STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
Standard Aquaculture Lease Application
Suspended culture of shellfish
Damariscotta River

Mook Sea Farms, Inc.
Lease DAM EL3
Docket # 2011-08

May 14, 2012

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION

Mook Sea Farms, Inc. applied to the Department of Marine Resources ("DMR") for a standard aquaculture lease on two sites in the coastal waters of the State of Maine in the Damariscotta River in the Town of Newcastle in Lincoln County: 24 acres located on the applicant's existing lease site DAM PP, east of Perkins Point, and 2.68 acres in the northwest tract of its existing lease site DAM EL2, east of Little Point, for the purpose of cultivating American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) using suspended culture. The applicant currently holds leases on both sites for bottom culture of the same species.

The application was accepted as complete on February 25, 2011. No one intervened in this case. A public hearing on this application was held on September 19, 2011, in Newcastle; the hearing was recessed and continued on November 2, 2011.

1. THE PROCEEDINGS

Notices of the hearing and copies of the application and DMR site report were sent to numerous state and federal agencies for their review, as well as to various educational institutions, aquaculture and environmental organizations, the Town of Newcastle and the Newcastle Harbormaster, members of the Legislature, representatives of the press, riparian landowners, and others on the Department's mailing list. Notice of the hearing was published in the *Lincoln County News* on August 11 and September 8, 2011 and in the *Commercial Fisheries News* September, 2011 edition.

Sworn testimony was given at the hearing by: Bill Mook, on behalf of the applicant; Jon Lewis, DMR Aquaculture Environmental Coordinator; Newcastle Harbormaster Paul Bryant; and by Karen Benner, Joseph Griffin, Rob Nelson, James Sparrell, Andrew Stevenson, and Lucas Wegman. Mr. Mook described his proposed project and answered questions. Mr. Lewis described the site visit and presented a videotape of the bottom. Mr. Bryant asked questions and presented concerns on behalf of himself as harbormaster and for the Damariscotta-Newcastle Joint Harbor Committee about the effect of the project on navigation and access to moorings. Mr.

Stevenson testified in support of the project. The other witnesses testified to their concerns about the effect of the lease on their uses of the river, primarily for navigation.

Each witness was subject to questioning by the Department, the applicant, and members of the public. The hearing was recorded by DMR. The Hearing Officer was Diantha Robinson.

The evidentiary record before the Department regarding this lease application includes 17 exhibits introduced at the hearing (see exhibit list below), and the record of testimony at the hearing itself. The evidence from all of these sources is summarized below.[1]

LIST OF EXHIBITS[2]

Hearing on 9-19-11

1. Case File, Docket 2011-08

2. Application dated 2-2-11

3. Site Report dated 7-8-11

4. Aerial photo showing leases EL and EL2 (DAM EL2 site report, Figure 3), 17" x 22"; William Vaughan's dock labeled "WV" by Mr. Mook at 9-19-11 hearing

5. Photo of OysterGro cages close-up, including pontoons (DAM EL2 and PP site reports, Figure 6) 17" x 22"

6. Photo of OysterGro cages flipped with pontoons beneath, looking toward western shore from lease DAM EL (DAM EL2 and PP site reports, Figure 5) 17" x 22"

7. Photo of OysterGro cages, flipped and not flipped (not in site reports) 17" x 22"

8. Poster, Chart of Damariscotta River with all lease sites shown, leases DAM EL2 & DAM PP are shaded gray (DAM PP site report, Figures 1, & 7; DAM EL2 site report, Figure 1)

9. Poster, Aerial photo of Damariscotta River with all lease sites shown, leases DAM EL2 & DAM PP are shaded ray (DAM PP site report, Figure 2)

10. Poster, Chart of Damariscotta River showing lease DAM PP only (not in site report)

11. Poster, Aerial photo of Damariscotta River showing lease DAM PP only (not in site report)

12. Document, Damariscotta-Newcastle Harbor ordinance, page 6

13. Document, statement of Newcastle Harbormaster Paul Bryant, 1 page

Hearing on 11-2-11

[1] In references to testimony, "Smith/Jones" means testimony of Smith, questioned by Jones. References are to testimony at the September 19, 2011 hearing, unless the November 2, 2011 hearing is indicated.

[2] Cited as CF, App, SR, with page numbers or item numbers indicated. Other exhibits are cited by exhibit number.

14. Document, color copy of NOAA chart 13293 showing lease DAM PP with small blue numbers indicating water depths as measured by Bill Mook on Sept. 29, 2011

15. Document titled "Additional Testimony: DAM EL2 & DAM PP Conversion from Bottom to Suspension Culture" by Bill Mook, 4 pages

16. Aerial photograph titled "El – EL2 Gear," showing gear as deployed on 11-2-11 on lease DAM EL and as proposed to be deployed on lease DAM EL2 if the application is approved, 1 page

17. Document titled "Appendix 5B, PP Maximum Structure and Mooring System Schematic (Top View)", 1 page

2. DESCRIPTION OF THE PROJECT

A. Overview of Project

Mr. Mook testified that he began his oyster farm in the Damariscotta River in 1986 with the lease DAM EL, a 7.17-acre lease for suspended culture. Lease DAM EL2, a 7.98-acre lease for bottom culture, was granted to Mook Sea Farms in 1998. These two sites lie adjacent to one another east of Little Point in a shallow area of the upper river, west of the main navigational channel. The company holds a third lease, DAM PP, granted in 1990 and located approximately a mile downriver from the other two lease sites. This is also a bottom lease for shellfish on 24 acres; it lies east of Perkins Point along the western edge of the river's main channel, also in shallow water (Mook, testimony).[3]

Mr. Mook has grown American oysters and other shellfish on these lease sites since they were granted, using floating mesh bags on DAM EL and bottom-planting oysters on the other two leases. In 2010, Mr. Mook changed the gear he uses on the DAM EL site, substituting wire mesh cages (referred to in the application and the hearing as "OysterGro" cages) for the floating mesh bags. He has now applied to use the cages on the DAM PP site and on the northwest tract of the DAM EL2 site by requesting leases for suspended culture (Mook, testimony). He submitted a single application to do this on both existing lease sites.

The Department accepted the application for review after requiring some modifications in the proposed layout of gear to accommodate navigation. Department biologists subsequently visited both sites and prepared two separate site reports. A single hearing was held at which the proposal to use cages on both sites was described and discussed. The proposed operations are the same for both sites, although the layout of the gear will be adapted to each site. The Department is issuing two separate decisions on the application, one pertaining to lease DAM PP, the other to lease DAM EL2.

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[3] "Suspended culture" means that the authorized species are grown on the lease site using aquaculture gear which floats at or below the surface or rests on the sea bottom; " bottom culture" means that the species are free-planted on the sea bottom and no gear other than marker buoys is placed on the lease site.

The layout of gear was the main focus of testimony during the hearing because of concerns that the floating cages could interfere with navigation in the river. Although Mr. Mook revised his original gear plans at the Department's request before the application was accepted for review, testimony and questions at the hearing indicated a need for additional revisions. The hearing on Sept. 19 was recessed to allow Mr. Mook to make such revisions and to consult with Mr. Bryant, the Newcastle Harbormaster, and with the Damariscotta-Newcastle Joint Harbor Committee. At the reconvened hearing on November 2, 2011, Mr. Mook presented revised plans for the layout of gear on the northwest tract of DAM EL2 and on DAM EL, as well as on DAM PP. These revised plans are described in Exhibit 15 and depicted in Exhibit 16 (DAM EL2 and DAM EL) and Exhibit 17 (DAM PP). The evidence on these issues is described below in sections 3 A, Riparian Access, and 3 B, Navigation.

B. Proposed Operations

Mr. Mook testified that there are three reasons for his proposal to change from bottom to suspended culture on the two lease sites. First, he said, bottom culture is unpredictable; survival rates for oysters range from 25% to 90%, with average survival for bottom-planted oysters below 50%. Second, he harvests bottom-planted oysters by dragging, which he said is inefficient in both labor and fuel costs. Third, dragging stirs up suspended particulates in the water column; he is concerned about the effects of turbidity on shellfish growth, especially on soft-bottom sites (Mook, testimony).

Mr. Mook said he thought suspended culture would not be cost-effective until he tried the OysterGro system and found it to be profitable. In 2010, he switched to OysterGro cages on his DAM EL lease (his only lease site currently authorized for gear) and had a 90% survival rate for oysters. With suspended culture, he said, he knows how many oysters he has, which is not the case with bottom-planted oysters (Mook testimony).

The pontoons attached to the wire-mesh cages are the key, according to Mr. Mook. For growing shellfish, the pontoons are filled with air and the cages float beneath them, just below the surface, where they do not collect floating seaweed and other debris as the floating mesh shellfish bags do. To control the growth of fouling organisms, the cages are flipped over every seven to ten days for 24 hours, to float with the pontoons underneath and the cages above, exposed to the air. The fouling material dries out and falls off the wire mesh. In winter, the pontoons are filled with water to sink the cages to the bottom (Mook testimony). Oysters inside the cages are contained in mesh shellfish bags.

The cages will be deployed in groups of parallel "strings" of no more than 50 cages (App 3). Although the drawings of the layout of cages contained in the application indicate that spacing between the lines of cages will be 30 feet, Mr. Mook testified at the November hearing that he reduced this to 20 feet in his revised gear plans (Exhibits 15, 16, 17). He said that he has used 20-

foot spacing between the cages on DAM EL site and found this space adequate for tending the cages (Mook, testimony 11-2-11).

