

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
COASTAL RESOURCES MANAGEMENT COUNCIL
 4808 TOWER HILL ROAD; Suite 3, WAKEFIELD, RI 02879
 (401) 783-3370

 **FILE COPY**

Application for State Assent to perform work regulated by the provisions of Chapter 279 of the Public Laws of 1971 Amended.

File No.	2015 12 014	
Location: Street	City/Town	
Sw of Jacks Island	Tiverton,	R.I
Applicants Name.	Carl Berg	
Mailing Address	4 West Main Road	
City/Town	State	Zip Code
W. M. Copton	R.I	02837
Location of Proposed Aquaculture Project:		
Sakonnet River - NE corner - 4 35' 31 N 71 12 39 W		
Name of Waterway	Sakonnet River	
Est. Project Cost \$	5 - 10,000	Fee/Costs \$
		200.00

Have you or any previous owner filed an application for and/or received an assent for any activity on this site? (If so please provide the file and/or assent numbers).

IS THIS APPLICATION BEING SUBMITTED IN RESPONSE TO A COASTAL VIOLATION?

YES NO

IF YES, YOU MUST INDICATE NOV OR C&D NUMBER _____

NOTE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible, adhered to the policies and standards of the program. Where variances or special exceptions are requested by the applicant, the applicant will be prepared to meet and present testimony on the criteria and burdens of proof for each of these relief provisions. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. If the information provided to the CRMC for this review is inaccurate or did not reveal all necessary information or data, then the permit granted under this application may be found to be null and void. Applicant requires that as a condition to the granting of this assent, members of the CRMC or its staff shall have access to the applicants property to make on-site inspections to insure compliance with the assent. This application is made under oath and subject to the penalties of perjury.

Date: 12/3/2015 Owner's Signature 

Appendix C
 Rev. 05/05



Proposal to Rhode Island CRMC for Aquaculture Lease

Carl Berg / July 16, 2015

Introduction :

My name is Carl Berg and I am a 2015 graduate of the University of Rhode Island. I am a native Rhode Islander, from Little Compton. Currently I am a commercial fisherman, working on boats that catch a variety of species, from monkfish to lobster, using different techniques. It is how I make a living, but I want to branch out into other fisheries, oyster farming being the primary one. I have good knowledge of not only the subject of aquaculture in a biological sense, but the gear designs, water navigation, boat handling and repair, and economics and business sense that come together to create a successful farm and product. I truly believe the farming of filter feeding organisms (oysters) is one of the best ways to deliver sustainable and healthy food products to the market. This lease would serve as a commercial enterprise owned and operated by me with support and input from other shellfish farmers and fishermen who I have a relationship with on both sides of Narragansett Bay.

Location :

I have attached three different maps to the application. The location map and site plan, each taken from NOAA chart 13221, show depth and contour lines. The location map is shown at 1"=600'. The site plan is shown at 1"=100' and it calls out the distance from the site to the nearest point of land, as well as the GPS coordinates of the site. The third map, an aerial view, shows the GPS coordinates of the proposed site as these were taken from satellite imagery, at Google Earth.

The GPS coordinates of the site to be leased are as follows:

NE: 41 35'31.25 N 71 12'39.17 W
NW: 41 35'31.80 N 71 12'42.39 W
SW: 41 35'26.79 N 71 12'43.93 W
SE: 41 35'26.25 N 71 12'40.70 W



Photographic Documentation :

Attached are four photos taken from the proposed location of this requested aquaculture lease, depicting the site from different angles. One is facing SW toward Sapowet Point, another SSE, another NNW with the Mount Hope and Sakonnet River bridges evident, and the fourth facing NE toward Jack's Island. Also attached are two recent aerial photos of the vicinity, the proposed lease location marked with an 'x'.

Site Plans :

This description should be used along with the site plan and gear detail sheets in cross-section which are attached to this application. The site plan locates the operational layout on the proposed site, and shows its distance from the shoreline. The two cross sections show the depth at which the gear will sit for both low and high tide, and the types of gear to be used. Also shown is a detailed model of the cage design that will be used, and how it will be rigged. The operation will feature mainly bottom cages, set up in a trawl fashion, so that they may be quickly and efficiently hauled onto the boat. The additional advantage of this trawl system, with cages being attached in rows, is that there will be a lesser need for buoys than with a single cage system, and therefore the risk of watercraft colliding with them will be minimal. Further, the visual impact from the shore of the proposed operation will be minimized.

Operational Plan :

Because of my experience in the commercial fishing field, I plan on adopting many techniques used offshore and combining them to produce an efficient method for farming oysters. Because the site proposed will be in water too deep for wading, it will require gear methods that utilize a workboat and hauler in order to bring the oysters to the surface. While a surface longline or single bottom cages would prove to be easy to work with, in an effort to keep the farm as unobtrusive as possible I have chosen to use bottom cages in a trawl system, which are explained in detail in the site plans. By using anchors on the end of each trawl to limit the movement of these trawls in tide and current, and by setting these trawls up in rows, much like a farmer would with crops on land, an efficient operation can exist, with organization of the rows being very easy to divide oysters by year, size, seed type, market ready, and so on. Further, there would be only two buoys per trawl, at the northeast and southwest end of each trawl. The farm would therefore be less visible from the shore or the water, and its surface footprint would be very small in relation to its capacity underwater. However, in order to notify boat traffic and other people operating on the water, the corners of the proposed site would be marked with large colorful and reflective buoys, with the CRMC permit number displayed on them clearly. This would outline the farm itself, while the interior buoys inside the farm would be less visible, to keep the area as natural looking as possible. In total, there would be approximately 60 black low visibility buoys which would mark the trawl lines, and 4 large high visibility corner markers that would be labeled and positioned in accordance with CRMC instructions.

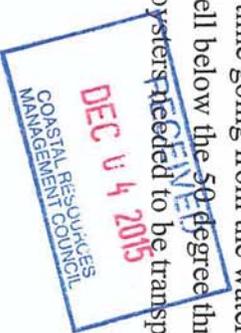
For the product itself, I will most likely obtain seed from ARC hatchery or a comparable source in the first year. I understand seed sources such as these have a reputation for being adequately tested and are accepted by the permitting authorities in Rhode Island to use with no further testing needed. The seed would also be obtained by me following biosecurity board protocols in accordance with state standards. A mix of both diploid and triploid seed will be used to start, in order to determine which will be more productive in the environment of the chosen site. The first year the plan is to use a larger seed size, dividing the seed into equal portions of between 6 and 15 mm in length. This is to stagger the growth of oyster age classes, and thus produce

continuous product for sale. I believe that with the depth, current flow, and gear maintenance techniques that are planned for this site, the mortality rate of the smaller stock will be normal, while the larger stock should be fairly resilient.

As to the gear, fouling will most likely be less than that experienced in shallow water due to the deeper water and strong current flow at this proposed site. Regardless of this, gear maintenance will be performed in an efficient and environmentally friendly manner, which is critical for the survival and growth of oysters. While many other farms utilize land drying or on-site drying of bags, this can be costly, time wise. This proposal plans on using a method from the commercial lobster fishery which is effective, fast, and easy. The gear, including the cages, bags, buoys and line will all be subject to cooking at a periodic rate, more frequently in the summer months as the warmer water will bring about more fouling. This will be done in a cooker, a metal self-contained implement that uses a source of fuel (propane, gas, or oil) to heat the water inside of it to temperatures ranging from 170-240 degrees. The gear would be hauled up and while the product is sorted and culled, the cages and bags would be placed in the cooker. At high temperatures, only a minute or so is needed to completely kill and eradicate all fouling organisms on the gear. Also, most fouling particulates would stay within the cooker and therefore contained on board, rather than being dumped back into the water over the lease site. Because of the effectiveness of this method, cooking would only need to be done every so often, and new bags and gear could be rotated in and out as needed.

