish and Game Commission on Form A, State of California Department of Fish and Game Application for Lease of State Water Bottoms for Aquaculture.

  A completed Form A shall be accompanied by the following information:

  - Proof of ownership.
  - Description of the area involved.
  - Estimate of the acreage to be leased.
  - A reference map depicting the exterior boundaries of the area. The description must be tied to monuments of record and maps must be in a form acceptable for recording in the county in which the aquaculture area is located. An aquaculture lease or agreement is subject to repeal if a map of the area is not filed by the holder of such lease or

agreement in the appropriate county(ies) within 30 days of approval by the Fish and Game Commission.

- An explanation of the type of operation including the aquaculture practices/culture techniques, description of the organisms to be grown, and the relay or depuration activities to be employed shall also be included in the application for an aquaculture lease or agreement.
- All aquaculture leases contain minimum planting and harvesting requirements for the species to be cultivated to insure that water bottoms so encumbered will be used for the purpose intended.
- A 5-year business plan detailing the steps in reaching the minimum planting and harvesting requirements shall be included in your application.
- Information as to whether the area involved in the aquaculture relay or depuration operation has been classified by CDPH as approved, conditionally approved, prohibited, restricted, or unclassified.

- **Analysis Required:** Analysis of the above-listed information. No aquaculture agreement will be valid until the California State Lands Commission (SLC) has certified to CDFW that the area applied for is unencumbered or the private ownership is properly described, so as not to preclude its use for the proposed culture. Additionally:
  - A lease shall not unreasonably interfere with fishing or other uses or public trust values.
  - A lease shall not unreasonably disrupt wildlife and marine habitats.
  - A lease shall not unreasonably harm the ability of the marine environment to support ecologically significant flora and fauna.
  - A lease shall not have significant adverse cumulative impacts.
- **Timing:** If the Fish and Game Commission finds that the area applied for is available for lease and that the lease would be in the public interest, it shall publish a notice that the area is being considered for leasing. No aquaculture lease or agreement will be approved until the Fish and Game Commission has held a public hearing at least 90 or 30 days, respectively, after notice thereof has been published in a newspaper of general circulation within the county involved.

- **Fee:** Nonrefundable filing fee of $500 submitted with the application to:

  Fish and Game Commission
  Executive Director
  1416 Ninth Street, 13th Floor
  Sacramento, California 95814
  916.653.4899

Assistance in completing and filing Form A may be obtained from CDFW's Marine Region Marine Aquaculture Coordinator, 619 Second Street, Eureka, California 95501, or from the Marine Region Offices at 20 Lower Ragsdale Drive, Suite 100, Monterey, California 93940, or 4665 Lampson Avenue, Suite C, Los Alamitos, California 90720.

2.3.2 California Department of Fish and Wildlife

CDFW is the lead state agency for aquaculture. The CDFW has jurisdiction over commercial and recreational activities involving California fish and wildlife including the culture and husbandry of aquatic organisms as well as take of any California state-listed fish and wildlife species. The CDFW is the lead agency for evaluating potential marine aquaculture leases on state and private water bottoms in bays and estuaries and providing such analysis to the Fish and Game Commission to ensure that marine resources and essential habitat are protected.

In California, marine aquaculture for commercial purposes is currently limited to oysters, abalone, clams, scallops, mussels, and kelp.

CDFW operates under the Aquaculture Registration and Fish and Game Code and the California Endangered Species Act, and administers permits for the commercial import of fish species.

With its jurisdiction over state-listed species, CDFW also oversees the disbursement of Certificates for Health Inspections for Importation of live organisms into California, the issuance of Wild Broodstock Collection Permits, Permits for Exotic or Restricted Species, Aquarium Dealers' Permits, and Incidental Take Permits.

Aquaculture Registration Process

- **Data Required:** Aquaculture Registration approval by CDFW is required for every person engaged in controlled growing and harvesting of fish, shellfish, and plants in marine, brackish, and freshwater. Aquaculture does not include species of ornamental marine or freshwater plants and animals not used for human consumption or bait purposes that are maintained in closed systems for personal, pet industry, or hobby

purposes; however, these species continue to be regulated. A person desiring to propagate and rear marine life should make application on Form FG 750. The following information must be submitted:

- Owner information
- Facility name
- Facility location
- Business to be conducted at your facility (e.g., rearing invertebrates for sale); common and scientific names are to be used when listing species to be cultivated
- Species requested
- Cultivation area location information
- Whether bottomlands are state leased or private (for marine aquaculture)
- Bay or area
- Lot numbers or description

- **Analysis Required:** Staff is responsible for the following tasks:
  - Review and set terms and conditions for all marine importation permits, broodstock collection permits, and aquaculture registration forms
  - Review aquaculture CEQA documents, provide aquaculture expertise and coordinate with Marine Region Environmental Services, CDFW Legal Services, other CDFW regions, and other state and federal agencies
  - Develop recommendations for Fish and Game Commission action
  - Coordinate disease and health certification for shellfish and other imported animals
- **Timing:** New applicants should allow a total of 70 business days for permit application processing (40 business days for processing an Aquaculture Registration Application and an additional 30 business days for inspection of the proposed facility).
- **Fees:** Aquaculture Registration is required for every person engaged in controlled growing and harvesting of fish, shellfish, and plants in marine, brackish, and freshwater, and the fee for a new operation is $827.50 (valid January 1 through December 31). The annual aquaculture renewal fee is $520.00 or $622.50 if the total gross sales at the aquaculture facility were at least $25,000 during the previous registration year. **Please note**: Every registered aquaculture facility or new facility engaged in aquaculture activity that fails to submit an application before April 1 is required to pay a late fee of $153.75.

Possession of a valid aquaculture registration is a condition of all aquaculture leases. An application, together with the required fee, should be transmitted to the CDFW License and Revenue Branch:

California Department of Fish and Wildlife
License and Revenue Branch
1740 North Market Boulevard
Sacramento, California 95834

The registration form is available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=35115&inline.

CDFW is also responsible for administering the Marine Life Protection Act by designating marine protected areas, developing their management plans, and reviewing development within their boundaries for consistency. The Project lease area is outside the zone of any designated marine protected areas.

A preliminary investigation indicates there may be potential for Scripps's murrelet (*Synthliboramphus scrippsi*) in the project area. However, it is unlikely that the proposed Project would be required to obtain an Incidental Take Permit pursuant to the California Endangered Species Act given the low potential for adverse impacts to state-listed species.

California Endangered Species Act Incidental Take Process

- **Data Required**
  1. Applicant's full name, mailing address, and telephone number(s). If the applicant is a corporation, firm, partnership, association, institution, or public or private agency, the name and address of the person responsible for the project or activity requiring the permit, the president or principal officer, and the registered agent for the service of process.
  2. The common and scientific names of the species to be covered by the permit and the species' status under the California Endangered Species Act, including whether the species is the subject of rules and guidelines pursuant to Section 2112 and Section 2114 of the Fish and Game Code.
  3. A complete description of the project or activity for which the permit is sought.
  4. The location where the project or activity is to occur or to be conducted.
  5. An analysis of whether and to what extent the project or activity for which the permit is sought could result in the taking of species to be covered by the permit.

6. An analysis of the impacts of the proposed taking on the species.
7. An analysis of whether issuance of the Incidental Take Permit would jeopardize the continued existence of a species. This analysis shall include consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (A) known population trends, (B) known threats to the species, and (C) reasonably foreseeable impacts on the species from other related projects and activities.
8. Proposed measures to minimize and fully mitigate the impacts of the proposed taking.
9. A proposed plan to monitor compliance with the minimization and mitigation measures and the effectiveness of the measures.
10. A description of the funding source and the level of funding available for implementation of the minimization and mitigation measures.

