

JAN 25 2016

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Maine Department of Marine Resources

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Maine Department of Marine Resources

**C: APPLICATION COVER SHEET FOR AN EXPERIMENTAL LEASE**

COMPLETE 2-23-16

Name: Shearwater Ventures, LLC.

Address: 285 Fern Avenue

City: Long Island

County: Cumberland

State, zip: Maine, 04050

Telephone: business 207-712-2927 home 207-766-0050 cell 207-712-2927

Email address: shearwaterventures@gmail.com

Location of lease site: town county waterbody  
Chebeague Island Cumberland Casco Bay

Additional description East of Little Chebeague Island, Casco Bay  
(e.g. south of B Island)

Total acreage requested (4-acre maximum): 3.79

Growing Area # 13 Water Quality Classification Unrestricted (DMR Water Quality Map Included with Application)

Type of culture (circle): Bottom (no gear) Suspended (gear in the water and/or on the bottom) Net Pen (finfish)

Name of species to be cultivated, common and scientific names:  
Sugar Kelp (*Saccharina latissima*), Horsetail Kelp (*Laminaria digitata*), Winged Kelp (*Alaria esculenta*)

Name and address of the source of seed stock, juveniles, smolts, etc., to be cultivated:

Ocean Approved, LLC nursery – Southern Maine Community College (SMCC)  
2 Fort Road, South Portland, ME 04106

Amount of application fee enclosed: \$100.00  
(\$100 payable to: Treasurer, State of Maine)

I hereby state that the information included in this application is true and correct and that I have read and understand the requirements of the Department's rules governing aquaculture.

Signature: [Signature] Date: 1/21/2016

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

# PART D: EXPERIMENTAL LEASE APPLICATION INFORMATION

## 1. Location of Proposed Lease.

### A. Vicinity Map.

The proposed lease area is located east of Little Chebeague Island in Casco Bay, on the western side of Chandler Cove as shown in Figure 1.

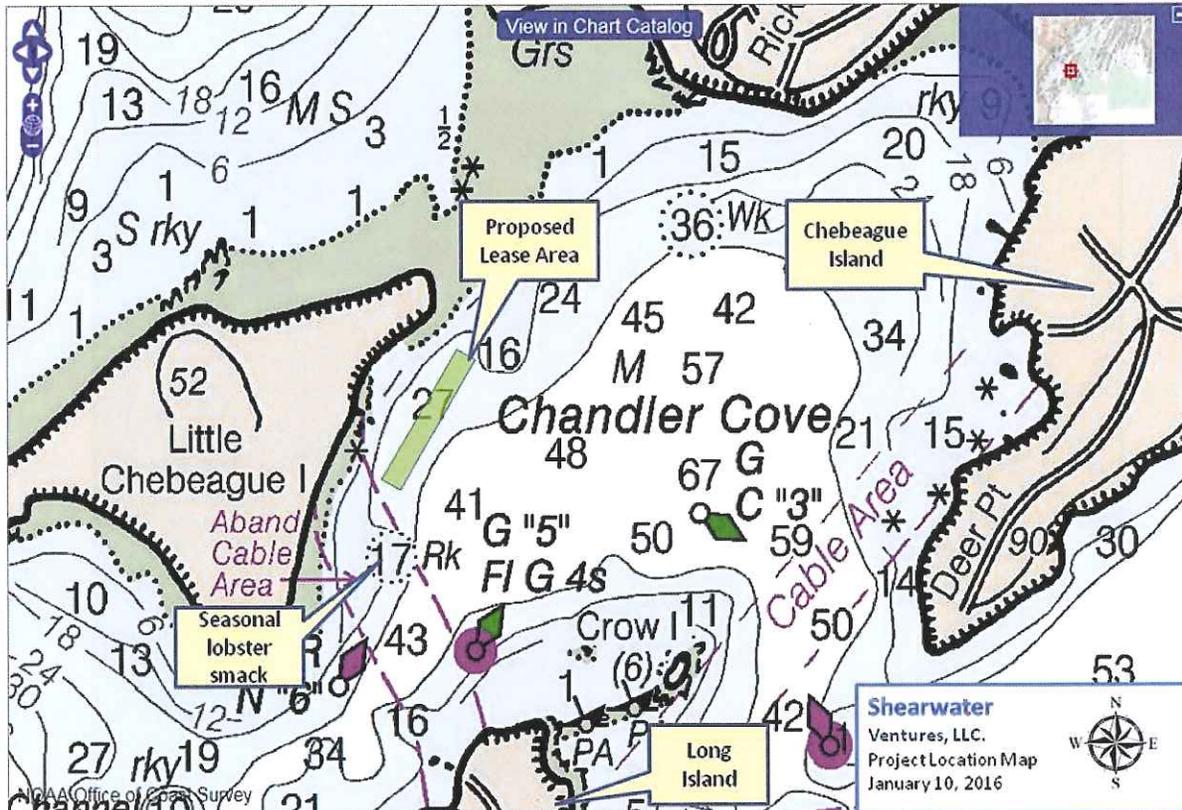


Figure 1. Vicinity map for proposed kelp farm. January 2016.

### B. Boundary Description.

*Describe the boundaries of the proposed lease site. Be sure to provide a description of how you developed the location description. For example, did you scale it from a NOAA chart or USGS map, did you use a compass and measuring device, did you use a GPS unit (was it Differential GPS), was it done by a certified land surveyor, etc.? Provide a drawing with all sides, directions, distances, and/or coordinates labeled.*

The proposed lease site is 1,100 feet in length and 150 feet in width. The location description was developed using NOAA chart number 13290 (datum coordinates WGS) and Google Earth Pro software. The northern end of the site is southeast of the northeast tip of Little Chebeague Island. The southern end of the site is east of Little Chebeague Island and west of the northern end of Long Island. The proposed lease site is in subtidal waters. These waters are unrestricted (Figure 2).