At the start-up of the operation, the various size seeds will be placed in bags, and these bags then placed inside the cages in a trawl. The smallest seed will be in the westernmost trawl, nearest to the hard current, and thus mimicking somewhat the flow of an upweller. As the size goes up they will be placed easterly. This is so that small seed will survive with the help of the current, and medium seed will grow at a more substantial rate, due to the shallower area being east, and thus more affected by sunlight/nutrients etc. As the oysters grow they will be sorted, most likely with the use of a self-designed sorter and tumbler, which will also help the shape of the oyster become more market ready. As the oysters reach market size (around 3"), and orders are placed, they will be placed directly in cages or cars in order for them to be easily harvested as orders are filled.

Because of their perishability in warmer weather, and because of the possibility they may carry the *Vibrio* bacteria, great care must be taken in the summer months to deliver the oysters in fresh condition to market. By following the Rhode Island state regulations on *Vibrio* prevention, every precaution will be taken when harvesting oysters for market. As mentioned before, market ready oysters will be placed in submerged cars, and thus will not have to be moved above water several times during the fulfilling of an order. Also the workboat from which operations will be conducted will have on board a large vat filled with ice during harvest days in which to safely transport the product. The oysters themselves would spend no time going from the water unto fresh ice, and thus the organism's temperature would remain well below the 50 degree threshold. There would also be ice in a cooler on the farm vehicle, if the oysters needed to be transported by



road. Also, as mentioned earlier, the farm would have a systematic number and tracking policy in place, so that each order of oysters sold could potentially be tracked to a certain month or day of harvest, year of seed etc.

Market :

Although it is very difficult to tell what the future market for oysters might be and what prices will be seen then, the current growth in this industry has shown there will be a strong market for commercially grown shellfish. In my first years I will try to form relationships with local restaurants. Compared with locations to the west of Narragansett Bay, it has been my observation there is a shortage of aquaculture operations in the waters of Little Compton and Tiverton. Certainly there is a demand for fresh shellfish in these towns which is comparable to the market across the bay. Most of the product would likely be sold to wholesale markets such as fish vendors and also shellfish distributors, many of whom are in this state, and thus would require no interstate permitting or storage regulations. I also believe that with this site in particular, being deeper water and more exposed to currents, the oysters produced will have a brinier and richer flavor than those that come out of coastal ponds. Thus an alternative taste could be marketed to a consumer looking for a richer tasting product.

Written responses to RICRMP section 300.1 and subsequent sub-sections :

1. Demonstrate the need for the proposed activity or alteration:

Aquaculture is by far the most sustainable and nutritious form of producing food products without detrimentally effecting or taking resources from the natural environment. Due to their nature of filter feeding, and the relatively low carbon footprint created by the gear and the harvesting methods, oyster farming is not only sustainable but also extremely environmentally friendly. In an ever-expanding world, with multiplying mouths to feed every day, aquaculture could be the future of not only gourmet seafood, but also nutrition for the masses. The proposed farm would not only be a step in the right direction of sustainable eating, but also would provide another local seafood source, create economic opportunities in the local marketplace, have potential for future jobs, and will not infringe on existing usage of the area proposed. There would be little alteration to the water surface as all proposed gear types would be bottom culture, and no gear types would be permanently fixed/anchored so no alteration or drilling of the bay floor would be needed.

2. Demonstrate that all applicable local zoning ordinances, building codes, flood hazard standards, and all safety codes, fire codes and environmental requirements have or will be met:

No portion of the proposed growing site and any other operations related to oyster growing and harvesting will be in non-tidal areas, or areas on land that will require

permitting and permission of building officials and zoning ordinances, and thus would not be subject to any or all requirements for approval of sections 300.2, 300.3, 300.6, 300.8, 300.9, 300.11, 300.13, 300.15 and 300.17.

3. *Describe the boundaries of the coastal waters and land area that are anticipated to be affected:*

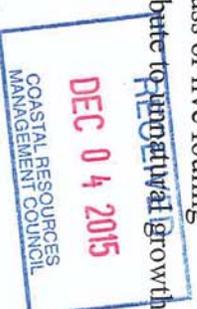
The site proposed is located in the Sakonnet River, just northeast of Sapowet point. Agriculture is still the predominant land use at Sapowet, its soils being among the most prime in the state for this purpose. The other main land use in this location is a wildlife preserve to the north and east owned by Audubon. To the west, in the river, is the main boating and shipping channel through the Sakonnet, but more than enough room is left between the farm and this channel to ensure boating traffic will not be inconvenienced by the farm. The proposed area would only be accessible by boat, and only noticed by private residences to the east, of which there are few. The site does not encroach upon any public beach. In fact this is a quiet section of waterfront, due to limited public access and the waterfront properties being used for farming or wildlife.

4. *Demonstrate that the alteration or activity will not result in significant impacts on erosion and or deposition processes along the shore and in tidal waters:*

The site will consist of bottom cages in trawl fashion, which will be free to move. This gear will thus not pose any threat to erosion due to the fact that no ground penetrating anchors or screws will be used. Rather the weight of the full trawl and cages combined with the depth of the water here (8' at mean low tide) will keep them in place and safe from normal to excessive wave and wind action. The only deposits from the site will be organic matter such as shells and some fouling particulates, and occasionally live shellfish which have come free from the cages and bags. Due to the nature of the spot, and the currents and tide present, all particulates will be washed away or settle to the bottom and not become clumps on the beach or adjoining properties.

5. *Demonstrate that the alteration or activity will not result in significant impacts on the abundance and diversity of plant and animal life:*

It has been proven that oysters being filter feeding organisms provide an invaluable resource to the environment by filtering water and thus cleaning it. The site for consideration would benefit greatly in water quality from the installation of oyster growing sites, and as a result the organisms and plant life that already inhabit the vicinity would benefit, too. Furthermore, the proposed process for anti-fouling of gear (which is explained in the operational plan) would lead to very little biomass or live fouling organisms being returned to the water and thus would not contribute to ~~any~~ ^{any} ~~environmental~~ ^{environmental} growth



of fouling organisms seen as a result of other aquaculture applications. Also the site up for consideration, a shallow coastal terrace or shoal, takes into account more productive marine species habitats and does not infringe on special habitats used for spawning, marine mammal life, or heavy fish traffic. Rather the gear and oysters themselves would attract fish species such as black seabass, tautog, scup, toadfish and other fish who use bottom gear as a place to hide or rest. It would also lead to shellfish species such as conch repopulating the area (but hopefully not!) due to their preference of shellfish such as oysters as a food source.

6. *Demonstrate that the alteration will not unreasonably interfere with, impair, or significantly impact existing public access to, or use of, tidal waters and the shore:*

The nearest point of public access to the shore is at the beach in the state management area to the south of Sapowet Point, and there is an unofficial point of access at Jack's Island. This proposed site cannot be reached along the shore from those points of access without a boat. To the north around the point at Jack's Island, is a small beach in the cove at Winnisimmet and public roadway, but the farm would have no impact on this area as it cannot be seen or reached from this location. To the south of the proposed site is the public beach and parking space off of the bridge at Sapowet creek, but once again, the site cannot be seen or accessed from this location. The proposed site does not come into contact with the land to the east, and thus does not impact it. It is also at least 400 yards to the east of the shipping channel, and thus does not impact the usage of tidal waters around it. The only legal access to the site through public means would be by way of boat, and this also helps to insure the security of the site from potential poachers, if there were ever to be any.

