

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [\[HELP\]](#)

1. Name of proposed project, if applicable:
SPARO Aquatics

2. Name of applicant:
Mike Spranger

2. Address and phone number of applicant and contact person:

14400 107th Way SW

Vashon, WA

98070

206-491-0936

3. Date checklist prepared:

Original - Oct 5, 2021

Revised – March 15, 2022

4. Agency requesting checklist:

King County, Dept of Local Service, Permitting Division

6. Proposed timing or schedule (including phasing, if applicable):

Summer 2022

- I am planning for the 2022/23 growing season which means planting kelp seeds in the water in Nov 2022. I would like to install the growing array in late summer 2022

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Biological Evaluation (Spranger 2022) created and submitted to the US Army Corps of Engineers. It has been included with this application.

Reference: Spranger, Mike (March 2022). SPARO Aquatic biological evaluation.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No

10. List any government approvals or permits that will be needed for your proposal, if known.

- JARPA – Washington State Joint Aquatic Resources Permit Application
- [Health Growing Area Classification](#) (Dept of Health) – Approved
- Dept of Natural Resources Lease application (State Owned Aquatic Lands) – **Application submitted 12/22/21**
- Dept of Fish and Wildlife (**Approved**)
- Dept of Ecology (**Approved**)
- Puyallup Tribe (**Approved**)
- Dept of Army (US Army Corps of Engineers) – **Submitted, Comment period closed 3/27/21. Pending final approval**

- US Coast Guard – private aides to navigation – **To be coordinated by the Army Corps of Engineers upon their approval**
- King County – Shoreline Substantial Development Permit. Shoreline Conditional Use Permit.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The proposed project is an integrated and regenerative 10-acre (approximate) kelp and shellfish farm in the Puget Sound at the SW corner of Vashon Island, WA in Colvos Passage. The mariculture farm will grow sugar kelp (*Saccharina latissima*), clams (Manila – *Ruditapes philippinarum*), mussels (Blue Mussels/ *Mytilus trossulus* or *M. galloprovincialis*), oysters (Pacific/*Crassostrea gigas*), and possibly scallops at one location. All these species are either native or naturalized to the proposed area.

The site footprint, including the gear area and regulatory markers, will be approximately 1200' by 350', for a total of 9.6 acres.* The site will be entirely in open water between depths of 30' and 90' and will not access the shoreline or tidal lands. Required gear includes anchors, buoys, cages, and line. There will be no nets. It is approximately 300' off shore of the mean low tide. While the total farm site will be approximately 10 acres, due to the scope required for necessary anchorage the actual size of the area being farmed will be approximately 3-4 acres.