The cages in each string are connected to a 3/8" poly "system line" which is attached at each end to a 1" poly/nylon "headline". The headlines lie perpendicular to the rows of cages on the system lines; they are moored at each end by three helix anchors and in the middle by four additional helix anchors (App 23 & 24; Mook testimony). The headlines are approximately 300 ft. long, depending on location (App 25).

According to the application,

> Cages are attached to each other as well as to a "system" line which runs from head line to head line. This grid system is currently holding 450 cages on our lease (EL) adjacent to Little Point and has withstood several severe storms including the October 15th [2010] northeaster with storm force winds and the most recent storm with winds over 60 mph. It has also held over 2000 floating bags prior to its use with cages. It should be noted that the OysterGro system offers the advantage of being "sinkable" to avoid extreme wind and wave conditions (App 4).

This mooring arrangement successfully held the cages on DAM EL in Hurricane Irene (August-Sept. 2011), Mr. Mook said. If a severe storm threatened, he would assess the situation and sink the cages most vulnerable to the highest wind, if he had time, but the cages have held against 60-knot winds (Mook/Nowak).

Equipment that will be visible on the lease sites if suspended culture is permitted will include: OysterGro wire cages containing mesh oyster bags, small boats (under 24 ft.) with outboard motors, and a 40' x 14' work raft (Mook, testimony; App 5,). The raft will be moved among the lease sites to tend the gear as needed (App 3). A fiberglass wheelhouse on the raft "will house a cylindrical seed grading machine powered by a small gasoline engine" (App 3). "Plastic mesh bags containing oysters will be transported to the raft by outboard boats where the seed will be graded in the drum grader and restocked in the mesh bags" (App 3). The bags are then placed in the wire cages.

Maximum development is proposed to be 600 cages on the northwest tract of DAM EL2 and 3600 cages on DAM PP. DAM EL, south of and adjacent to the northwest tract of DAM EL2, now has 800 cages in use (Mook, testimony). The remainder of lease DAM EL2, which lies just to the east of the northwest tract and adjacent to DAM EL, will remain available for bottom culture only. Mr. Mook originally proposed 650 cages for the DAM EL2 northwest tract in the application, but he testified that he had since reduced it to 600. With another 3600 cages on the DAM PP lease site, the total is 5,000 cages over Mr. Mook's three lease sites (Mook/Lewis).

Operations at the lease site will consist of flipping the cages periodically, thinning the number of oysters in the bags and grading them, and harvesting oysters on the day of shipment. Harvesting is done by pulling the cages out of the water into a small boat and removing the oyster bags inside. The cage is flipped upside down in the water until it is re-stocked. The bags of

market-size oysters are taken by boat to either the applicant's wharf and packing facility in Walpole or the Damariscotta Town Landing (Mook testimony). Bags of seed oysters are taken to the work raft for thinning and grading. The bags are re-stocked and replaced in the cages, which are then flipped back into the normal growing position (App 5).

Work will occur on the lease sites on most days during the growing season, with less or no activity on weekends. "By the time temperatures drop in the fall, most of the grading and thinning will be done, and only cage drying and harvesting will occur" (App 7). In December, the cages will be sunk to the bottom for overwintering, to be brought up again in April for the new season.

Approximately 600,000 oysters will be grown initially in cages on the northwest tract of DAM EL2 and 3.6 million on DAM PP, less than the number that would have been seeded on the bottom in those locations, according to Mr. Mook, because there is no need to overplant in order to ensure that an adequate number survive to be harvested (Mook testimony). According to the application, the applicant's initial experience with OysterGro cages indicates that optimal stocking density per cage for the final growth phase (before harvest) is 1200 to 1400 oysters per cage (App 5). The application states, "If the final stocking density were 1400 oysters per cage, *theoretically*, DAM PP could hold up to 6.9 million at any one time and DAM EL2 would be just under 1.5 million" (App 6). The application continues:

> The rate and extent of scale up will ultimately depend on the cost effectiveness of the OysterGro system, and market conditions for Damariscotta River oysters as well [as] what we determine to be optimal stocking and thinning procedures for the oysters. The maximum stocking density for each site using OysterGro cages will be less than for bottom culture, for which 0.5 million oysters per acres [*sic*] is a standard planting density (App 6).

C. Site Characteristics

The Department's site report describes the proposed lease site (the existing northwest tract of lease DAM EL2) and its surroundings in light of the proposal to use gear on the site:

> The proposed aquaculture lease site is located approximately 0.8 miles to the southwest of the Damariscotta/Newcastle Bridge. It occupies a finger of subtidal water extending from the primary navigation channel in the area. At Mean Low Water (MLW) it is surrounded by shoals to the west, north and east. Tidal mudflats are extensive along the western shore of the upper Damariscotta River (Figures 1 and 2) (SR 2).
>
> Bottom sediments are a mixture of mud and silt over firm sand. Divers could insert their gloved hand approximately 6-8 inches before meeting resistance. Sediments are of a finer grade along the northern portion of the proposed lease. (SR 9)
>
> Based on historical observations the area of the proposed lease is expected to ice over in some winters; drift ice from the upper reaches of the river is expected to

> flow through the lease site. During winter months, structures such as OysterGro cages, work rafts, bags, ropes and buoys may have to be removed and reset in the spring (SR 3).

The report notes that water depths at mean low water on the DAM EL2 site range from approximately one to eight feet. The effect of this range of depths is noted:

> The cages proposed by the applicant measure 1.67' in height. Within the shallower, northern portion of the proposed lease the cages would presumably sit on the bottom sediments at MLW (0.0') and any minus tides. During winter months cages would need to be submerged in the deeper, southern portions of the lease and adequately marked to prevent prop strikes (SR 3).

The issue of minimum water depths above submerged cages on DAM EL2 is addressed below in section 3 B, Navigation/Sinking Cages.

Extensive mud flats separate the proposed lease site from the nearest upland shore, some 700 ft. to the southwest (SR 4), restricting navigation and shore access in this area at lower tidal stages. Two U.S. Coast Guard aids to navigation mark the westerly edge of the main navigational channel to the east of the proposed lease site: the green can buoy "23" lies 1,047 ft. northeast of the northeast corner of the northwest tract of DAM EL2, and the green can buoy "21" lies 875 ft. northeast of the southeast corner of the northwest tract.

The area around the site is currently classified by the Department's Water Quality Classification program as "open/approved for the harvest of shellfish" (SR 10).

D. Combining Leases DAM EL and DAM EL2

The DAM EL2 and DAM EL lease sites together occupy a "Y"-shaped shallow side channel in the upper Damariscotta River, west of the main channel and east and northeast of Little Point.

The DAM EL2 lease site consists of three tracts leased for bottom planting of oysters:

- The northeast tract is 2.17 acres;
- The southeast tract is 2.49 acres; and
- The northwest tract is 3.32 acres.

The DAM EL lease site consists of a single 7.17-acre tract, southwest of the other three tracts, which is leased for suspended culture of oysters and other shellfish. Mr. Mook said that while he formerly used floating mesh oyster bags on this site, since 2010 he has been using approximately 800 oyster cages there (Mook, testimony).

The applicant originally proposed to use 3 acres of the 3.32-acre northwest tract of DAM EL2 for floating oyster cages (see plan at App 23), leaving a small area of open space at the north end of the tract; the site report recalculated the area proposed for gear as 2.68 acres. The northeast and southeast tracts of DAM EL2 will continue to be available for bottom planting only.

The aerial photograph below, adapted from Figure 3 of the site report, shows the perimeter boundaries of the DAM EL and EL2 leases. The area originally proposed in the application for gear on the DAM EL2 northwest tract is highlighted by cross-hatching.

