



King County
Department of Local Services- Permitting Division

State Environmental Policy Act (SEPA)
Mitigated Determination of Nonsignificance (MDNS)
SPARO Kelp and Shellfish Farm

Date of Issuance:	January 10, 2023
Project:	This proposed project is an integrated and regenerative kelp and shellfish farm which will grow sugar kelp, clams, mussels, oysters, and possible scallops at one location. All these species are either native or naturalized to the proposed area.
Location:	300 feet offshore of the mean low tide in the Puget Sound at the SW corner of Vashon Island, WA in Colvos Passage. The NW corner will be at approximately: 47.337833N, -122.526706W, Section 2, Township 21N, Range 02E. The site will be entirely in open water between depth of 30 feet and 80 feet and will not access the shoreline or tidal lands.
King County Permits:	Shoreline Substantial Development Permit (SSDP) SHOR22-0015
SEPA Contact:	Tracy Cui, AICP, Principal Planner Tracy.Cui@kingcounty.gov 206-263-8720
Proponent:	Mike Spranger 14400 107 th Way SW, Vashon, WA 98070 mike.spranger@outlook.com (206)491-0936
Water Body:	Puget Sound
Shoreline Environment:	Aquatic
Section/Township/Range:	Section 2, Township 21N, Range 02E
Tax Parcel:	022102HYDR

Notes

- A. This finding is based on review of the project site plan; Environmental Checklist revised on March 15, 2022; the concurrent letter from National Marine Fisheries Service (NMFS) dated January 3, 2023; the concurrent letter from U.S. Fish and Wildlife (USFWS) signed on June 10, 2022; Eelgrass and Macroalgae Survey prepared in May 2022; Seaweed/Shellfish Farm Map and Substrate Details dated September 20, 2022; Impact Analysis prepared in May 2022; U.S. Army Corps of Engineers (USACE) Permit signed in August 2022; Shoreline Photo Survey conducted on October 10, 2022; Seaweed/Shellfish Farm Planting and Harvesting Narrative dated September 18, 2022; Examples of Buoys and Lights; Visualization Photos of PATON and U.S. Coast Guard (USCG) Lighting; Biological Evaluation; Washington State Joint Aquatic Resources Permit Application (JARPA) Form; and other documents in the file (See respective file for information).

- B. Issuance of this threshold determination does not constitute approval of the permit. This proposal will be reviewed for compliance with all applicable King County codes which regulate development and land use activities, including but not limited to 2016 King County Comprehensive Plan, King County Code (KCC) 21A, Shoreline Master Program; and the Critical Areas regulations.
- C. The SSDP application was received on June 2, 2022. The application was automatically deemed complete by the end of 28th day on June 30, 2022, pursuant to KCC 20.20.050. The Notice of Application was issued on August 11, 2022, by 1) mailed notice to property owners in a proximity of the subject property; 2) laminated notices posted on different locations on the island, including but not limited to, Vashon Market VGA, Minglement, Granny's Attic, Café Luna, and Vashon Chamber of Commerce; 3) publication in the Seattle Times and Vashon/Maury Island Beachcomber; 4) posted notice with associated docs on Permitting public notice webpage, <https://kingcounty.gov/depts/local-services/permits/public-notices.aspx>; and 5) emailed notice to the public agencies and tribes in accordance with KCC 20.20.060.
- D. This public comment period was from August 11 to September 13, 2022 (33 days). The Department of Local Services received extensive comments from the public. All public comments received were shared with the applicant and the County review staff to ensure the impacts of the proposed development were thoroughly evaluated within the context of existing regulations and standards. The applicant provided written responses to the public comments. The following notes describe in more detail the proposed operations and the assessment of potential environmental impacts of the proposal.
- E. The proposed farm is located in an area (Colvos Passage) where marine mammals are present potentially year-round, although it is not known as a particularly high use area as compared to other sites in Puget Sound. Marine mammals, including Southern resident killer whale (SRKW) and humpback whales could also travel through Colvos Passage. The project has evaluated the potential for farm activities to overlap with marine mammal use of the area. There are no documented seal or sea lion haul out areas near the proposed project location and the project does not include structures that are likely to attract seals or sea lions or provide opportunities to haul out. The farm area is approximately 300' from the shoreline and thus would not disrupt nearshore travel or use of the beach by marine mammals. The project area itself represents less than 0.1% of Colvos Passage and even a smaller percentage when including areas to the South of Vashon Island (between the Tahlequah Ferry Terminal and Point Defiance, the Tacoma Narrows, Gig Harbor, and Commencement Bay). Therefore, travel around the site is unrestricted. Farm activities as planting, inspection, maintenance, harvesting will overlap with marine mammal use of the area however farm activities will be very low impact involving one small boat (less than 20') with a small 4 stroke (quiet, clean) outboard motor. There will be no other machinery used as the planting, inspection, and harvesting process is done manually. 95% of the time farm work will be done by 1 employee. During planting and harvesting there will be up to 3 employees. These conclusions are supported by the conclusions in the Endangered Species Act Consultation Letter of Concurrence (LOC) evaluating effects to listed species including salmon and marine mammals. NMFS concluded that effects to behavior, movement, prey resources, risk of entanglement are "discountable, insignificant, or beneficial" and is not likely to adversely affect listed species and designated critical habitat. Minimization measures are proposed and presented in the document entitled "Best Management Practices, Avoidance and Minimization Measures" to address potential impact to marine mammals. USFWS issued in their letter of concurrence for the proposed project that effects to marbled murrelet "will not be measurable (insignificant) and will not significantly disrupt normal behaviors". The likelihood of marbled murrelets occurring in Central Puget Sound is generally low (refer to Speich