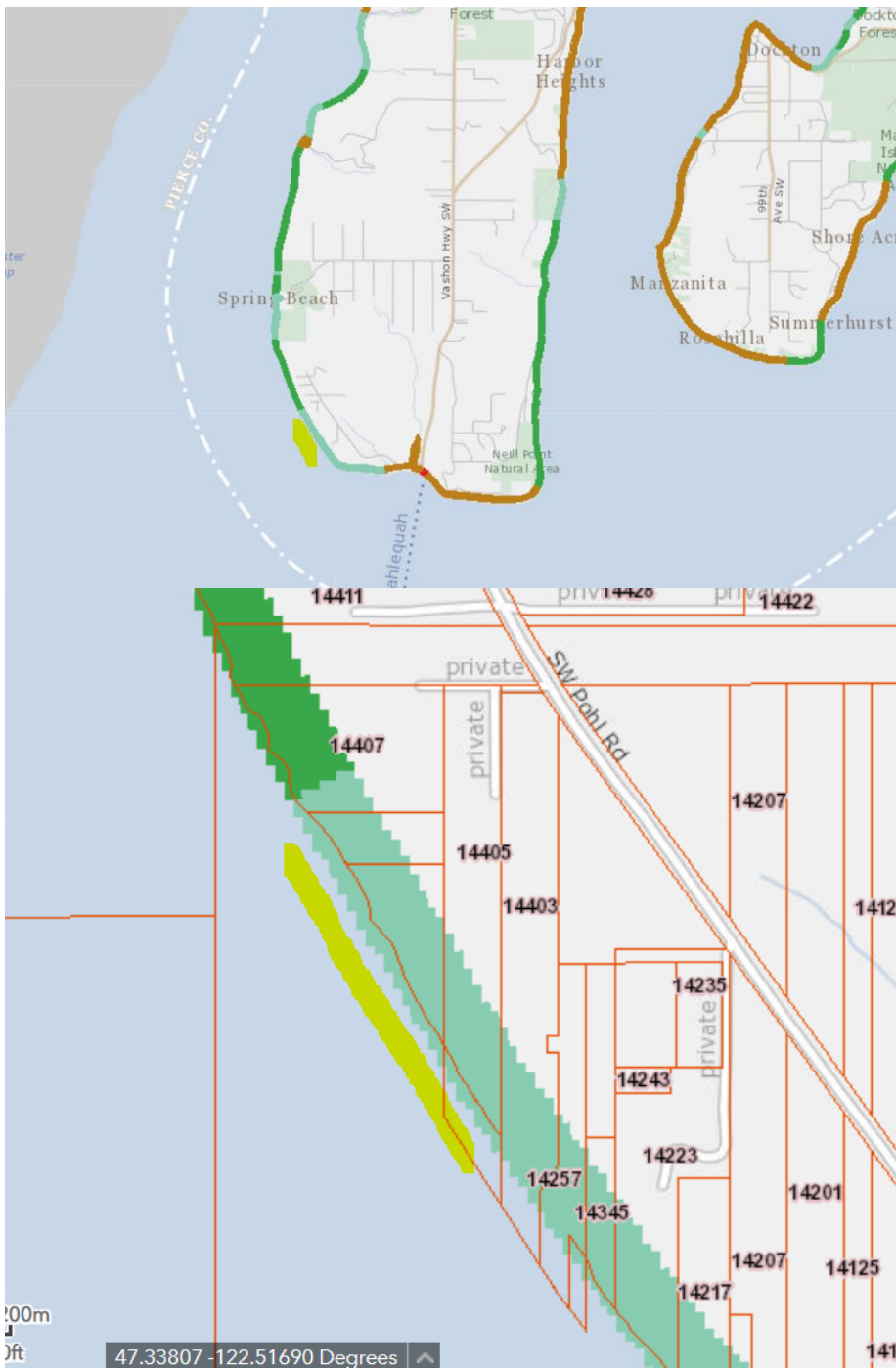
*Note: Precise location, size, depths will all be determined pending completion of farm site marine engineering work.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site measures approximately 1200'X 350'. It is 300' off shore of the mean low tide and in approximately 30' (NE/SE corner) and 90' (NW,SW corners) of water. Precise location and depths will be determined in conjunction with a professional marine engineering firm.

The NW corner will be at approximately: 47.337833 N, -122526706 W Section 2, Township 21N, Range 02E

The site is in an Aquatic Shoreline Environmental Designation (SED) and adjacent to a Conservancy (SED) (light green in map below). It is NOT in a Natural SED (dark green)



B. Environmental Elements [\[HELP\]](#)

1. **Earth** [\[help\]](#)

a. General description of the site:

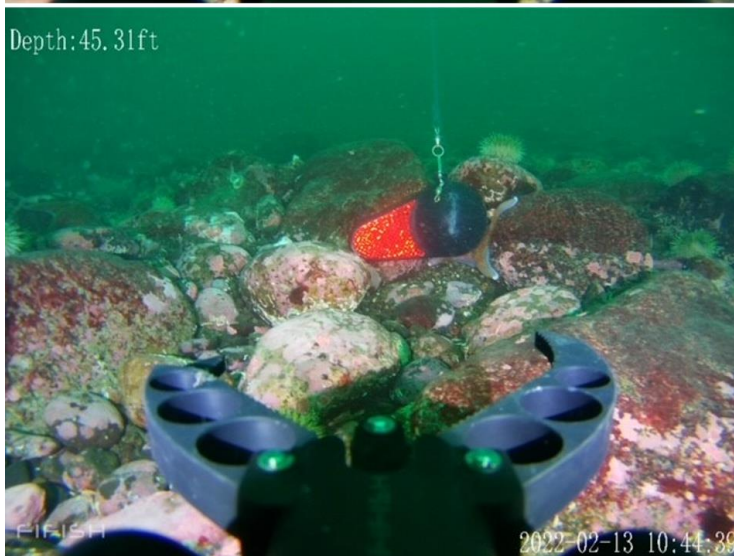
(circle one): Flat, rolling, hilly, steep slopes, mountainous, other **Open Water**_____

b. What is the steepest slope on the site (approximate percent slope)?