# Maine Department of Marine Resources

## Pollution Area No. 13

Western Casco Bay and Islands (Cape Elizabeth to Falmouth)

August 8, 2014

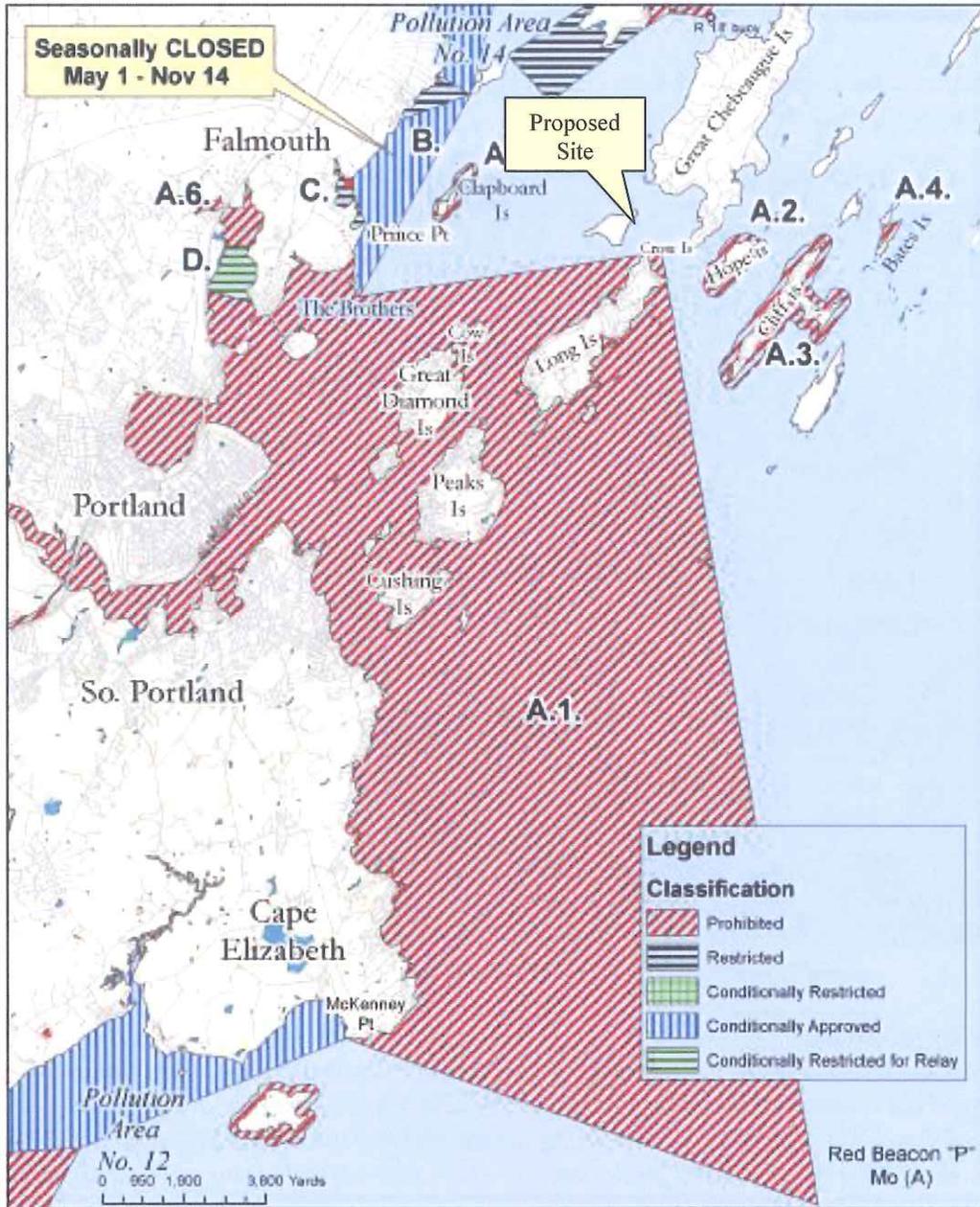


Figure 2. Maine DMR Water Classification, January 2016

**1) Coordinate Description.**

*Provide geographic coordinates for each corner of the lease site in latitude and longitude as accurately as possible (e.g., to the nearest second or fraction of a second). Identify the datum on the map or chart used to develop these coordinates. The datum will be shown on the map or chart you are using.*

Table 1 below provides the longitude/latitude coordinates for the corners of the proposed lease area from Google Earth Pro. The internal coordinate system of Google Earth is geographic coordinates (latitude/longitude) on the World Geodetic System of 1984 (WGS84) datum.

**Table 1. Site Coordinate Description**

Corner	Longitude	Latitude
North	43° 42' 50.60" N	70° 08' 30.31" W
Northeast	43° 42' 49.85" N	70° 08' 28.48" W
South	43° 42' 40.33" N	70° 08' 35.57" W
Southwest	43° 42' 41.03" N	70° 08' 37.37" W

**2. Land Owners (Who are your neighbors and do you have their permission to use their land?)**

Attach a copy of a tax map or chart showing the location of the lease and the waters and shorelands within the general vicinity of the lease. List the name and address of every riparian owner of land within 1000 feet of the lease and the location of their property marked as shown on the map. If you need to use riparian property to access the lease site, or the lease activities would take place on intertidal land, provide written permission from every owner of such property to be used. The map and list of riparian owners must be certified by the tax collector or clerk of the municipality in which the lease is located as being an accurate copy of this information as maintained by the municipality. *The applicant must provide to the department proof of access to the lease area. If access will be across riparian land, the applicant shall provide to the department the written permission of every riparian owner whose land will be used to access the lease area (Sec. 1. 12 MRSA §6072-A, sub-§§8).*

The proposed lease site is located east of Little Chebeague Island, a small undeveloped island owned by the Towns of Long Island and Chebeague Island, located in Cumberland County Maine (Figure 3). There are no riparian owners, other than the two towns, within 1,000 feet of the proposed lease site. The closest private land is Lot #903 on the northeast tip of Long Island, located 1,788 feet from the proposed lease area (Figure 4). The Town of Long Island maintains parcels information on its website and available for download as a .kmz file. The closest private land on Chebeague is Parcel 20 (Figure 5) of Cumberland tax map I05 (Figure 6), located approximately 2,401 feet from the proposed lease site.