- **Analysis Required:** CDFW must ensure that:
  1. The take authorized by the permit will be incidental to an otherwise lawful activity.
  2. The applicant will minimize and fully mitigate the impacts of the take authorized under the permit. The measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation. For purposes of this section only, impacts of taking include all impacts on the species that result from any act that would cause the proposed taking.
  3. The permit will be consistent with any regulations adopted pursuant to Fish and Game Code Sections 2112 and 2114.
  4. The applicant has ensured adequate funding to implement the measures required under the permit to minimize and fully mitigate the impacts of the taking, and to monitor compliance with, and the effectiveness of, the measures.
- **Timing:** Issuance of an Incidental Take Permit is expected to take approximately 4 months.
- **Fees:** None.

Commercial Vessel Registration

Fish and Game Code Section 7881 requires commercial fishing vessels to obtain a commercial boat registration license from CDFW. However, a mussel-culture-only vessel may not fall under the vessel licensing requirement. In the event CDFW determines a license is required, an application would be made for the commercial boat registration.

- **Data Required:** A commercial boat registration can be acquired by completing an application form and providing the associated fee. Application forms are available from the website for commercial fishing licenses.
- **Analysis Required:** The granting of a license is a ministerial process.
- **Timeline:** A license must be renewed annually and can be renewed through an online renewal process.
- **Fees:** The fee for a commercial boat registration is $357.00.

California Coastal Commission

The Coastal Commission has planning, regulatory, and permitting responsibilities, in partnership with local governments, over all "development" taking place within the coastal zone, which extends seaward 3 miles and landward from several miles inland to as close as a few hundred feet from the shore in other areas, under the Coastal Act and the federal Coastal Zone Management Act (CZMA). The Coastal Commission plans and regulates activities on land and water within the coastal zone or permits local agencies to make decisions under the guidance of an approved Local Coastal Program. Among the coastal resources specifically protected within the Coastal Act are public access to the coastline, wetlands and other environmentally sensitive habitat areas, marine biological resources, agriculture, low-cost visitor-serving recreational uses, visual resources, commercial and recreational fishing, and community character.

The Coastal Commission retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands. The proposed project would involve work within submerged lands, over which the Coastal Commission retains permanent coastal permit jurisdiction. The VSE Project would, therefore, be required to obtain a Coastal Development Permit from the Coastal Commission, South Central Coast District Office. Additionally, the Coastal Commission would have regulatory control over the federal action (Corps permit), and the VSE Project would need to be compliant with the federal CZMA.

- **Data Required**
  - Coastal Development Permit Application: https://www.coastal.ca.gov/cdp/cdp-forms.html

- Project description
- Proof of the applicant's legal interest in the property
- Assessor's parcel map(s) (if applicable)
- Stamped, addressed envelopes and list of names and addresses of all other parties known to the applicant to be interested in the proposed development
- Vicinity or location map
- Plans drawn to scale
- A copy of any draft or final negative declaration, environmental impact report (EIR), or environmental impact statement prepared for the project, and if available, comments from the reviewing agencies
- Verification of all other permits, permissions or approvals applied for or granted by public agencies such as CDFW, SLC, Corps, and Coast Guard
- Any offers of access, preliminary title reports, land surveys, legal descriptions, subordinate agreements, and other outside agreements

- **Analysis Required:** The Coastal Commission staff completes an analysis of the application for consistency with the Coastal Act. The results of this analysis are described in the form of a staff report to the Commissioners, which includes suggested findings, recommendations, and any special conditions.
- **Timing:** A coastal development permit application is considered filed after Coastal Commission staff determines the application is complete.
  - ***Federal Consistency Determination.*** Under normal circumstances, the Coastal Commission must act on a filed application within a "limited time frame." The Consistency Determination review period is up to 75 days. The Consistency Certification review period is up to 6 months. Applicants may extend either of these time frames. There is a 90-day rule for consistency determinations in the Code of Federal Regulations, Title 15, Section 930.36(b), which states "the consistency determination shall be provided to State agencies at least 90 days before final approval of the federal agency activity unless both the federal agency and the state agency agree to an alternative notification schedule."
  - ***State Coastal Development Permit.*** There is a 30-day application completeness review. If determined incomplete by staff, additional requested materials must be submitted commencing another application completeness review cycle. Following a determination of application completeness, the Coastal Commission

staff has 180 days to bring the item to hearing, with extensions feasible if granted by the applicant.

- **Fees:** Fees will be determined individually and are generally based on the cost of development.

State Water Resources Control Board and Regional Water Quality Control Boards

The California State Water Resources Control Board (SWRCB) oversees the policy objectives of the nine Regional Water Quality Control Boards (RWQCBs). The RWQCBs exercise jurisdiction over water quality in waters of the United States within their respective regions and administer Section 401 Water Quality Certification and Section 402 National Pollutant Discharge Elimination System (NPDES) permits pursuant to the Clean Water Act to ensure projects meet state water quality standards to regulate point source discharges of pollutants to waters of the United States. The RWQCBs also regulate impacts to waters of the state, including point-source and diffused-source discharges to land and groundwater, under California's Porter-Cologne Water Quality Control Act. In addition to those responsibilities to ensure water quality, the RWQCBs are required to grant approvals to 34 Areas of Special Biological Significance, ocean areas monitored and maintained for water quality by SWRCB.

The proposed Project is anticipated to be required to obtain a Section 401 Water Quality Certification from the Los Angeles RWQCB, Region 4. The Los Angeles RWQCB is charged with maintaining the beneficial uses of waters of the state, as presented in the Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan; Los Angeles RWQCB 2014). Aquaculture is considered one of the beneficial uses for water bodies in the Los Angeles Region and the Basin Plan defines that use as "Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes" (Los Angeles RWQCB 2014).

The RWQCB regulates discharges of fill and dredged material under Section 401 of the Clean Water Act.

The RWQCB protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters because these water bodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. Basin-level analysis focuses on pollutant removal, floodwater retention, and habitat connectivity.

- **Data Required:** Issuance of a Section 401 Certification requires information demonstrating the project will comply with state water quality standards and aquatic

resources protection requirements. A 401 permit application should include information including a detailed project description, discussion of avoidance and minimization of impacts to waters of the state, impacts analysis, discussion of beneficial uses, identification of pollutants of concern and short- and long-term best management practices (BMPs) to minimize discharge of pollutants, and all associated figures (vicinity maps, project site maps, construction cross-sections, and others). Additionally, the RWQCB may require information pertaining to baseline benthic habitat and community assessments within the Project area and a monitoring plan for the operation of the aquaculture facility.

- **Analysis Required:** Analysis by the SWRCB and RWQCB is intended to authorize and regulate discharges from aquaculture facilities. Analysis would consider impacts to the following beneficial uses: industrial processes and industrial service supply; wildlife habitat; migration of aquatic organisms; preservation of biological habitats of special significance; rare, threatened, or endangered species; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sportfishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance; marine habitat; and fish spawning and shellfish harvesting.

  The Corps (under Section 404 of Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899) regulates the discharge of dredged or fill material into waters of the United States and work or structures in navigable waters of the United States. The Project is only required to obtain a Section 10 permit from the Corps, because there will not be a discharge of dredged or fill material. The state program under Section 401 of the Clean Water Act states "whenever anyone proposing to conduct a project that requires a federal permit or involves dredge or fill activities that may result in a discharge to U.S. surface waters and/or waters of the state are required to obtain a Clean Water Act Section 401 Water Quality Certification." Either a 401 Water Quality Certification or compliance with Waste Discharge Requirements, or both, will be required from the RWQCB.

- **Timing:** The RWQCB has 30 days to deem the application complete. The RWQCB has 180 days to act on a complete permit submittal. There is a 21-day public notice period that commences once the application is deemed complete.

- **Fees:** The Project qualifies for the low impact application fee ($200).

2.3.3 California Department of Public Health

The California Department of Public Health (CDPH) is the state department under the State of California Health and Human Services Agency that is responsible for public health in California. At the state level, the California Department of Food and Agriculture has primary responsibility for food safety, but CDPH operates a parallel food safety program called the California Shellfish Sanitation Program.