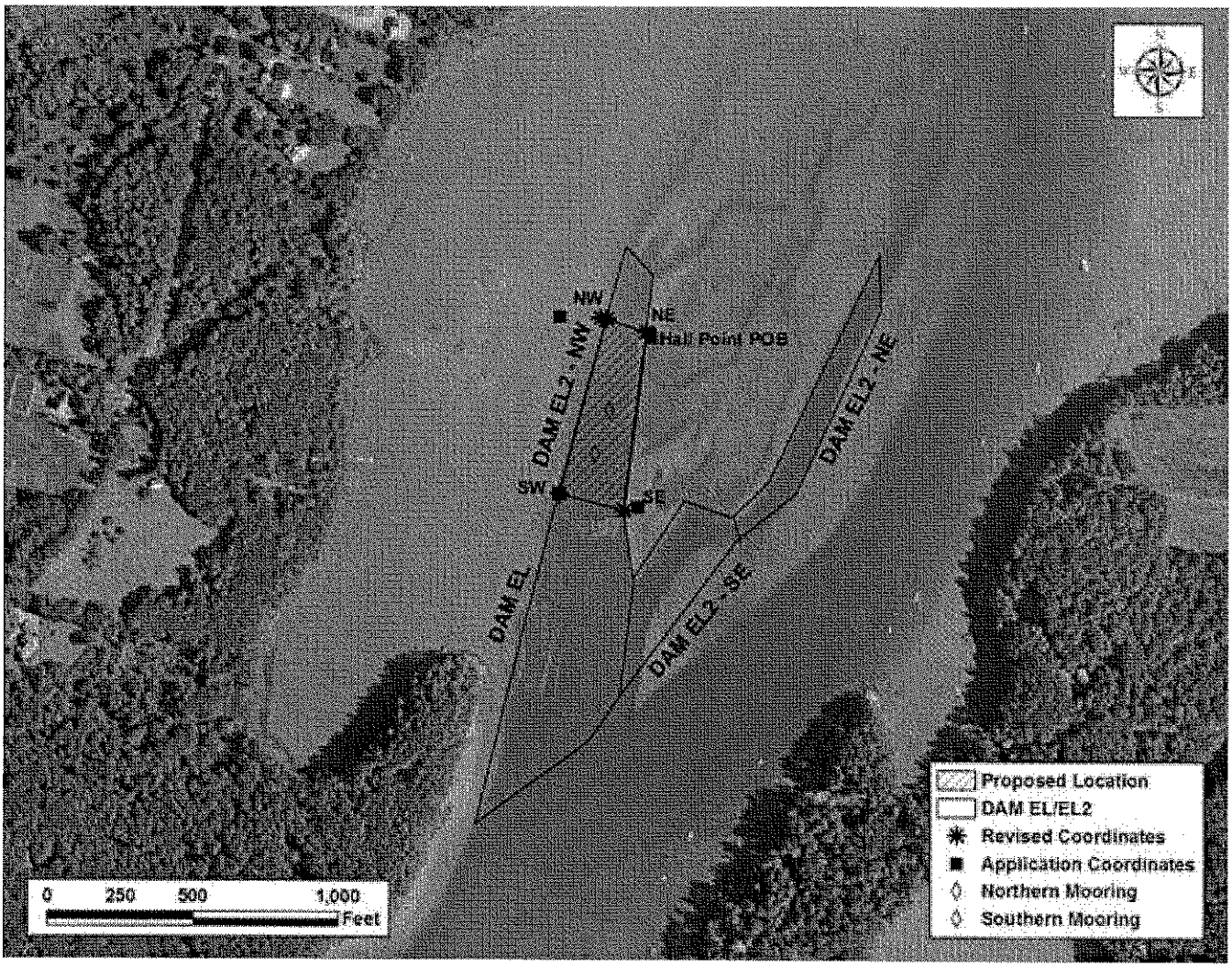

Figure 3 of Site Report, revised

Following the first public hearing on his application, Mr. Mook revised the site layout plan, as noted above. He presented the new plan at the second public hearing on November 2, 2011. Mr. Bryant testified that the Harbor Committee agreed to the revised gear layout as shown on this plan, labeled Exhibit 16 (Bryant, testimony). Exhibit 16 is reproduced below. It shows:

- The boundaries of the three tracts of the DAM EL2 lease;
- The revised gear layout, navigation corridor, and mooring area proposed for the DAM EL2 northwest tract;
- The areas of gear as now laid out on the DAM EL lease (the southwest tract); and

- The existing mooring area and 185-ft. navigation corridor proposed for the DAM EL lease.

Mr. Mook testified at the November 2 hearing about the revisions shown in Exhibit 16; these changes will be discussed in more detail below in the sections on riparian access (3A) and navigation (3B). Taken together, however, the revisions make it apparent that if this application to use oyster cages on the DAM EL2 northwest tract is granted, that tract and the DAM EL site, where oyster cages are already in use, will be operated essentially as a single lease site. Mr. Mook's commitment to maintain navigation corridors and areas available for moorings on both sites and to rearrange gear at the north end of DAM EL as necessary to accommodate navigation across both sites indicates a need for the sites to be subject to a common set of lease conditions. In light of this, combining the two leases into a single lease with a single set of conditions appears to be the most effective and efficient way for the Department to administer the leases at this location.

Discussions between the Department and Mr. Mook subsequent to the hearings have resulted in an agreement to combine these two leases as part of the decision on this application. The DAM EL lease expires on August 27, 2016. The DAM EL2 lease expires in 2018. The Department cannot legally extend the term of an existing lease that is not the subject of a new application. Neither DAM EL nor the northeast and southeast tracts of DAM EL2 are included in the pending application to add gear to the northwest tract of DAM EL2. Thus, a new lease combining those tracts could not be issued for a 10-year term, because the terms remaining for those tracts are four and six years, respectively.

A lease that combines the two existing leases must be held to the expiration date of the existing lease with the shorter term. Although a new lease to place gear on the northwest tract of DAM EL2, as requested in this application, could be issued for up to ten years, once it is combined with the existing leases it also must be held to the nearest expiration date. Therefore, the combined lease will expire on the same date as the DAM EL lease. At the time of a renewal application in 2016, the combined lease can be renewed for a period of up to ten years, assuming the requirements of 12 MRSA §6072 (12) are met.

The following discussion of the application and evidence is based on the assumption that the DAM EL lease and the DAM EL2 lease, including any authorization to use gear on the northwest tract of DAM EL2, will be combined into a single lease as a result of this decision. Although the DAM EL lease was not the subject of the application, it was frequently referred to in the testimony at both hearings, as well as being included in the site layout plan that was finally agreed to. Issues that affect the DAM EL lease site will therefore be discussed below.

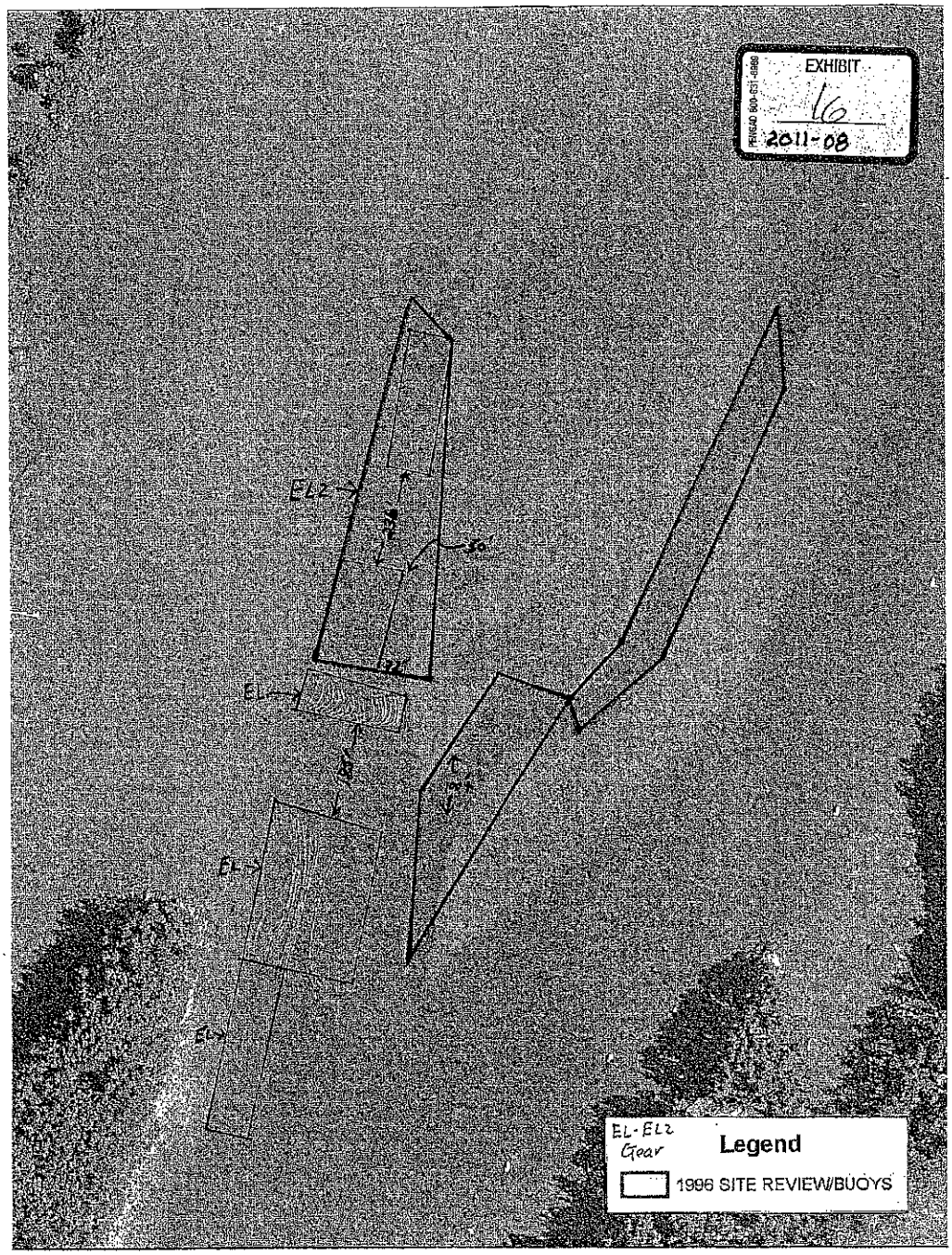
EXHIBIT
16
2011-08
EL2
EL
EL-EL2 Gear
Legend
1996 SITE REVIEW/BUOYS

EL EL2

3. STATUTORY CRITERIA & FINDINGS OF FACT

Approval of standard aquaculture leases is governed by 12 M.R.S.A. §6072. This statute provides that a lease may be granted by the Commissioner of DMR upon determining that the project will not unreasonably interfere with the ingress and egress of riparian owners; with navigation; with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in an area; with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna; or with the public use or enjoyment within 1,000 feet of beaches, parks, docking facilities, or conserved lands owned by municipal, state, or federal governments. The Commissioner must also determine that the applicant has demonstrated that there is an available source of organisms to be cultured for the lease site; that the lease will not result in an unreasonable impact from noise or lights at the boundaries of the lease site; and that the lease will be in compliance with visual impact criteria adopted by the Commissioner relating to color, height, shape and mass.

