

**STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER
SOUTHCENTRAL REGION LAND OFFICE**

**PRELIMINARY BEST INTEREST FINDING
AQUATIC FARMSITE LEASE**

**APPLICANT: ORGANIZED VILLAGE OF KAKE
ADL #108090**

LOCATION: HAMILTON BAY

The Department of Natural Resources is accepting public comment on the following preliminary decision document for the approval of an aquatic farm site. **Written comments must be received on or before 5:00 p.m., Thursday, September 15, 2011.**

PROPOSED ACTION: The Organized Village of Kake is requesting the approval of 2 parcels for suspended oyster culture. The parcels are proposed to be located in the northern portion of Hamilton Bay, east of the southern tip of Hamilton Island, approximately 5 miles south and east of Kake, Alaska. Parcel #1 is for a suspended oyster grow-out site 200 ft. x 400 ft. totaling 1.8 acres. Within the parcel there will be up to 15, 16 ft. x 20 ft. rafts for hanging oyster growing gear, plus a 20 ft. x 20 ft. work raft. Parcel #2 will be a 100 ft. x 100 ft. intertidal nursery and hardening area totaling 0.2 acres.

The total combined acreage of the sites is 2.0 acres, more or less.

The proposed farm site locations are only accessible by boat or floatplane. A location map is attached to this decision.

AUTHORITY: AS 38.05.035; AS 38.05.070; AS 38.05.075; AS 38.05.083; AS 38.05.127;
AS 38.05.128; 11 AAC 63.020

This decision addresses and is based on those issues under the authority of the Department of Natural Resources (DNR) under Title 38. While other issues may be addressed that are not within the scope of DNR's responsibilities, this decision's purpose is to determine whether or not to issue a DNR lease and does not make any determinations whatsoever on the issuance of other agency authorizations that are necessary for aquatic farming activities. Information included in the original preliminary decision document may not be included in this document if conditions have not been altered. Original preliminary decisions for this lease can be obtained by contacting the aquatic farm program manager for the DNR in Anchorage.

ADMINISTRATIVE RECORD: The administrative record for this renewal application is ADL 108090.

LOCATION:

USGS MAP COVERAGE: Petersburg (D-6) Quadrangle

NAUTICAL CHART: 17368

LEGAL DESCRIPTION:

Those tide and submerged lands located in southeast Alaska lying within:

Township 57 South, Range 73 East, Copper River Meridian,

E ½ of Section 24 – Parcel #1, Oyster Grow-out area measuring 200 ft. x 400 ft. containing up to 15, 16 ft. x 20 ft. rafts plus one, 20 ft. x 20 ft. work raft;

Township 57 South, Range 74 East, Copper River Meridian,

SW ¼ of Section 19 – Parcel #2, Intertidal oyster nursery and hardening area measuring 100 ft. x 100 ft., according to the site drawings attached to this document containing 2.0 acres.

Parcel #1 – Oyster Grow-out Area - 200 feet x 400 feet = 1.8 acres

NE Corner: Latitude 56 54.786' N Longitude 133 50.598' W

SE Corner: Latitude 56 54.732' N Longitude 133 50.531' W

SW Corner: Latitude 56 54.713' N Longitude 133 50.581' W

SE Corner: Latitude 56 54.768' N Longitude 133 50.648' W

Parcel #2 – Intertidal Oyster Nursery and Hardening Area –
100 ft. x 100 ft. = 0.2 acres

NE Corner: Latitude 56 54.448' N Longitude 133 49.921' W

SE Corner: Latitude 56 54.431' N Longitude 133 49.922' W

SW Corner: Latitude 56 54.432' N Longitude 133 49.952' W

SE Corner: Latitude 56 54.448' N Longitude 133 49.951' W

Parcels are located in the Petersburg Recording District.

GEOGRAPHIC: The proposed farm site is located on state-owned tide and submerged lands in Hamilton Bay approximately 5 miles southeast of Kake, Alaska.

POLITICAL INFORMATION:

BOROUGH/MUNICIPALITY: This existing aquatic farm application is outside of an organized borough.

REGIONAL CORPORATION: Sealaska Corporation

FISH AND GAME ADVISORY COMMITTEES: Region 3 – Southeast, (1A) Kake Fish and Game Advisory Committee.

PLANNING AND CLASSIFICATION:

LAND MANAGEMENT PLAN: Central/Southern Southeast Area Plan, Region 2. Kuiu/West Kupreanof – North.

Management of State Tidelands: Areas of waterfront development are recommended along the Kake waterfront and at specific timber transfer sites. Tideland areas with particular habitat or harvest values are designated either Habitat (ha) or Harvest (Hv). These areas are to be managed so that their principle resources are protected. In this region, tideland tracts include areas of estuarine wetlands, concentrations of marine mammals, shorebirds and waterfowl, and eulachon and Pacific herring

spawning sites. The remainder of the tideland area is designated General use (Gu). In these tidelands, it is intended that the standard state/federal permitting process will determine, on a site by site basis, whether tideland development is appropriate at a given tideland site. The residents of Kake make extensive use of the tidelands throughout the planning area gathering black seaweed, gumboats (black mollusk), herring, clams, sea cucumber, sea urchins and seals.

UT- 68, Hamilton Bay: The proposed aquatic farm site is within Unit UT-68, which has a tideland designation of Habitat (Ha) and Harvest (Hv). The management intent is to fish and wildlife habitat and commercial/community harvest values.

Resources – This unit is a waterfowl/shorebird spring and fall concentration area. Juvenile pink, chum and coho salmon rear and adult salmon from Hamilton River school in the area. The expanded unit is a Dungeness crab commercial and community harvest area and community harvest area for salmon.

SURFACE MINERAL ORDERS: By statute, all state lands are open to mineral location unless specifically closed.

CULTURAL RESOURCES: The Office of History and Archaeology reviews state authorizations to determine if there may be adverse effects on cultural resources and makes recommendations to mitigate those effects.

SURVEY AND APPRAISAL:

SURVEY: A survey is not required by law before issuing a 10-year negotiated lease. However, the department has the right to require one in the future, at the applicant's expense, if boundary conflicts or disputes over acreage arise.

APPRAISAL: The Division of Mining, Land and Water has approved an administrative lease fee schedule for aquatic farm sites that meet the conditions listed within the schedule. The most current lease fee schedule will be used to establish the fair market rental each lessee must pay. The applicant has the option to have a site-specific appraisal done, at the applicant's expense, before the lease is issued, if he or she does not wish to use the fee schedule. If an applicant opts for a site-specific appraisal, the division-approved appraisal will establish the rental for the lease and the fee schedule will no longer be an option.

PUBLIC/AGENCY NOTICE AND COMMENTS: Public notice of the proposal has been sent to various newspapers, post offices, agencies, boroughs/cities, native corporations, Fish and Game Advisory committees, etc. Public and agency comments are welcome during the comment period and will be considered in the final best interest finding. Only those who provide written comments during the comment period or who testify at a public hearing will be sent a copy of the final best interest finding and will be eligible to appeal. The final best interest finding will include an explanation of the appeal process. **The public comment period begins on August 17, 2011 and will end at 5:00 p.m. on Thursday, September 15, 2011.**

The preliminary best interest finding is subject to public comments received during the comment period. The final best interest finding will consider and address any comments related to the subject proposal and will be available on or about October 10, 2011. If significant changes occur to this decision as a result of public comments received, additional notice will be sent to those who provided comments, either in writing or by testifying at a public hearing.