The California Shellfish Sanitation Program regulates the growing, harvesting, processing, and marketing of shellfish intended for sale for human consumption. The CDPH defines "shellfish" as "edible bivalve molluscan shellfish, including oysters, mussels, clams, and scallops."

The California shellfish sanitation program follows the standards and guidelines of the National Shellfish Sanitation Program (NSSP) Model Ordinance, and various other guidelines of the U.S. Food and Drug Administration. For information on the NSSP, contact the U.S. Food and Drug Administration:

U.S. Food and Drug Administration
Program and Enforcement Branch
5100 Paint Branch Parkway
College Park, Maryland 20740-3835
301.436.1410

http://www.fda.gov/Food/GuidanceRegulation/FederalStateFoodPrograms/ucm2006754.htm

The CDPH Shellfish Sanitation Program is divided into two main components:

- **Pre-harvest**, which regulates growing and harvest areas in California, including sanitary surveys, classification, certification (the Shellfish Growing Area Certificate), monitoring for water quality and marine biotoxins, and harvest closures. This program segment is conducted by staff of the Preharvest Shellfish Unit within the Environmental Management Branch (EMB). For questions or assistance, contact:

  Eric Trevena, Chief
  Environmental Health Services Section
  Preharvest Shellfish Program
  PO Box 997377, MS 7404
  Sacramento, California 95899-7377
  916.449.5661

- **Post-harvest**, which regulates the handling, processing, and distribution of shellfish after they are harvested, including inspection of shellfish plants and issuance of the Shellfish Handling and Marketing Certificate. This program segment is conducted by staff of the Food and Drug Branch (FDB). For questions or assistance, contact FDB:

  Nicole Givens
  Food and Drug Branch – MS 7602
  1500 Capitol Avenue
  PO Box 997413
  Sacramento, California 95899-7413
  Phone: 916.319.9661
  Fax: 916.440.5138
  Nicole.Givens@cdph.ca.gov

Pre-Harvest

This portion of the program requires Growing Area Certification from the EMB of the CDPH. It is unlawful in California to sell, offer, or hold for sale for human consumption any bivalve shellfish unless the harvest area is certified by CDPH. A harvest area may be any water body that meets certain standards of cleanliness, as well as an on-shore aquaculture system. A shellfish Growing Area Certificate is issued to the commercial shellfish grower/harvester when all of the requirements listed below are met. The certificate expires annually on February 15, and must be renewed by submitting an updated application.

- **Data Required to Obtain Growing Area Certification**
  - ***Submit Preliminary Inquiry.*** Contact CDPH's EMB Pre-Harvest Shellfish Unit for a preliminary evaluation of the feasibility of certifying the proposed shellfish growing area. An area may be classified as *Prohibited* if it is too close to a sewage treatment plant outfall (dilution modeling is normally required if the proposed growing area is within 1 to 3 miles of a wastewater treatment plant outfall), marina, or other pollution source. During this time discuss the proposal informally with the EMB and request application forms.
  - ***Define the Growing Area.*** The applicant must be legally authorized to conduct commercial shellfish growing and harvesting operations in that area, and must be able to submit written proof of that authorization and a detailed map or legal description that defines the location and boundaries of the growing area. Most commercial shellfish growers in California operate on state aquaculture leases issued by CDFW upon approval by the Fish and Game Commission. In some cases a growing area may be leased from a

local agency, such as a city or harbor district. Also, in some instances the grower may actually own a tidelands area—in which case a copy of the deed and a use permit form the city or county should be submitted.

- ***Identify a Law Enforcement Agency for Patrol Support.*** The NSSP requires that patrol be conducted in harvest areas classified as *Restricted, Conditionally Restricted,* or *Prohibited,* or *Conditionally Approved* or *Approved,* when in the closed status at sufficient intervals to deter illegal harvesting. Patrols must be conducted by law enforcement personnel from any state or local enforcement authority. If patrol activities are conducted by an agency other than CDPH, a Memorandum of Agreement must be developed with the delegated agency to assure that patrol requirements are met. The delegated agency must agree to maintain and file records of its patrol activities with CDPH. Staff from CDPH will work with the applicant to determine whether a patrol agency is available and willing to provide the required oversight as per NSSP requirements.
- ***File an Application.*** Upon completion of the aforementioned items, complete and submit Form SSP-11, Application for Shellfish Growing Area Certificate.

- **Analysis Required:** Analysis is geared toward understanding water quality and impacts. The watershed or source of water is considered, and an attempt is made to determine the hazards associated with all actual and potential sources of pollution that might impinge on the growing area. This includes such things as sewage treatment plants, areas of urban runoff, industrial plants, and agricultural operations. For example, if the growing site is located closer to shore in the intertidal zone, then analysis is more focused on non-point-source pollution from stormwater runoff. Analysis for an open-ocean proposal is normally less complicated than a proposal located near shore and typically takes less time to complete.
  - A shellfish growing area cannot be classified and certified until a sanitary survey has been completed, which usually requires evaluation of pollution impacts during all seasons of the year.
  - Upon an application's acceptance, CDPH will assist in the development of a mandatory sampling plan. The applicant will agree to (1) be responsible for the collection, transportation, and analysis of all samples necessary for a sanitary survey, including payment of all costs; (2) establish an account at a certified shellfish laboratory where samples will be analyzed and which will transmit the data directly to CDPH; (3) provide all materials and equipment needed for sample collection, preservation, and transportation; and (4) conduct sampling in accordance with a prescribed sampling protocol. Failure of the applicant to comply with the approved sampling plan may result in denial of a certificate. CDPH will provide training and

coordination, monitor sampling, perform a pollution source survey, and complete a sanitary survey report.

- Participation in a sanitary survey is on a cost-sharing basis, as agreed in the sampling plan. CDPH will conduct a sanitary survey of the proposed growing area and its watershed in accordance with the NSSP Model Ordinance. The sanitary survey evaluates the watershed or source of water as a whole, and attempts to determine the hazards associated with all actual and potential sources of pollution that might adversely affect the growing waters (the pollution source, or "shoreline survey"). This includes consideration of things such as sewage treatment plants, urban runoff, industrial plants, agricultural operations, etc.
- The amount of sampling depends on the location of the harvest sites and how they may be affected by pollution. In the case of an area not previously surveyed and classified, the NSSP Model Ordinance requires that at least 30 water samples be collected for bacteriological analysis from each sample station, and that the samples be collected under various environmental conditions, so as to permit determination of "adverse pollution conditions." This generally requires taking samples over the course of at least 1 year. Additional time may be required to collect sufficient data to determine parameters for conditional closures (e.g., rainfall thresholds and closure durations).
- Standards in the NSSP Model Ordinance set maximum allowable levels for fecal coliform bacteria, as well as for other contaminants such as pesticides, toxic organic compounds, and heavy metals.
- Upon analysis of the required sampling data, and of other information that is collected, CDPH will complete a written sanitary survey report with a recommendation for the appropriate growing area classification.
- Upon completion of the sanitary survey, and any other plans or studies that may be required, the CDPH will classify the growing area (and certify it, if appropriate) in accordance with the NSSP Model Ordinance under one of the following classifications:

    a. *Approved.* Shellfish may be harvested for direct marketing (no purification process required). Water samples must be collected for bacteriological monitoring at least five times annually under adverse conditions. An *Approved* area classification is reevaluated every year.

    b. *Conditionally Approved.* Under this certification, shellfish may be harvested for direct marketing when the area is open for harvest, but the area is subject to closure when certain criteria are not met. Impacts to water quality must be

predictable and manageable in order for an area to be classified as *Conditionally Approved*. Water monitoring samples must be collected at least monthly under adverse conditions during open periods. A *Conditionally Approved* area is reevaluated annually.

c. *Restricted*. Shellfish must be purified by relaying or depuration before marketing. Water quality monitoring samples must be collected from the growing area at least five times annually. Additional sampling is required by FDB for any depuration system. The applicant must satisfactorily complete a purification effectiveness study and, if depuration is certified, CDPH must also determine that it has the resources necessary to manage the area. A *Restricted* area classification is reevaluated every year.

d. *Prohibited*. Areas having this classification are not certified. Shellfish cannot be harvested for human consumption in *Prohibited* areas.