7. *Demonstrate that the alteration will not result in significant impacts to water circulation, flushing, turbidity, and sedimentation:*

All of the gear used in oyster farming generally, and specifically in this proposal is designed so that the maximum amount of water circulation can be presented over and around the oysters in order to facilitate their good health, growth, and taste. Being on the bottom of the water column, the gear location for the proposed site would have access to rich bottom currents but would not hinder the movement of these currents or other species relying on them in any way. Due to their nature, the farming of oysters in this site would lead to reduced water turbidity, as many particles found in the water are actually food for oysters or are filtered through as waste. Because of its tidal and high current flows, the spot selected has very little turbidity and water sedimentation as compared to shallower spots. The implementation of an oyster farm in this location would not increase sedimentation, as the bottom current would flush it away and most fouling particles would be broken down into smaller particulates by the anti-fouling

methods proposed, and thus not build up on the seafloor.

8. *Demonstrate that there will be no significant deterioration in the quality of the water in the immediate vicinity as defined by DEM:*

Oysters as an organism provide a valuable and much needed resource to the environment because they filter feed small particles from the water. This action simultaneously cleans the water, and it reduces the number of phytoplankton that are present, mainly due to nutrient runoff from land. An abundance of phytoplankton has been linked with the decrease of fish and marine species. Thus the site proposed for oyster farming would increase the quality of the water, which would mutually benefit other uses dependent upon these coastal waters, the oyster farm itself, and the nearby wildlife preserve.

9. *Demonstrate that the alteration or activity will not result in significant impacts to areas of historic and archaeological significance:*

To my knowledge, the area proposed for this aquaculture lease does not contain any artifacts, nor is it associated with any sites of historic or archaeological significance. Thus I do not believe there will be an impact in this regard.

10. *Demonstrate that the alteration or activity will not result in significant conflicts with water dependent uses and activities such as recreational boating, fishing, swimming, navigation and commerce:*

The proposed site of the aquaculture lease does not infringe upon any activities mentioned above for water use. Its location is of use only given the additional means of a boat for gaining access to it. Its position off the shore assures that no homeowner in the vicinity would ever be near it swimming or fishing from shore. It is far enough away from the channel (which is clearly marked with navigational buoys) that no large or small vessel would come near it or be hindered by it. No commerce would be affected, as no species are specifically harvested out of that area, currently, and no marine traffic needs that area to cross over in order to get to or from a commercial operation. It is not accessible by land unless through private property, and its location is not one of a well-used recreational boating or fishing spot.

11. *Demonstrate that measures have been taken to minimize any adverse scenic impact:*

The proposed lease sits in a location that cannot be seen from land by virtually anyone but the few property owners to the east of it. It is also rigged in a way that minimal buoys are used, no floating cages are present, and it is far enough from any recreational beach that it does not interfere with any scenery on land. The buoys used will be black



go-deeps and thus have limited visual impact. A boat and gear would be present while work on the farm was happening, but as a shipping and boating channel lies to the west, this would not be out of the ordinary or infringe upon anything visually that isn't already usually there. You would need optics to see it from the west (Aquidneck), and it is sheltered on both sides by points to the north and south, so its visibility from those areas would be extremely minimal.

Carl Berg / November 30, 2015

Operational Plan for Aquaculture

Applicant/Operator:

Carl Berg
14 West Main Road
Little Compton, RI 02837
cell (401) 525-6561

CRMC File Number: D2015-07-048

DEM Aquaculture license number: Will be obtained upon successful permitting of proposed oyster farm.

Type of facility: Commercial bottom lease with the intention to propagate and raise oysters for commercial sale and market. Situated on three acres in the eastern Sakonnet in 8' of water depth, the enterprise will make use of bottom cages tethered into trawls which will be operated from a small boat.

Location of facility:

Tiverton, Rhode Island
Sakonnet River

Coordinates:

NE: 41 35'31.25 N 71 12'39.17 W
NW: 41 35'31.80 N 71 12'42.39 W
SW: 41 35'26.79 N 71-12'43.93 W
SE: 41 35'26.25 N 71 12'40.70 W



Identification of Species:

The proposed farm will grow *Crassostrea virginica* or Eastern Oysters. Other shellfish such as quahogs and bay scallops, which are naturally occurring species in the area, may incidentally be found on the farm or among the cultured oysters. All biosecurity board seed protocols will be followed in compliance policies of the State of Rhode Island. A proper *Vibrio* management plan is explained in detail in the main application.

Description of Gear and Methods:

The site will utilize bottom trawls with wire cages similar to lobster pots connected with sinking line and all appropriate marine mammal breakaway devices. Attached to each trawl will be two end buoys marking the trawl and suspending the endlines. Additionally, there will be several

large wire holding cars submerged on the site to safely hold market ready product before it is harvested. There will be 30 total trawls on the site, arranged in a grid pattern. Please see the attached plan sheets that describe and show the exact layout of this gear.

Site Identification:

The proposed site will be marked with four large reflective and colorful corner marker buoys in compliance with CRMC guidelines. These will be labeled with the permit number and will be visible to all marine traffic. The trawl buoys, of which there will be two per trawl line, will occur within the interior of the area located by the marker buoys, and will be smaller and black in color, so as to create the least visual intrusion from the shoreline and neighboring properties.

DEM Shellfish Harvesting Classification:

The site is within an area currently declared open for shellfishing and safe for consumption and harvest. The operator will monitor the site location and DEM reports in the event of changes to this status in the future.

Description of Operating Procedures: *(taken directly from the full application)*

For the product itself, I will most likely obtain seed from the ARC hatchery or a comparable source in the first year. I understand this seed source has a reputation for being adequately tested and is accepted by the permitting authorities in Rhode Island to use with no further testing needed. The seed to be obtained will also conform to biosecurity board protocols in accordance with state standards as these may change over time. A mix of both diploid and triploid seed will be used to start, in order to determine which will be more productive in the environment of the chosen site. The first year the plan is to use a larger seed size, dividing the seed into equal portions of between 6 and 15 mm in length. This is to stagger the growth of oyster age classes, and thus produce continuous product for sale. I believe that with the depth, current flow, and gear maintenance techniques that are planned for this site, the mortality rate of the smaller stock will be normal, while the larger stock should be fairly resilient.

As to the gear, fouling will most likely be less than that experienced in shallow water due to the deeper water and strong current flow at this proposed site. Regardless of this, gear maintenance will be performed in an efficient and environmentally friendly manner, which is critical for the survival and growth of oysters. While many other farms utilize land drying or on-site drying of bags, this can be costly, time wise. This proposal plans on using a method from the commercial lobster fishery which is effective, fast, and easy. The gear, including the cages, bags, buoys and line will all be subject to cooking at a periodic rate, more frequently in the summer months as the warmer water will bring about more fouling. This will be done in a cooker, a metal self-contained implement that uses a source of fuel (propane, gas, or oil) to heat the water inside of it

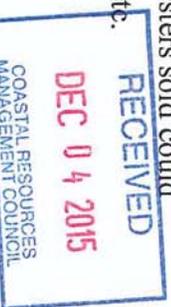
to temperatures ranging from 170-240 degrees. The gear would be hauled up and while the product is sorted and culled, the cages and bags would be placed in the cooker. At high temperatures, only a minute or so is needed to completely kill and eradicate all fouling organisms on the gear. Also, most fouling particulates would stay within the cooker and therefore contained on board, rather than being dumped back into the water over the lease site. Because of the effectiveness of this method, cooking would only need to be done every so often, and new bags and gear could be rotated in and out as needed.