Evaluation by the Alaska Department of Fish and Game

I. Physical and Biological Characteristics: Based on the information provided by the applicant on the site physical and biological characteristics, the proposed sites appear capable of supporting the farm activities proposed. Details listed for the proposed areas are summarized below.

Protection from Oceanographic and Atmospheric Extremes: The physical exposure notes from Alaska ShoreZone imagery mapped data¹ shows the area as “protected” defined as a maximum effective fetch of < or = to 10 km. The proposed suspended and intertidal farm culture gear have a sound configuration and anchoring system and are comparable to existing farm gear used in Southeastern Alaska that can withstand ocean and atmospheric conditions.

Sufficient Environmental Conditions: The proposed aquatic farm operation project is in an area that appears to have sufficient water exchange, water temperatures, currents, salinity, and primary production to support an aquatic farm and maintain healthy environment for other marine organisms.

Sufficient Water Depth: No depth information was provided by the applicant on depth of gear and depth of water at site at low tide on Page 5 of the application, Part D, Site suitability. There is some concern that Parcel 1 is not deep enough for the intended suspended gear associated with the grow-out raft and tray system based on the NOAA Chart 17368, which shows the Parcel 1 near the four (4) fathom line (24 ft). The actual depth may be deeper on the site. The permit holder needs to provide depth information for where the gear will be located in this parcel. Depending on the tidal range, the parcel may need to be relocated to deeper water to be sufficient to prevent the culture gear from grounding and impacting the benthos under the floating structures. Shallower depths may increase sea star infestation and predation on grow-out raft and tray culture gear.

As a note to the applicant, under circumstances where water temperatures may reach 63 degrees, culture gear used in Parcel 16 would not be able to be lowered into deeper recommended depths of 60 ft where cooler temperatures are found. This is an accepted ADEC corrective action practice to eliminate or decrease the possible occurrence of pathogenic stage of *Vibrio parahaemolyticus* is known to cause gastroenteritis in humans. As of yet, there have been no reports or any outbreaks in Southeast Alaska.

Eelgrass and Kelp Beds Maintained: Eelgrass and kelp habitats are among some of the most productive and biologically diverse. Among other things, eelgrass and kelp beds helps prevent erosion and maintain stability of near-shore environments and provide food, breeding areas, and protective nurseries for fish, shellfish, crustaceans, and many other animals. Operations must be done in a manner to minimize turbidity in the area and to prevent any trampling or shading that may impact the health and abundance of eelgrass or kelp beds. Alaska ShoreZone imagery data² was not available for this area. Based on the information provided by the applicant, there does not appear to be any eelgrass in the proposed project area. The exact locations and extent of eelgrass beds is not well documented in the area. If health and the abundance of eelgrass beds in the area are not properly maintained, project modifications to the aquatic farm operations permit will be made to correct the condition.

Anadromous Fish Streams: Anadromous streams catalogued for various salmon species are located near the proposed project parcels³. However, the proposed aquatic farm site parcels are not

¹ NOAA (National Oceanic and Atmospheric Administration), Fisheries, National Marine Fisheries Service. Alaska ShoreZone: Coastal Mapping and Imagery. <http://akr-mapping.fakr.noaa.gov/szflex/> (Accessed July 2011).

² NOAA (National Oceanic and Atmospheric Administration), Fisheries, National Marine Fisheries Service. Alaska ShoreZone: Coastal Mapping and Imagery. <http://akr-mapping.fakr.noaa.gov/szflex/> (Accessed July 2011).

³Johnson, J. and K. Klein. 2009. Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southcentral Region, Effective June 1, 2009. Alaska Department of Fish and Game, Special Publication No. 09-03, Anchorage.

located within 300 feet of the mouth of an anadromous fish stream. The closest anadromous stream is 3,000 ft from both site parcels being proposed. It is unlikely that the current design of the proposed project structures and gear will significantly affect fish rearing habitats for salmonids and other marine fishes and will allow adequate fish passage for salmonid adults that may be in the milling or migrating through the area. Floating structures and farm gear in the bay could impede salmon migration enough to draw sportfish angler use to the area during August and September for coho salmon and increase angler efficiency and thereby causing concern for nearby salmon stream coho stocks. This could be remedied later by a local seasonal angling closure if it was an issue.

II. Existing Uses not Significantly Altered: The proposed aquatic farm site will not significantly alter an established use defined in regulations as a commercial fishery, sport fishery, personal use fishery, or subsistence fishery.

Commercial Fisheries: The proposed aquatic farm is located in ADF&G Commercial Fisheries Division statistical area sub-district 109-42. The proposed aquatic farm site project is not expected to cause any significant alterations to the existing commercial fishery uses in the area. Details on each commercial fishery is listed below.

Geoducks: No commercial geoduck dive fishery takes place at the site.

Sea cucumber: Commercial sea cucumber dive fishery landings took place in 2010 for the area.

Red Sea Urchins: No commercial red sea urchin dive fishery takes place at the site.

Salmon: Commercial salmon fishery landings using power and hand trolling (Chinnok) occurred in 2010 for the area. No salmon set netting, purse seining, or gillnet salmon fishery occurs in the area.

Herring: No commercial herring fishery occurs in this area.

Golden King/Tanner Crab: Harvest data for golden king crab and Tanner crab reported landings occurred 2010 for the area.

Dungeness crab: Harvest data from statistical area, 109-42, shows consistent commercial Dungeness harvest. Dungeness harvest (lbs), permits fished, and landings made from statistical area 109-42 for the past ten seasons are shown in Table 5 below:

SEASON	HARVEST	PERMITS FISHED	LANDINGS
2001/02	182,080	21	101
2002/03	492,635	29	183
2003/04	183,510	24	115
2004/05	206,455	14	77
2005/06	156,761	15	57
2006/07	327,648	15	87
2007/08	509,435	21	135
2008/09	319,198	21	101
2009/10	182,465	14	78
2010/11	48,171	10	40
TOTALS	2,608,358	61	977

Aerial surveys of the Dungeness grounds in central and northern Southeast are conducted every June after the commercial fishery opens. An aerial survey of the area conducted in June of 2011 noted the presence of 20 pots directly in front of Parcel 1, and 10 pots were observed south of Parcel 2. A total of approximately 280 pots were observed in all of Hamilton Bay in 2011.

It is likely that this proposed farm site will have an appreciable impact on commercial, personal use, and subsistence Dungeness fisheries, and on Dungeness habitat, in the immediate project area. The proposed farm site is located in Hamilton Bay. The bottom type is listed as cobble in the application. Sandy, muddy substrates at the head of bays and stream mouths are good indicators of Dungeness habitat, but crabs also utilize other bottom types such as silt, pebble, cobble, and shell (O'Clair 1998). The project footprint is 2 acres and the growing area is intertidal and subtidal. Juvenile Dungeness crabs can be very abundant in intertidal areas (O'Clair 1998). Aerial surveys of Southeast have shown use of the nearshore intertidal area by commercial Dungeness interests, often with pots going dry at low water on minus tides. Also, installation of the intertidal bag system and work raft could disturb or damage crabs buried in the substrate, and could interfere with commercial, personal use, and subsistence Dungeness gear.