- **Timing:** New areas and areas closer to shore (i.e., the intertidal zone) typically take a year of analysis to develop a management strategy adequate for issuance of a Growing Area Certification. If a sanitary survey already exists or if the proposed project is located in the open ocean it typically takes less time to receive a Growing Area Certification (around 6 months).
- **Fees:** No fee. **Also note:** The application is not online. The application should be transmitted to the CDPH's EMB Pre-Harvest Shellfish Unit.

Post-Harvest

This portion of the program requires a Handling and Marketing Certificate from the FDB of CDPH, which cannot be issued before a Growing Area Certificate has been issued. Firms that process, handle, and distribute shellfish must obtain a Shellfish Handling and Marketing Certificate from FDB. This includes businesses involved in the distribution of shellfish that do not take physical possession of the shellfish. The Shellfish Handling and Marketing Certificate is required even if the facility has a Processed Food Registration. The Shellfish Handling and Marketing Certificate is free.

A Processed Food Registration is not required if firms exclusively manufacture, handle, and distribute raw, fresh, or frozen (shucked or in-the-shell) shellfish.

The Shellfish Handling and Marketing Certificate assigns a dealer's number for each certified facility and authorizes a dealer to engage in specific activities such as repacking, reshipping, and shucking shellfish. The dealer's number is required to be listed on all shellfish tags and labels to indicate that the shellfish has originated from a certified facility.

Shellfish dealers shipping products into interstate commerce are required to meet the requirements of the NSSP and must be certified for listing on the Interstate Certified Shellfish Shippers List.

In advance of processing/shipping, growers/producers would be required to obtain a Processed Food Registration and a Shellfish Handling and Marketing Certificate from the CDPH's FDB.

In addition, prior to entering product into interstate commerce, producers are required to meet the requirements of the NSSP and must be certified for listing on the Interstate Certified Shellfish Shippers List.

- **Data Required to Obtain a Handling and Marketing Certification**
  - Description of the type and location of any facilities to be used for handling, packaging, or storing the aquaculture products within the state.
  - Growing Area Certification from CDPH.
- **Analysis Required:** Analysis completed under this certification is for subsequent approval of facilities, equipment, and procedures used for handling, shucking, storing, packaging, and shipping of fish and shellfish after harvest. This certification also enforces meat quality standards and sets requirements for proper packaging and labeling of all fish and shellfish moved in commerce.
- **Timeline:** Typically a year from submittal.
- **Fees:** None.

The California Shellfish Handling and Marketing Certificate Application can be found online at https://www.cdph.ca.gov/CDPH%20Document%20Library/ControlledForms/cdph8642.pdf.

2.3.4 California Department of Food and Agriculture

The California Department of Food and Agriculture is internally divided into seven administration divisions that carry out state food safety and regulation policy: the Animal Health and Food Safety Services, Division of Fairs & Expositions, Inspection Services Division, California Organic Program, Division of Marketing Services, Division of Measurement Standards, and Division of Plant Health and Pest Prevention Services.

The Division of Measurement Standards has jurisdiction over agricultural operations and administers Weighmaster Registration for agricultural products, including the sale of aquaculture products by weight. Pursuant to this authority, individual member-fishermen involved in aquaculture production on the proposed project would be required to obtain a weighmaster

license. The Project would most likely not be required to obtain a weighmaster license as an agent selling membership to shellfish fishermen.

Marine fish and shellfish cultivated under the provisions of an aquaculture registration may be sold irrespective of seasons, bag limits, or angling license provisions. The laws and regulations governing the sale of aquaculture products are cited in Fish and Game Code Section 15005 and in Title 14, Section 238, of the California Code of Regulations.

- **Data Required:** Weighmaster licenses can be acquired by completing a standard Weighmaster License Application form and providing the associated fee. Application forms are available from the website of the Division of Measurement Standards.
- **Analysis Required:** The granting of weighmaster licenses is a ministerial process.
- **Timeline:** A weighmaster license must be renewed annually and can be renewed through an online renewal process.
- **Fees:** Fees for a new weighmaster license range in cost depending on the number of deputy weighmasters included on the license, fixed versus non-fixed weighing location, and the number of fixed weighing locations. The fee is $75 for a fixed location, with a $30 fee for each additional location. The fee for a non-fixed location is $200. Each deputy costs $20.

2.3.5 California State Lands Commission

SLC has jurisdiction and management control over the state's 4 million acres of tidelands and submerged lands and the beds of navigable rivers, streams, lakes, bays, estuaries, inlets, and straits; these lands are often referred to as public trust lands. SLC's Land Management Division in Sacramento administers the leasing of these lands for development projects.

SLC will consider numerous factors in determining whether or not a proposed use of the state's land is appropriate, including, but not limited to, the potential impacts on and the consistency with the Public Trust under which SLC holds the state's sovereign lands, protection of natural resources and other environmental values, and preservation or enhancement of the public's access to state lands. Other factors that SLC will consider are the size, location, intended use, and described need for the project/structure/facility, its relationship to the surrounding environment, and whether the size of the project/structure/facility is appropriate for the location and type of use or operation proposed.

- **Data Required:** No aquaculture lease will be valid until SLC has certified to CDFW that the area applied for is unencumbered or the private ownership is properly described, so as not to preclude its use for the proposed culture.

- **Analysis Required:** A state water bottom lessee may not "unreasonably impede public access to state waters for purposes of fishing, navigation, commerce, or recreation."
- **Timeline:** Review will occur concurrently with CDFW review.
- **Fees:** None.

2.3.6 California State Office of Historic Preservation

The California State Office of Historic Preservation (OHP) is responsible for administering federally and state-mandated historic preservation programs to further the identification, evaluation, registration and protection of California's irreplaceable archaeological and historical resources under the direction of the State Historic Preservation Officer (a gubernatorial appointee responsible for the operation and management of the OHP and long-range preservation planning), and the State Historical Resources Commission (a nine-member state review board, appointed by the governor, with responsibilities for the identification, registration, and preservation of California's cultural heritage). As such, OHP has authority over historic structures and ensures compliance with Section 106 of the National Historic Preservation Act. It also administers the National Register of Historic Places, the California Register of Historical Resources, and the California Historical Landmarks and California Points of Historical Interest programs.

The proposed Project would need to identify cultural and historic resources within the Project area. Tribal engagement would be required to assist in identifying areas of cultural importance and to map and document any Tribal resources. The OPH would also recommend that Project proponents identify ways in which Tribes can be better incorporated into decision processes. It is anticipated that the Project would be determined to have either "no potential to cause effects" or "no effect" on historic properties.

- **Data Required:** An assessment of potential archaeological constraints on the Project area would be conducted. Typically, this includes a literature review and record search conducted through the California Historical Records Information System. Additionally, a Native American Heritage Commission Sacred Lands File search and follow-up with Native American Heritage Commission-listed Native American representatives can be requested. Findings would be summarized in a cultural resources section of the environmental documents.
- **Analysis Required**
    - Consistency with Section 106 of the National Historic Preservation Act is a requirement of the Corps's permitting process. Applicants provide the Corps with a cultural resources report identifying and analyzing the potential effects to historic

properties. If there is the potential to cause effects to historic properties, the Corps consults with the OHP per Title 33, Part 325 of the Code of Federal Regulations, Appendix C.

- Assembly Bill 52 requires consultation with all California Native American Tribes on the Native American Heritage Commission List. As part of the CEQA process, consideration must be given to Tribal Cultural Resources when determining project impacts and mitigation. Additionally, notice must be given to the Tribes and they must be engaged in a meaningful consultation.

- **Timeline:** If the OHP does not object within 30 days of receipt of an adequately documented "no effect" determination, the Corps may proceed with issuing its permit.
- **Fees:** None.