Figure 3. Property owners within 1,000 ft of lease area

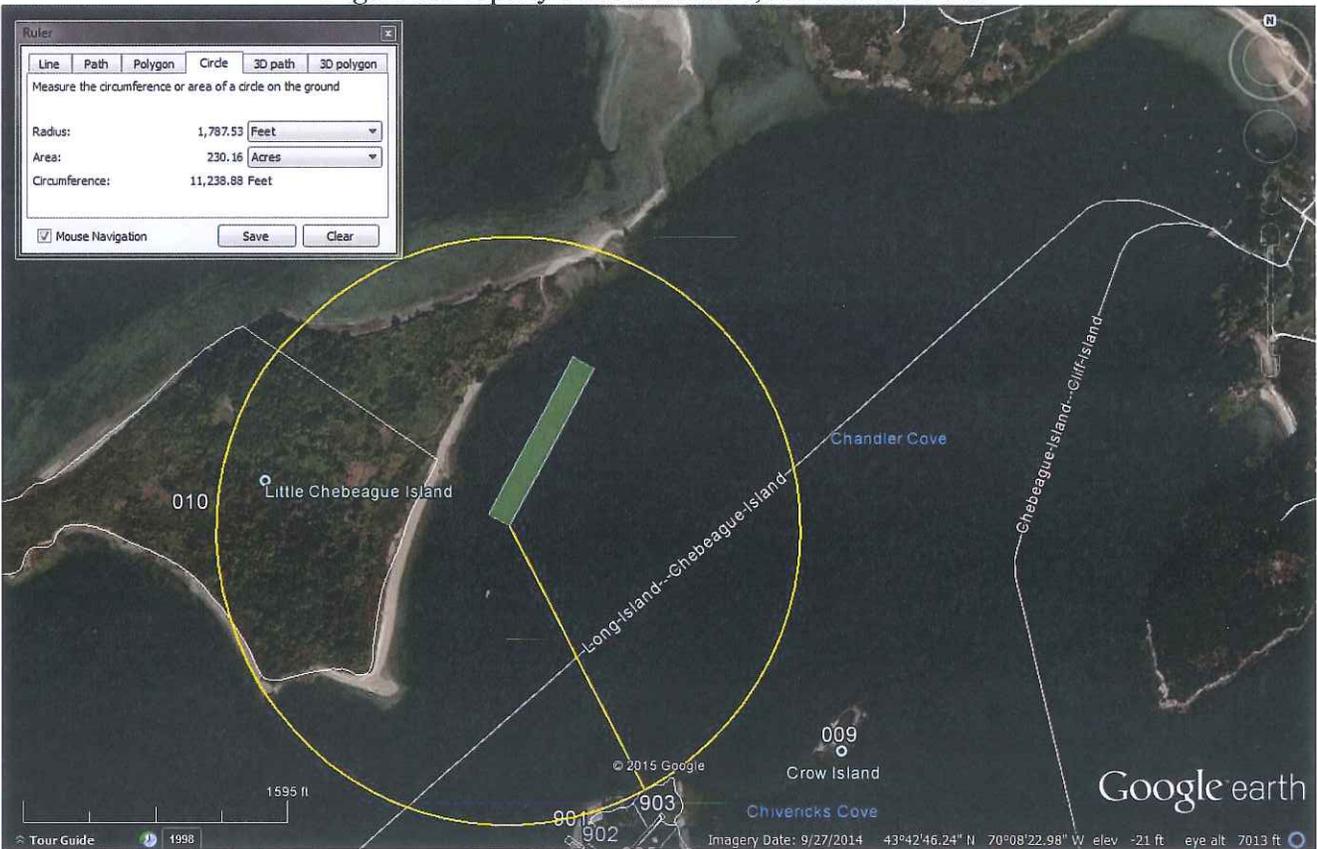


Figure 4. Distance (1,788 ft) to nearest property owner on Long Island, Lot #903

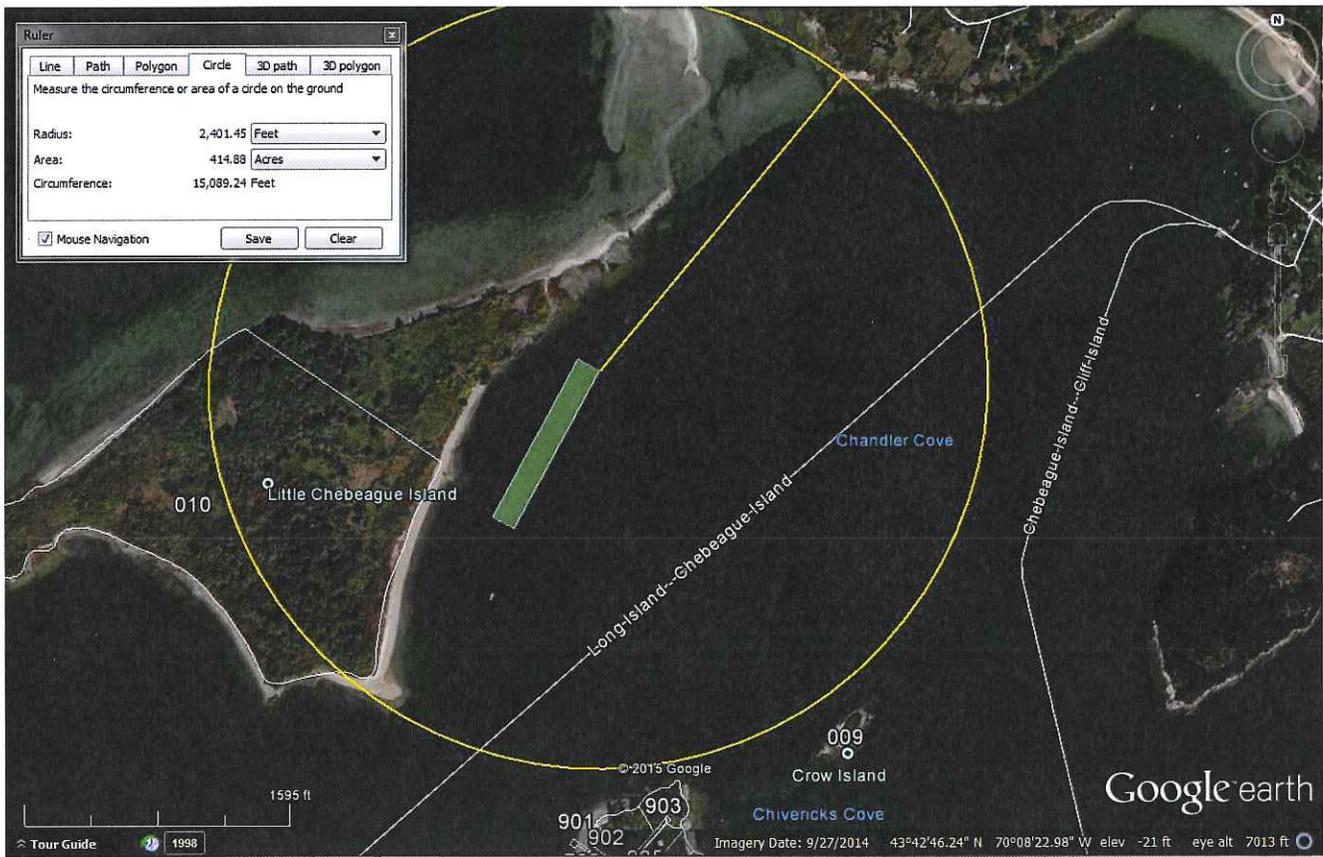


Figure 5. Distance (2,401 ft) to nearest property owner on Chebeague Island

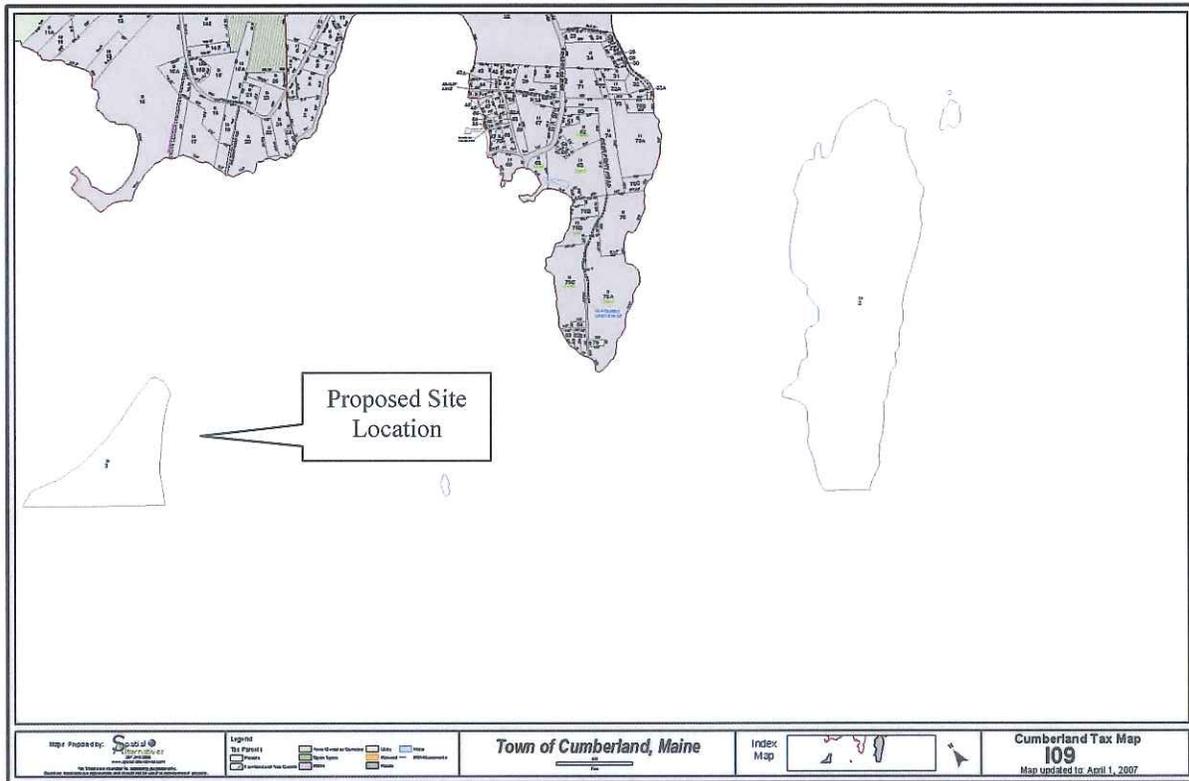


Figure 6. Chebeague Island Tax Map I09

3. **Research Program and Operation**

*Provide a concise description of the scientific or commercial research and development study you will be conducting on the experimental lease site. Describe:*

**A. The purpose and design of the study.**

The purpose of this study is to demonstrate the viability of a commercial kelp farm and experiment with alternative mooring configurations to reduce effort and cost associated with installation and removal. In addition, new methods of harvesting the kelp will be evaluated and tested. Long lines will be seeded during fall.

**B. The species, amount and proposed source of the organisms to be grown.** (Note: You may apply to grow more than one species).

Sugar Kelp (*Saccharina latissima*), Horsetail Kelp (*Laminaria digitata*), Winged Kelp (*Alaria esculenta*). The source of the organisms will be Ocean Approved, LLC who will harvest spores from native plants collected in the wild. The spores will be grown to 2.5mm sporelings in Ocean Approved's laboratory prior to being placed at the site. This technology was developed by Ocean Approved in 2010 and funded by NOAA.

**C. A description of the culture and harvesting techniques to be used.**

1. Ocean Approved, LLC will isolate and maintain native cultures of Sugar Kelp (*Saccharina latissima*), Horsetail Kelp (*Laminaria digitata*), Winged Kelp (*Alaria esculenta*) to be used as “seed stock” for the production of young plants.
2. Shearwater Ventures, LLC will transfer sporelings to the site once they achieve 2.5 mm in length. Seed string with sporelings will be applied to long lines.