and Wahl 1995). Based on the conclusion from USFWS and the low likelihood of occurrence, a marbled murrelet survey prior to in-water work is not considered to be necessary.

- F. An Eelgrass and Macroalgae Survey report was prepared indicating that no eelgrass was found nor was it expected considering the absence of any sandy/silty substrate. At depths less than -40 ft MLLW there was found to be areas of macroalgal cover of sugar kelp (*Saccharina latissima*) and various anchored red macroalgae (*Cryptopleura reprechtiana*, *Sarcodiotheca gaudichaudii*, *Ulva* and *Ulvaria spp.*, and *Delesseria decipiens*). This coverage decreased with increasing depth; at depths of -70 ft MLLW and greater, little to no macroalgae was present. As such, depending on the final siting of the farm, it has the potential to impact existing macroalgae through disturbance from anchor placement and shade during growth of the kelp. Impacts related to anchor placement would occur over a small area up to 20 square feet and would largely be temporary, as macroalgae would be expected to recolonize suitable areas affected by fluke anchor placement and concrete anchors could themselves become attachment substrate. Kelp farms, right before harvest when the biomass is at its maximum, can cause reduction in light by 40% at 5 m below the surface (Visch et. al. 2020), which could impact existing macroalgae. Additionally, installation of anchors could impact existing macroalgae during construction. To address this concern, the siting of the aquaculture lines within the farm area has specifically taken existing macroalgae distribution into consideration and been adjusted so that the lines are located over areas with minimal to no existing macroalgae. Similarly, prior to anchor installation a ROV will be utilized to assess the area and final positioning of the anchors will be done to avoid existing macroalgae to the extent practicable. A map of existing kelp relative to the proposed farm location has been provided entitled SPARO Farm Location and Substrate Details. The farm will utilize 6 anchor locations to secure the farm in place. Two of the six locations will be in approximately 35' of water where macro algae exist however to a lesser extent than in shallower water. Each anchoring system will modify approximately 20 square feet of substrate which, considering the size of Colvos Passage, is insignificant. The 4 other anchors will be in 45'-75' of water where no macro algae are present due to the lack of sunlight. In addition, a quantification of no-net-loss will be required in post-project reporting as a mitigation measure due to the potential effects on macroalgae and benthic community.
- G. Available research suggests that the proposed project would have limited impact to the benthic community. Study of the effects of a seaweed farm in Sweden found a positive effect on benthic infauna, indicating that the farm may provide habitat to mobile species (Visch et al. 2020). Additionally, benthic oxygen flux, dissolved nutrient concentrations, and benthic mobile fauna were unchanged between farm and control sites. Thus, the underlying benthic processes were minimally affected. This is consistent with data from a seaweed farm in Ireland, that found little impact on the subtidal benthic communities from kelp cultivation (Walls et al. 2017). The primary process through which kelp aquaculture has the potential to influence the benthos is the addition of particulate organic matter (POM) (Campbell et al. 2019). While there may be some variability in the amount of material coming from the farm and reaching the local benthos (i.e., more or less detaching in any given year), given the local currents, no accumulation of materials is expected. Furthermore, the addition of this material (e.g., POM) to the larger surrounding area of Colvos Passage would be minimal given that the detrital food web is one of the key drivers of trophic structure in Puget Sound. This input of detritus would be consistent with inputs historically derived from native kelp beds which are in decline in Puget Sound. Impacts to the benthic community from the proposed project would be highly localized and, based on best available science, are expected to be limited.
- H. The Impact Analysis prepared by Confluence Environmental Company indicates the existing substrate at the proposed farm site is small to medium size (golf ball to softball) cobble with occasional large (4-5') rocks. If that is accurate, relative to the size of the farm, the proposed