2.4 CEQA Requirements

CEQA requires that any project in the State of California determined to have the potential to result in adverse impacts to the environment be analyzed under the CEQA Guidelines (14 CCR 15000 et seq.) and the results disclosed to the general public. A lead agency is determined under CEQA as the agency with greatest authority over the resources or land the proposed project is likely to impact, often a city, county, school district, or public resource agency.

If a proposed project is not exempt from CEQA, the CEQA lead agency conducts an Initial Study to determine whether the proposed project may have a significant effect on the environment. The Initial Study is circulated to responsible, trustee, and interested public agencies and others who have expressed an interest in such documents for review and comment. The circulation period is normally 30 days. Based upon the responses received, a determination is made as to whether a negative declaration (ND) or an EIR is required.

An ND is the less complex of the two documents. Generally, an ND consists of the Initial Study accompanied by a recommendation by the determination that the proposed project would not have a significant effect on the environment. If the ND contains mitigation measures that help ensure that the proposed project is not environmentally harmful, then it is considered to be a mitigated negative declaration (MND). The ND/MND is circulated for 30 days to appropriate agencies and interested persons. This review is provided through the State Clearinghouse. If no significant environmental effects are identified, the ND/MND is considered together with any comments received, and the lead agency either does or does not adopt the ND/MND, and then either approves or disapproves the proposed project.

An EIR is required in instances where responses to the Initial Study reflect concern that the proposed project may or will have a significant effect on the environment. In some cases it is clear without preparation of an Initial Study that a project could have a significant effect on the environment. In such cases, the EIR process may begin without preparation of an Initial Study. Usually a third-party consultant will be hired by the lead agency to prepare the EIR.

In most instances, the preparation of an EIR takes from 6 to 9 months. The lead agency will prepare a Notice of Preparation that is circulated for 30 days, and will hold a scoping meeting during that time, to obtain specific detail about the scope and content of environmental information to include in the EIR. Later, a Draft EIR is circulated for 45 days to agencies and individuals concerned about the project. The State Clearinghouse provides for circulation to state agencies. During the 45-day review period, a public meeting to receive comments on the project may be held. Comments and recommendations received and significant environmental points raised in the review and consultation process are responded to in the Final EIR. This document is then circulated to those agencies and persons who commented on the Draft EIR. The Final EIR is then presented to the lead agency for certification, and the proposed project, including any recommended alterations or mitigation measures, is presented to the lead agency for approval or disapproval.

The proposed Project would be required to complete environmental review under CEQA, led by the Fish and Game Commission, to identify and disclose potential environmental impacts related to the construction and operation of the proposed aquaculture facilities.

2.5 Permits Not Required

- Clean Water Act 404 Permit – not required because the project will not result in a discharge of dredged or fill material into waters of the United States.
- Clean Air Act Title V Permit – not required because shellfish processing will use pre-existing infrastructure.
- Hazardous Waste ID Number – not required because no hazardous waste will be generated.
- NPDES 402 Stormwater Permit – not required because there will not be a discharge of pollutants to surface waters resulting from the lease areas.

2.6 Permit Application Sequencing and Critical Path

The overall timeline for completing environmental review under CEQA and obtaining all required permits is expected to be up to 3 years. The process follows a simple sequence: engaging regulatory agencies and gathering data at Project development stage; generating a complete Project description; initiating the CEQA and NEPA process; and submitting permit

applications concurrently to all regulatory agencies for required permits (see Figure 3, Ventura Shellfish Enterprise Permit Application Sequencing Timeline). A unique aspect of the Project is the simultaneous permitting and CEQA processes. The Project will combine the permit applications submittal with the processing of environmental documents, allowing for increased early input and review from the regulatory agencies.

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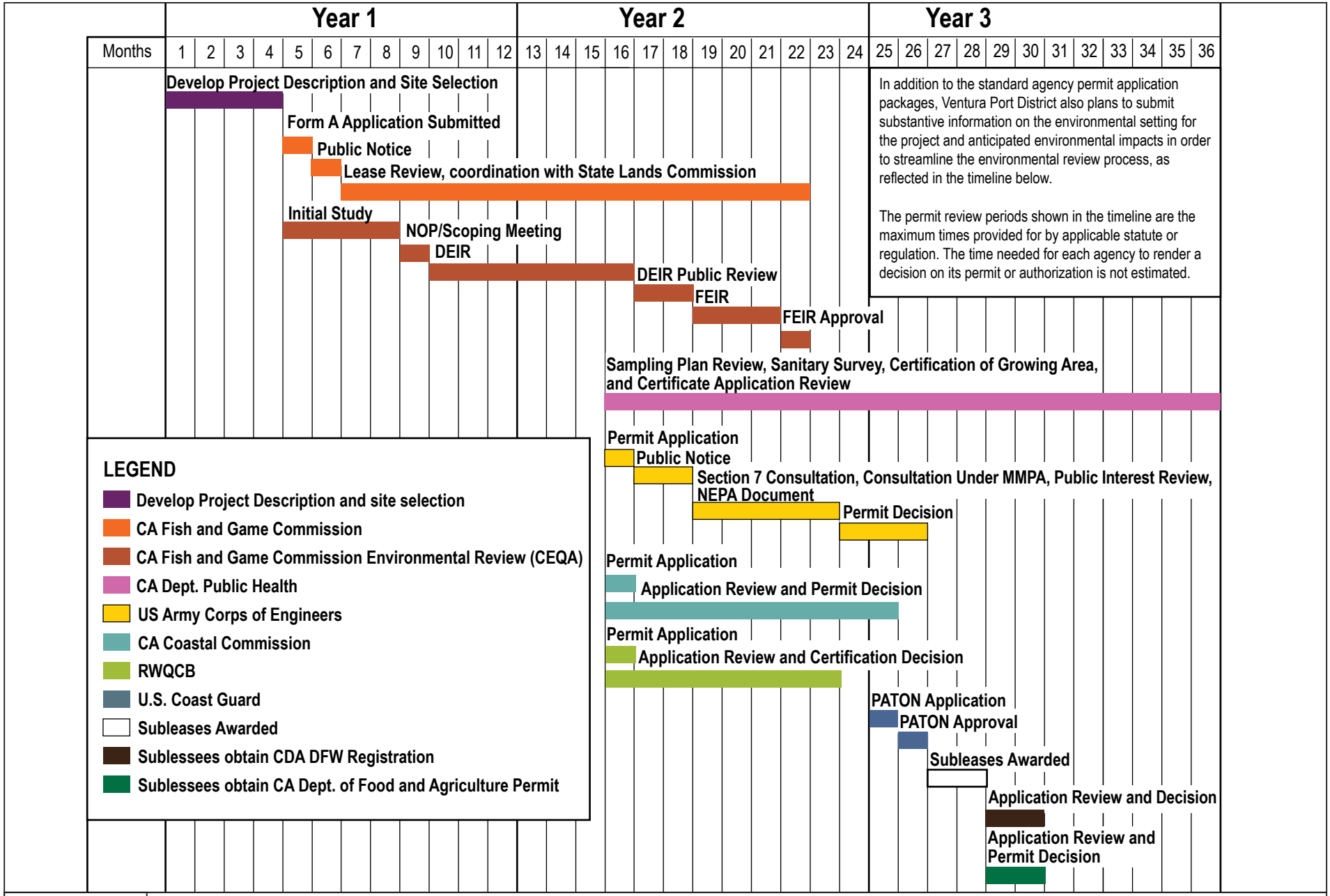

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FIGURE 3

Ventura Shellfish Enterprise Permit Application Sequencing Timeline

Strategic Permitting Initiative to Substantially Increase Shellfish Farming in Southern California

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3 KEY TECHNICAL ISSUES AND INFORMATION NEEDED TO ADDRESS KEY ISSUES

In order to procure all required permits to proceed, the proposed project must address potential impacts and fully comply with the suite of applicable regulations. We have identified the following considerations as Key Issues in the approval process for the proposed Project and shellfish aquaculture in California in general. Approvals by the various regulatory agencies will require evaluating alternatives with regard to these Key Issues in order to minimize adverse environmental effects of the Project. Table 3 summarizes the Key Issues and potential levels of impact by category, and each issue is described in further detail following the table.