ADF&G is concerned that Kake's proposed Hamilton Bay farm site would displace commercial Dungeness permit holders from a portion of Hamilton Bay, and would thus further concentrate commercial Dungeness effort in Southeast Alaska. A few Dungeness permit holders forced to relocate due to an oyster farm in this bay might appear at face value to have little effect on the greater Dungeness fishery in Southeast, but one has to consider the other factors that have already served to concentrate effort in the Dungeness fishery. Log storage sites used in the past that no longer support fishable populations of Dungeness crabs, nearshore development projects, the National Park Service's decision to exclude commercial Dungeness permit holders from Glacier Bay, Dungeness predation by sea otters in Southeast Alaska, and Alaska Board of Fisheries decisions that have excluded commercial Dungeness interests in favor of personal use and sport interests have all served to concentrate the effort of commercial Dungeness permit holders by reducing the total amount of Dungeness habitat available for commercial harvest. Since sea otters have moved into Keku Strait in large numbers over the past decade, Hamilton Bay's importance as a commercial Dungeness crab fishing area has only increased. It has been reported that Hamilton is one of the few bays in the Kake area yet to be influenced by sea otter predation, and maintains the lion's share of commercial effort in the Kake area. Though the project area is relatively small, if the proposed oyster farm is approved there will likely be impacts to the Dungeness fishery in Hamilton Bay and in the larger Kake area.

Sport Recreational Fishery: The area is not a significant site for Sport Anglers. Since no permit system is in place for the personal use fishery, the amount of effort and harvest in the area would be difficult to gauge. The Statewide Harvest Survey does tally Dungeness personal use harvest in Southeast, but summarizes these data on a wider scale than district or statistical area. Due to their design, oyster farms have not seemed to have significant negative impact on anglers. The proposed aquatic farm site is not expected to cause any significant alterations to the existing sport recreational fishery use.

Subsistence Use: There is a customary and traditional use finding for Dungeness crab in section 9-B north of Point Ellis, so subsistence fishing for Dungeness crab is allowed in Hamilton Bay. The proposed aquatic farm site is not expected to cause any significant alterations to the existing

subsistence use.

Anchorage: This area is not known to have any critical vessel anchorages.

III. Compatible with Fish and Wildlife Resources: The proposed aquatic farm site is compatible with fish and wildlife resources in the area.

Predator and Pest Control Methods: Predator exclusion devices to be used at the proposed site are expected to be utilized in a manner that minimizes impacts on non-targeted fish and wildlife resources in the area.

Sensitive Wildlife: The proposed aquatic farm site is not expected to adversely impact seabird colonies, sea lion haulouts and rookeries, seal haulouts and pupping areas, and walrus haulouts.

Sea Bird Colonies: There are no sea bird colonies identified within 1 mile of the proposed sites.⁴

Eagle Nest: There are no eagle nests within 330 ft of the proposed project site parcels⁵

Sea Mammal Habitat: There are no sea mammal haul outs within 1 mile of the proposed sites⁶.

Endangered species: The proposed aquatic farm site will not adversely impact endangered and threatened species recovery and habitat efforts.

IV. Operation and Development Plan:

Increase Productivity: The operation and development plan for this project sufficiently describes how the operation will improve the productivity of the species intended for culture above what would occur in natural conditions using approved methods. Approved methods include predator exclusion, reduction of competing species, destiny manipulation, import of naturally-produced seed, import of hatchery produced seed, programming harvest to optimize growth and shellfish condition, and habitat improvements.

Maintenance: The operation and development plan for this project indicates that support facilities and culture gear and anchoring system will be installed with sufficient anchors and be maintained.

Rotation Schedule: The projected rotation schedule is consistent with the life history of the species intended for culture.

V. Species to be Cultured and Site Suitability

The department has not conducted a site suitability study for this site. Based on information provided by the applicant, the proposed site is capable of supporting the activities proposed. The proposed parcels in this aquatic farm operation project are located in an area that is thought to be suitable for

⁴ U.S. Fish and Wildlife Service, (current year). Beringian Seabird Colony Catalog -- computer database. U.S. Fish and Wildlife Service, Migratory Bird Management, Anchorage, Alaska 99503.

⁵ U.S. Fish and Wildlife Service, Migratory Bird Management. Alaska Bald Eagle Nest Atlas-computer database. 2008.

⁶ Analysis completed by NOAA Fisheries Service, Alaska Region, Protected Resources Division. Specifically, the data used to complete this analysis were provided by researchers from NOAA Fisheries Service, Alaska Fisheries Science Center, and National Marine Mammal Laboratory.

suspended oyster culture.

VI. Request for Additional Information

The applicant needs to provide the following information:

1. There is a discrepancy of the number of rafts. The operation and development plan, Part B and the site plan overhead diagram for the project. The plan shows five (5) rafts will be used and the diagram shows fifteen (15) rafts. Clarify and provide an update to either the operation and development plan or the diagram.
2. In addition, the operation and development plan has to be updated to reflect the year that the support facilities, equipment and gear to be used will be installed. There is also no mention of the flip-flop bags on the plan. The plan now indicates that the applicant plans to add one (1) to three (5) rafts and a work raft each year over the ten years. The plan also needs to reflect all support facilities, equipment, and gear types and numbers to be used at the site and indicate what year the applicant will install them.

ENVIRONMENTAL RISK ASSESSMENT: The applicant has submitted a signed environmental risk questionnaire. The questionnaire asks for information on potentially hazardous materials, such as plans for onsite storage of fuel or chemicals. The applicant has indicated that no on-site use, storage, transport, disposal, or otherwise, of any petroleum products will be used during the course of the proposed activities.

BONDING AND INSURANCE:

BONDING: Bonding, or another form of security, is required under AS 38.05.083 and 11 AAC 63.080. The bond must cover the costs of site cleanup and restoration, any associated cleanup costs after termination of the lease, including any unpaid rentals or other obligations accruing until site restoration is complete. The regulations require the minimum security amount of \$2,500 (or \$1,250 with an association bond) for an aquatic farm lease. Factors such as location and amount of improvements at the site are taken into consideration when the bond amount is determined. Please refer to the Recommendation section at the end of this decision for the bond amount that was determined appropriate for this proposal.

INSURANCE: At this time the DNR does not require this type of activity to have general liability insurance. General liability insurance may be required in the future depending on the aquatic farming operations and the procedures of the department at the time changes are made to the lease or a renewal lease is issued. The lessee is responsible for acquiring other types of insurance, such as Workman's Compensation Insurance that may be required under other local/state/federal laws.

POTENTIAL CONFLICTS/PENDING INTERESTS: There are no known pending interests at the location of the proposal.

TRADITIONAL USE FINDING: The proposed aquatic farm would not appear to cause disruption of traditional and/or existing uses of the area, such as commercial and sport fishing, subsistence activities, boat travel, and recreation. Through agency and public input, more traditional and existing use information may surface. If such information becomes available, any potential and/or existing conflicts will be addressed in the final best interest finding.

Upland Owner/Management Intent: The uplands adjacent to the proposed aquatic farm, parcel #1, are native owned. The uplands adjacent to Parcel #2 (oyster nursery and hardening area) are Tongass National Forest lands.