At the start-up of the operation, the various sized seeds will be placed in bags, and these bags then placed inside the cages that are arranged into a trawl. The smallest seed will be in the westernmost trawl, nearest to the hard current, and thus mimicking somewhat the flow of an upweller. As the seed size increases they will be placed easterly. This is so that small seed will better survive with the help of the current, and medium seed will grow at a more substantial rate, due to the shallower area being east, and thus more affected by sunlight/nutrients etc. As the oysters grow they will be sorted, most likely with the use of a self-designed sorter and tumbler, which will also help the shape of the oyster become more market ready. As the oysters reach market size (around 3"), and orders are placed, they will be placed directly into empty cages or cars in order for them to be easily harvested to fulfill the order.

Because oysters can perish in warmer weather, and can be susceptible to the Vibrio bacteria, great care must be taken in the summer months to deliver a fresh product to market. By following the Rhode Island state regulations on Vibrio prevention, every precaution will be taken when harvesting oysters for market. As mentioned before, market ready oysters will be placed in submerged cars, and thus will not have to be moved above water several times during the fulfilling of an order. Also the workboat from which operations will be conducted will have on board during harvest days a large vat filled with ice in which to safely transport the product. The oysters themselves would spend no time going from the water unto fresh ice, and thus the temperature of these organisms would be kept well below the 50 degree threshold until they reach the point of sale. There would also be ice in a cooler on the farm vehicle, if the oysters need to be transported by the producer by road. Also, as mentioned earlier, the farm would have a systematic number and tracking policy in place, so that each order of oysters sold could potentially be tracked to a certain month or day of harvest, year of seed, etc.

Procedures for Maintaining Records:

As described in the operational plan above for the farm, each batch of oysters will be labeled, dated and identified from their initial date of propagation by seed, and these will be further organized by trawls over the farm site so as to separate different years and hatcheries. All seed

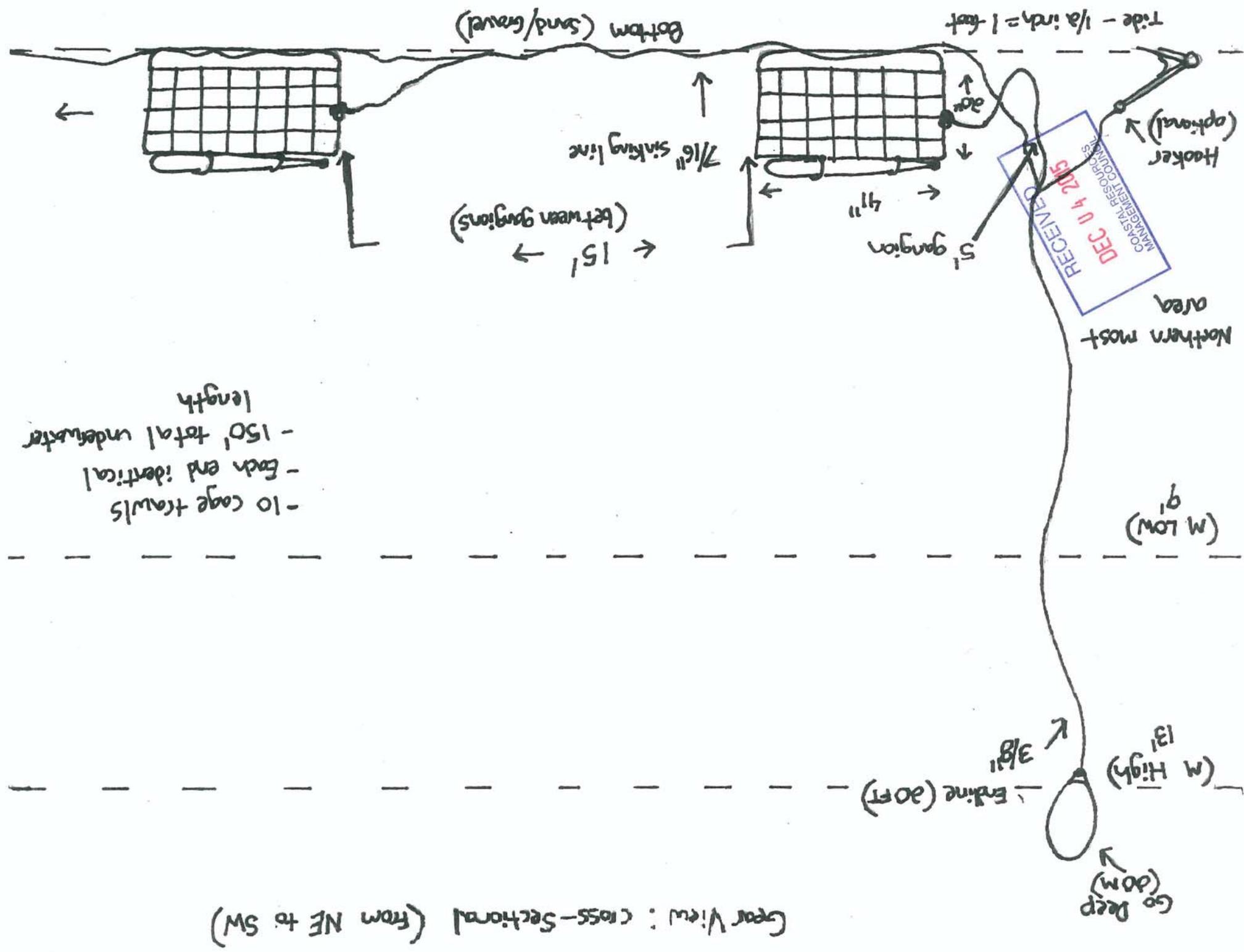


will come from Rhode Island approved hatcheries, and seed from universities such as Roger Williams will also be used, which is screened through strict protocols. No seed will come from prohibited waters, in Rhode Island or any state from which the seed is acquired. Once the product reaches market size, every order that is sold will be recorded, tagged and will be able to be tracked back to the year of seed and where the seed came from. Physical records will be kept by the operator on all seed sources and market ready oysters, and these will provide insight into the best types of seed for this location and market, and the growth and mortality rates for those seeds.