A. Riparian Access

The site report describes the docks, moorings, and issues involving riparian access with respect to the northwest tract of the DAM EL2 lease as follows:

> On May 3, 2011 three docks were observed within the general vicinity of the proposed lease, extending from the western shore of the Damariscotta River. Additional docks were observed to the north of the proposed lease. The nearest dock is located 650' to the west. At MLW riparian landowners would be hindered as much by the shallow water depths between the proposed lease and shore as they would be by the proposed activities. In combination with the gear present on the applicant's current lease immediately south (DAM EL) the proposed addition of up to 650 additional cages (as described in the application) will, however, restrict navigation from the south and east, around the northern tip of Little Point. Unless a navigation corridor suitable for the type and size of vessels frequenting the area is provided, mariners will be required to traverse more than 1200 feet to the north of Little Point, beyond the floating gear, before making their approach to shorefront properties (SR 5).
>
> Two moorings were documented, on May 3, 2011, within the boundaries of the proposal. Navigation to and from these moorings, particularly under sail, would be hindered by the addition of more floating cages. The compatibility of the proposed lease activities with these existing moorings, or the ability and acceptability of relocating these moorings has yet to be determined (SR 7).

As the site report indicates, the addition of gear to the northwest tract of DAM EL2 will not impede riparian owners' access in the immediate vicinity of their docks and shore. That access is already limited by the shallow water and extensive mud flats between the shore and the main channel of the Damariscotta River to the east. The addition of 600 oyster cages to the northwest tract, however, in addition to the 800 cages already in use on the adjacent DAM EL site to the south, will potentially affect navigation across the area and access to the shore to the west,

as the site report explains. The effect of the application on such navigation by riparian landowners and others is discussed in greater detail under section 3B, Navigation, below.

As the photographs above show, the boundaries of both DAM EL and DAM EL2 incorporate all the deeper waters of the side channel in this generally shallow area of the river. Both the existing leases are subject to conditions requiring the lessee to accommodate moorings inside the lease boundaries.

The DAM EL lease condition states "moorings existing in lease area will be allowed" (DAM EL lease, item 16a). There is one mooring on that lease site ("the Hale mooring"), a 4,000-lb. granite block, which pre-dated the DAM EL lease and is owned by Mr. Hale, a riparian landowner. According to Mr. Bryant, the harbormaster, this mooring was in use at the time of the hearing, and given its size, it cannot be moved (Bryant, testimony). Mr. Mook testified that he was not proposing to change the location of the Hale mooring and that he would continue to maintain a 185-ft. gear-free "gap" across the DAM EL lease to accommodate this mooring and others, as well as to provide space for boats to cross the site (Mook, testimony).

The DAM EL2 lease condition states "The riparian land owners are to be allowed boat moorings as designated by the local harbormaster(s)" (DAM EL2 lease, item 16b). Two moorings were placed on the northwest tract of that lease soon after it was granted ("the Wegman moorings"). They are shown on the aerial photo labeled "Figure 3" above; they are located 159 ft. and 311 ft., respectively, north of the south boundary of that lease tract (SR 4). According to testimony at the hearing from Mr. Bryant, the harbormaster, from Mr. Wegman, and from Mr. Mook, these moorings have not been in use for several years. Mr. Mook testified that Mr. Wegman is not a riparian landowner. The application requests that moorings no longer be permitted on the northwest tract of DAM EL2 (App 11).

Under the terms of the Newcastle-Damariscotta Mooring Ordinance (Exhibit 12), moorings that are vacant for more than one year are subject to removal following 14 days' notice to the mooring holder. The two Wegman moorings on the DAM EL2 northwest tract are 400-lb. mushroom anchors; Mr. Bryant said he can move them under his authority as harbormaster.

While there were discussions at the September hearing about moving the Wegman moorings to the north end of the DAM EL2 northwest tract, where open space was originally proposed, the final site layout plan contained in Exhibit 16 provides different open areas for moorings on the northwest tract. Mr. Mook described the creation of these new spaces at the November 2 hearing. He said that he was able to create "considerably more open space" around the gear on the DAM EL2 northwest tract by reducing the spacing between the lines of cages from 30 feet, as originally proposed, to 20 feet (Mook, testimony 11-2-11; Exhibits 15 & 16). He described the space made available for moorings and navigation as follows:

> The tract boundary was shifted north, back to the original EL2-NW tract boundary, and gear proposed for the north end of the tract was shifted north into this space. This, in combination with the tighter row spacing, creates:

- A 236 foot gap in the middle of the site, which along with the 185 foot gap in EL (left for the Hale mooring), allows room for small boats to tack through the site to and from the shore at high water. Mooring space would be available in this gap as well as in the portion of EL2 just east and contiguous with EL *[i.e., the northeast and southeast tracts]* as shown on the photo (Exhibit 16) [*emphasis added*].
- A 50 to 70 foot lane along the southeast side of the EL2 tract to allow access to this space at low water. If this plan is approved, then Mook Sea Farm would maintain a similar gap at the northeast end of EL.
- A reduction in the area covered by gear from 2.24 to 1.47 acres (Exhibit 15).

The revised site plan dedicates 1.85 acres of the 3.32-acre northwest tract of DAM EL2 to open space for moorings and navigation. Space will likewise be available on the northeast and southeast tracts of DAM EL2, which are authorized for bottom culture only, with no gear. Mr. Mook also offered to adjust gear at the north end of the DAM EL tract to accommodate access to the 236-ft. corridor on the northwest tract of DAM EL2. The 185-ft. corridor on DAM EL will also be available for moorings, in addition to the existing Hale mooring, and for navigation. The Wegman moorings on the northwest tract of DAM EL2 will need to be moved to accommodate the installation of oyster cages and other gear, but there is adequate space to relocate them in the open areas provided, as the harbormaster designates.[4]

As Mr. Mook noted at the November 2 hearing, it makes sense to limit the number of moorings that can be placed in these open areas, in order to allow them to serve their primary purpose of facilitating navigation in the river (see additional discussion of navigation corridors under section 3 B, Navigation, below). While the Department will continue to place conditions on the combined lease to ensure that mooring space is kept available, we recognize that the area is now subject to a mooring ordinance enacted jointly by the towns of Newcastle and Damariscotta, which Mr. Bryant, as harbormaster, enforces. Mr. Bryant and the Joint Harbor Committee are better positioned than the Department to determine where and for whom moorings should be set in the space made available on the aquaculture lease site. The condition will reflect this fact.

Given the applicant's plan to maintain gear-free open space for moorings and navigation corridors on both the DAM EL and DAM EL2 lease sites as shown in Exhibit 16, it appears that the addition of oyster cages and other gear to the northwest tract of the DAM EL2 site will not unreasonably hamper the ability of riparian landowners to gain access to and from their property by water. The existing "Hale mooring" will continue in its current location. Moorings for riparians and others can be set within the open areas on the combined lease as authorized by the Newcastle Harbormaster.

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[4]Mr. Wegman acknowledged that his mooring had lapsed according to the terms of the mooring ordinance and that he has sold his boat (Wegman, testimony).

Although Mr. Mook is changing the use of the northwest tract of the DAM EL2 site from bottom planting to surface gear, he retains the right to plant shellfish on the bottom of the entire DAM EL2 lease. Given this, and in view of the amount of gear to be installed on the combined lease site, it appears practical to provide that the leaseholder shall have the right to temporarily displace and relocate any moorings on the lease site as necessary to facilitate the aquaculture operations, but to allow this to be done only after reasonable notice to and authorization from the Newcastle Harbormaster.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner, provided (1) that open spaces for moorings for riparians and others and navigation corridors as shown on Exhibit 16 are maintained on the combined DAM EL2 and DAM EL lease sites with moorings to be set as authorized by the Newcastle harbormaster; (2) that the "Hale mooring" remains in its present location (44° 01' 16.68 " N, 69° 32' 38.34" W); and (3) that the lessee may temporarily displace and relocate moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster.

B. Navigation

The site report summarizes the effect on navigation of the proposal to add gear to the northwest tract of the DAM EL2 lease as follows:

> An area of 2.68 acres would be removed from navigable waters. The proposed lease is located in a western finger-channel of the Damariscotta River and is located approximately 560 feet to the west of the main navigational channel. The channel in which the lease would be located is essentially a "dead-end" and shallow water depths prevent navigation to the north at low water.
>
> Structures on the proposed lease, in conjunction with structures located on existing lease DAM-EL to the south would block access to all of this western finger-channel. At high water local vessels transiting the immediate area would have adequate room to move about. At low water, access to the two moorings presently in the proposed lease area would be prevented, as would direct access to the docks to the west (see Section 1: Riparian Owners Ingress and Egress). Vessels transiting from downriver to the vicinity of the town landing to the north would use the main navigational channel to the east (SR 7).

The site report also notes the concerns expressed by the Newcastle Harbormaster and the Town of Newcastle after their review of the application:

> **"Harbormaster Questionnaire"** was mailed to Mr. Paul Bryant, Harbormaster for the town of Newcastle, on March 1, 2011. A response from Mr. Bryant with an accompanying letter from the Town Administrator, Mr. Ron Grenier, was received by the Department on April 4, 2011. According to Mr. Bryant, the location of the proposed lease and oyster cages at Little Point is "clear of the navigation channel". Mr. Bryant did, however, suggest that access to the

> two moorings located within the boundaries of the proposed lease might be hindered by the addition of floating gear (SR 4-5).