Table 3
Key Issues and Potential Levels of Impact

Issue	Level of Potential Impact
Biological Issues	
Release of viable nonnative reproductive material by cultivated specimens	Low
Release of potentially invasive species, parasites and pathogens from seed stock	Low
Removal of phytoplankton from the water column	Low
Effects of equipment on water column habitat	Low
Construction impacts on the seafloor	Low to medium
Deposition and accumulation of biological materials on the seafloor during operation	Low to medium
Invasive fouling organisms	Medium
Potential for ship strikes of marine wildlife	Low
Potential for marine mammal entanglement in aquaculture gear	Low to medium
Navigational Issues	
Project effects on navigational safety	Low
Air Quality Issues	
Increased air emissions from boat trips to construct and operate the project	Low
Product Quality Issues	
Potential for domoic acid accumulation in cultivated shellfish from natural algae blooms	Low
Vibrio contamination of cultivated shellfish	Low
Social Impact Issues	
Potential economic impact on existing fisheries, specifically halibut trawling	Medium
Damage to fishing gear due to contact with aquaculture equipment	Low to medium
Onshore aesthetic impacts of surface equipment (buoys, navigation aids, etc.)	None to low

For each of the following issues, data will be required to describe the existing conditions, potential project impacts, and potential cumulative impacts.

3.1 Biological Issues

3.1.1 Cultivation of Non-Native Species

The proposed project would involve the cultivation and harvest of the Mediterranean mussel (*Mytilus galloprovincialis*). The Mediterranean mussel is a non-native species but has already established naturalized, self-sustaining populations outside of cultivation in California. The California Department of Fish and Wildlife (CDFW) does not consider the Mediterranean mussel an invasive species in California.

Issue A: Release of Viable Nonnative Reproductive Material by Cultivated Specimens

Cultivation of Mediterranean mussels has the potential to lead to the spread of this non-native species outside of cultivation if viable eggs, larvae, or other reproductive material are released into the ocean system. Subsequent competition with and displacement of native shellfish species is the primary concern related to release of reproductive material. However, the Project area appears to lack suitable substrate for development of natural Mediterranean mussel populations and there are no native shellfish populations in the Project area or in Ventura Harbor. Because the Mediterranean mussel is already so pervasive in California waters, the additional reproductive material released by the proposed Project may not have any appreciable effect on the spread of the species.

- **Permits/Entitlements Implicated**
  - Consultation with the National Marine Fisheries Service (NMFS) pursuant to Endangered Species Act (ESA) Section 7, Marine Mammal Protection Act, Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act), and the Wildlife Coordination Act
  - California Coastal Commission (Coastal Commission) federal consistency review pursuant to the Coastal Zone Management Act (CZMA) and compliance with Section 30233(a) of Article 4, Chapter 3 of the California Coastal Act (Coastal Act)
  - CDFW review during the California Environmental Quality Act (CEQA) process and lease approval
- **Information Needs**
  - Data regarding the nearest known existing occurrences of Mediterranean mussel and baseline conditions
  - Amounts of potential release of eggs and larvae from the Project

- Potential for dispersion based on ocean currents
- Identification of suitable substrate and any native shellfish populations that could be affected

Issue B: Release of Potentially Invasive Species, Parasites, and Pathogens from Seed Stock

Shellfish aquaculture has the potential to introduce invasive species, parasites, and pathogens into the environment via seed stock, which could have detrimental impacts on the California marine ecosystem. The risk of such introductions can be minimized by ensuring shellfish seed are imported from sources with rigorous QA/QC for invasive species and that are certified to be disease and parasite free.

- **Permits/Entitlements Implicated:** CDFW aquaculture registration
- **Information Needs:** Importation permit demonstrating that the seed stock will come from a hatchery that is certified as disease and parasite free

3.1.2 Water Column Effects

The Project has the potential to affect habitat within the water column, including habitat for pelagic fish species.

Issue A: Removal of Phytoplankton from the Water Column

Mussels, including the Mediterranean mussel, are filter feeders that feed primarily on phytoplankton from the water column. In large enough numbers, cultivated mussels have the potential to affect the abundance and diversity of phytoplankton in the vicinity of aquaculture operations. A decrease in phytoplankton can lead to subsequent decreases in the zooplankton species that feed on phytoplankton and the fish species that feed on plankton in the water column. The Project's location in open offshore waters reduces the likelihood that a localized decrease in phytoplankton will occur, because the currents and movement of water in the open ocean should ensure a sufficient mixing and turnover of water.

- **Permits/Entitlements Implicated**
  - Consultation with NMFS pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act

- **Information Needs**
  - Data regarding the baseline abundance of plankton in the vicinity of the Project area
  - Phytoplankton consumption rate for mussels
  - Potential for mixing of waters characterized by water movement velocity and depth in the Project area

Issue B: Effects of Equipment on Water Column Habitat

The aquaculture equipment associated with the Project, particularly the submerged lines and cultivation ropes, would serve as a new source of water column habitat not otherwise present in the open ocean. The new surface area created by the equipment has the potential to function as foraging habitat and refuge areas for pelagic fish species. This type of beneficial effect would be an important consideration in favor of locating the Project in open ocean waters.

- **Permits/Entitlements Implicated**
  - U.S. Army Corps of Engineers (Corps) Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899
  - Consultation with NMFS pursuant to ESA Section 7, Marine Mammal Protection Act, Magnuson-Stevens Act, and the Wildlife Coordination Act
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act
- **Information Needs**
  - Data regarding the baseline abundance of pelagic fish in the project vicinity

3.1.3 Benthic Community

The proposed project would be located above sandy bottom sea floor in offshore open ocean waters. The benthic community in the project area is likely to contain a limited number of epifaunal species and a much larger number of infaunal species. The Project has the potential to impact the benthic environment through both placement of the proposed anchors and through the accumulation of biological material generated by shellfish cultivation.

Issue A: Construction Impacts on the Seafloor

Seafloor habitat could be altered or disturbed by the placement of the anchoring apparatus (e.g., screw anchors) used to hold the lines, ropes, floats, and buoys of the cultivation lines in place. The Coastal Commission will consider the anchors as “fill in open coastal waters.” The Corps

will not consider the anchors as "fill" but will regulate the apparatus as a "structure" and regulate its placement as "work."

- **Permits/Entitlements Implicated**
  - Corps Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899
  - Consultation with NMFS pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act
- **Information Needs**
  - Detailed plans describing and depicting the type, amount, layout, and method of installation of the facility, specifically the anchoring apparatus
  - Data regarding the baseline abundance and diversity of epifaunal and infaunal species beneath the proposed anchoring areas

Issue B: Deposition and Accumulation of Biological Materials on the Seafloor during Operation

Seafloor habitat can be altered or disturbed by the deposition of biological materials resulting from dislodged or discharged shells, shell fragments, and deposits from the growing operation accumulating on the seafloor beneath the structure. Such material typically includes feces and pseudofeces from the cultivated shellfish, as well as fouling organisms such as algae, barnacles, sponges, and other species of shellfish that accumulate on the Project equipment and subsequently become dislodged by natural processes, or due to harvesting or cleaning operations. Cultivated shellfish or shells from the Project can also be dislodged from the structure during growth, storm events, predation by marine wildlife, cleaning, and harvest activities.

The accumulation of material including shell fragments, intact shells, fouling organisms, and feces can alter the physical and chemical characteristics of the bottom substrate, and can impact the benthic community and sediment-dwelling organisms that may be sensitive to conditions such as substrate composition and chemistry. Accumulation of material could also attract organisms that would change the composition of the benthic community.