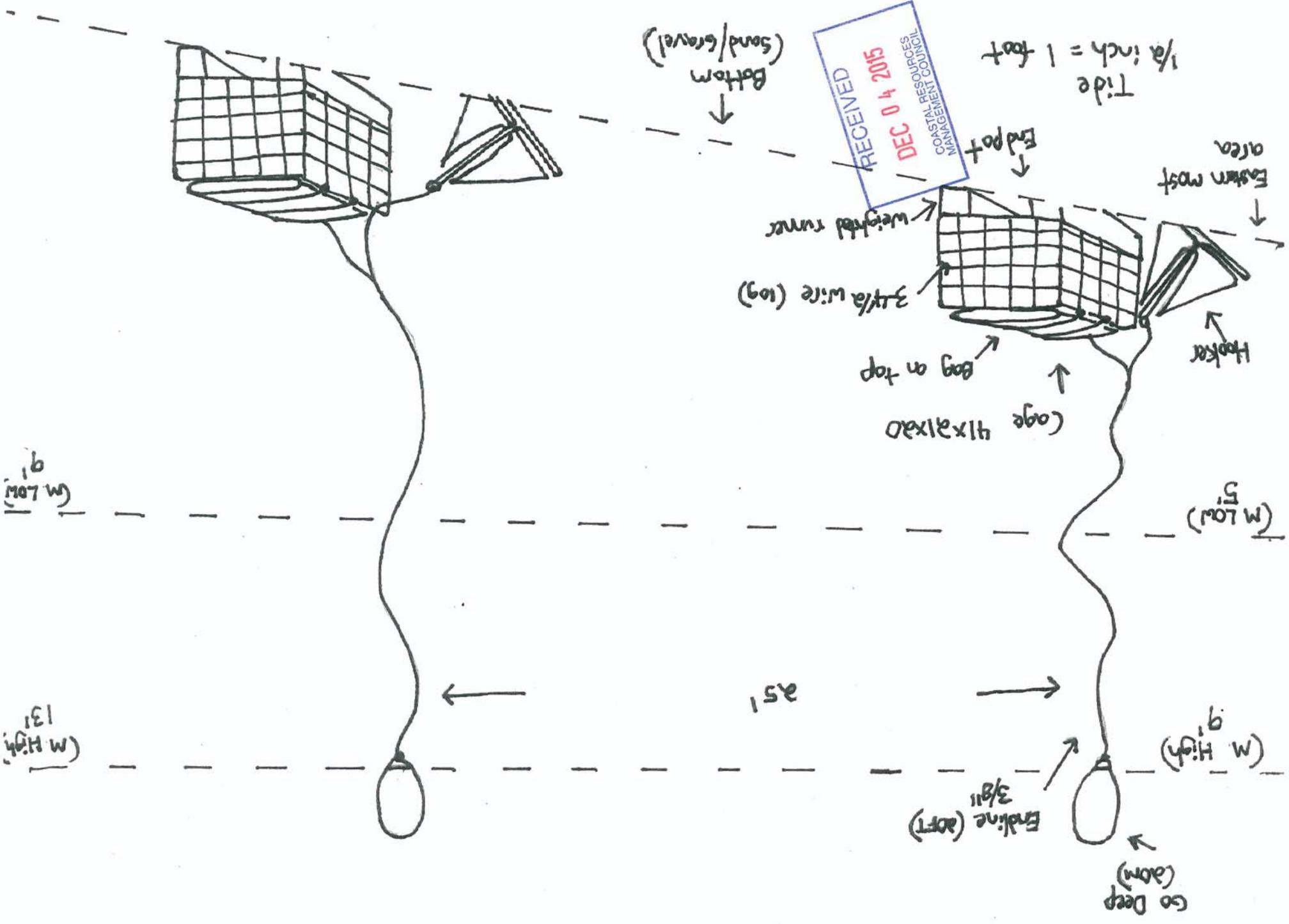
Carl Berg / November 30, 2015

Gear View: Cross-Sectional (from NE to SW)

- 10 cage trawls
- Each end identical
- 150' total underwater length



Gear View: (Cross-sectional) (From E to W)



Go Deep (20m)

(M High) 9'

(M Low) 5'

Eastern most area

Tide 1/2 inch = 1 foot

Endline (20FT) 3/8"

Cage 41x21x20

3/4 wire (log)

weighted runner

Endpot

Bottom (sand/gravel)

RECEIVED
DEC 04 2015
COASTAL RESOURCES
MANAGEMENT COUNCIL

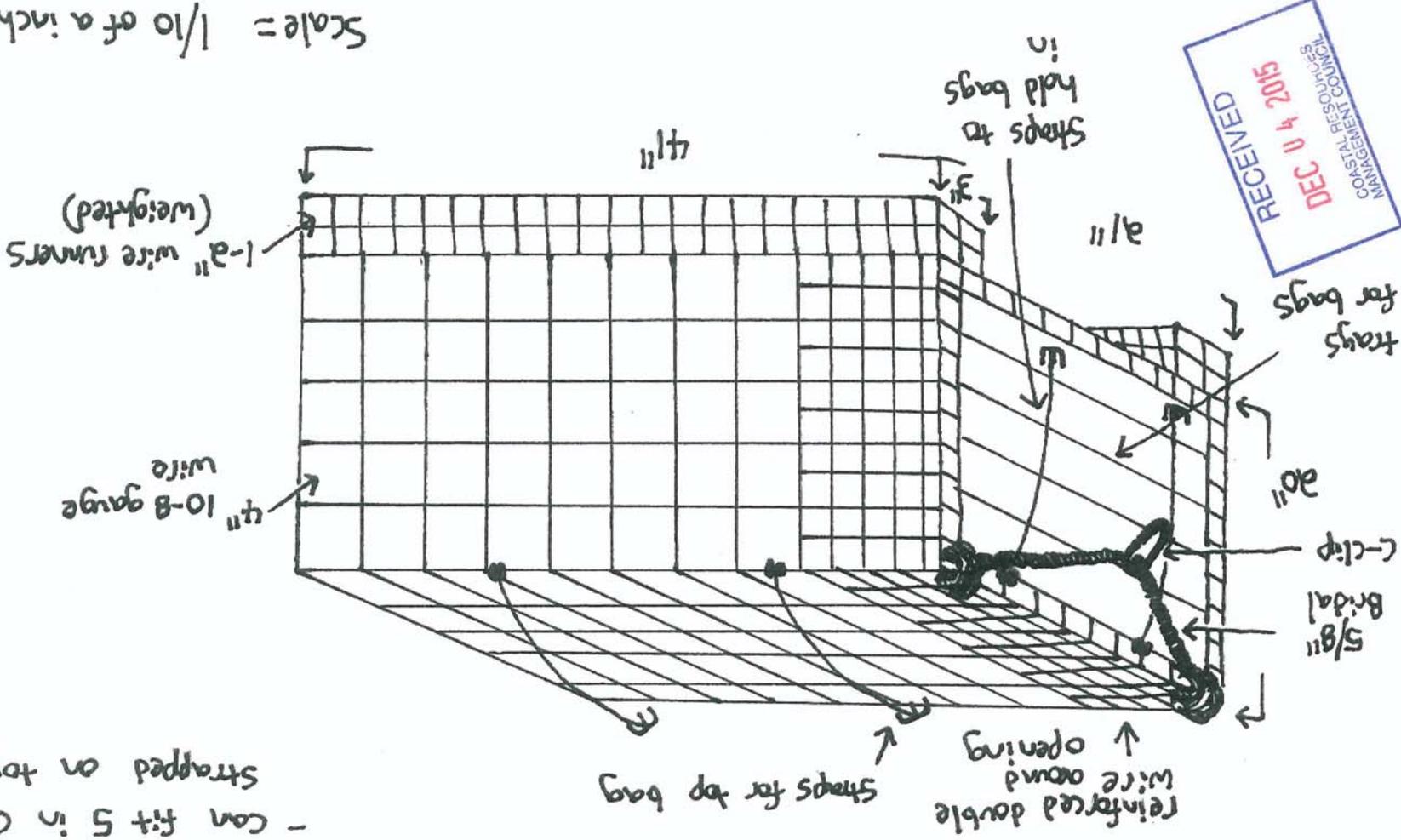
(M Low) 5'

(M High) 13'

25'