Navigation corridors. Mr. Mook testified at the September hearing that he has observed the use of the waters in the area of the proposed lease site for 25 years, starting with the DAM EL site. Boat traffic near the DAM EL2 site is mainly in the main channel, so cages on the northwest tract will not interfere with navigation, according to Mr. Mook. A portion of the EL2 northwest tract is in a blind channel that also extends south into DAM EL. The only observed dock along the adjacent shore is at the Vaughan cottage north of Little Point, which is accessible only at high tide, according to Mr. Mook (although the site report noted additional docks) (Mook, testimony).

At the September hearing, Mr. Mook said he would maintain a 185-ft. gap on the DAM EL site as a navigation corridor. He said he will make sure that gear on DAM EL2 does not restrict the ingress and egress of riparians over the adjacent 500 ft. of mud flats at MLW. He noted that as originally submitted to DMR, the application filled the northwest tract with 650 oyster cages, in addition to the 750-800 cages already deployed on the adjacent DAM EL lease site. He revised the layout plan at the Department's request before the application was accepted, eliminating 50 cages to create a 60-ft. navigation corridor on the northwest tract, and he left open space for small boat moorings in the north end of the tract, north of the gear. Mr. Mook said he had modified his application to meet concerns of riparians and ensure that small boats could gain access at low tide to the blind channel on EL2 (Mook, testimony).

Navigation in this area of the river includes clam harvesters crossing the lease site to reach the mudflats to the west, although access to those flats is also gained by land, according to Mr. Mook. Mook Sea Farms personnel work at the existing site approximately from Mondays through Fridays, 8 am to 5 pm, except at low drain tides. They have observed one or two clammers harvesting on the nearby flats one or two days per week at DAM EL2 (Mook, testimony).

Mr. Mook testified that the volume of recreational sailing around his lease sites is "light" (Mook testimony). Small sailboats heading upriver against a northerly wind have to tack, he said, and although this does not occur frequently, it does happen. He has seen water skiing and tubing at the DAM EL lease site once or twice each summer, but he said he never felt that his leases were in the way of these activities. Kayak traffic has "exploded" on the river, he said, and oyster farms are attractive points of interest to many kayakers (Mook testimony).

Newcastle Harbormaster Paul Bryant testified to the difficulties faced by small boat sailors in the river and the need for adequate space within which to navigate:

> Having sailed on the Damariscotta River for over 60 years, I am very aware of the challenges faced by small boat sailors whose only propulsion would be sails and paddle. Clawing one's way to windward with an opposing tide can be most challenging when the wind is failing. The ability to make multiple tacks even hugging the shore to dodge some of the stronger current is sometimes the only

way to return home when wind and tide don't cooperate. These are well known challenges to small boat sailors but possibly not as well known to power boaters (Bryant, testimony, Exhibit 13).

Mr. Bryant said that sailboats need space to tack near shore, and the gap proposed in the application as a navigation corridor on the DAM EL2 northwest tract is "minimal" (Bryant, testimony).

James Sparrell, who lives across the river from the EL & EL2 sites, disagreed with Mr. Mook's characterization of the use of the river for recreational boating as "light". Mr. Sparrell noted that in later afternoons, early evenings, and on weekends, there is significant boating activity in the upper river. The harbor is being gradually taken up by obstructions, he said, making it hard to tack a sailboat. He asked what would be the consequences of hitting an oyster cage with a sailboat. Small boats returning upriver on a southwest wind have to follow the shore, Mr. Sparrell said, which takes them closer to the Little Point lease sites, in particular. There will be more boats on the river in future, he believes, and this additional gear would interfere with their ability to navigate. Aquaculture gear should not be allowed in the harbor area, Mr. Sparrell said, referring to the upper part of the river above Cottage Point, which includes the waters east of the DAM EL and DAM EL2 lease sites (Sparrell, testimony).

Mr. Mook responded, saying that the previous day he had observed two large sailboats sailing past his leases on a northwest wind and that such larger vessels sometimes tack or reach in that part of the river. He said he kept and sailed a 25-ft. sailboat in the Damariscotta River with no difficulty (Mook, testimony). He also said that an oyster cage weighs approximately 60 pounds with empty pontoons; when filled with bags of oysters, it weighs about 200 lbs. (Mook/Sparrell).

Rob Nelson testified to the importance of accommodating small boat sailing in the river. Mr. Nelson said the 60-ft. navigation corridor proposed in the application for the DAM EL2 lease site is inadequate for this purpose and that more maneuvering space for sailboats is critically needed (Nelson, testimony).

Joseph Griffin testified that he supports aquaculture in the river, but said it is "sad that the inner harbor is getting filled up" with gear. It is hard to come upriver by boat at night and avoid buoys and aquaculture gear, Mr. Griffin said (Griffin, testimony 11-2-11).

Riparian landowner Bill Vaughan asked Mr. Mook to create a wider access lane which he could use to reach his dock south of the sandbar to the west of the lease site. Mr. Mook agreed to do this, provided the Harbor Committee would approve. Mr. Mook marked Mr. Vaughan's dock with the initials "WV" on Exhibit 4, a photograph similar to the revised Figure 3 reproduced above; the dock is clearly visible on the western shore, opposite the letters "SW" on the left side of the lease boundary.

As described above, at the end of the September hearing, it was agreed that Mr. Mook would revise the gear layout plans for both proposed lease sites, in consultation with Mr. Bryant,

the Harbormaster, the Joint Harbor Committee, and Mr. Lewis. At the resumed hearing on November 2, Mr. Mook presented the revised plans, and Mr. Bryant testified that they were acceptable to the Harbor Committee.

The revised site layout plan is shown in Exhibit 16, which is reproduced above. As noted under the previous section on riparian access, the revised plan reduces the area covered by gear from 2.24 acres to 1.47 acres and creates the following open spaces on both the DAM EL and DAM EL2 sites, to be used for navigation corridors and moorings (Mook, testimony 11-2-11; Exhibit 15, p. 4):

- A 236-ft. navigation corridor across the northwest tract of DAM EL2 between two grids of oyster cages.
- A 50-70-ft. lane along the southeast side of the northwest tract of DAM EL2 for access to the space above at low water.
- The northeast and southeast tracts of DAM EL2, which do not contain gear.
- A continued 185-ft. navigation corridor on DAM EL in which the Hale mooring is located.

In addition to the open spaces shown on Exhibit 16, Mr. Mook testified at the November 2 hearing that he will create additional open space at the northeast corner of the DAM EL lease site to allow low-tide access for boats to reach the open areas on the adjacent northwest tract of DAM EL2.

Together, these dedicated spaces provide access for vessels to cross the lease site, whether sailboats tacking across the river or kayaks or power boats crossing to the western shore. They also provide limited locations for moorings to be set in the deeper waters of this portion of the river and avenues by which to reach the moorings at lower tidal stages. Maintenance of these spaces will be made a condition of the new, combined lease.

Cage moorings. Mr. Bryant said he is concerned that the helix anchors used for mooring the headlines could allow the strings of cages to swing sideways, beyond the lease boundaries or into the open spaces intended to be kept for navigation corridors or mooring spaces on the lease sites. He asked how this could be prevented. Mr. Mook said he will need to figure this out, possibly by using diagonal lines on the moorings (Mook/Bryant).

Mr. Mook also said that he is willing to change the mooring system to eliminate headlines and use helix moorings directly on the ends of the strings of cages, instead. This would not require more mooring tackle than he uses now, but he would need to prevent the strings of cages from swinging outward, possibly by using diagonal lines to make it easier to navigate between the rows of cages. He proposed to use helix moorings on all new cage lines and to make the same change on the mooring grid on the DAM EL site (Mook/Lewis).

At the November 2 hearing, Mr. Bryant again raised the issue of gear swinging with the wind, noting that Exhibit 16, an aerial photograph showing the proposed gear layouts on the DAM

EL and EL2 lease sites, clearly shows lines of gear on the EL site bowing outward to the east, rather than remaining straight. Mr. Mook agreed with Mr. Bryant that he will promptly alter or remove gear on the lease sites at the Harbormaster's request in order to prevent the cages from impeding navigation either in the navigation corridors or outside the lease boundaries (Mook/Bryant).

Sinking cages for winter. At the November 2, 2011 hearing, Mr. Mook noted the concerns expressed in the DMR site report and by Mr. Lewis at the Sept. 19 hearing that if cages are overwintered on the bottom of the lease sites in water that is too shallow, passing boats could damage propellers or centerboards on the rigid wire cages. Mr. Mook said that cages held in the growing season in shallower water would be moved to deeper water for sinking and overwintering, as he did the previous winter with the cages on the DAM EL site. Mr. Mook's written testimony states: "Cages on the west side of EL2 will need to be moved towards the eastern side of the tract, or to deeper parts of EL" (Exhibit 15, p. 2; Mook, testimony 11-2-11).

As the site report notes, depths on the DAM EL2 northwest tract range from one to eight feet, with the southern part of the site being deeper. Mr. Mook testified that cages on the DAM PP site would be sunk in six to eight feet of water, so that four feet of water would remain above them, even at mean low water (Mook/Rhodes). Four feet is sufficient to avoid propeller strikes by most types of smaller boats that would be likely to navigate in this shallow area of the river at low tide. In light of this and of Mr. Mook's testimony that four feet of minimum water clearance would remain above the cages, it appears reasonable to require that the cages be sunk for winter only in areas where a minimum of four feet of water will remain above them at mean low water and that they be marked when ice is not present.