3. The kelp will be harvested by lifting the long line to the surface and cutting the kelp at the intersection of the hold fast and the stipe, stripping the kelp from the line.

**D. The expected length of the study.**

The expected length of this study is 3 years.

**E. Specify whether the research is for scientific OR commercial research and development.** Note: Results of scientific research will be part of the public record.

Commercial research will be conducted to determine cost effective anchoring and harvesting solutions. The lease proponent is open to scientific research being conducted at the site however it is not currently proposed.

**4. Existing Uses (Who uses or travels over the site now and why?)**

*Describe the existing uses of the proposed lease area, including commercial and recreational fishing activity, moorings, navigation and navigational channels, and use of the area by riparian owners for ingress and egress. Include the type, volume, time, duration, location and amount of activity. A signed statement from a Department Biologist or Marine Warden may be submitted to verify this information.*

The closest marked navigation channel is approximately 1,200 feet southeast of the proposed lease site and marked by green buoy #5 (NOAA Chart 13290 (Figure 1). Most vessels transiting to/from Chandler Cove and Luckse Sound pass approximately 1,000 feet to the south of the site. Little Chebeague Island is accessible by boat on most tides and by foot at low tide via the bar connecting Little Chebeague to Chebeague Island. As such, there is seasonal recreational boating in the area to access the island. Most seasonal boats and overnight/weekend visitors access the island to the southwest of the proposed lease site. The Maine Island Trail Association (MITA) maintains a network of paths on the island and was contacted in regard to the lease location. MITA confirmed the growing season for the kelp farm (late September to May) is not likely to impact visitors to the island.