Gear View : Cage Design

- to be used with full size PET bags
- can fit 5 in cage, 1 strapped on top



KEY

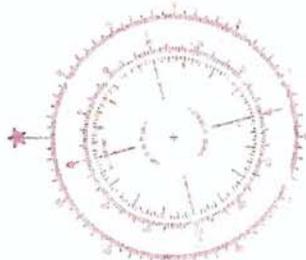
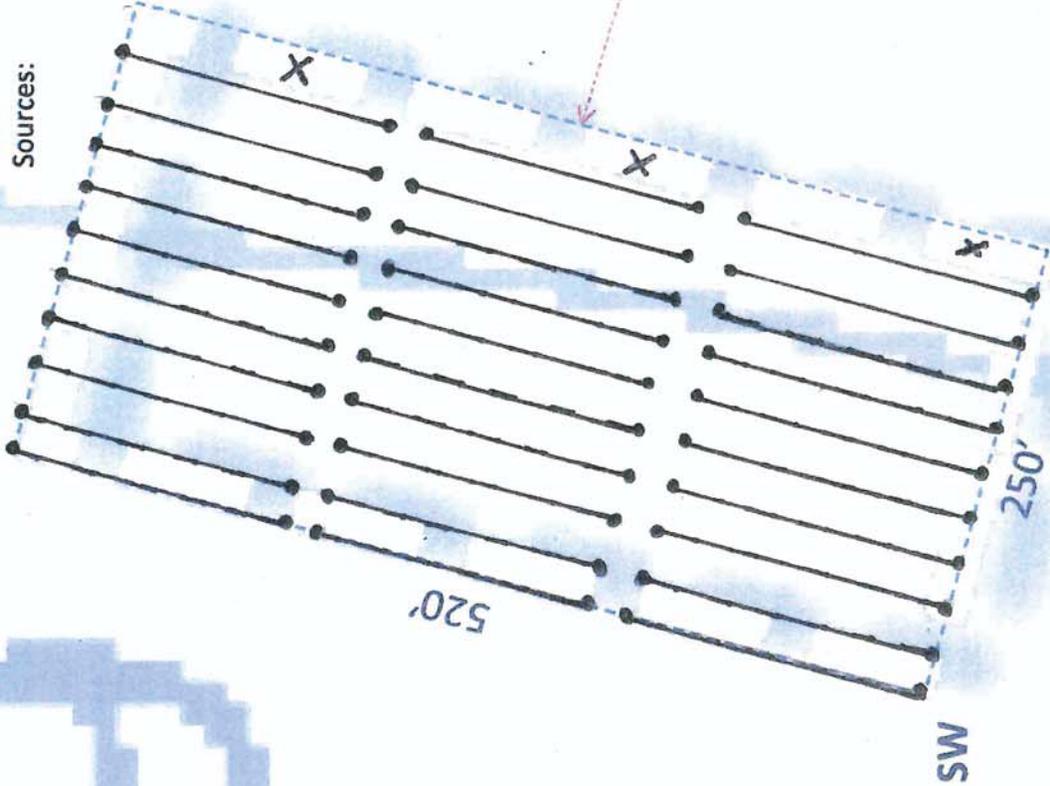
- - Buoy
 - - - trawl line
 - X - Area for market oyster take out
- 30 Trawls total
 - 10 Cage trawls
 - 300 cages total



Site Plan

SAKONNET EAST (Sapowet / Jack's Island - Tiverton)
 Aquaculture Lease Application to Rhode Island CRMC

Applicant: Carl Berg
Date: June 20, 2015
Sources: Google Earth
 NOAA 13221 - Narragansett Bay

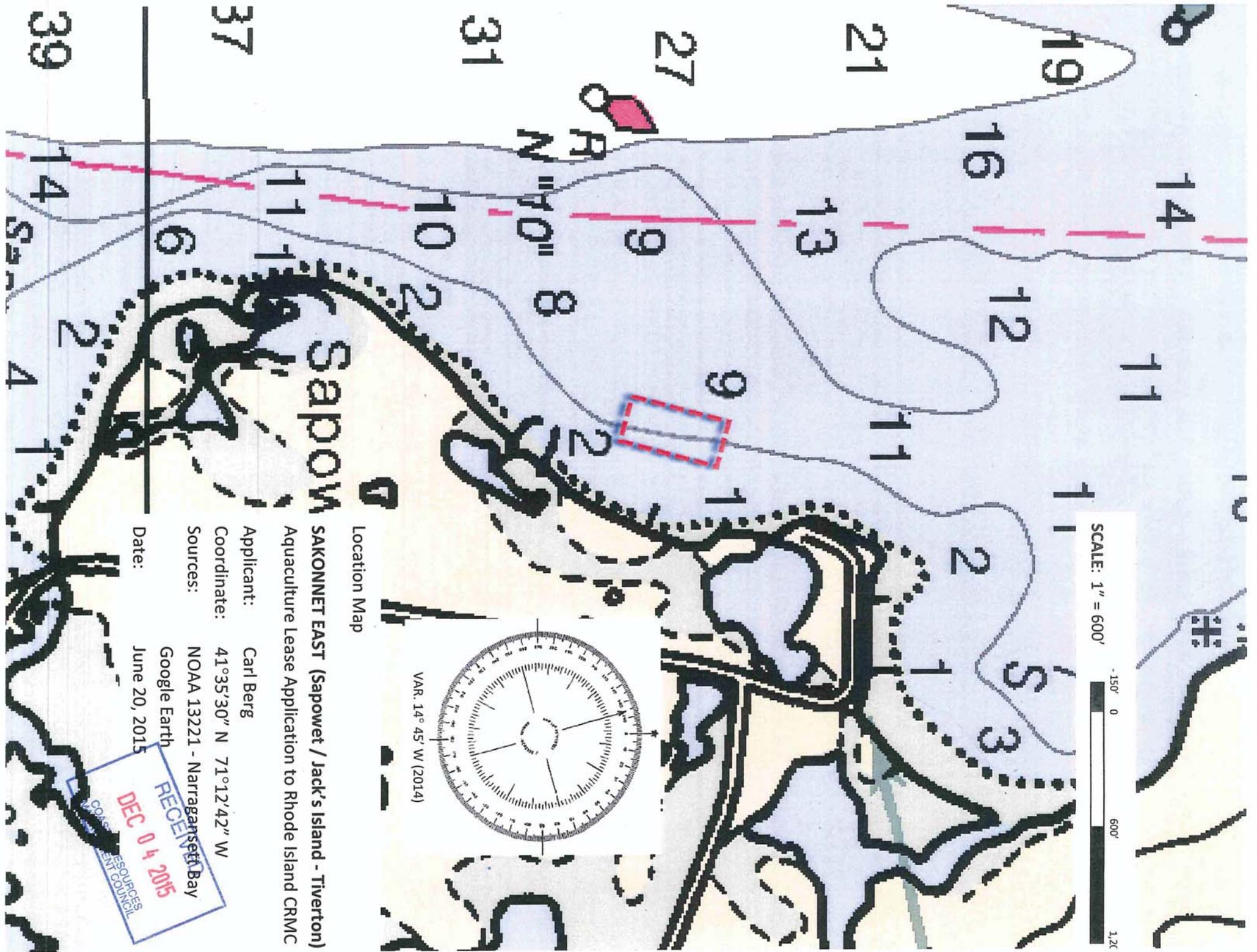


Coordinates:

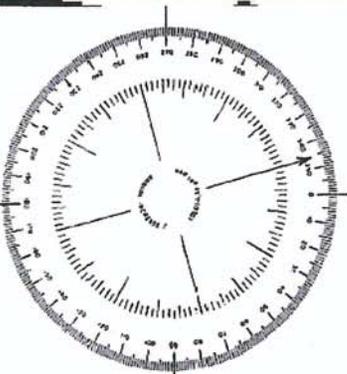
NW	41°35'31.80" N	71°12'42.39" W
NE	41°35'31.25" N	71°12'39.17" W
SE	41°35'26.25" N	71°12'40.70" W
SW	41°35'26.79" N	71°12'43.93" W

* as measured to end of bulkhead, Google Earth

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SCALE: 1" = 600'