N/A. Site is all open water.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Sea floor (substrate) is cobble . These pictures were taken with a Remote Operated Vehicle (ROV) on the farm site at 45'. The downrigger ball measures 7" from the edge of the black ball to the edge of the red reflector and is there to provide scale.



- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Anchors – Helical anchors will be used throughout the farm (corners and perimeter) pending on site analysis of the substrate by an established helical anchor installer. Helical anchors are screwed into the seafloor and provides increased holding power over other types of anchors as well as less environmental impact.

If Helical anchors are not possible due to the substrate condition (cobble that is so large that exceeds the anchors' ability to screw into the seafloor) this will be documented by an expert in which case concrete blocks will be used.

The number, type, weight, and scope of anchoring system will be determined by a marine engineering firm.

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

No

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

None with the exception of the above mentioned (1.e) anchors

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

N/A

2. Air [\[help\]](#)

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction:

If helical anchors are used a small boat (<22') will be used to support a scuba diver who

will install the anchors. If concrete anchors are used they will be set in place by a crane supported by a tug/barge. In either case, construction will take less than a week. Subsequently, lines and buoys will be installed with support from a small boat (<22') with a 4 stroke 35 HP motor.

Operation/Maintenance:

All farm activities will be done via a small boat(s) (<22') with a 4 stroke 35HP motor. No other mechanical or emission producing equipment will be used.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

During operations a quiet high efficiency 4 stroke motor will be used.

3. Water [\[help\]](#)

- a. Surface Water: [\[help\]](#)

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Farm site to be located in Puget Sound/Colvos Passage between approximately 30'-90' of water

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Farm will be constructed in the water. Construction includes anchors, buoys, and lines. No nets will be used. (see plans at the end of this document)

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Per 1.e above, anchoring may be done with concrete blocks (TBD by an engineering firm). If concrete is used, there will be between 15-20 6000# blocks used.

- 3) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water: [\[help\]](#)

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None. No inputs (fertilizer, pesticides, etc) will be used.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

There will be no water runoff. The proposed project is located within an aquatic area.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

No

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

N/A

4. **Plants** [\[help\]](#)

a. Check the types of vegetation found on the site:

- deciduous tree: alder, maple, aspen, other
- evergreen tree: fir, cedar, pine, other
- shrubs
- grass
- pasture
- crop or grain
- Orchards, vineyards or other permanent crops.
- wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

I used an underwater ROV (remote operated vehicle.. aka drone) and videod the area including sea floor from 30'-115'

- Eel grass does **not** exist nor was it expected at this depth (30-100').
- Sugar kelp (this is the species I plan to grow)
- Bull kelp (small numbers in shallower depths adjacent but not within the perimeter of the proposed farm)

b. What kind and amount of vegetation will be removed or altered?

None

b. List threatened and endangered species known to be on or near the site.

- Salmon (Coho, Chum, Sockeye ,Chinook)
- Boccacio (rock fish)
- Eulachon (smelt)
- Grey Whales
- Orca
- Steelhead Trout
- Stellar Sea Lions

See SPARO Aquatics Biological Evaluation (March 2022) for more information.

c. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

None beyond proposed farmed sugar kelp

- e. List all noxious weeds and invasive species known to be on or near the site.

Unknown

5. **Animals** [\[help\]](#)

- a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:

mammals: deer, bear, elk, beaver, other:

fish: bass, salmon, trout, herring, shellfish, other _____

Birds: Bald eagle, seagulls (various species), heron, hawks, songbirds, cormorant

Mammals: seals, sea lion, river otters, deer, raccoon, orca, grey whales, humpback whales

Fish: salmon, greenling, steelhead, smelt, rockfish, ling cod, shellfish (clams, scallops), sea urchin, seastar

- b. List any threatened and endangered species known to be on or near the site.