substrate modification from anchor placement is small and limited to the areas of anchoring. Once the anchors are installed, operational impacts to the substrate are expected to be negligible. To validate that, the applicant provided the ROV survey which shows the substrate is cobble with large rocks interspersed.

- I. KCC requires protection of all salmonids. March/April is prime outmigration timing of juvenile pink and chum salmon. Kelp farms may attract seals and sea lions and piscivorous birds (e.g., cormorants) that come to eat the fish; concerns were raised that this could increase predation on juvenile salmonids. While it is possible that seals and sea lion and piscivorous birds will utilize the site to forage and that increased prey resources to these predators may be supported by the kelp farm, that does not translate into increased predation on juvenile salmonids. First, juvenile salmonids are migratory and not structure oriented. So, while juvenile salmonids may utilize the kelp farm for foraging and benefit from additional prey resources, they are not expected to concentrate in the site or reside at the site for extended periods of time. Secondly, juvenile salmonids, while at the site, will benefit from the structure and refugia from predation provided by the kelp farm and likely experience decreased predation as compared to when they are migrating through open waters away from the site. The value of eelgrass and macroalgae for prey resources and refugia from predation for juvenile salmonids is precisely one of the key reasons why these habitats are protected. One public commenter suggested that a kelp farm would increase salmonoid predation. Under the reasoning, kelp and eelgrass restoration projects or any projects which might benefit juvenile salmonids could lead to increased predation which is a contradiction.
- J. The two main streams on Vashon Island are Judd Creek (middle of island enters Puget Sound on the east side of the island) and Shinglemill Creek (north portion of island enters Puget Sound on west side of the island). Chum, coho, and chinook salmon (Washington Department of Fish and Wildlife (WDFW) Spawning Ground Survey Database) along with steelhead trout are known to spawn in this stream system. Coastal cutthroat trout juveniles have also been observed in the lower reaches. Juvenile and adult coho, chinook, and coastal cutthroat trout have been observed at numerous points along the marine shorelines of the island (Kerwin and Nelson 2000 (Eds.)). Even though there may be use of streams on Vashon Island by chum, coho, steelhead, chinook and cutthroat, chinook salmon presence is limited to migration and spawning is not documented or likely to occur in Judd Creek (StreamNet Mapper). WDFW SalmonScape data indicates documented presence of coho, steelhead, and cutthroat in Judd Creek (WDFW 2022). Shingle Mill Creek and a variety of smaller streams are documented as having cutthroat trout present. The WDFW Spawning Ground Survey Database includes only one instance of a Chinook salmon observation in Judd Creek made in 1997. Given the current data presented on SalmonScape and StreamNet, as well as stream size and morphology, the streams on Vashon Island are not considered to support spawning of Chinook salmon. Juvenile salmonids may use the nearshore area along Vashon Island during migration from natal streams and rivers. Individuals that may make use of the habitat created by the proposed project are likely to be larger in size (given the depth and offshore location of the project area) and may benefit from the prey resources and refuge provided. Consistent with the concurrence letter from NMFS for the proposed project, the project may affect, but is not likely to adversely affect Puget Sound Chinook salmon and steelhead, and by extension other salmonids in the project area.
- K. The NMFS Letter of Concurrence includes analyses of the proposed project related to potential impact to SRKW/Orcas and humpback whales as well as their designated Critical Habitat. The LOC evaluated potential impacts to Orcas and humpback whales from suspended sediment/water quality, modified substrate, prey reduction, gear in aquatic habitat/passage, noise, and disturbance. The LOC evaluated potential impacts to designated critical habitat from water quality, disturbed substrate, prey, safe passage, noise, and long-term effects. NMFS concluded based on their analysis “that all