Discussions with local lobsterman indicate the proposed lease area is not typically an area with high concentrations of lobster or gear. Dragging for scallops does occur in the vicinity of the site but conversations with local scallop fishermen did not raise significant concern. However, the lease area was shifted closer to the shore of Little Chebeague Island to minimize impacts to existing scallop draggers. A seasonal lobster raft (“smack), as shown on Figure 1, is located approximately 440 feet to the south of the lease area. During the summer and fall bait is distributed and lobster collected at this location. The owner of the lobster smack was notified regarding the proposed lease.

Several existing aquaculture leases are located within a mile of the proposed lease area. Table 2 summarizes aquaculture lease holders. Figure 7 shows aquaculture leases in Casco Bay from Maine DMR’s website. Since several of the leases weren’t shown, Figure 8 includes all known lease sites in proximity to Little Chebeague Island.

**Table 2. Existing Aquaculture Sites in Proximity to Proposed Site**

Site Name	Owner	Type	Approximate distance (miles) and direction from Proposed Site*
CAS LCI	Ocean Approved, LLC	Standard Lease - Kelp	0.57 NNW
CAS CHEB	Ocean Approved, LLC	Standard Lease - Kelp	0.67 SW
CAS LONG	Trundy Point, LLC	Standard Lease - Mussels	0.81 WSW
WHIS1 13	David Whiston	LPA - Oyster	0.95 ENE
WHIS2 13	David Whiston	LPA - Oyster	0.95 ENE

\*Measured from center of lease area to center of lease area

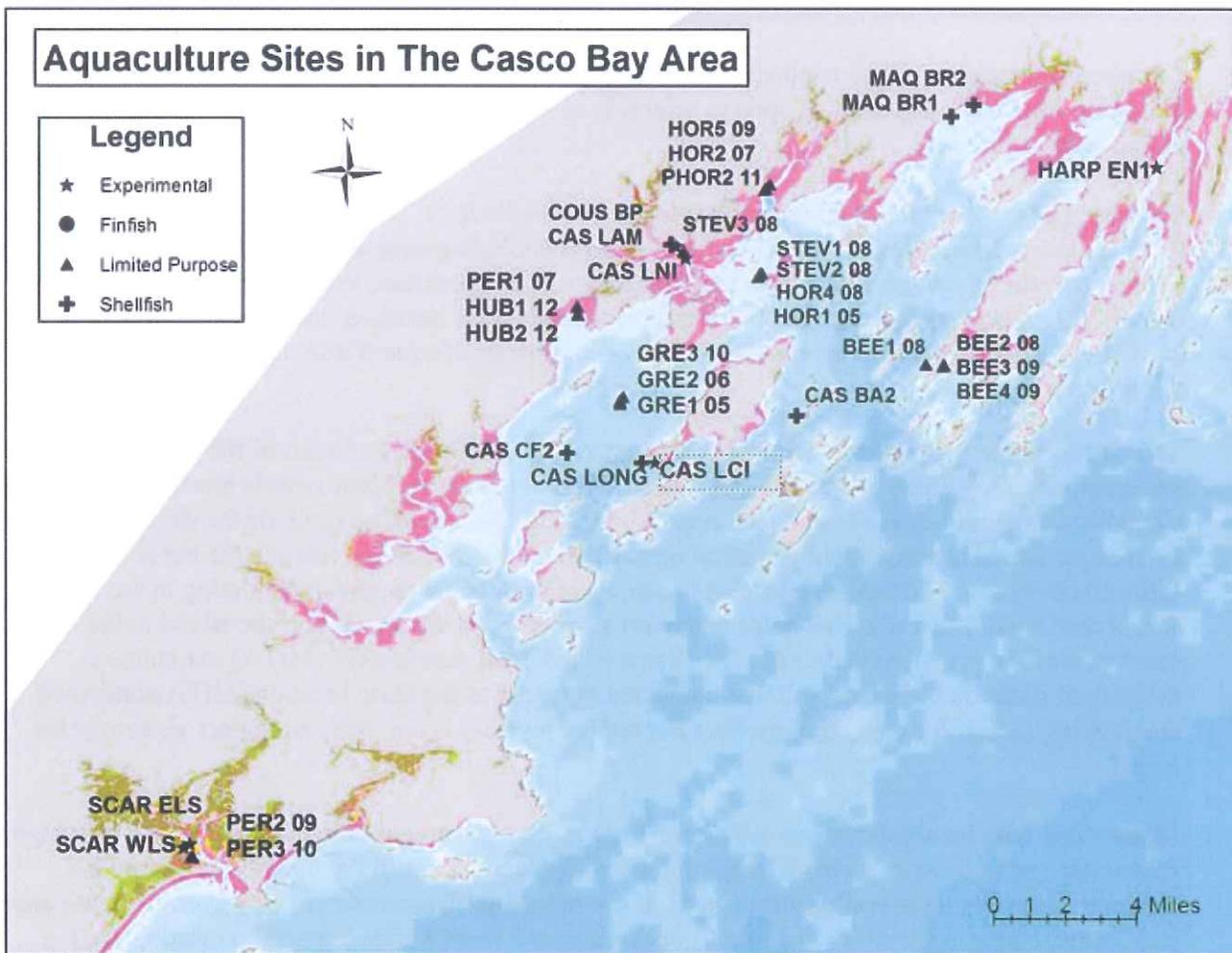


Figure 7. Existing Aquaculture Sites in Casco Bay, Maine DMR, January 17, 2016



Figure 8. Existing Aquaculture Leases near Little Chebeague Island, Shearwater Ventures

In summary, the following parties were notified of the proposed lease site and their input solicited. No objections to the proposed lease location have been received.