- Salmon (Coho, Chum, Sockeye ,Chinook)
- Boccacio (rock fish)
- Eulachon (smelt)
- Grey Whales
- Orca
- Steelhead Trout
- Stellar Sea Lions

- c. Is the site part of a migration route? If so, explain.

Puget Sound salmonids may migrate through Colvos Passage. The closest major spawning river is the Puyallup River. Additionally, migratory birds that follow the Pacific Flyway may utilize the proposed project area for foraging during migration."

- d. Proposed measures to preserve or enhance wildlife, if any:

Regenerative maritime farming has proven to be environmentally beneficial on many fronts as well as economically feasible (see Theuerkauf et al. 2022 for a review of the ecological benefits). Seaweed absorbs nitrogen and carbon helping to offset the effects of climate change.

This farm will be a polyculture not a monoculture. In other words, it will mimic the diversity of a rich and natural

marine ecosystem with seaweed near the surface and shellfish in deeper water. For example, one oyster can filter up to 50 gallons of water per day with the kelp providing habitat and safety for other marine life.

e. List any invasive animal species known to be on or near the site.

Several noxious and invasive species of concern have been identified in Puget Sound. Species that may occur near the site include tunicates (*Styela clava*), which have been found in Elliott Bay, and *Didemnum vexillum*, which have been found on Maury Island.

6. Energy and Natural Resources [\[help\]](#)

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Diesel/Gasoline will be used during construction.

Gasoline will be used to power a 4 stroke 35HP marine engine during normal operations.

Solar energy to power PATON lighting.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Normal operations will only include an efficient 4 stroke 35 HP marine engine.

7. Environmental Health [\[help\]](#)

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No- the farm will not use any inputs (fertilizer, pesticides, etc). The risk of marine contamination from outboard motor/fuel is small.

1) Describe any known or possible contamination at the site from present or past uses.

None

2) Describe existing hazardous chemicals/conditions that might affect project development

and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Diesel/gasoline will be used by support vessel during construction (~1 week)
Gasoline will be used by vessel during regular farm operations.

- 4) Describe special emergency services that might be required.

None

- 5) Proposed measures to reduce or control environmental health hazards, if any:

General safe marine practices will be used.

b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Recreational and commercial boat traffic; natural wind-wave noise.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

The only noise created would be from an efficient 4 stroke 35 HP outboard motor on a small boat (<22')

- 3) Proposed measures to reduce or control noise impacts, if any:

Regular maintenance of outboard motor. Turning off motor when it isn't necessary.

8. Land and Shoreline Use [\[help\]](#)

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Two residential properties are located on the shoreline relatively close (within several hundred yards) of proposed farm. Farm will be located approx. 300'-1000' off shore. There are several other residential properties set back from the high bank shoreline bluff

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No / Not applicable

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No

b. Describe any structures on the site.

None

c. Will any structures be demolished? If so, what?

No

d. What is the current zoning classification of the site?

Aquatic SED

e. What is the current comprehensive plan designation of the site?

N/A – aquatic area

f. If applicable, what is the current shoreline master program designation of the site?

Aquatic SED

g. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The project will occur within Puget Sound, which is a Type S aquatic area under King County critical area code.

h. Approximately how many people would reside or work in the completed project?

No more than 3 employees on an infrequent and periodic basis would work the farm.

i. Approximately how many people would the completed project displace?

None

j. Proposed measures to avoid or reduce displacement impacts, if any:

N/A

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

N/A

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

N/A

9. **Housing** [\[help\]](#)

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

N/A

10. **Aesthetics** [\[help\]](#)

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

2-4' rubber/plastic buoys per USCG requirements

b. What views in the immediate vicinity would be altered or obstructed?

Depending on precise site location. Up to 2 residential (boat/walk in access only) houses would see buoys in the water. Residents in homes on the high bank above site would likely not see the buoys.

e. Proposed measures to reduce or control aesthetic impacts, if any:

Only Coast Guard approved buoys will be used.

11. Light and Glare [\[help\]](#)

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None other than USCG approved buoys that will require illumination.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

No light or glare will be produced other than lights required by the USCG for navigational aids

12. Recreation [\[help\]](#)

a. What designated and informal recreational opportunities are in the immediate vicinity?