VAR. 14° 45' W (2014)

Location Map

SAKONNET EAST (Sapowet / Jack's Island - Tiverton)
 Aquaculture Lease Application to Rhode Island CRMC

Applicant: Carl Berg

Coordinate: 41°35'30" N 71°12'42" W

Sources: NOAA 13221 - Narragansett Bay
 Google Earth

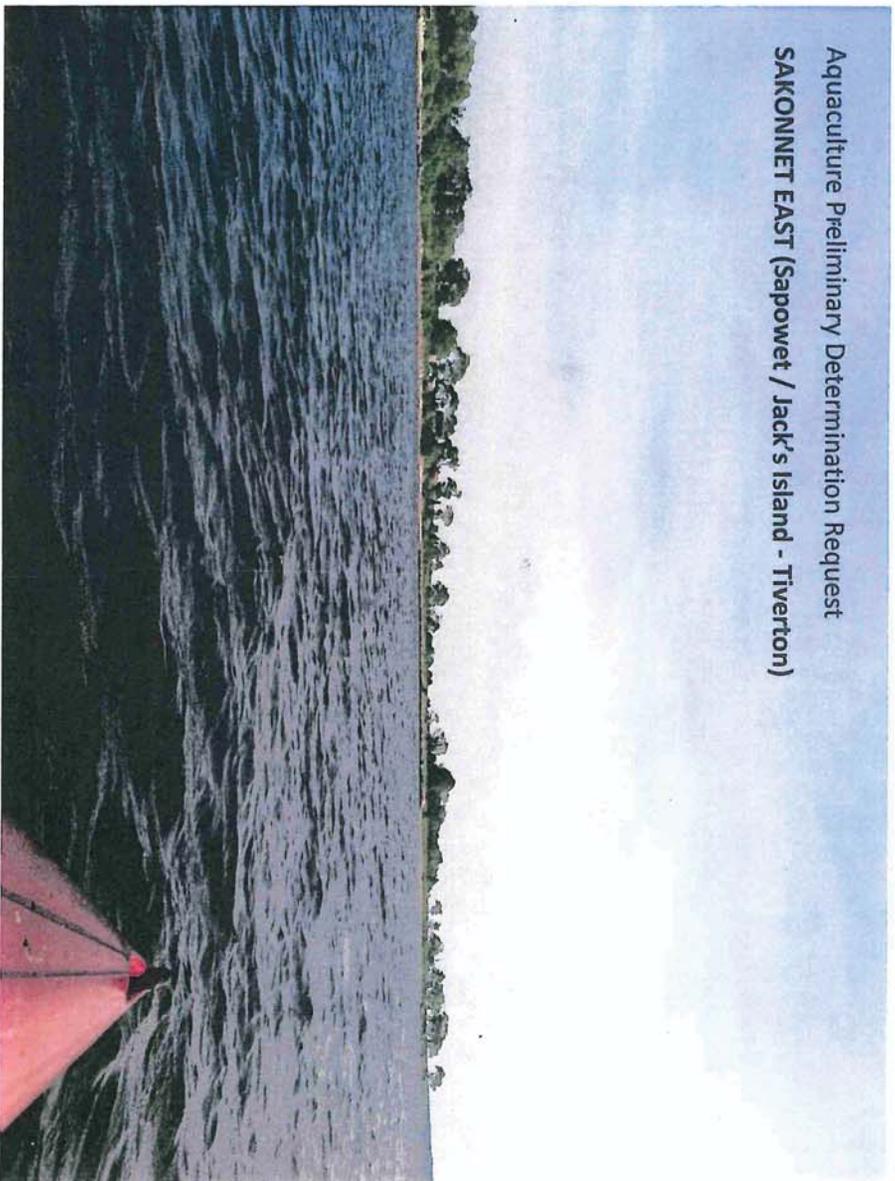
Date: June 20, 2015



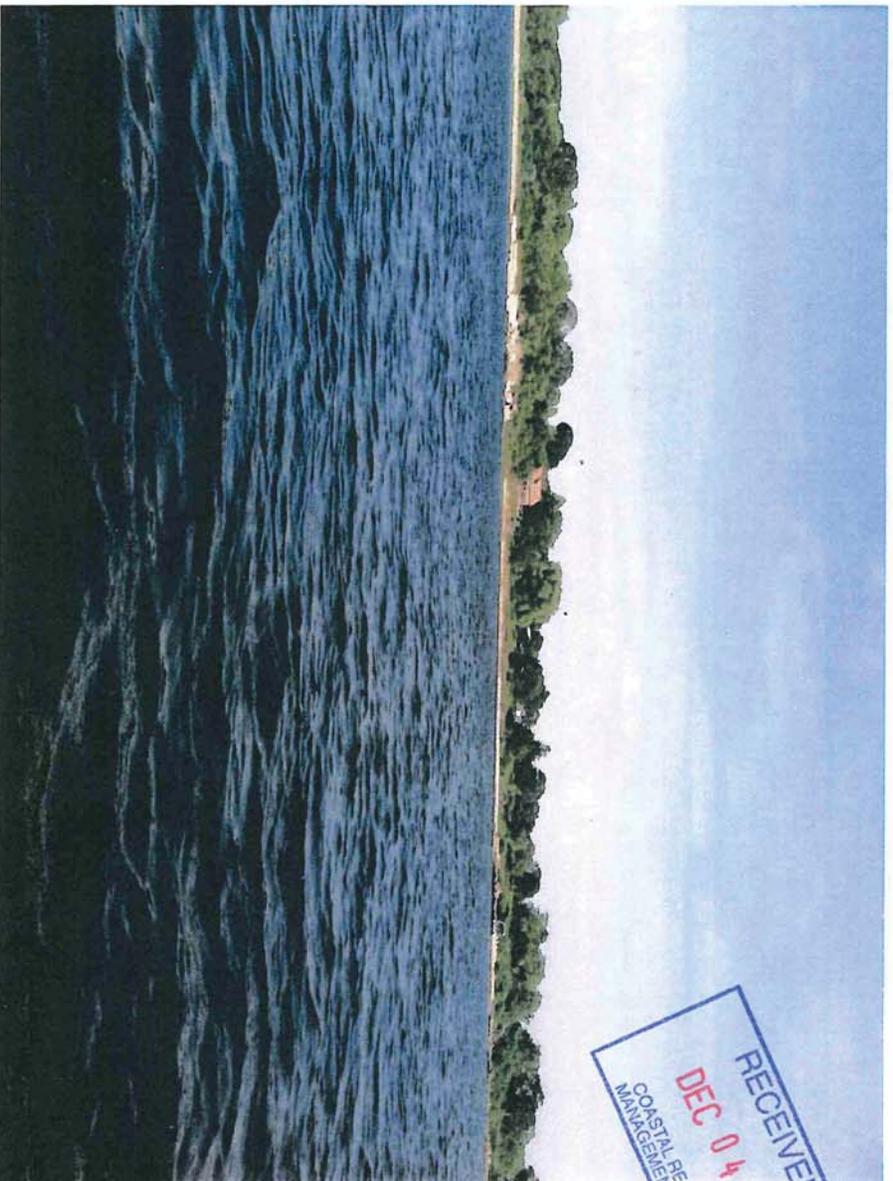


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Aquaculture Preliminary Determination Request
SAKONNET EAST (Sapowet / Jack's Island - Tiverton)