CONSIDERATIONS: The following criteria set out in 11 AAC 63.050(b), has been considered and represents what is known at this time:

Land Management: There are no known land management policies or designations, other than those in the Central/Southern Southeast Area Plan, Region 2. Kuiu/West Kupreanof, North that may impact this proposal. Measures taken to mitigate impacts on the resources identified in the above-mentioned plans are listed below.

Pending/Existing Uses:

1. There are no known pending use conflicts or potential negative impacts to nearby communities or residential land due to the placement of this farm at the proposed location.
2. Information available suggests the aquatic farm will not disrupt traditional and existing uses of the site for use as an anchorage, commercial and sport fishing, recreation, and tourism.
3. There are no historic and cultural resources known to exist in the area.
4. There are no commercial or industrial facilities known to exist in the area.

Public Access: Public access has been and will be protected in accordance with 11 AAC 63.050(b)(6) and 11 AAC 53 and will be addressed in any resultant lease agreement.

Public Trust Doctrine: Any resultant lease agreement is subject to the principles of the Public Trust Doctrine in order to protect the public's right to use navigable waters and the land beneath them for navigation, commerce, fishing, and other purposes.

Mitigation Measures: In addition to the mitigation measures identified above under Pending/Existing Uses, paragraph 2, any resultant lease renewal may include additional stipulations necessary to mitigate conflicts identified during the public/agency comment period

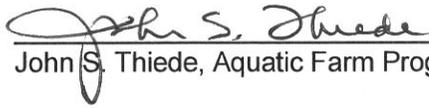
Social, Economic, and Environmental Concerns: There are no known significant social, economic, and environmental effects from the existing lease.

Surface Area: The proposal does not encumber more than a third of the surface area of a bay, bight, or cove in accordance with 11 AAC 63.050(c).

Aquatic farm sites have the opportunity to increase income and diversify the state's economy by utilizing state tide and submerged lands for this purpose. The advantage of issuing this lease on state owned tide and submerged lands is the continued employment opportunities as well as any secondary jobs created or increased from businesses involved in marketing, transport or sale of the farmed products.

After researching this proposal there seems to be no obvious disadvantages in issuing this activity on state owned tide and submerged lands. The public should be aware that access through the site, as well as access to any of the common property resources not being cultured at the site are public uses that remain intact. Therefore, and as mentioned above, any resultant lease would stipulate the requirement that signs be posted informing the public of their rights at the aquatic farm site.

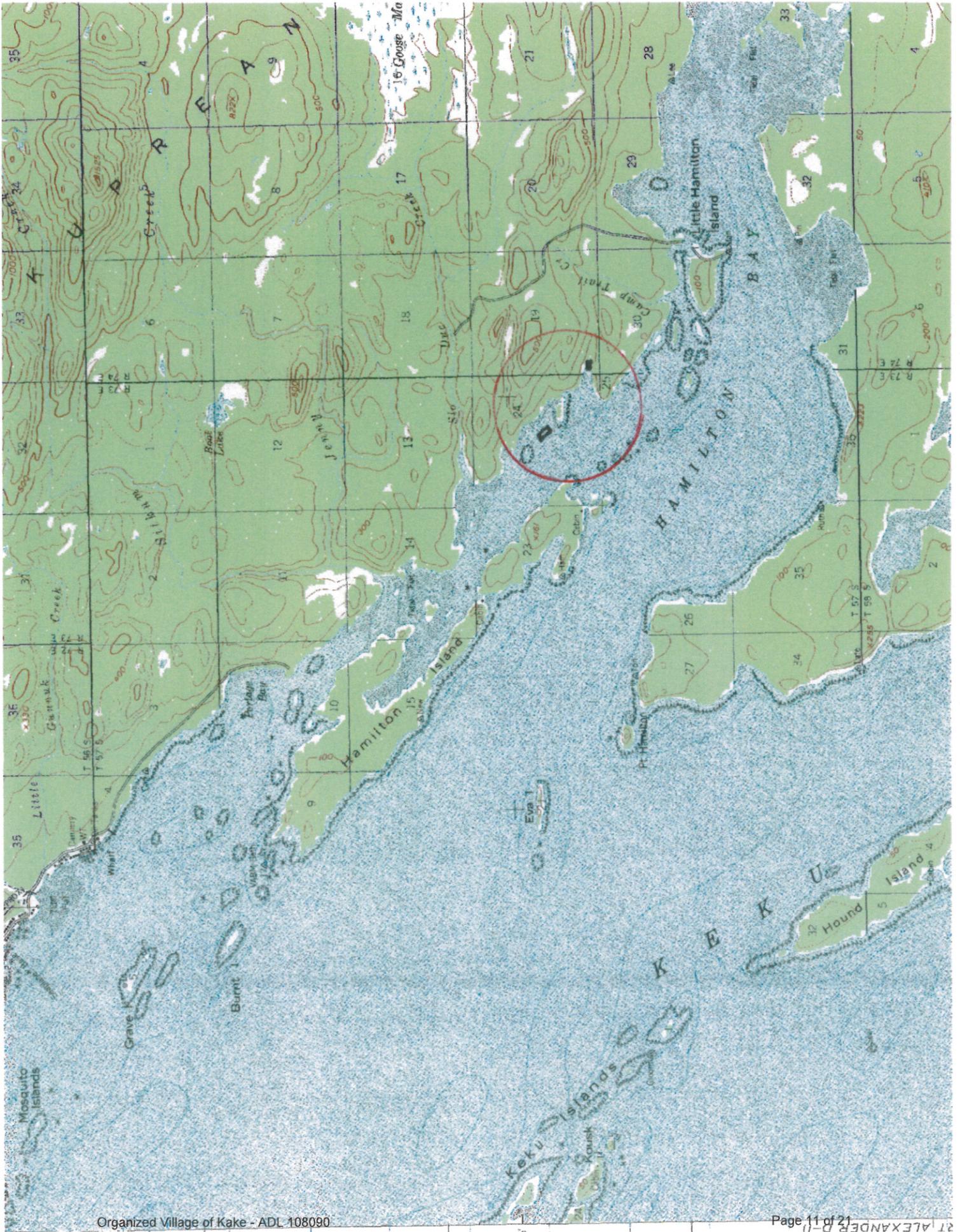
RECOMMENDATION: Considering the information known at this time and described within this decision, it appears to be in the state's best interest to issue a 10-year aquatic farm lease for approximately 2.0 acres more or less to the applicant for oyster culture. Any resultant lease will include stipulations that may be identified as a result of public comments. Approval of the application is recommended with a security bond set at \$2,500 or \$1250 with an association bond.