effects on species and designated habitat are discountable, insignificant, or beneficial, NMFS concurs with USACE that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats". NMFS made the statement that "While the risk of the cultured kelp obstructing or entangling either species of whale as they utilize Colvos Passage is not zero, the history of entanglement with aquaculture equipment in Puget Sound is that none has occurred, indicating risk is very low, their echolocation capabilities suggest that it is unlikely that lines will be an entanglement hazard." While no additional literature is specifically cited regarding Orca/humpback whale echolocation, the conclusion that it is unlikely that Orca/humpback whale will become entangled is further supported by the lack of entanglement observations with aquaculture gear. As part of a synthesis effort by the NMFS and Puget Sound Restoration Fund to evaluate opportunities and challenges associated with kelp aquaculture in Washington State, the risk of Orca/humpback whale entanglement within kelp aquaculture sites was evaluated. Searches of the scientific literature and outreach to NMFS marine mammal experts failed to identify any known instance of Orca entanglements with aquaculture gear worldwide (Dan Tonnes NMFS, pers comm. Sept 27, 2022). Similarly, the World Wildlife Fund has been working on this concern and states "There have been no credible documented marine entanglements in 40 years."

- L. The USACE permit states "In order to meet the requirements of the Endangered Species Act you may conduct the Authorized activities from July 16 through February 15 in any year this permit is valid. You shall not conduct work authorized by this permit from February 16 through July 15 in any year this permit is valid. If changes to the originally authorized work window are proposed, you must re-coordinate these changes with the Services and receive written concurrence on the changes." The applicant shall notify Permitting if the project requests a modification to the work window imposed by the USACE.
- M. The positive value of increased diversity and abundance as well as other ecosystem services (e.g., enhanced water quality, nutrient cycling, habitat provisioning, food services) provided by the proposed farm is supported in the literature on kelp aquaculture (as reviewed in Theuerkauf et al. 2022). The increased diversity and abundance is primarily achieved via the kelp itself and the three dimensional structure and surface area the kelp provides. Not by the artificial infrastructure, which is minimal for a kelp farm (i.e., anchors, lines, and buoys all surface area for additional natural kelp) versus in salmon farms which include large floating structures and pens. Similarly, the comparison to artificial reefs and their associated permitting is inappropriate. Artificial reefs are most commonly created with rubble and debris (e.g., concrete debris, old tires, sunken vessels, etc.). These reef materials have their own potential challenges, unlike the kelp that provide the three dimensional structure as well as additional ecosystem services for the proposed project. The concept of relying on natural conditions versus artificial infrastructure makes sense when evaluating restoration projects, however, the project is not proposed as an artificial reef or kelp restoration project.
- N. Kelp building up on beaches is possible and is part of the detrital food web. To ensure there is no risk that large amounts of kelp will break off from the farm and build up on local shorelines, an "as is" photo survey of adjacent and N/S beaches was provided. Monthly surveys will be performed and will be available upon request to document lack of accumulation of kelp build up on adjacent shoreline from the project.
- O. Farm operations will occur on average 4-6 days per week typically by one farm employee. Visits will last no more than 6 hours and typically less than 3 hours. A small (< 20' boat with a 30HP motor will be used to access the farm site). The motor will be turned off when possible. During planting (late November) and Harvesting (April) farm operations will increase but never by more than 3 employees using no more than 2 small boats. No work will be done in non-daylight hours. A Farm

Operations Narrative was provided. The NMFS letter of concurrence concluded a determination of “no impact” as a result of this level of marine traffic/noise.