- **Permits/Entitlements Implicated**
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Sections 30230 and 30231 of Article 4, Chapter 3 of the Coastal Act

- Consultation with NMFS pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act

- **Information Needs**
  - Analysis of baseline and potential seafloor habitat debris composition

3.1.4 Fouling Organisms (*Didemnum*)

The submerged structures of open water shellfish farms can provide hard substrate habitat for invasive "fouling organisms." Fouling organisms, such as invasive algae, sea squirts, and mussels, pose economic and ecological risks to the marine environment. A species such as *Didemnum vexillum* is worthy of considerable attention as a nuisance species because it reproduces rapidly and fouls marine habitats (including shellfish aquaculture operations and fishing grounds), ship's hulls, and maritime structures. It can interfere with coastal and offshore activities. Like other fouling organisms, they are found on hard substrates that include floats, moorings and ropes, steel chain, automobile tires, polythene plastic, rock outcrops, gravel seabed (pebbles, cobbles, boulders), and ship hulls. They overgrow other marine organisms such as tunicates, sponges, macro algae, hydroids, anemones, bryozoans, scallops, mussels, and oysters. Where these colonies occur on the seabed, they likely cover the siphons of infaunal bivalves and also serve as a barrier between demersal fish and benthic prey. The colonies can occur at water depths ranging from intertidal to continental shelf depths of 65 meters (213 feet).

Issue A: Attraction of Fouling Organisms on Aquaculture Gear

- **Permits/Entitlements Implicated**
  - Coastal Commission, Section 30231, Article 4, Chapter 3 of the Coastal Act
  - NMFS consultation pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act
  - CDFW aquaculture registration

- **Information Needs**
  - An evaluation of the diversity, abundance, and distribution of fouling organisms that could potentially establish on the shellfish cultivation facility (e.g., ropes, buoys, cables, cultivation structures, and cultivated shellfish)
  - A list of maintenance actions for in-water structures and vessels that involve the periodic removal of fouling organisms with proper collection and disposal protocols

- Analysis of the abundance/distribution of non-native fouling organisms, and evaluation of the response of fish, macro invertebrate, seabird, and marine mammal populations in the Project area to the presence of the facility's bio fouling organisms
- An upland disposal plan for non-native fouling organisms when conducting maintenance cleaning operations

3.1.5 Marine Wildlife

The proposed Project would be located in open ocean waters that are used by numerous marine species, including marine mammals and sea turtles. Marine mammal species that could be present in the Project area include gray whales (*Eschrichtius robustus*), blue whales (*Balaenoptera musculus*), humpback whales (*Megaptera novaeangliae*), Dall's porpoises (*Phocoenoides dalli*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*), common dolphins (*Delphinus delphis*), California sea lions (*Zalophus californianus*), and harbor seals (*Phoca vitulina*). Two species of sea turtle, green sea turtles (*Chelonia mydas*) and leatherback turtles (*Dermochelys coriacea*), could also be present. The Project has the potential to adversely affect marine wildlife via collisions with Project boats and entanglement in lines and aquaculture equipment.

Issue A: Potential for Ship Strikes due to Increased Boat Activity

Ship strikes are known to be a hazard to a number of marine species with the potential to occur in the Project vicinity, including several species of whale. The Project would contribute to increased boat traffic in the area during both Project construction and regular operations. Mortality from collision with marine vessels is often associated with larger container and freight ships; however, collisions with smaller boats such as those that would be used for the proposed Project do have the potential to kill or injure marine mammals.

- **Permits/Entitlements Implicated**
  - Coastal Commission, Section 30231, Article 4, Chapter 3 of the Coastal Act
  - NMFS consultation pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act
- **Information Needs**
  - List of species with the potential to occur in the Project area and survey data if available
  - Information regarding the size and number of vessels to be used during Project construction

- Information regarding the size and number of vessels to be used during regular Project operations, such as seeding, harvesting, and maintenance of facilities and the frequency/number of trips
- Existing use of the area by ships (size, frequency)

Issue B: Potential for Marine Mammal Entanglement in Aquaculture Gear

Marine mammal entanglement in fishing gear is considered a major cause of injury and mortality for marine mammals, particularly when a large number of lines and ropes are used and the lines and ropes have a small diameter and are slack. Each of these factors can create a potential for entanglement.

Additional risk is posed by the potential for aquaculture facilities to trap derelict fishing gear, lines, and debris that could separately create the potential for entanglement if not properly managed and removed.

Few quantitative data are available regarding the risks of commercial aquaculture facilities located in offshore open ocean waters, particularly in California. A mussel aquaculture operation located off the coast of Santa Barbara is the nearest similar facility to the proposed Project, and that operation has never recorded an instance of marine mammal entanglement in more than a decade of operations.

The design of each of the facilities currently proposed consists of cultivation ropes suspended from a long line submerged 15 to 45 feet beneath the water surface. The configuration consists of a horizontal header line that is supported by buoys and vertical lines that anchor the longline to the bottom of the ocean, as shown on Figure 2. The long line configuration produces a fairly rigid structure under tension, with stout lines and little slack. Unlike fishing lines and nets, shellfish longlines are not intended to catch fish or marine mammals. Therefore, the Project design is expected to pose a much smaller risk to marine mammal entanglement compared to long line fishing methods.

- **Permits/Entitlements Implicated**
  - Coastal Commission, Section 30231, Article 4, Chapter 3 of the Coastal Act
  - NOAA consultation pursuant to ESA Section 7, the Marine Mammal Protection Act, the Magnuson-Stevens Act, and the Wildlife Coordination Act
- **Information Needs**
  - List of species with the potential to occur in the Project area and survey data if available

3.2 Navigational Issues

Offshore shellfish cultivation facilities can pose a risk of collision or entanglement to ocean-based vessel traffic and activities such as whale watching, sailing, and fishing. Marker buoys placed at the corners of the facility demarcate the boundaries, and the actual cultivation structures would be submerged to a depth of 15 to 45 feet, below the draft of most vessel traffic outside of shipping lanes. With proper facility design, installation, location information, and in-water navigational demarcation, vessel traffic through an offshore shellfish cultivation facility can be properly managed.

Issue A: Project Effects on Navigational Safety

- **Permits/Entitlements Implicated**
  - U.S. Coast Guard pursuant to U.S. Private Aids to Navigation System
  - Corps Section 10 Rivers and Harbors Act Permit
  - Coastal Commission pursuant to Sections 30211, 30220 of Article 4, Chapter 4 of the Coastal Act
- **Information Needs**
  - Marker buoy type, size, and layout design to assist implementation of a navigation system
  - Facility structure layout plans to aid in analysis of collision or entanglement risk to vessel traffic
  - Location and configuration information to allow information transfer to navigational charts

3.3 Air Quality Issues

Issue A: Increased Air Emissions from Boat Trips to Construct and Operate the Project

The proposed Project has the potential to impact air quality, primarily through emissions generated by additional boat trips to and from the Project site for construction, operation, and maintenance of the aquaculture facilities, as well as additional vehicle traffic generated by the Project and operation of harvesting equipment.

- **Permits/Entitlements Implicated**
  - Corps Permit Public Interest Review, pursuant to Section 10 of the Rivers and Harbors Act of 1899

- **Information Needs**
  - Information regarding the number of vessels to be used during Project construction, duration of construction, and estimate of resulting emissions
  - Information regarding the number of vessels to be used during regular Project operations, such as seeding, harvesting, and maintenance of facilities; frequency/number of trips; and estimate of resulting emissions
  - Expected vehicle traffic generated by the Project
  - Existing use of the area by ships; baseline emissions

3.4 Product Quality Issues

3.4.1 Domoic Acid

Domoic acid is a biological toxin produced by members of the phytoplankton genus *Pseudo-nitzschia*. When environmental conditions cause these phytoplankton to bloom in excessive concentrations, domoic acid can accumulate in the environment and become highly concentrated in filter-feeding organisms and higher trophic levels of the marine food chain. It can be harmful to humans if shellfish contaminated with domoic acid is consumed.