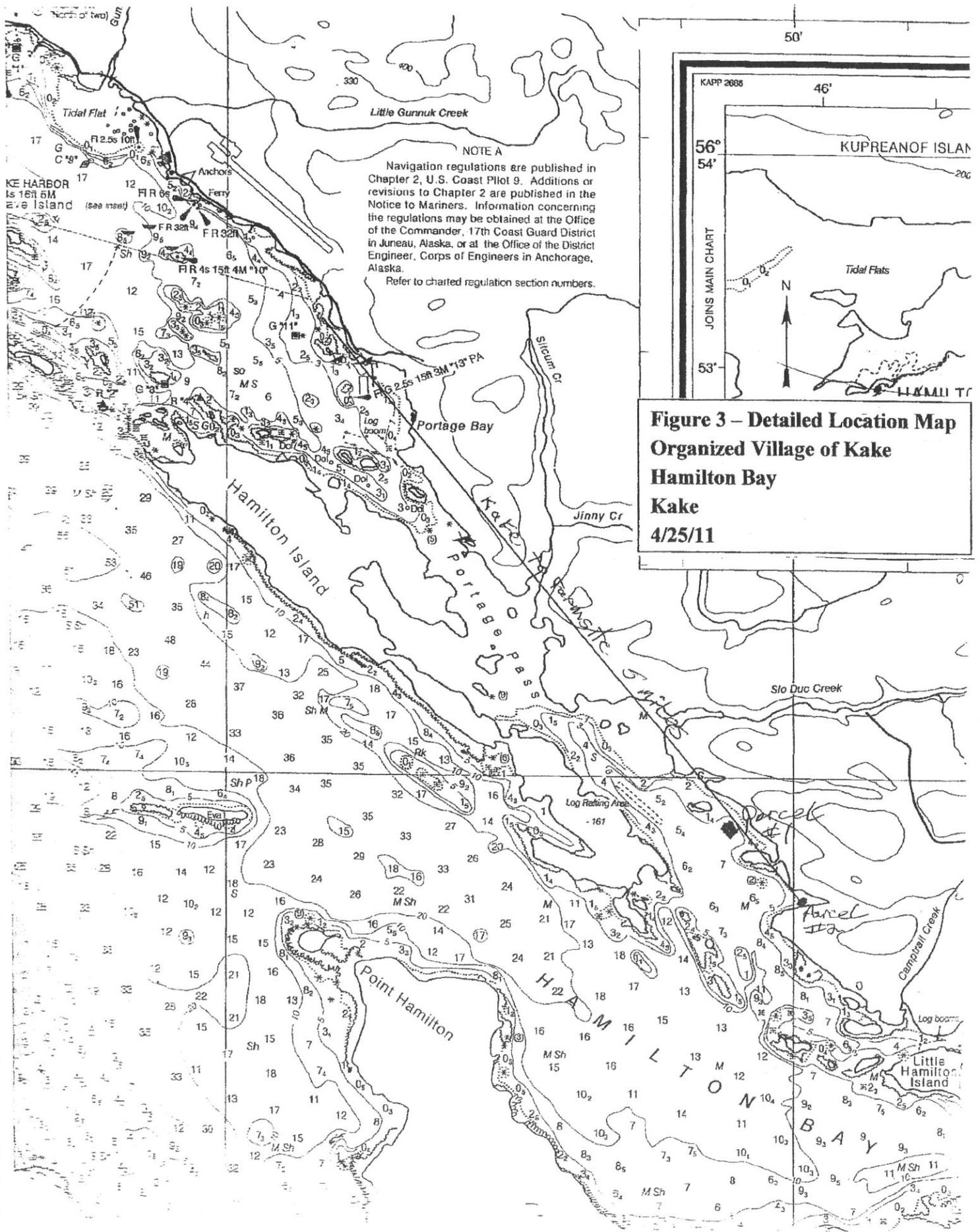


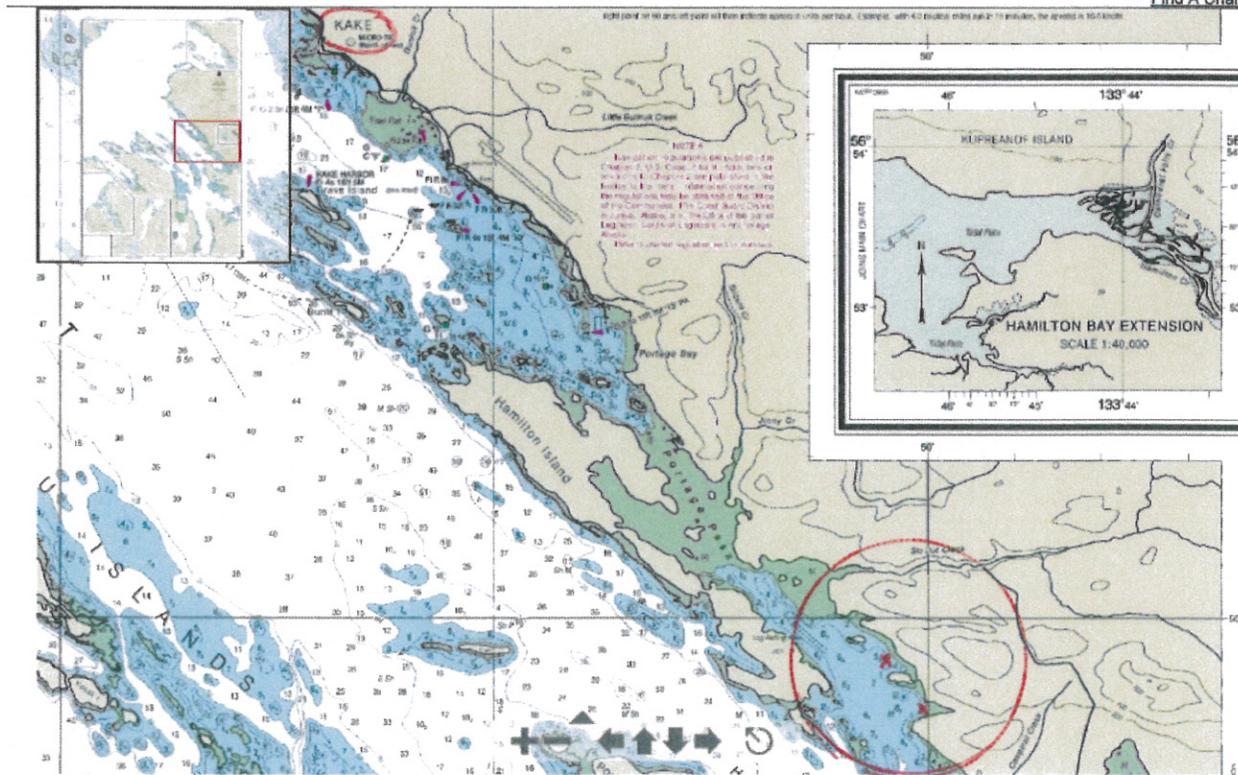
John S. Thiede, Aquatic Farm Program Manager



Date







- Click the +/- buttons and drag the slider tool (solid triangle) to zoom in and out.
- Click the arrow buttons to pan left/right and up/down.
- Drag the navigation box in the upper left hand corner to move around the chart image.

This chart display or derived product can be used as a planning or analysis tool and may not be used as a navigational aid.

NOTE: Use the official, full scale NOAA nautical chart for real navigation whenever possible. These are available from authorized NOAA nautical chart sales agents. Screen captures of the on-line viewable charts available here do NOT fulfill chart carriage requirements for regulated commercial vessels under Titles 33 and 46 of the Code of Federal Regulations.

[Adobe Flash Player](#) is required to view the chart image.
Powered by [Zoomify](#).