- Long Island lobsterman (2)
- Long Island lobsterman/scallop dragger
- Long Island Selectman
- Ocean Approved, LLC
- Island Institute
- Chebeague Island residents (2)
- Chebeague Island lobsterman/scallop dragger
- Owner of lobster smack near Little Chebeague (and scallop dragger)
- Friends of Casco Bay
- Maine Island Trail Association

5. **Exclusive Use** (*Who will be restricted from the site?*)

*Describe the degree of exclusive use required by the project and the impact on existing or potential uses of the area. Will others be allowed access to the site? Will fishing be allowed on the site? Will you request that certain types of activities be restricted? If so, please explain.*

It is anticipated that the kelp farm will be operational from late September to May annually. This temporal use will minimize conflict with recreational boaters and lobster gear, both of which occur primarily during the summer months at the proposed location. The site structure design (illustrated

in Section 7 Structures) will allow for recreational boaters to transit the site. We request that both lobstering and dragging be restricted from the site to minimize the risk of gear entanglement.

## 6. Description of the Proposed Lease Site

### A. Environmental Characterization. (Written description or video)

*NOTE: If your application involves structures, a permit from the U.S. Army Corps of Engineers will be required. The ACOE requires that the Environmental Characterization be in written form. A video will fulfill only the DMR requirements. If you are using structures, a single written description will satisfy both the ACOE and DMR requirements.*

*Describe the environment of the proposed lease site and your reasons for deciding that this site would work for your intended purposes. This may be done either by submitting a written description of the area, or, if no structures are involved, by submitting a video of the area. Both methods should include the following:*

1. *Bottom Characteristics-* The bottom in the proposed site area is sand and mud.
2. *Approximate Depths-* Approximate depth at low tide is 20 to 30 feet. The approximate depth at high tide is 30 to 40 feet.
3. *Topography-* The lease site is situated on generally flat topography which a gentle slope from the northeast to the southwest.
4. *Flora and Fauna-* A dive survey of the site has not been conducted. However, discussions with local fishermen as well as information available from other aquaculture lease sites in the area indicates the bottom is comprised of sand and mud. The presence of seaweed cultivation in this area will provide additional structure and shade for a diverse array of species including juvenile fish, small invertebrates, diving birds, etc.
5. *Approximate Current Speed and Direction-* The current in the proposed lease site area runs in several directions during both ebb and flow due to the nature of the bar between Chebeague Island and Little Chebeague Island. Prior to the bar being exposed on the ebb, the current runs NE between Little Chebeague and Long Islands as well as S over the bar. Once the bar is exposed, the ebb currents runs solely NE between Little Chebeague and Long Islands prior to being redirected in Chandler Cove to the southeast and out through Luckse Sound. During flood tide, the current runs NW through Luckse Sound prior to flowing SW past Little Chebeague Island. This tidal condition is shown on Figure 9 and likely generates peak tidal velocities of approximately 0.5 m/s. Once the bar is covered, the current also runs NW across the bar, resulting in lower overall flow velocities.

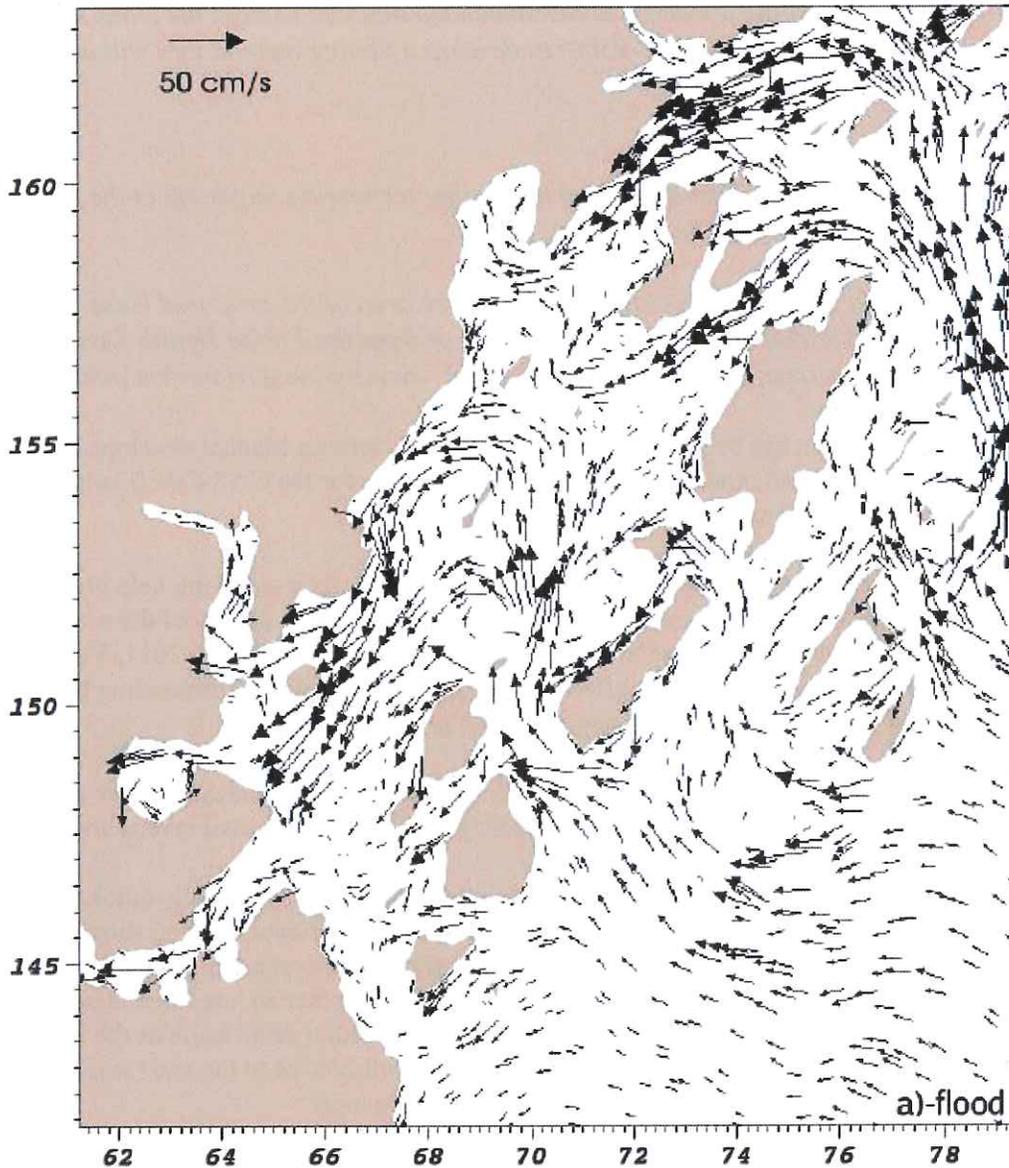


Figure 9. Norwich University FVCOM model predictions of wind and tidal induced circulation in Casco Bay, flood (upper panel) and ebb (lower panel), western (left) and eastern (right) side of the bay.