- P. The farm will be seeded using best practices that were established in other US based seaweed farming locations. Specifically, seaweed (sorus) will be collected within 50 nautical kilometers from the farm site. Furthermore, sorus material will be collected from 30-50 individual seaweed plants. This process will greatly reduce the spread of any non-native diseases and will maintain genetic diversity. In addition, the vast majority of the farmed kelp will be harvested in the Spring before sorus/spores occur naturally on the kelp. The applicant will likely not harvest a small portion of the farmed kelp and leave it in place either until the following growing season or indefinitely. The purpose is to monitor how it grows, monitor bio-fouling, observe whether and how it is used by other marine species, etc. It is likely that spores from these plants would be released into the environment and find purchase in adjacent substrate areas. The spread of diseases or nonnative species is an ongoing concern for the King County and Washington State, but there is nothing intrinsic to this project that will introduce disease or nonnative species given that the aquaculture seed sources will be local and adhere to relevant regulations. In addition, the applicant proposes to add a mitigation measure which is “To avoid the inadvertent spread of non-native or invasive species, SPARO aquatics will monitor for attached non-native and invasive species during project operation. This would include visual monitoring during site visits as well as during harvest. If any substantial numbers of non-native or invasive species are determined to be present, SPARO Aquatics will work with WDFW and other expert agencies to address the issue.”
- Q. The USCG requires lighting to be white, visible for no less than one nautical mile and have a flash timing of FL W 6s (flashing white, six seconds, ten flashes per minute). The USCG requires a minimum of 8 lighted buoys (1 at each corner, and an additional 2 along the length (north/south perimeter) of the farm. Small buoys will be used to suspend the grow lines at the proper depth. A minimal number of buoys will be used and the applicant will balance coloring taking into consideration visual impact and navigational obstructions. In other words, the majority of the buoys on the interior of the farm will be black, grey and/or white which offers reduced visible impact. Orange buoys will be interspersed around the perimeter along with black/grey/white to serve as a deterrent to boaters. While lighting may potentially be visible from the shoreline and adjacent homeowners, the distance to most homes is substantial. The closest shoreline homes on Vashon Island are situated on an extensive bluff. Direct line of site is out over the water and not down to the water surface of the farm area. The proposed USGC lighting has solar panels on the surface which limit the light transmission in an upward direction. While this will likely not eliminate visibility to homeowners along the bluff, it would reduce the amount of light visible. The majority of the homes where light may be visible are situated on the Pierce County side of Colvos Passage and located more than 1.5 miles away. At this distance, these lights are minimally perceptible.
- R. Macroalgae aggregations act as a region of high drag and have been shown to affect water velocity and attenuate waves (Wood et. al. 2017). Suspended aquaculture reduces water flow as shown by a study of a bay in China where a model predicted a reduction of 54% in current within farms of kelp and scallops on suspended longlines (Wood et. al. 2017). Similar reductions in current (36% to 63%) were measured for a large offshore longline shellfish farm in New Zealand. Authors also recorded wave energy attenuation across the farm (Wood et. al. 2017). Scale appears to be an important consideration for this potential impact—a small farm on its own is unlikely to have a large effect on the marine environment (Wood et. al. 2017). The proposed farm will be oriented parallel to the adjacent shoreline to minimize the drag on the lines and associated infrastructure. This orientation is intended to function with, rather than against, local hydrodynamics and implies that it will result in a minimization of potential impact. While impacts of suspended aquaculture to hydrodynamics have

been documented in the literature (e.g., He et al. 2022), the aquaculture in these locations is incredibly dense. Thus, scale, as well as density, play a part in effects to hydrodynamics and both support a lack of effect for the proposed farm. A study conducted evaluating current velocity within and outside longline aquaculture in Willapa Bay showed non-significant differences in velocities and concluded that oyster flip bag plots do not have a significant effect on tidal currents or the sediment transport processes associated with tidal currents (Confluence 2016). Therefore, the proposed farm is unlikely to have an impact on the hydrodynamics and sediment transport within the farm area.

Threshold Determination:

The responsible official finds that the above-described proposal does not pose a probable significant adverse impact to the environment provided the mitigation measures listed below are applied as conditions of permit issuance. This finding is made pursuant to RCW 43.21C, KCC 20.44 and WAC 197-11-600 after reviewing the environmental checklist and other information on file with the lead agency and considering mitigation measures which the agency or the applicant will implement as part of the proposal. The responsible official finds this information reasonably sufficient to evaluate the environmental impact of this proposal. Therefore, an environmental impact statement (EIS) is not required prior to proceeding with the permit review process.

Mitigation:

The following mitigation measures shall be attached as conditions of permit issuance. These mitigation measures are consistent with applicable policies, plans, rules, or regulations as a basis for the exercise of substantial authority and in effect when this threshold determination is issued.