PARCEL COORDINATES (NAD83)

Parcel 1: Suspended Grow-out Area

200 ft x 400 ft = 1.8 acre

NE Corner 1 - 56° 54.786' N and 133° 50.598' W

SE Corner 2 - 56° 54.732' N and 133° 50.531' W

SW Corner 3 - 56° 54.713' N and 133° 50.581' W

NW Corner 4 - 56° 54.768' N and 133° 50.648' W

Parcel 2: Intertidal Nursery Area

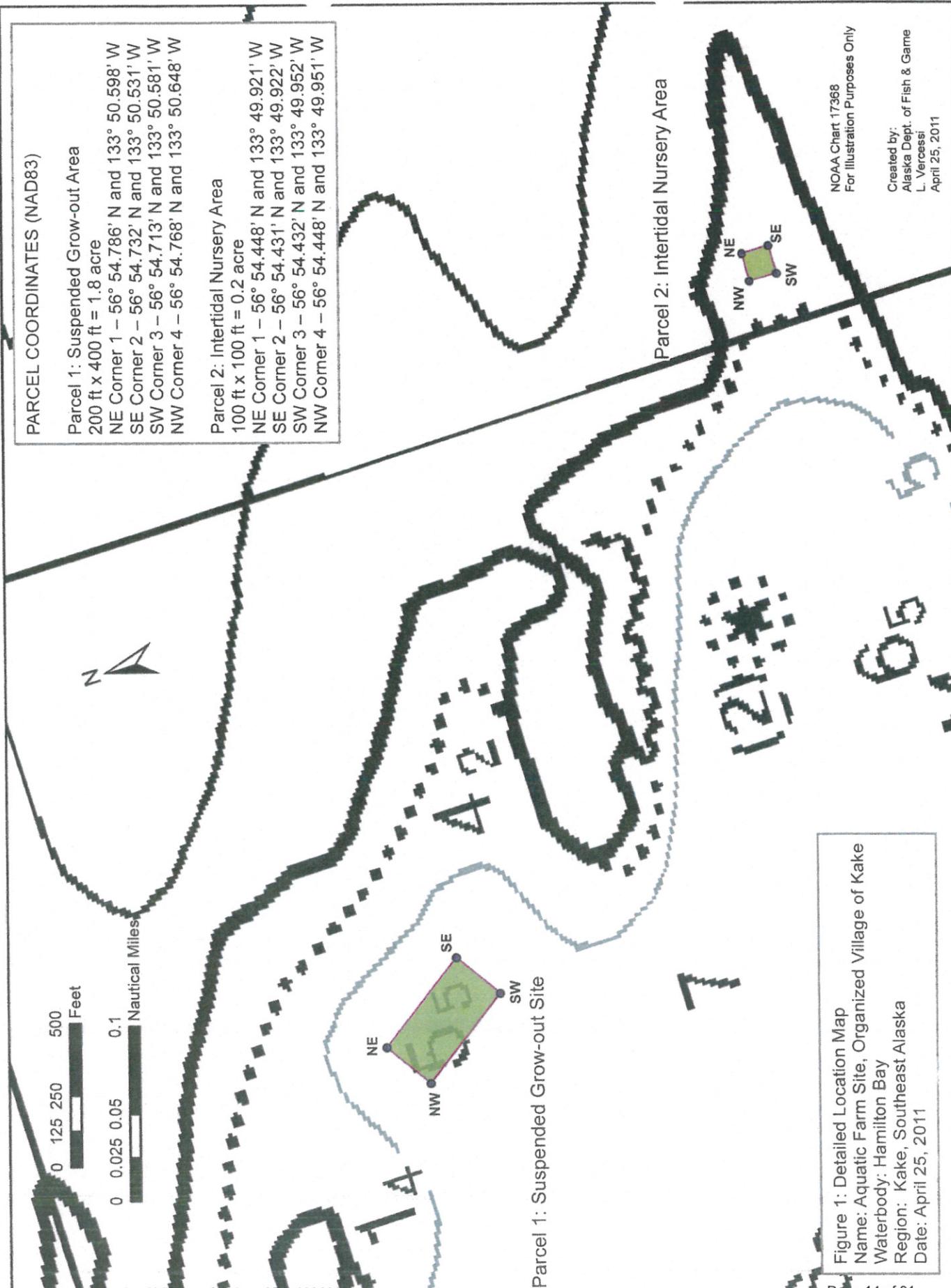
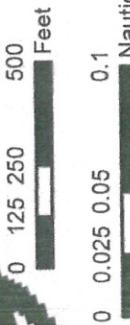
100 ft x 100 ft = 0.2 acre

NE Corner 1 - 56° 54.448' N and 133° 49.921' W

SE Corner 2 - 56° 54.431' N and 133° 49.922' W

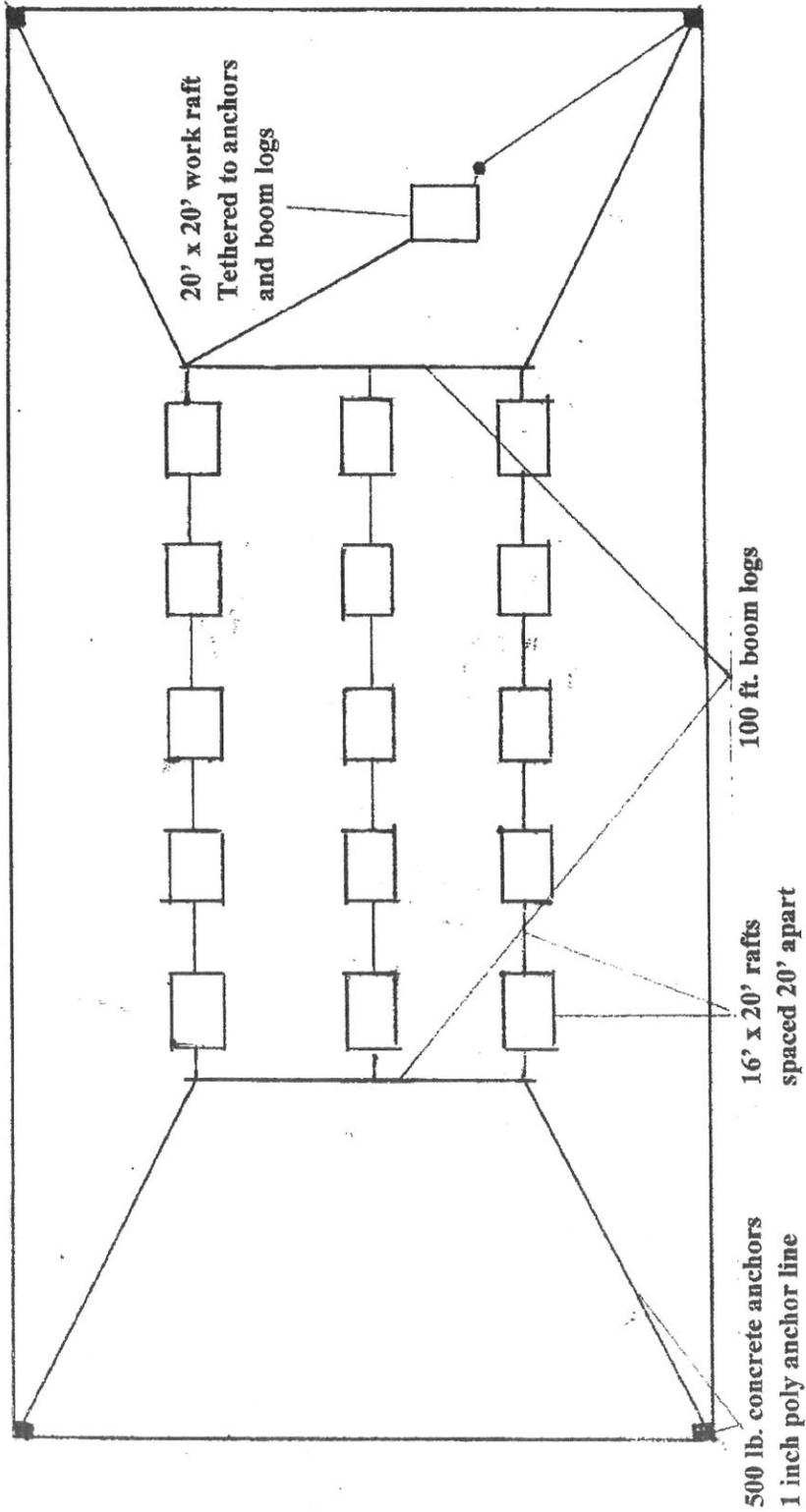
SW Corner 3 - 56° 54.432' N and 133° 49.952' W