Issue A: Potential for Domoic Acid Accumulation in Cultivated Shellfish from Natural Algae Blooms

- **Permits/Entitlements Implicated**
  - California Department of Public Health (CDPH) Environmental Management Branch (EMB) Pre-Harvest Shellfish Unit
- **Information Needs**
  - General growing area information and analysis geared towards understanding water quality and impacts to conduct a Preliminary Inquiry with CDPH's EMB Pre-Harvest Shellfish Unit
  - Detailed location information (with written authorization for that location), sanitary survey, and monitoring protocol for water quality and marine biotoxins to set rules for harvest closures and to develop a management strategy adequate for issuance of a CDPH Growing Area Certification
  - A plan that identifies law enforcement agency patrol support when in the closed status (due to a product quality issue such as domoic acid) to deter illegal harvesting

3.4.2 *Vibrio*

Vibrio is a genus of Gram-negative bacteria. Several species of *Vibrio* are pathogens. Most disease-causing strains are associated with gastroenteritis in humans, but they can also infect open wounds and cause septicemia, leading to fatality. *Vibrio* can be carried by numerous marine organisms, including shellfish.

Issue A: *Vibrio* Contamination of Cultivated Shellfish

- **Permits/Entitlements Implicated**
  - CDPH's EMB Pre-Harvest Shellfish Unit
- **Information Needs**
  - General growing area information and analysis geared towards understanding water quality and impacts to conduct a preliminary inquiry with CDPH's EMB Pre-Harvest Shellfish Unit
  - Detailed location information (with written authorization for that location), sanitary survey, and monitoring protocol for water quality and marine biotoxins to set rules for harvest closures and to develop a management strategy adequate for issuance of a CDPH Growing Area Certification
  - A plan that identifies law enforcement agency patrol support when in the closed status (due to a product quality issue such as *Vibrio*) to deter illegal harvesting

3.5 Social Impact Issues

3.5.1 Commercial Fishing

The proposed Project has the potential to impact certain commercial fishing operations. In particular, the California Halibut Trawl Grounds are a designated area located offshore beginning approximately 1 nautical mile from the mainland shore between Point Arguello in Santa Barbara County and Point Mugu in Ventura County. California halibut (*Paralichthys californicus*) is a commercially important flatfish species caught in shallow waters off the Southern California coast. Trawl-caught California halibut account for the majority of California halibut catches, generating a seasonal annual average of over $1.7 million in ex-vessel revenue (CDFG 2008).

Issue A: Potential Economic Impact on Existing Fisheries

The Project's location in offshore open ocean waters has the potential to preclude certain commercial and recreational fishing operations and activities within the lease areas. In

particular, the halibut trawling operations currently in the Project area would need to avoid the cultivation equipment, because the trawl nets and other equipment could become entangled or damaged by contact with the aquaculture lines. This preclusion of the lease areas could have an adverse economic impact on a fishery that has already seen its available trawling area restricted in recent years.

- **Permits/Entitlements Implicated**
  - Corps Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act
- **Information Needs**
  - Current use of the Project area by halibut trawling operations
  - Suitability of Project area for halibut trawling operations

Issue B: Damage to Fishing Gear due to Contact with Aquaculture Equipment

The Project has the potential to damage commercial and recreational fishing gear should the gear come into contact with the aquaculture facilities and become entangled. The result of entanglement could be damage to or even loss of the fishing gear, which could have an adverse economic impact on fishermen. Clear demarcation of all lease areas and aquaculture configurations with surface highflyer buoys will minimize collisions and associated gear damage.

- **Permits/Entitlements Implicated**
  - Corps Permit pursuant to Section 10 of the Rivers and Harbors Act of 1899
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act
- **Information Needs**
  - Locations of lease areas and current fisheries operations
  - Amount of recreational fishing in the lease areas

3.5.2 Aesthetics

Issue A: Onshore Aesthetic Impacts of Surface Equipment (Buoys, Navigation Aids, etc.)

The proposed Project site would be located in offshore waters and would likely not be visible to observers from the shoreline. The majority of equipment involved in longline mussel

aquaculture is located beneath the surface. Above-surface equipment would consist of buoys, floats, and navigational aids that would be used to identify the location of the cultivation plots for vessels to prevent collisions or entanglement of gear. The potential for aesthetical conflicts is likely to be minimal.

- **Permits/Entitlements Implicated**
  - Corps Permit Public Interest Review pursuant to Section 10 of the Rivers and Harbors Act of 1899
  - Coastal Commission federal consistency review pursuant to the CZMA and compliance with Section 30233(a) of Article 4, Chapter 3 of the Coastal Act
- **Information Needs**
  - Visual layout of surface markers and buoys associated with specific lease locations

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APPENDIX A

Agency Comments Received during Regulatory Pre-Application Meeting

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Agency Comments Received during Regulatory Pre-Application Meeting

Document Location	Name	Comment/Issue
1.4, Project Location	Chris Yates (NOAA)	Suggest having the Bren School model incorporate factors that the permitting agencies suggest as screening criteria. Make sure the model is answering the questions of the permitting agencies.
1.5.3, Protected Species Conservation Measures	Bryant Chesney (NOAA)	Fully describe conservation measures and point to recent studies and anecdotal evidence that supports this design and shows how issues can be managed.
2.1.3, NOAA National Marine Fisheries Service	Penny Ruvelas (NOAA)	Include full list of listed species that could occur.
2.1.3, NOAA National Marine Fisheries Service	Bryant Chesney (NOAA)	Consider reaching out to Pacific Fisheries Management Council regarding their Essential Fish Habitat responsibilities.
2.1.3, NOAA National Marine Fisheries Service	Penny Ruvelas (NOAA)	Consider variety of other effects and concerns beyond just the location of the lines in the water. For example, need to consider entire scope of project, including impact of having 20 or more sites, how the ropes and lines are configured in the water, harvesting activities, boat traffic, etc.
2.3.2, California Department of Fish and Wildlife	Loni Adams (CDFW)	Consider California least terns could potentially be impacted as they forage in Ventura Harbor.
Table 3, Key Issues and Potential Levels of Impact	Penny Ruvelas (NOAA)	For ESA/MMPA, focus is at site specific level. But also need to consider density and siting/location of structures; where sites are located relative to one another. Make sure there isn't a creation of migratory barriers or mazes for species moving through. Also think about MMPA stocks – dolphin or porpoise stocks that have a restricted range; make sure not narrowing with dense placement within 100 acre plots.
Table 3, Key Issues and Potential Levels of Impact	Chris Yates (NOAA)	Don't want to set up a curtain or migratory barrier for gray whales, for example.
Table 3, Key Issues and Potential Levels of Impact	Bryant Chesney (NOAA)	Think of other indirect impacts such as Port infrastructure expansion's effects if creating a large commercial enterprise.
Table 3, Key Issues and Potential Levels of Impact	Cassidy Teufel (CA Coastal Commission)	Marine debris can be a biological issue and also have commercial impacts. Facilities themselves can break loose and become marine debris. And if fishing is allowed nearby, fishing gear can become entangled and lost.
Table 3, Key Issues and Potential Levels of Impact	Chris Yates (NOAA)	Consider gear marking requirements so there is a confident system of marking and way of identifying if pieces get lost.
Table 3, Key Issues and Potential Levels of Impact	Cassidy Teufel (CA Coastal Commission)	On water operations and use of lighting – protected sea bird species can be sensitive to light attraction. If there are on-water operations at night, effects of use of lighting should be considered depending on location and how far offshore.
Table 3, Key Issues and Potential Levels of Impact	Cassidy Teufel (CA Coastal Commission)	May need to consider effects of on-water operations at night (light effects) as aesthetic or visual impacts, depending how far offshore.

Document Location	Name	Comment/Issue
3.5, Social Impact Issues – 3.5.1, Commercial Fishing	Mike McCorkle	Fishermen already concerned about being squeezed in. Have had bad luck with CDFW; leases are still there that were never removed and not marked. Gray whales need to be included in list of species moving through. Would support a project inside of one mile. Sites have to be well marked and monitoring needs to happen. Put pingers on leases to warn whales. Need a bond to ensure there's clean up if growers walk away. Need criteria in place/ vetting process for who can get a lease. Concerned about unmaintained gear and no enforcement from the agencies. Fishermen need to know where the sites are and they need to be clearly marked.