1. In order to meet the requirements of the Endangered Species Act, the applicant may conduct the Authorized activities from July 16 through February 15 in any year USACE permit is valid. The applicant shall not conduct work authorized by the permit from February 16 through July 15 in any year this permit is valid. If changes to the originally authorized work window are proposed, the applicant shall notify Permitting if the project requests a modification to the work window imposed by the USACE.
2. General Measures:
 - i. All harvesting will be done manually with no mechanical equipment except for an electric/battery-powered winch to raise long lines and shellfish cages.
 - ii. No mechanical dredge harvesting, raking, harrowing, tilling, leveling or other bed preparation activities, or frosting or applying gravel/shell on beds, shall be done.
 - iii. No activity will occur landward of the MLLW tide line.
 - iv. No nets will be used (shellfish cages/socks will be used).
 - v. No inputs (fertilizer, pesticides, fresh water, etc.) will be used on the farm site.
 - vi. No land vehicles will be used in the farm area.
 - vii. Vessels used in operations will be maintained to avoid release of any fuels or oils and will carry absorbent pads in the unlikely event of a spill.
 - viii. Sorus tissue for seeding will be collected within 50 nautical miles of the farm site and 30-50 seaweed plants will be used to maintain genetic diversity.
3. Submerged Aquatic Vegetation and Benthic Habitat:
 - i. No eelgrass is present thus activity associated with the farm will not impact eelgrass.
 - ii. To protect local wild kelp genetics, a small amount of cultivated sugar kelp (less than 5 pounds) will be originally sourced from local sugar kelp in accordance with the Washington State Department of Natural Resources harvest regulations. Sorus

material will be collected on permitted waters and grown by the applicant to produce sugar kelp “seed”.

- iii. The aquaculture lines have been sited to be located in areas with minimal to no existing macroalgae present.
- iv. Prior to anchor installation a ROV will be utilized to view the area where the anchors will be placed. Final positioning of anchors will be done to avoid existing macroalgae to the extent practicable.
- v. Upon installation of anchoring system photos will be captured. Photographic surveys of anchor sites will be done quarterly and will be available upon request.
- vi. Due to potential effects on macroalgae and benthic community, a quantification of no net-loss will be provided in post-project reporting.
- vii. Monitoring before and after construction and operations will be conducted to see if the proposed project provides benefits or impacts to the benthic community.

4. Marine Mammals:

- i. No intentional hazing of wildlife will occur.
- ii. When performing other activities onsite, the grower shall routinely inspect for and document any fish, bird, or mammal found entangled in the gear, nets, or other equipment. In the event that any fish, birds, or mammals are found entangled, the grower shall: 1) provide immediate notice (within 24 hours) to the Washington Department of Fish and Wildlife (all species), Services (ESA listed species), and/or Marine Mammal Stranding Network (marine mammals); 2) attempt to release the individuals without harm; and 3) provide a written and photographic record of the event, including dates, species identification, number of individuals, and final disposition to the Corps and Services. Contact the U.S. Fish and Wildlife Service Law Enforcement Office at (425) 883-8122 with any questions about the preservation of specimens.
- iii. Prior to installation of farming infrastructure, operators will survey for Southern Resident Killer Whales (SRKW), humpback whales and other marine mammals (and consult with the ORCA Network) and avoid in-water activities if any are within, or anticipated to be in, the project area. Similarly, operators will not conduct farm maintenance activities or harvest if SRKW or humpback whales are within or are anticipated to enter the project area. Please post signs in the vessels reminding operators to stay a minimum of 200 yards away from marine mammals at all times.
- iv. When species are expected to be present, marine mammal feeding areas and migration corridors will be avoided.
- v. Longlines will be kept taut to reduce potential for marine mammal entanglement.
- vi. A marine mammal entanglement response plan will be developed to define steps to be taken if a marine mammal were to become entangled or otherwise negatively interacting with the aquaculture site.

5. Other Sensitive Species:

- i. Proposed site does not overlap with herring holding/spawning area or WDFW identified surf smelt or sand lane spawning areas.
- ii. If Pacific herring spawn on the cultivated kelp project, operators will contact the Area Habitat Biologist of WDFW and not harvest the kelp until after hatching occurs.
- iii. A qualified biologist will train staff in identification of forage fish eggs and other sensitive resources (e.g., SRKW) to aid in successful implementation of minimization measures.