Marking the lease site. No marking plan was submitted for the DAM EL2 site. Mr. Mook testified that all markers on the south boundary of the DAM PP site will be white buoys with reflective tape; reflective tape will also be used on other buoys, and radar reflectors will be used on that site, as well.

Mike Herz, a sailor, testified that some of the existing lease buoys are missing the reflective tape, and some are not well marked. He asked if the corners of the lease site would be marked with lighted buoys. Mr. Mook said that DMR does not require reflecting tape, just the words "Sea Farm" on the buoys. He noted that the DAM EL site has 3 Coast Guard type buoys, which are long spars with tape and radar reflectors. The marker buoys are black balls with "Sea Farm" lettering and reflective tape. Mr. Mook said he will use reflective tape on all the outer markers on the DAM PP site (Mook/Herz).

Leaseholders are required to mark their sites in accordance with U. S. Coast Guard requirements. DMR marking requirements are not intended for navigational purposes, as DMR does not have legal authority to require navigation marking. DMR markings are intended to delineate the boundaries of lease sites or the portions thereof that are being used (see section C, Fishing & Other Uses, below). Nevertheless, devices for marking the boundaries of the combined

lease site should be readily visible to mariners in all sea conditions. The Coast Guard will review the proposed navigational marking.

While it is clear that placing 600 oyster cages on the northwest tract of lease DAM EL2 will create obstacles to navigation where there were none before, the layout plan shown in Exhibit 16 mitigates the effects of the change. The Department appreciates the participation of the Harbormaster and the Harbor Committee in this process. Mr. Mook has developed a plan for arranging the gear on DAM EL and DAM EL2 that appears to reasonably accommodate the needs of boaters for space to navigate in this area of the river. The criteria for granting an aquaculture lease do not prohibit all interference with navigation but instead require that such interference not rise to an unreasonable level. Based on the evidence and on the revised site plan shown in Exhibit 16 and agreed to by the Harbor Committee, and with the conditions listed below, it appears that this criterion has been met.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with navigation, provided (1) that navigation corridors are maintained free of gear as depicted on Exhibit 16 and at the northeast corner of the DAM EL lease site, which is the southwest tract of the new, combined lease; (2) that the lessee will promptly alter or remove gear on the lease site at the harbormaster's request if it is outside the lease boundaries or if it interferes with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 16; (3) that oyster cages are sunk to the bottom of the lease site only in areas where a minimum of 4 feet of water will remain above them at mean low water and are marked when ice is not present; and (4) that devices for marking the boundaries of the combined lease site are readily visible to mariners in all sea conditions. The site must be marked in accordance with U. S. Coast Guard requirements.

C. Fishing & Other Uses

The site report notes:

> During the site visit on May 3, 2011 no commercial or recreational fishing was observed in the vicinity of the lease site. This is not surprising considering the season. It is likely that recreational anglers may fish the surrounding flats and the deeper waters of the proposed lease site. Structures at the surface of the water would preclude this activity within the proposed lease boundaries. No commercial fishing is anticipated in the area of the proposed lease site as the bottom does not support commercially exploitable quantities of any species.
>
> The harvest of soft-shell clams (*Mya arenaria*) and cultched American oysters (*Crassostrea virginica*) is common in the intertidal areas to the west and north. The proposed lease activities will not preclude the continued harvest of intertidal species of shellfish (SR 7-8).

It is clear that the proposed addition of gear to the northwest tract of DAM EL2 will not hamper shellfish harvesting along the shore, provided the navigation corridors are maintained, as

discussed above. The site report indicates that commercial fishing in the area covered by the lease is very unlikely but that some level of recreational fishing is likely to occur within the DAM EL2 lease site.

No recreational fishermen testified at the hearings. Mr. Mook testified that recreational fishing can continue on the open parts of the lease site, even with the oyster cages in place on other portions of the site (Mook/Lewis). Under the revised site plan shown in Exhibit 16, the open area constitutes 1.85 acres of the 3.32-acre northwest tract of DAM EL2.

While it appears that allowing gear to be used on the DAM EL2 lease site will make 1.47 acres of that site unavailable for recreational fishing because of the presence of the gear on the northwest tract, the 1.85-acre open area of the northwest tract is still available for such fishing. Other open areas available for recreational fishing on the combined lease site include the open areas of the DAM EL tract and the northeast and southeast tracts of DAM EL2. The surrounding area of the river continues to be available for recreational fishing, as well. While this change has the potential to interfere to some degree with recreational fishing, the interference is not significant, given the remaining areas on and beyond the lease sites that remain available for this activity.

The lease boundaries must be marked in accordance with DMR Rule 2.80.[5] As discussed above under Navigation, given the amount of recreational boating activity in the vicinity of the lease site and the limitations on access at lower tidal stages, the devices for marking the boundaries of the combined lease site, while not intended as navigation markers in themselves, must be readily visible to mariners in all sea conditions.

Other aquaculture leases. According to the site report, while there are some 18 leases in the upper Damariscotta River for suspended and/or bottom culture of oysters, "The proposed activities are unlikely to impact existing aquaculture operations in the area" (SR 9). This application will not add to the number of acres leased for aquaculture in the river, since it provides for the use of gear on a site that is already leased for bottom culture.

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[5] **2.80 Marking Procedures for Aquaculture Leases**

1. When required by the Commissioner in the lease, aquaculture leases shall be marked with a floating device, such as a buoy, which displays the lease identifier assigned by the Department and the words SEA FARM in letters of at least 2 inches in height in colors contrasting to the background color of the device. The marked floating device shall be readily distinguishable from interior buoys and aquaculture gear.

2. The marked floating devices shall be displayed at each corner of the lease area that is occupied or at the outermost corners. In cases where the boundary line exceeds 100 yards, additional devices shall be displayed so as to clearly show the boundary line of the lease. In situations where the topography or distance of the lease boundary interrupts the line of sight from one marker to the next, additional marked floating devices shall be displayed so as to maintain a continuous line of sight.

3. When such marking requirements are unnecessary or impractical in certain lease locations, such as upwellers located within marina slips, the Commissioner may set forth alternative marking requirements in an individual lease.

4. Lease sites must be marked in accordance with the United State's Coast Guard's Aids to Private Navigation standards and requirements.

Exclusivity. According to the application, "In the portions of the tracts holding cages, any uses which could interfere with the gear would be excluded. Access lanes to the shore by motor boats, sailboats, kayaks, canoes, etc. will be provided. Kayaks and canoes would be able to navigate throughout the site" (App 11). As noted above, Mr. Mook testified that recreational fishing can continue on the open parts of the site (Mook/Lewis). Based on this evidence, navigation and recreational fishing will be permitted in the open areas of the lease.

Therefore, considering the number and density of aquaculture leases in the area, I find that the aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area. Navigation and recreational fishing will be permitted in the open areas of the lease. The lease must be marked in accordance with DMR Rule 2.80 using devices that are readily visible to mariners in all sea conditions.

D. Flora & Fauna

Species of marine flora and fauna observed by Department biologists during the site visit on May 3, 2011 included horseshoe crabs (*Limulus polyphemus*), Hermit crabs (Pagarus sp.) mud snails (Littorina spp.) green crabs (*Carcinus maenus*), mud shrimp (Crangon septemspinosa), and American oysters (*Crassostrea virginica*), (SR 9). No eel grass (*Zostera marina*) was observed (SR 9).

The application includes a copy of a letter to the applicant from the Maine Department of Inland Fisheries and Wildlife (MDIF&W) dated December 1, 2010. The letter states that no Essential or Significant Wildlife Habitats are within the area of the proposed lease. The Department mailed a copy of the application and a "Request for Review and Comment" to MDIF&W on March 1, 2011. No response has been received from that Department. It is usual for MDIF&W to respond if they foresee a conflict between the proposed aquaculture lease and a wildlife resource in the area; the absence of a response generally indicates that no conflict is expected.

Mr. Lewis testified that oysters, being filter feeders, improve the quality of the water where they grow, filtering as much as 15-30 gallons of water per day per oyster. He noted that no feed or other substances are added to the waters where oysters are grown. In fact, he said, they help to filter out some of the excess nutrients that wash into the water from lawn fertilizers, overboard sewage discharges, and other land-sourced pollutants. He has no biological concerns about the effect of the proposed lease on the environment of the Damariscotta River, Mr. Lewis said (Lewis, testimony).

While some disturbance of the river bottom can be expected in the course of raising and lowering the cages in the spring and fall, the combined lease site has experienced repeated dragging in the past when the bottom-planted oysters were harvested. The bottom in this area is firm sand beneath a six-to-eight-inch layer of mud and silt. The effect on the bottom of lifting and depositing the cages twice a year are likely to be much less than the effects of repeated dragging.

Based on this evidence, it appears that the use of oyster cages on the lease site will not have any negative effects on the environment of the lease and the surrounding area.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.

E. Public Use & Enjoyment

According to the site report, "No public facilities are located within 1000 feet of the proposed lease". The site report notes that the Damariscotta public boat landing is located "more than 4,000 feet to the northeast" (SR 9).

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities or certain conserved lands owned by municipal, state, or federal governments.