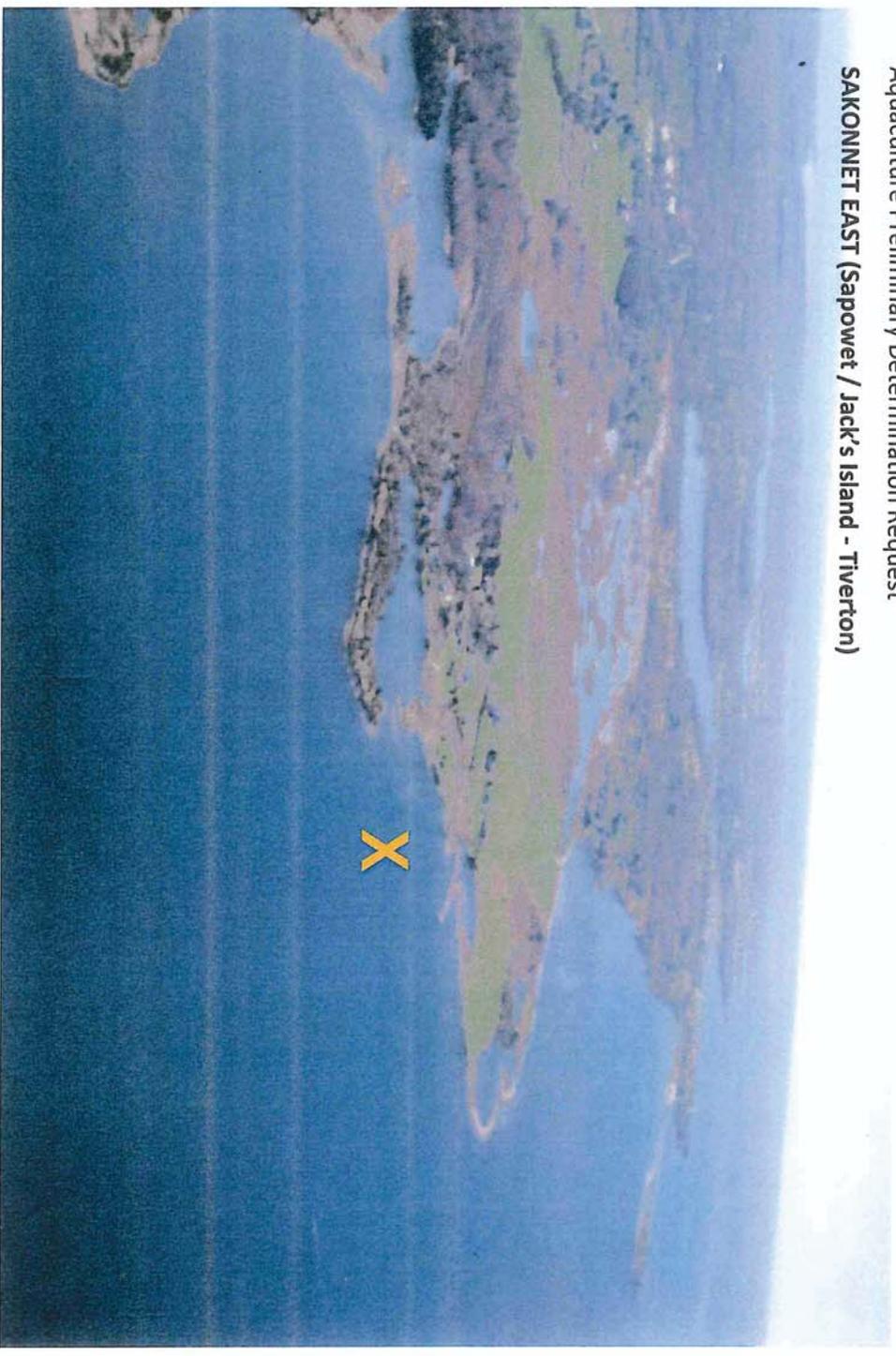
view southwest from proposed location - July 5, 2015



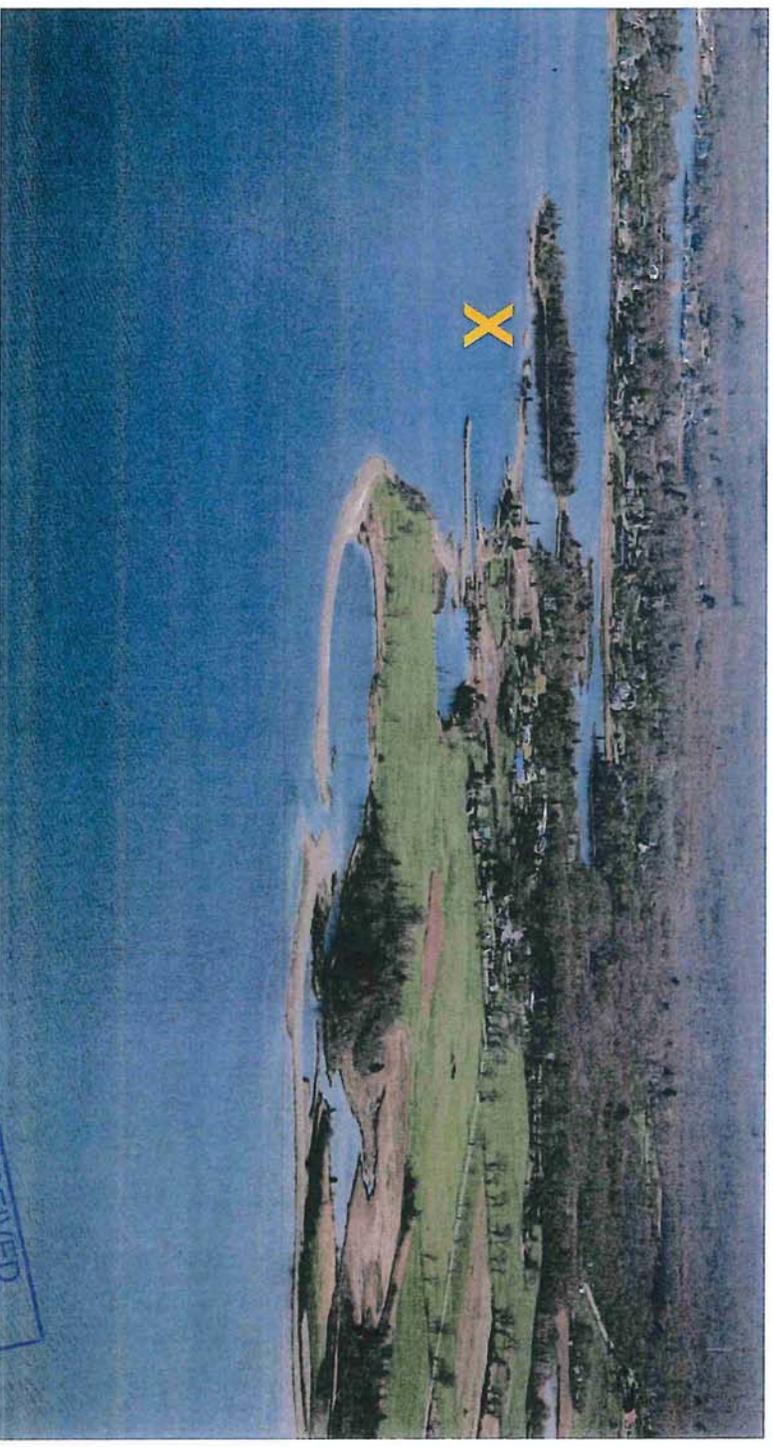
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view south southeast from proposed location - July 5, 2015

SAKONNET EAST (Sapowet / Jack's Island - Tiverton)



aerial view south of proposed location



aerial view northeast of proposed location

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