- iv. All shellfish gear and the vast majority of seaweed gear (the exception being buoys and floating lines) will be subtidal, minimizing the potential for bird entanglement.
- v. As stated above, any fish or wildlife that becomes entangled in gear will be recorded and reported to the appropriate agencies.
- vi. To avoid the inadvertent spread of non-native or invasive species, the applicant will monitor for attached non-native and invasive species during project operation. This would include visual monitoring during site visits as well as during harvest. If any substantial numbers of non-native or invasive species are determined to be present, the applicant will work with WDFW and other expert agencies to address the issue.

6. Debris and Aesthetics:

- i. All shellfish (and other) gear shall either be secured to long lines and/or anchors or will be removed from the area and kept in a storage area that is landward of MHHW.
- ii. All shellfish bags and cages will be clearly, indelibly, and permanently marked.
- iii. All buoys/flotation devices will be constructed of commercial-grade marine material.
- iv. Regular maintenance and surveillance of farm area, including adjacent beaches, will be completed to remove any project debris.
- v. Monthly photo surveys will be performed and will be available upon request to document lack of accumulation of kelp build up on adjacent shoreline from the project.
- vi. Operators will maintain infrastructure (e.g., cultivation lines) to avoid release of any marine debris.
- vii. Use of plastic gear, including polylines, will be minimized; ensure collection and proper disposal of waste materials, excess line, and other debris consistent with regulations.
- viii. Survey shoreline and inspect cables and connections at regular intervals and after storm events.
- ix. Operations will minimize light pollution of trips that occur during non-daylight hours. The only non-daylight work would be in emergency situations.
- x. Baseline and periodic operational monitoring measures will be established to look for evidence of accumulated kelp on shore.
- xi. Number of surface buoys will be minimized to limit the visual impact of the farm.
- xii. Vessels used in operations will be maintained to avoid release of any grease/gas, and will carry absorbent pads in the unlikely event of a spill.

7. The project shall follow the baseline and periodic operational monitoring standards below:

- i. Catalog and periodic inspection of all farm infrastructure.
 - a) To ensure that all anchors, line, buoys, and cages are in place, secure, and in good condition, monthly inspections will be done. If any insufficiencies are found, repairs will be undertaken as soon as practicable. Inspection should also occur after storm events.
- ii. Beach inspection/profile.
 - a) Inspection of the natural beach/shoreline directly opposite the farm and 500' to the north and south will be done monthly and documented.
 - b) Unnatural debris, farm gear or otherwise, will be collected and cataloged.
- iii. Substrate inspection/profile.
 - a) A sampling plan will be developed to document accumulation or lack of accumulation of farm related natural material, marine species (e.g., macroalgae coverage), detritus, etc. The plan will define sampling locations

- (test and control locations), sampling frequency, and the data analyses that will be used to determine potential changes attributable to the farm.
- b) Monitoring of macroalgae extent and quantification of no net loss on an annual basis following WDFW macroalgae survey guidelines to the extent practicable.
 - c) Benthic community monitoring following Puget Sound Estuary Protocols (or similar) before and after construction and operations to determine if the project provides benefits or impacts the benthic community.
- iv. Marine mammal sightings.
 - a) Farm employees will be on site regularly (4-5 times per week weather permitting). Specific notes/conditions will be tracked including major mammal (whales, seals, sealions, otters) sightings.
 - v. Marine species entanglement response plan.
 - a) A marine species response plan will be developed and will include tracking observations (item 4) and specific response strategies (e.g., who to call, what to do) in the event of negative interactions with marine mammals.
 - vi. Marine species observations.
 - a) A variety of marine animals have been seen in/around the farm site including various birds, seals, sea lions, jellyfish, herring, sea stars, etc. Farm staff will catalog, observe, and note any changes and/or behaviors that occur due to seasonality, farm operations, or other conditions.
 - vii. Invasive species.
 - a) Farm staff will become familiar with any/all known and anticipated invasive species (e.g., tunicates) that may be found in the area. Through normal farm operations and maintenance, including underwater drone and/or scuba observations, changes will be noted and reported.
 - viii. Fish spawning.
 - a) The farm location is neither a herring holding nor a known spawning area for herring or other fish. However, if any spawning activity is seen including roe attached to farmed kelp/gear all farm activities will cease until eggs have hatched and the occurrence will be reported.
 - ix. Response plan to public comments/questions.
 - a) It is understood that a portion of the public currently has questions/concerns about seaweed farming. A plan will be developed to solicit, understand, and respond to public inquiries.
 - x. Reporting.
 - a) An annual report will be submitted providing the details and results associated with the measures above. The report will be submitted to King County and applicable agencies.