NW Corner 4 - 56° 54.448' N and 133° 49.951' W



NOAA Chart 17368
For Illustration Purposes Only
Created by:
Alaska Dept. of Fish & Game
L. Vercesi
April 25, 2011

Figure 1: Detailed Location Map
Name: Aquatic Farm Site, Organized Village of Kake
Waterbody: Hamilton Bay
Region: Kake, Southeast Alaska
Date: April 25, 2011



**Figure 4 – Site Plan Map
Organized Village of Kake
Hamilton Bay
Kake
4/25/11**

Bottom substrate composed
of cobble and mud

No eel grass or kelp beds in immediate area

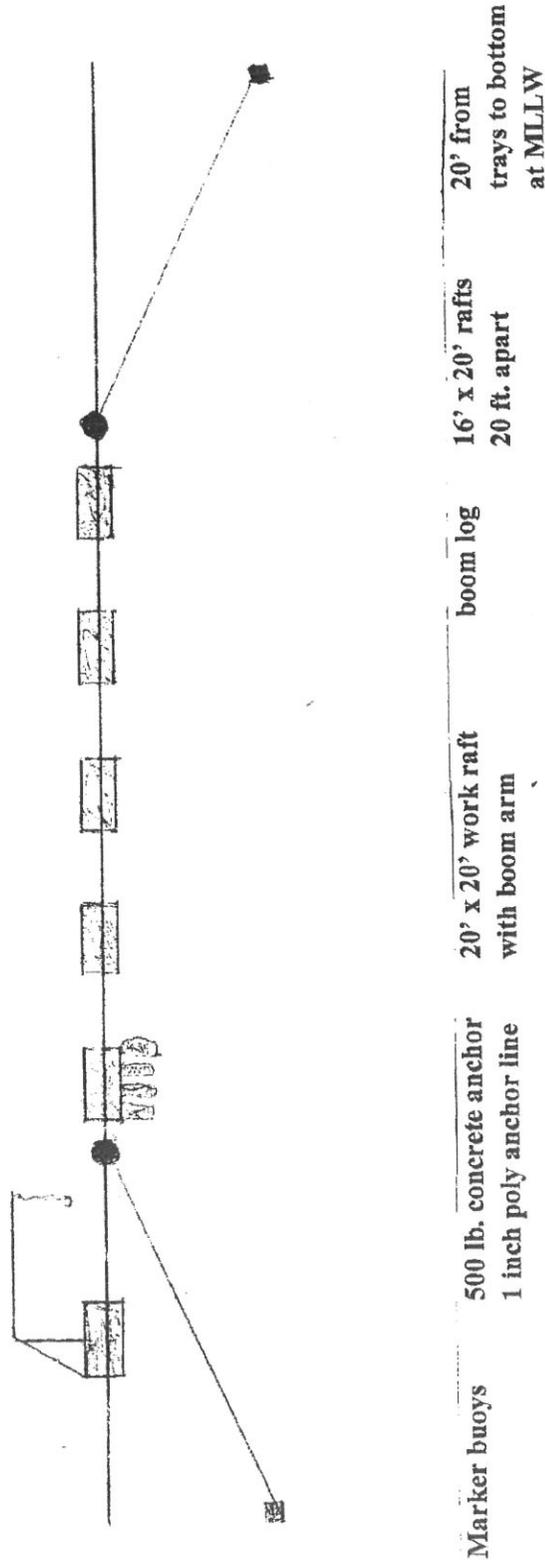


Figure 5 – Cross Sectional Site Plan
Organized Village of Kake
Hamilton Bay
Kake
4/25/11

Organized Village of Kake: Details of culture system



Stack of eight wire mesh trays loaded with oysters and tied with rope straps ready to hand from the culture rafts.



Wire mesh trays with liners loaded with oyster spat.

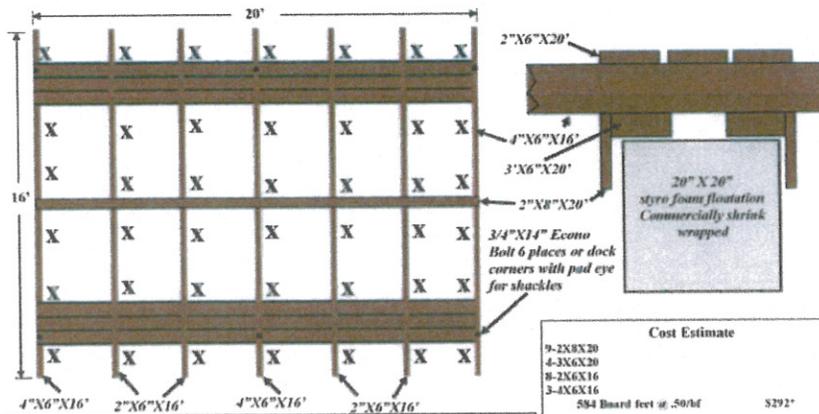
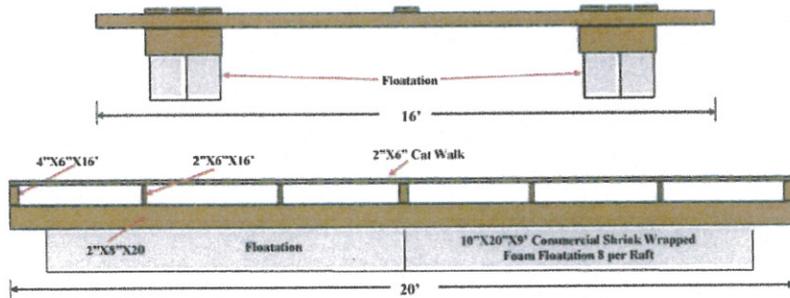
**Figure 6 – Suspended Culture trays
Organized Village of Kake
Hamilton Bay
Kake
4/25/11**

Figure 7 – Raft details
Organized Village of Kake
Hamilton Bay
Kake
4/25/11

Typical Oyster Grow Out Raft

Grow out rafts are constructed of rough sawn lumber and foam flotation. Fasteners are stainless steel and marine grade. The foam flotation is commercially shrink wrapped. Each raft measures 16' X 20' and sits approximately 20" out of the water. Rafts are then moored to each other and anchored to the bottom.