F. Source of Organisms

The application indicates that American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) will be cultured on the northwest tract of DAM EL2. The DAM EL2 lease is already authorized for the culture of all of these species.

The source of these species for the combined DAM EL and DAM EL2 lease sites is Mook Sea Farm in Walpole, Maine (App 2), where the applicant operates a shellfish hatchery on the Damariscotta River.

The DAM EL lease is also authorized for all of these species, as well as for the culture of bay scallops (*Argopecten irradians*), which are not listed on the DAM EL2 lease. At the time of the hearing, the issue of combining these two leases had not arisen. Mr. Mook has since indicated to the Department that he wishes to continue to culture bay scallops on the combined lease.[6] Culture of bay scallops is consistent with the culture of the other species; a permit is required to import broodstock from outside of Maine.

Bay scallops, like the other authorized species, are spawned and raised as seed at the Mook Sea Farms hatchery, according to Mr. Mook. He indicated to the Department subsequent to the hearing that he uses broodstock from Maine or Cape Cod, noting that "As we currently do with any out of state oysters we spawn, we would obtain a broodstock importation permit and hold the broodstock in our quarantine system."[7]

The Department has declared both European and American oysters to be "Restricted" species in certain instances under DMR Rule 24.05 in order to prevent the spread of disease. Moving European oysters from any source anywhere in Maine requires a permit from the

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[6] E-mail, Bill Mook to Diantha Robinson, DMR, 4-19-12.

[7] Ibid.

Department. Movement of American oysters from within the waters north of a line between Ocean Point, Linekin Neck, Boothbay and Pemaquid Point, Bristol (including the entire Damariscotta and Johns Rivers) to any other coastal waters is also restricted and requires a permit from the Department.

To the Department's knowledge, Mr. Mook is well aware of these restrictions on movement of oysters, since he deals with them regularly in the course of his hatchery work. He likewise is aware of the permit requirement for out of state broodstock for bay scallops and other species. There appears to be no reason not to include bay scallops in the new, combined lease.

Therefore, I find that the applicant has demonstrated that there is an available source of American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), soft-shell clams (*Mya arenaria*), and bay scallops (*Argopecten irradians*) to be cultured for the lease site.

G. Light

The application states that "No lighting will be necessary for either of the proposed tracts...Night time work on the site would only occur in emergencies. This might include work to prevent or repair damage to gear by storms" (App 7).

Therefore, I find that the aquaculture activities proposed for this site will not result in an unreasonable impact from light at the boundaries of the lease site.

H. Noise

The application states:

> Outboards are either 4-stroke or "E Tec" engines, both of which are quieter than older 2-stroke outboards, especially when they are operated at relatively low RPMs as will be the case on the proposed leases. The power source for the grading machine will be a small (10hp) engine (App 7).

The site report observes that both of these motors "are significantly quieter than two-stroke outboards or diesel powered boats frequently seen in the surrounding area" (SR 10).

The application says that "a small engine will be used to power either a generator or hydraulic pump to run a grading machine....The power source for the grading machine will be a small (<10 hp) engine" (App 7). The report notes:

> A < 10 horsepower engine would be used to power a grading machine used in separating oysters of different sizes. No description of noise production, noise reduction, or muffling on this less than ten horsepower engine is provided in the application. A typical chainsaw produces less than 10 horsepower; presumably, the grading machine would operate at much lower engine speed and significantly lower noise levels. Clarification of this should be provided during the public hearing process (SR 10).

At the hearing, Mr. Mook testified that noise generated at the site will be minimal, particularly since there will be no dragging. An air-cooled pump of four to five horsepower will be used to wash the oysters and bags at the site. The pump will not operate all day, Mr. Mook said, just when the oyster bags are washed. Compared to the previous noise level of his operations at the lease site, there will be no increase in noise, he said (Mook, testimony). The pump has a muffler, he said, but he was told that the muffling cannot be increased. He said he is considering using a propane generator for the pump and for other equipment, similar to one he uses at his hatchery; it can be enclosed more easily to muffle its sound (Mook/Robinson).

Based on this evidence, it appears that any noise generated by operations on the site will be no different from previous noise levels at the lease site and is unlikely to have a significant effect at the boundaries of the lease.

Therefore, I find that the aquaculture activities proposed for this site will not result in an unreasonable impact from noise at the boundaries of the lease.

I. Visual Impact

The proposal to use floating oyster cages on lease sites that previously did not contain aquaculture gear means that the appearance of the lease sites will change. The application (App 27) and site report (SR Figures 4, 5, 6) contain photographs of the oyster cages deployed on the DAM EL site. The application states that the cages are black or dark green, with black floats. Each string of cages will be marked with a round 12" black buoy at the ends, and the perimeters of the lease tracts will be marked with "Sea Farm" buoys (App 4).

The site report states:

> The OysterGro units proposed for this lease site are not the current standard in the Maine oyster culture industry; they are, however, commonly used in Atlantic Canada for the culture of American oysters. The Department, in the last two years, has observed an increasing level of interest in moving from the traditional floating ADPI bags (34" X 20" X 5") to the larger, submersible, OysterGro cages. The proposed individual cage dimensions are 3.6 feet wide X 5.75 feet long X 1.67 feet tall. When stocked the cages would sit submerged with the black plastic floats, 2 per cage, visible above the water surface. According to the applicant, the proposed cages would be "flipped" approximately every 10 days for a period of 24 hours, exposing the wire cages, to remove any fouling that has accumulated.
>
> A 40' X 14' raft with a wheelhouse and a gasoline powered seed grader is also proposed for use at this site. This work raft, as described in the application, meets the visual impact criteria of DMR Chapter 2.37 (1)(A)(10) – less than 20 feet in height from the water-line (SR 10).

The Department's visual impact rule requires structures and gear on lease sites to blend with the surroundings as much as possible, in order to "minimize the visual impact as viewed from the water" (DMR Rules, Chapter 2.37 (AA) (10)).

When the cage is floating normally in the water, only the black plastic floats are visible, 8" high above the surface. When the cage is "flipped", the approximately 14" wire mesh cage structure is visible above the water's surface, with the floats beneath.

The presence of the cages on the lease site will be more or less noticeable from the water, depending on the distance of the viewer, the viewing angle, and the number of cages deployed. The cages will appear more or less as individual units or as dim lines of black dots or dashes as the viewer moves nearer to or farther from them.

The work raft consists of a wooden deck supported by fiberglass reinforced plastic beams on black plastic pontoons with a fiberglass wheelhouse (App 3). As the site report notes, the raft is less than 20 ft. in height above the water line, as required by the rule. The raft will be moved between the applicant's lease sites as needed for grading, sorting, and stocking oyster bags.

The rule requires that any visual impact be "minimized", not eliminated. The cages are simple pieces of gear made of materials in dark colors that will blend in with the river and surrounding landscape. There is no evidence to suggest that their visible presence can be further reduced. The raft meets the height requirements of the rule. Therefore, it appears that the visual impact of this gear when viewed from the water has been minimized.

Therefore, I find that the equipment, buildings, and watercraft to be used at the proposed lease site will comply with the visual impact criteria contained in DMR Regulation 2.37 (1) (A) (10).

4. CONCLUSIONS OF LAW

Based on the above findings, I conclude that:

1. The aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner, provided that:

(1) Open spaces for moorings for riparians and others and navigation corridors as shown on Exhibit 16 are maintained on the combined DAM EL2 and DAM EL lease sites with moorings to be set as authorized by the Newcastle harbormaster;

(2) The "Hale mooring" remains in its present location (44° 01' 16.68 " N, 69° 32' 38.34" W); and

(3) The lessee may temporarily displace and relocate moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster.

2. The aquaculture activities proposed for this site will not unreasonably interfere with navigation, provided that:

(1) Navigation corridors are maintained free of gear as depicted on Exhibit 16 and at the northeast corner of the DAM EL lease site, which is the southwest tract of the new, combined lease;

(2) The lessee will promptly alter or remove gear on the lease site at the harbormaster's request if it is outside the lease boundaries or if it interferes with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 16;

(3) Oyster cages are sunk to the bottom of the lease site only in areas where a minimum of four feet of water will remain above them at mean low water and are marked when ice is not present; and

(4) Devices for marking the boundaries of the combined lease site are readily visible to mariners in all sea conditions. The lease site must be marked in accordance with U. S. Coast Guard requirements.

3. The aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in the area. Navigation and recreational fishing will be permitted in the open areas of the lease. The lease boundaries must be marked in accordance with DMR Rule 2.80 using devices that are readily visible to mariners in all sea conditions.

4. The aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.

5. The aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities owned by municipal, state, or federal governments.

6. The applicant has demonstrated that there is an available source of American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), soft-shell clams (*Mya arenaria*), and bay scallops (*Argopecten irradians*) to be cultured for the lease site.

7. The aquaculture activities proposed for this site will not result in an unreasonable impact from light at the boundaries of the lease site.

8. The aquaculture activities proposed for this site will not result in an unreasonable impact from noise at the boundaries of the lease site.

9. The aquaculture activities proposed for this site will comply with the visual impact criteria contained in DMR Regulation 2.37(1)(A)(10).

Accordingly, the evidence in the record supports the conclusion that the proposed aquaculture activities meet the requirements for the granting of an aquaculture lease set forth in 12 M.R.S.A. §6072.