6. *The General Shoreline and Upland Characteristics*- The proposed lease site is located east of Little Chebeague Island, a small undeveloped island has a gently sloping beach of sand to the southwest of the site. The shore transitions adjacent to the southern end of the site from sloping sand to rocky outcrop towards the northeast. The northeast end of the lease site is approximately adjacent to the northeast tip of Little Chebeague, providing shelter from winter northwest winds. The upland side of the beach rises rapidly and is covered with low vegetation giving way to trees. There is a bar (primarily sand with a few rocks between Chebeague Island and Little Chebeague Island that is exposed at low tide. Little Chebeague Island was occupied by the U.S. Navy during WWI for recreational purposes and as training for on ship fires. Remnants of the Navy's presence continue today.
7. *Presence and Extent of Submerged Aquatic Vegetation* - A dive survey of the proposed lease location has not been conducted. However, lease sites in similar bathymetric and sediment conditions near Little Chebeague indicate minimal aquatic vegetation.

*NOTE: If you are submitting a video it is recommended that you contact the DMR Aquaculture Environmental Coordinator (207-633-9500) to develop a filming method that will adequately describe your proposed lease site.*

**B. Environmental Impact.**

*Describe how you think your husbandry and harvesting techniques might affect the physical and ecological environment around the lease site.*

*Provide the shellfish growing area classification for the area of the proposed lease. The classifications are available at either the town office or from the Public Health Division of DMR. Contact information is available at the DMR website: [www.maine.gov/dmr/rm/public\\_health](http://www.maine.gov/dmr/rm/public_health)*

The following description has been modified from the Kelp Farming Manual developed by Ocean Approved, LLC (NOAA and others) and their lease application for the CAS CHEB kelp farm site, located approximately 0.67 miles from the proposed location:

Kelp cultivation can have a positive impact on the environment. As a sea plant, kelp consumes excess nitrogen and CO<sub>2</sub> in the water and expresses O<sub>2</sub>, improving the water quality of the surrounding environment. The Town of Chebeague's Draft Comprehensive Report, March 2011, Volume 2, page 30-31 identifies excess nitrogen as an issue affecting the quality of the water surrounding the island and affecting the clam flats by increasing the prevalence of green algae.

In addition to improving the quality of the surrounding waters, kelp provides structure and shade for many marine organisms. It is an important habitat for juvenile fish and small invertebrates.

Kelp farm operations are low impact on the environment. Seeding is a relatively quick process accomplished from small skiffs. Based on Ocean Approved's experience seeding should require not more than 2 days each planting season for the proposed site (wind dependent). Seeding takes place in fall, winter, and spring. Harvest is quick and efficient, and takes place in late fall and spring. It consists of bringing the long line onto the boat and removing the kelp with a small knife as the boat moves down the line. Husbandry for the site will include weekly or bi monthly trips to the site (season dependent) for plant sampling, data capture, and structure inspection/maintenance.

There are no Essential Wildlife Habitats, such as bald eagle nests surrounding Little Chebeague Island (Figure 10), however the shoreline of the island and surrounding islands is designated a Significant Habitat for Tidal Waterfowl and Wading Birds. The proposed lease site should not interfere with this habitat as it is located in subtidal waters and there is no indication kelp farms are an aggregator for these species.

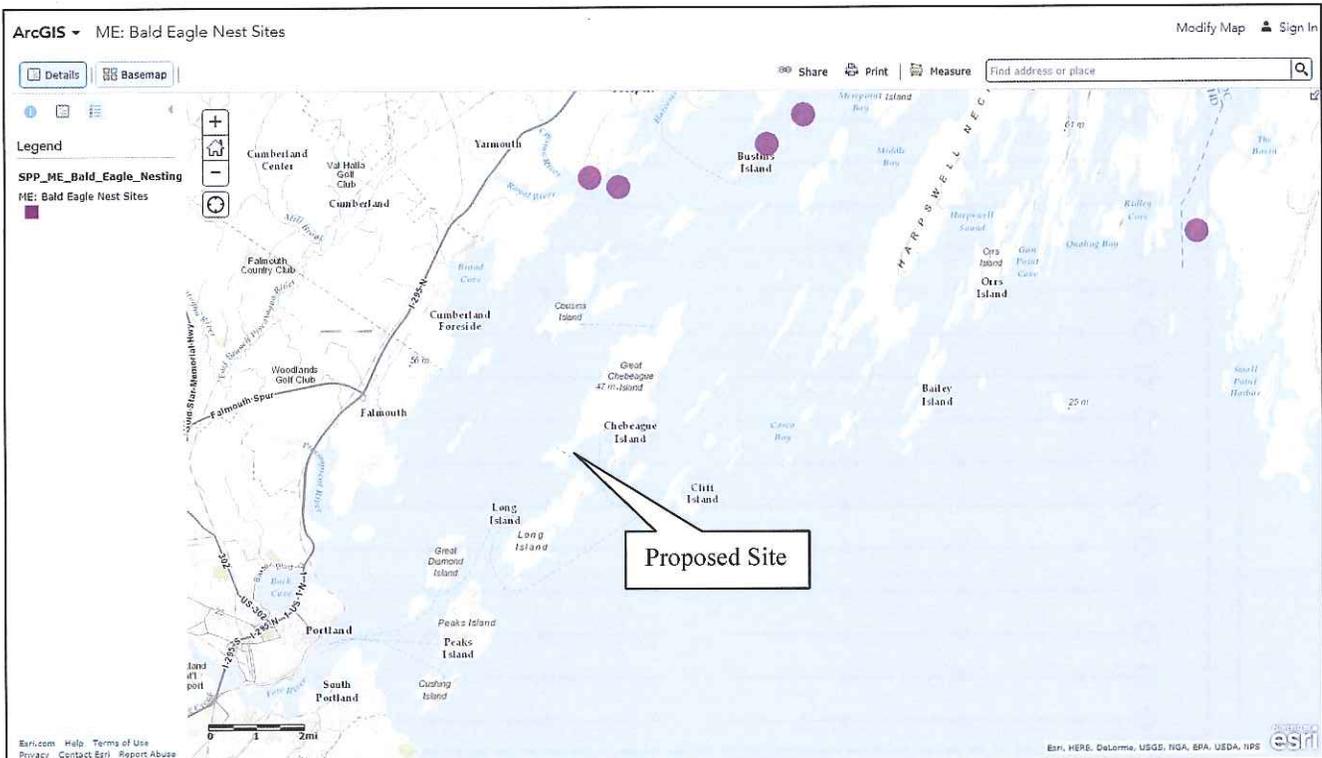


Figure 10. Identified Bald Eagle Nest Sites, Maine Department of Inland Fisheries and Wildlife, 2016