Comments and Appeals

This determination is issued pursuant to the optional DNS/MDNS process in WAC 197-11-355. No further comment period is provided. The application is for a Type 2 permit. Under KCC 20.44.120, there is no administrative appeal to the King County Hearing Examiner. Any appeals to this threshold determination can be combined with any appeals of the Shoreline Substantial Development Permit to the State Shoreline Hearings Board.

Information about the project is available from the project manager listed above. The permit application, studies and environmental documents may be reviewed at the address listed below.

Department of Local Services-Permitting Division
919 SW Grady Way, Suite 300
Renton, WA 98057

Responsible Official:

Ty Peterson, Responsible Official

January 10, 2023

Date

REFERENCES:

Campbell, I., A. Macleod, C. Sahlmann, L. Neves, J. Funderud, M. Øverland, A. D. Hughes, and M. Stanley. 2019. The Environmental Risks Associated With the Development of Seaweed Farming in Europe - Prioritizing Key Knowledge Gaps. *Frontiers in Marine Science* 6.

Confluence Environmental Company. 2016. Effects of Oyster Flip Bags on Current and Sediment Transport

He, Y., J. Xuan, R. Ding, H. Shen, and F. Zhou. 2022. Influence of Suspended Aquaculture on Hydrodynamics and Nutrient Supply in the Coastal Yellow Sea. *Journal of Geophysical Research: Biogeosciences* 127(2):e2021JG006633

Kerwin, John and Nelson, Tom S. (Eds.). December 2000. "Habitat Limiting Factors and Reconnaissance Assessment Report, Green/Duwamish and Central Puget Sound Watersheds (WRIA 9 and Vashon Island)." Washington Conservation Commission and the King County Department of Natural Resources.

Speich, Steven M.; Wahl, Terrence R. 1995. Chapter 30: Marbled Murrelet Populations of Washington — Marine Habitat Preferences and Variability of Occurrence. In: Ralph, C. John; Hunt, George L., Jr.; Raphael, Martin G.; Piatt, John F., Technical Editors. 1995. Ecology and conservation of the Marbled Murrelet. Gen. Tech. Rep. PSW-GTR-152. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; p. 313-326

StreamNet

Mapper:

<https://psmfc.maps.arcgis.com/apps/webappviewer/index.html?id=3be91b0a32a9488a901c3885bbfc2b0b>

accessed October 10, 2022

Theuerkauf, S. J., L. T. Barrett, H. K. Alleway, B. A. Costa-Pierce, A. St. Gelais, and R. C. Jones. 2022. Habitat value of bivalve shellfish and seaweed aquaculture for fish and invertebrates: Pathways, synthesis and next steps. *Reviews in Aquaculture* 14:54-72. Available online <https://onlinelibrary.wiley.com/doi/epdf/10.1111/raq.12584>

Visch, W., M. Kononets, P. O. J. Hall, G. M. Nylund, and H. Pavia. 2020. Environmental impact of kelp (*Saccharina latissima*) aquaculture. *Marine Pollution Bulletin* 155:110962.

Walls, A. M., R. Kennedy, M. D. Edwards, and M. P. Johnson. 2017. Impact of kelp cultivation on the Ecological Status of benthic habitats and *Zostera marina* seagrass biomass. *Marine Pollution Bulletin* 123(1):19–27.

Washington Department of Fish and Wildlife Salmon Scape: <https://apps.wdfw.wa.gov/salmonscape/>
accessed October 10, 2022

Wood, Daniel & Capuzzo, E. & Kirby, Damien & Mooney, Karen & Kerrison, Philip. (2017). UK macroalgae aquaculture: What are the key environmental and licensing considerations?. *Marine Policy*. 83. 29-39. 10.1016/j.marpol.2017.05.021.