Recreational fishing and boating. Beach walking

c. Would the proposed project displace any existing recreational uses? If so, describe.

Yes – Fishing and power/sail boating would not be possible within the farm site as lines would potentially get snagged. Boaters would need to navigate around the farm site. Human powered boating (kayak, canoes) would not pose a problem.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Colvos Passage is approximately 12 square miles in area or 7,280 acres. The farm site will remove 10 acres (or .13% of the total waters in the Passage) of fishing due to submerged lines. **Note:** farm site will create a rich ecosystem attracting fish and other marine species resulting in the waters **around the farm** to be excellent for fishing.

Once established, the farm will likely be a popular scuba diving site due to ease of access and the rich marine ecosystem that will be created.

Once established, local Marine science groups at SAMI (Science and Math Institute) and Bellarmine Prep. High School have already expressed interest in visiting for educational purposes.

Buoys and signage would mark the site.

Farm site will have no impact on beach walking

13. Historic and cultural preservation [\[help\]](#)

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.

No

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Farm site waters are within the Puyallup tribe's jurisdiction. They, along with other potentially interested tribes, have been notified via the "Tribal Interests Determination form 6.3"

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

N/A

14. **Transportation** [\[help\]](#)

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

N/A

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

N/A

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

N/A

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

No

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

Transportation to the farm site will be via a small (<22') boat. During construction visits will occur daily. During normal operations, site visits will occur 3-4 times per week.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No

- h. Proposed measures to reduce or control transportation impacts, if any:

N/A

15. **Public Services** [\[help\]](#)

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No

- b. Proposed measures to reduce or control direct impacts on public services, if any.

N/A

16. Utilities [\[help\]](#)

- a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,
other NONE
- b. Describe the utilities that are proposed for the project, the utility providing the service,
and the general construction activities on the site or in the immediate vicinity which might
be needed.

NONE

C. Signature [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee _____

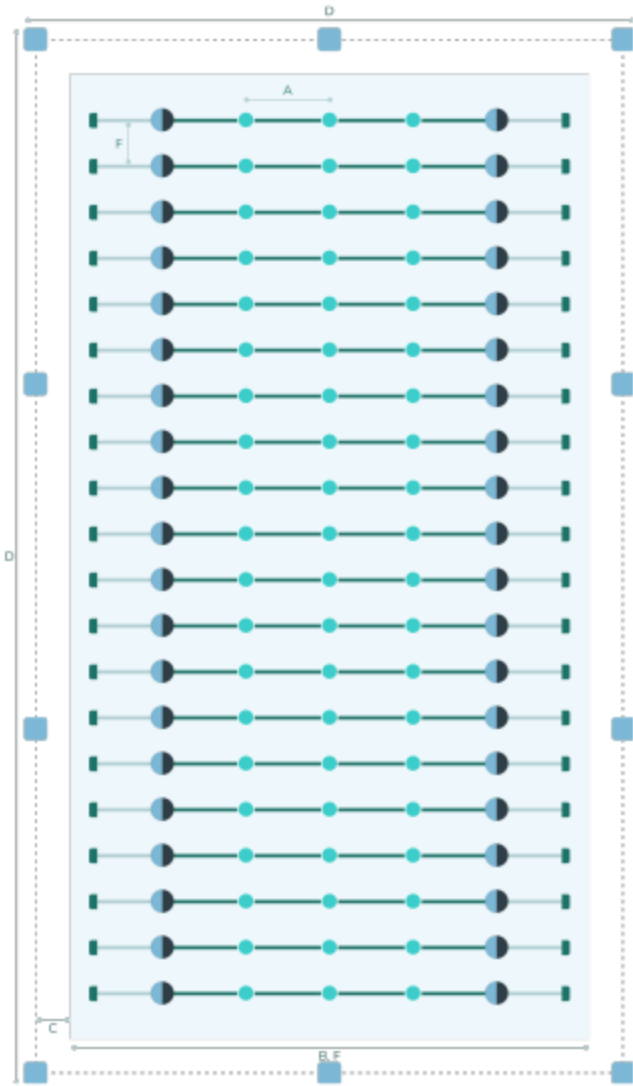
Position and Agency/Organization _____

Date Submitted: _____

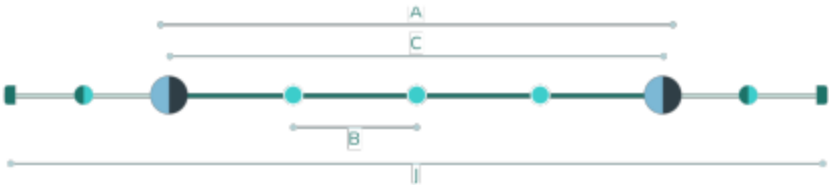
MSManger
Mike Spangler
OWNER - SPARU AQUATICS
5/20/22