7. **Structures (if applicable)**

*If your operations require the use of nets, ropes, trays, or any object (structure) other than the organism to be grown directly on the bottom or buoys to mark the corners of the lease site, you must submit the following:*

- A. **Plan View.** *Provide a drawing of the maximum area to be utilized by the structure(s) and moorings of the proposed lease. This drawing should include a layout of the lease boundaries and the location of all proposed markings. Please note that all moorings must be contained within the lease site.*

A plan view of the site is shown on Figure 11. Shearwater Ventures plans to build out the lease area in phases, likely adding five long lines annually, culminating in fifteen lines in the third year of the lease.

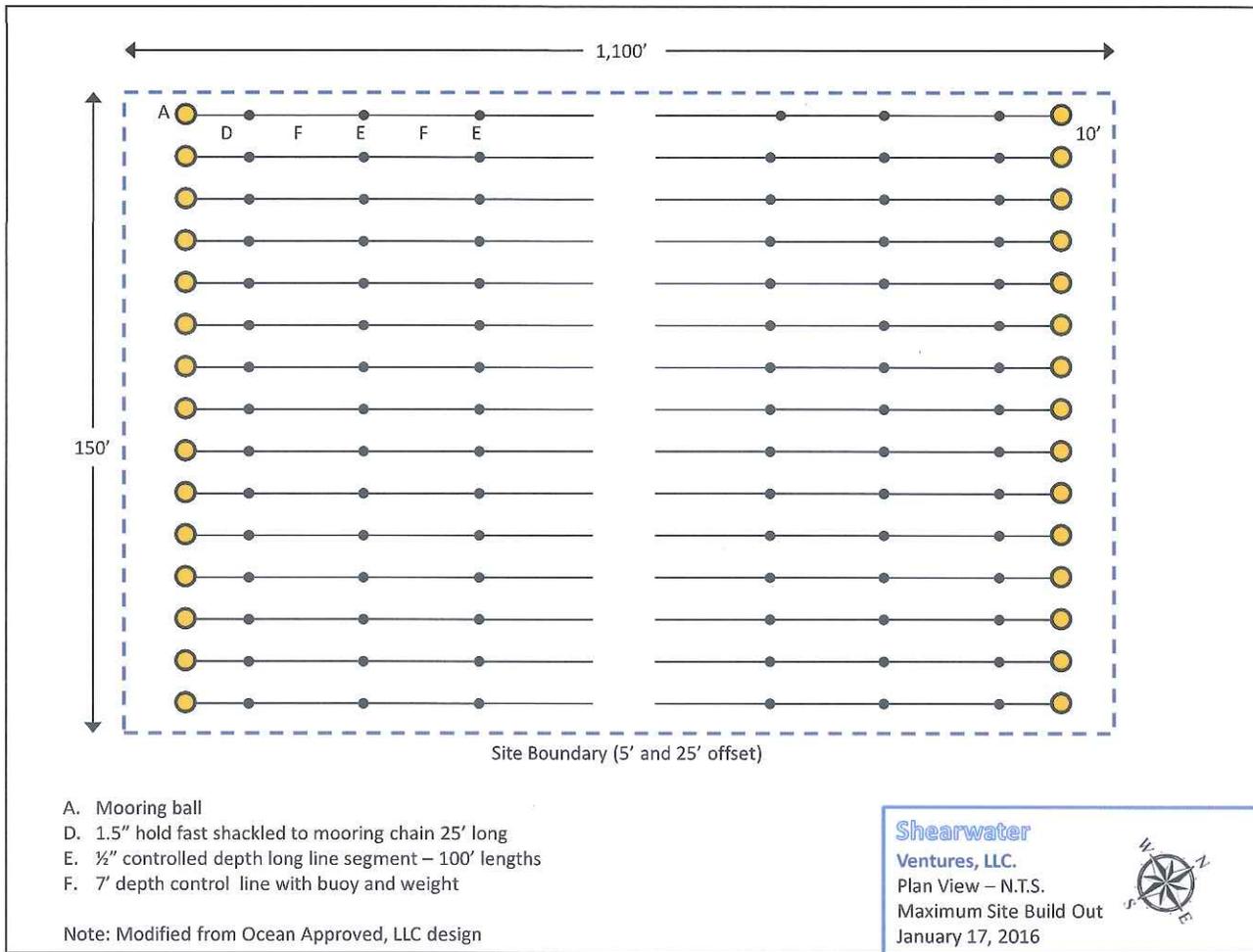


Figure 11. Plan View. Not to Scale (NTS)

B. **Cross Sectional View.** Provide a drawing and description of the mooring system used to anchor your structure(s) to the sea floor. Provide dimensions and materials used. Label all parts. Provide depth from the bottom of your structure(s) to the sea floor during both mean low water and mean high water.



10. **Escrow Account or Performance Bond and Rental Fee**

**A. Escrow Account or Performance Bond.** *Provide documentation confirming that the applicant has read MDMR Aquaculture Regulations 2.40 and that upon issuance of a lease by MDMR the lessee will either open an escrow account or obtain a performance bond, depending on the category of lease as follows:*

<u>Lease Category</u>	<u>Amount of Required Escrow or Performance Bond</u>
<i>No structure, no discharge</i>	<i>None</i>
<i>No structure, discharge</i>	<i>\$ 500.00</i>
<i>Structure, no discharge</i>	<i>\$</i>
<i>Total combined area of all structures on lease:</i>	
<i>≤400 square feet</i>	<i>\$1,500.00</i>
<i>&gt;400 square feet</i>	<i>\$5,000.00</i>
<i>Structure, discharge</i>	<i>\$ 25,000.00</i>

Shearwater Ventures, LLC has read MDMR Aquaculture Regulations 2.40 and upon issuance of a lease by MDMR will open either an escrow account or obtain a performance bond as appropriate for the proposed activities at the site.