Each raft can handle a minimum of 42 hanging stacks of 8 trays, each tray can hold 120 oysters at marketable size for a total of 40,320 oysters or 3,360 dozen per raft. Each raft could hold up to 336,000 25mm (1") spat when purchased from Naukati Bay Shellfish Nursery.



Typical Oyster Grow Out Raft

Grow out rafts are constructed of rough sawn lumber and foam flotation. Fasteners are galvanized and marine grade. The foam flotation is commercially shrink wrapped. Each raft measures 16' X 20' and sits approximately 20" out of the water. Rafts are then moored to each other and anchored to the bottom. Many variations are possible, however, spacing of the cross members to 36" makes it very easy to get the tray stacks in and out of the water and allows more flow around the tray stacks

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Cost Estimate

9-2X8X20	
4-3X6X20	
8-2X6X16	
3-4X6X16	
584 Board feet @ .50/lf	\$292*
4- 20"X20"X108" foam @ \$54 each	\$216*
6- 3/4"X14" Econo bolts with nuts and washers \$9.50 each	\$57*
Nails and screws	approximately \$20*
Poly rope to attach flotation	\$20*
Total	\$605

* Does not include shipping. Cost to ship foam varies depending on the quantity shipped.

**Figure 8 – Work Raft details
Organized Village of Kake
Hamilton Bay
Kake
4/25/11**

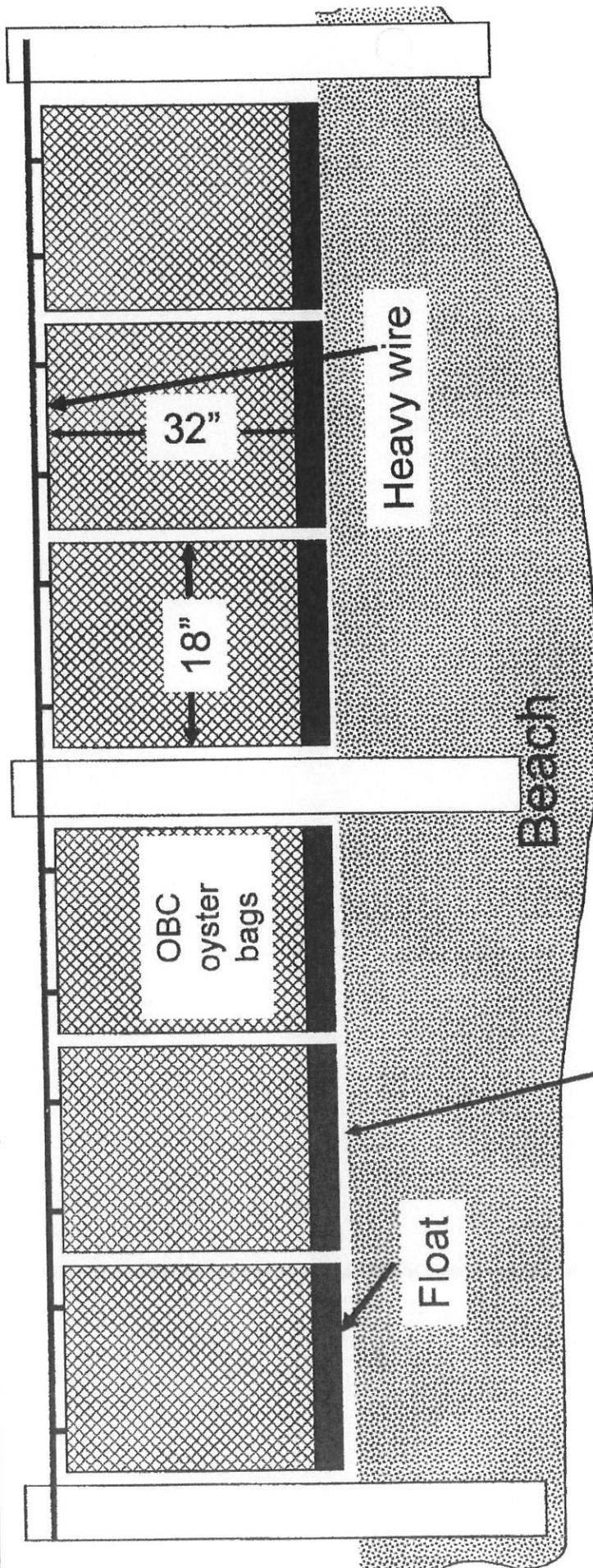
The 20' x 20' work raft will be the same basic design as the culture rafts, except it will have four foam pontoons to provide additional stability and the deck will be covered completely with 2"x 12" rough cut, untreated lumber.



The work raft will be equipped with a boom arm identical to the one shown here and used in several farms in the Naukati area.



The work raft also will have a tumbler sorter similar to the one shown here.



Cross sectional VIEW

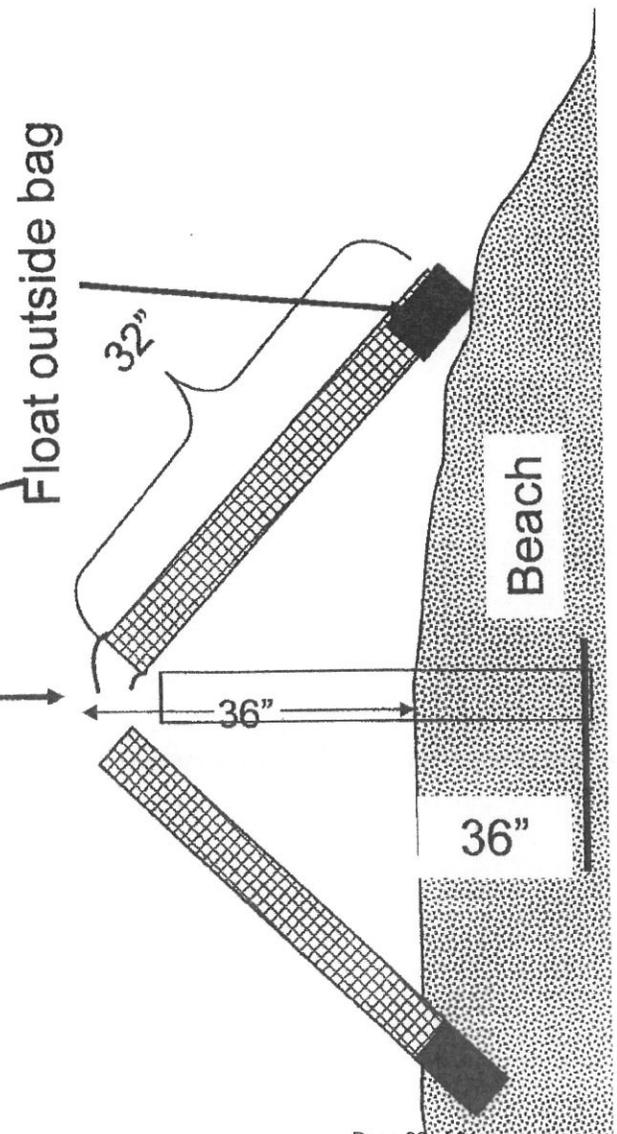


Figure 9 – cross section view of intertidal bag system
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 Hamilton Bay
 Kake
 4/25/11



**Figure 10 – photo of intertidal bag system similar to OVK’s proposal
Organized Village of Kake
Hamilton Bay
Kake
4/25/11**