5. CONDITIONS ON COMBINED LEASES DAM EL and DAM EL2

The combined lease resulting from this decision will expire on August 27, 2016, the date that the DAM EL lease expires.[8] The new lease will cover the 15.15 acres in four tracts currently leased to Mook Sea Farms, Inc., with suspended culture added to the northwest tract pursuant to this decision, as follows:

Northwest tract	3.32 acres	Formerly DAM EL2	Bottom & suspended culture
Northeast tract	2.17 acres	Formerly DAM EL2	Bottom culture
Southeast tract	2.49 acres	Formerly DAM EL2	Bottom culture
Southwest tract	7.17 acres	Formerly DAM EL	Suspended culture

The existing leases have different sets of conditions arising from the decisions on the original applications for those sites. The Department has reviewed these original conditions in light of the evidence on this application. Some conditions appear to be unnecessary after the passage of many years and will not be included in the new lease. Others are reflected in the conditions developed in this decision as discussed above or will be carried forward directly in the new lease, as listed below.

DAM EL lease conditions:

a. "Moorings existing in lease area will be allowed."

This condition will be replaced by the following condition:

> 4. The "Hale mooring" must be accommodated in its present location (44° 01' 16.68 " N, 69° 32' 38.34" W) on the southwest tract of the lease, formerly lease DAM EL.

b. "Gear associated with lease shall be maintained within boundaries of lease."

This condition will be replaced by the following condition:

[8] See the discussion in section 2D above on combining leases.

6. The lessee must promptly alter or remove gear on the lease site at the harbormaster's request in order to prevent interference with navigation in the open areas of the lease site or outside the lease boundaries.

c. "Corner buoys nearest river channel shall be marked with radar reflectors."

d. "The lease area shall be marked in accordance with the requirements of the U.S. Coast Guard and the Department of Marine Resources."

While radar reflectors may be desirable, navigation aids must be reviewed and approved by the Coast Guard. These two conditions will be replaced by the following condition:

1. The lease site must be marked in accordance with both U.S. Coast Guard requirements and DMR Rule 2.80 using devices that are readily visible to mariners in all sea conditions.

DAM EL2 lease conditions:

(1) "Lobster, crab, and recreational fishing are to be allowed on the lease."

According to the site report, there is no commercial fishing within the lease boundaries. This condition will be replaced by the following condition:

8. Navigation and recreational fishing are permitted in the open areas of the lease site.

(2) "The riparian land owners are to be allowed boat moorings as designated by the local harbormaster(s)."

This condition will be replaced by the following conditions:

2. Navigation corridors must be maintained free of gear as depicted on Exhibit 16 and at the northeast corner of the DAM EL lease site, which is the southwest tract of the new, combined lease.

3. Moorings may be set within the navigation corridors on the lease site as authorized by the Newcastle harbormaster.

5. The lessee may temporarily displace and relocate moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster.

(3) "The lease area shall be marked in accordance with U.S. Coast Guard regulations; the lease area shall be marked in accordance with Department of Marine Resources regulations Chapter 2.80, with markers placed no more than 300 feet apart and at each corner. This requirement applies to each of the 3 tracts described and all corner and boundary marker buoys shall be moored with the helix type moorings described."

While the applicant plans to use helix anchors, there does not appear to be a reason to require them, as opposed to other types of anchors. This condition will be replaced by the following condition:

> 1. The lease site must be marked in accordance with both U.S. Coast Guard requirements and DMR Rule 2.80 using devices that are readily visible to mariners in all sea conditions.

(4) "The planting density of oysters shall be restricted to no greater than 520,000 oysters per acre; up to date records of the seeding quantities of all shellfish shall be kept at the Walpole facility for inspection by the Department during normal business hours for the duration of the lease; dragging shall be limited to the hard bottom substrate in the channels described, bounded by helix type moorings."

Leaseholders are required to report seeding and harvesting amounts annually to the Department. There does not appear to be a need to limit bottom planting densities at this time. This condition will be replaced by the following condition:

> 9. Dragging is limited to the hard bottom substrate in the channels within the lease boundaries.

6. Bond

Chapter 2.40 (2) of the Department's rules describes the requirements for performance bonds and includes the following language:

> The Department may prorate the performance bond amount for a structure, no-discharge lease where structures are in excess of 2,000 square feet in order to increase the bonding requirement to satisfy the requirements of these rules.

The combined lease site will contain 1,400 OysterGro cages, plus mooring and marking gear and, from time to time, the work raft. 1,400 OysterGro cages at approximately 18 square feet each constitute 25,200 sq. ft. of gear. The stated bonding requirements for leases with "structure, no discharge," are $1,500 for leases with less than 400 sq. ft. of gear and $5,000 for leases with more than 400 sq. ft. of gear. The purpose of the bond is to protect the Department and the State of Maine from bearing any costs for cleaning up the lease site in the event that the leaseholder does not meet his obligations.

While the language of the rule authorizes the Department to pro-rate the amount of the bond for no-discharge leases where structures cover more than 2,000 sq. ft., it contains no information on how that should be done. Structures on the proposed lease will cover an area more than twelve times larger than 2,000 sq. ft., but a bond for twelve times $5,000 would be $60,000, almost two and one-half times the largest bond ($25,000) the rules require, which is for a "structure, discharge" lease, which is normally a lease containing multiple fish pens.

The Department will require a $25,000 bond for lease DAM PP2, the companion site in this application, which will contain 3,600 oyster cages. The 1400 cages to be used on the combined DAM EL3 site are 40% of the number at the DAM PP2 site. The applicant has requested that the bond for the new DAM EL3 lease be set at 40% of $25,000, or $10,000, to reflect the proportionally smaller number of oyster bags at the DAM EL3 site. Mr. Mook advised the Department that, in his experience, the total bonded amount of $35,000 for the two sites would be sufficient to pay for the cost of cleaning up 5,000 cages and associated gear, which is the purpose of the bond.[9]

Based on this information, I find that it is reasonable to require a $10,000 bond amount for this lease site.

7. DECISION

Based on the foregoing, the Commissioner grants a lease of 15.15 acres, incorporating the entirety of existing leases DAM EL and DAM EL2, to Mook Sea Farms, Inc., for a term ending on August 27, 2016, the expiration date of the current DAM EL lease, for the purpose of cultivating American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), soft-shell clams (*Mya arenaria*), and bay scallops (*Argopecten irradians*) using the following culture techniques:

Northwest tract	3.32 acres	Formerly DAM EL2	Bottom & suspended culture
Northeast tract	2.17 acres	Formerly DAM EL2	Bottom culture
Southeast tract	2.49 acres	Formerly DAM EL2	Bottom culture
Southwest tract	7.17 acres	Formerly DAM EL	Suspended culture

The applicant shall pay the State of Maine rent in the amount of $100.00 per acre per year. The applicant shall post a bond or establish an escrow account pursuant to DMR Rule 2.40 (2) (A) in the amount of $10,000.00, conditioned upon performance of the obligations contained in the aquaculture lease documents and all applicable statutes and regulations.

Once the new combined lease, to be named DAM EL3, is executed, the existing leases DAM EL and DAM EL2 will be terminated.

8. CONDITIONS TO BE IMPOSED ON LEASE

The Commissioner may establish conditions that govern the use of the lease area and impose limitations on aquaculture activities, pursuant to 12 MRSA §6072 (7-B)[10] Conditions are designed to encourage the greatest multiple compatible uses of the lease area, while preserving the exclusive rights of the lessee to the extent necessary to carry out the purposes of the lease. The following conditions shall be incorporated into the lease:

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[9] Comments on the proposed decision submitted by Mook Sea Farms, Inc., dated May 10, 2012.

[10] 12 MRSA §6072 (7-B) states: "The commissioner may establish conditions that govern the use of the leased area and limitations on the aquaculture activities. These conditions must encourage the greatest multiple, compatible uses of the leased area, but must also address the ability of the lease site and surrounding area to support ecologically significant flora and fauna and preserve the exclusive rights of the lessee to the extent necessary to carry out the lease purpose."

1. The lease site must be marked in accordance with both U.S. Coast Guard requirements and DMR Rule 2.80 using devices that are readily visible to mariners in all sea conditions.

2. Navigation corridors must be maintained free of gear as depicted on Exhibit 16 and at the northeast corner of the DAM EL lease site, which is the southwest tract of the new, combined lease.

3. Moorings may be set within the navigation corridors on the lease site as authorized by the Newcastle harbormaster.

4. The "Hale mooring" must be accommodated in its present location (44° 01' 16.68 " N, 69° 32' 38.34" W) on the southwest tract of the lease, formerly lease DAM EL.

5. The lessee may temporarily displace and relocate moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster.

6. The lessee must promptly alter or remove gear on the lease site at the harbormaster's request if it is outside the lease boundaries or if it interferes with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 16.

7. Oyster cages may be sunk to the bottom of the lease site only in areas where a minimum of four feet of water will remain above them at mean low water and must be marked when ice is not present.

8. Navigation and recreational fishing are permitted in the open areas of the lease site.

9. Dragging is limited to the hard bottom substrate in the channels within the lease boundaries.

9. REVOCATION OF LEASE

The Commissioner may commence revocation procedures upon determining pursuant to 12 MRSA §6072 (11) and DMR Rule Chapter 2.42 that no substantial aquaculture has been conducted within the preceding year, that the lease activities are substantially injurious to marine organisms, or that any of the conditions of the lease or any applicable laws or regulations have been violated.

Dated: May 14th, 2012

Patrick C. Keliher
Commissioner,
Department of Marine Resources