Cross-Sectional Diagram

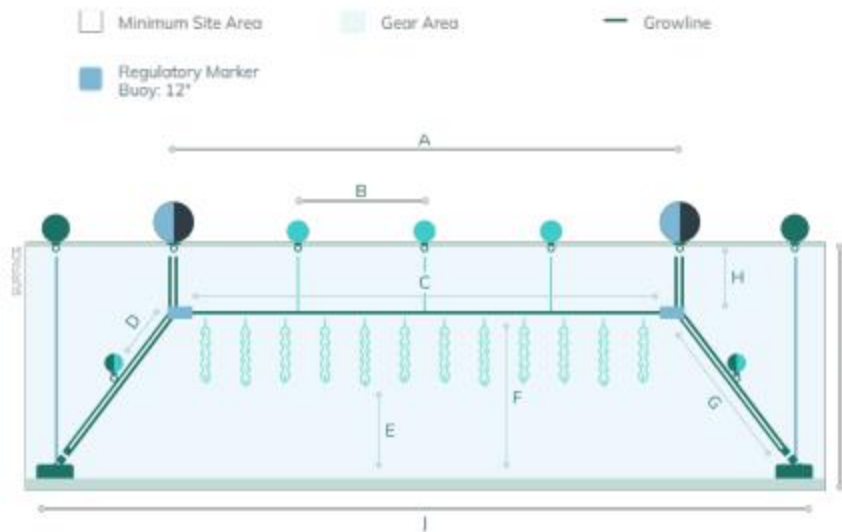
-  Anchor Line Buoy: A-2
-  Anchor: Pyramid
-  Retrieval Buoy Line: 3/8 inch
-  Retrieval Buoy: A-1
-  Anchor Line: 1/2 inch
-  Tension Buoy: A-2
-  Growline: 3/8 inch
-  Growline Flotation Buoy: A-1
-  Growline Flotation Buoy Line: 3/8 inch



Single-Line Array Design View



Farm Design View



- | | | |
|--|--|---------------------------------------|
| A: Growline Flotation Buoy Spacing
55 ft. | B: Array Length
389.7 ft. | C: Regulatory Buffer
50 ft. |
| D: Minimum Site Area
Length: 489.70 ft.
Width: 880.00 ft. | E: Gear Area
Length: 389.70 ft.
Width: 780.00 ft. | F: Array Spacing
40 ft. |



Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO ₂ e)			Lifespan Emissions (MTCO ₂ e)
			Embodied	Energy	Transportation	
Single-Family Home.....	0		98	672	792	0
Multi-Family Unit in Large Building	0		33	357	766	0
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home.....	0		41	475	709	0
Education		0.0	39	646	361	0
Food Sales		0.0	39	1,541	282	0
Food Service		0.0	39	1,994	561	0
Health Care Inpatient		0.0	39	1,938	582	0
Health Care Outpatient		0.0	39	737	571	0
Lodging		0.0	39	777	117	0
Retail (Other Than Mall).....		0.0	39	577	247	0
Office		0.0	39	723	588	0
Public Assembly		0.0	39	733	150	0
Public Order and Safety		0.0	39	899	374	0
Religious Worship		0.0	39	339	129	0
Service		0.0	39	599	266	0
Warehouse and Storage		0.0	39	352	181	0
Other		0.0	39	1,278	257	0
Vacant		0.0	39	162	47	0

Section II: Pavement.....

Pavement.....		0.50				25
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Total Project Emissions:

25

Data entry fields

Note: No Buildings involved. Approx 15-25 yards of concrete will be used for anchorage. This was estimated to be 500 sq ft of concrete