STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
Standard Aquaculture Lease Application
5 September 2007
Docket # 2007-07

ATLANTIC SALMON
OF MAINE, LLC
Site MACH CIN
(Cross Island North)

**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION**

On February 8, 2007, the Department of Marine Resources ("DMR") received an application from Atlantic Salmon of Maine Limited Liability Company ("ASM") for a ten-year aquaculture lease on 35 acres of submerged land and coastal waters located in Machias Bay northwest of Cross Island in the Town of Cutler in Washington County in the State of Maine, for the purpose of cultivating Atlantic salmon (*Salmo salar*); halibut (*Hippoglossus hippoglossus)*; cod (*Gadus morhua)*; arctic charr (*Salvelinus alpinus*); blue mussels (*Mytilus edulis)*; scallops (*Placopectin magellanicus*; American or eastern oyster (*Crassostrea virginica)*; dulse (*Rhodymenia palmata, Palmaria palmata*); nori/laver (*Porphyra umbilicalis, Porphyra purpurea, Porphyra amplissim)*; bloodworms (*Glycera dibranchiata*); and sand worms (*Nereis virens)* using net pen, suspended, and bottom culture techniques. The application was accepted as complete on March 21, 2007. No party intervened in this case. A public hearing on this application was held on July 16, 2007, in Cutler, Maine.

## 1. THE PROCEEDINGS

The evidentiary record before the Department regarding this lease application includes seven exhibits introduced at the hearing (see exhibit list appended), as well as testimony given and recorded at the hearing and several documents submitted by the applicant after the hearing at the Hearings Officer's request and included in the case file (which is Exhibit 1). Sworn testimony was given at the hearing by David Miller on behalf of the applicant and by DMR's Aquaculture Environmental Coordinator, Jon Lewis. The Hearings Officer was Diantha Robinson.

No government agencies testified, although notices and copies of the application and DMR site report were sent to numerous state and federal agencies, including, but not limited to: the U.S. Army Corps of Engineers, the U.S. Coast Guard, the National Marine Fisheries Service, the Maine Department of Inland Fisheries & Wildlife, the Maine Department of Environmental Protection, and the Maine State Planning Office, as well as to other government agencies, educational institutions, aquaculture and environmental organizations, the Town of Cutler and

the Cutler Harbormaster, members of the Legislature, representatives of the press, and private individuals, including four landowners originally thought to be riparians with property within 1,000 feet of the proposed lease site (the properties in question now appear to be located beyond the 1,000-foot limit provided in statute). No members of the public attended the hearing, and no written comments have been submitted regarding this application.

At the hearing, David Miller, Marine Production Manager of ASM described the proposed project and showed a Power Point presentation. Mr. Lewis presented his site report, including a benthic video that he filmed showing the sea bottom at the site. Both witnesses were sworn and subject to questioning by the Department and the applicant. The hearing was recorded by DMR. The evidence is summarized below. [NOTE: The reference (Smith/Jones) means testimony of Smith, being questioned by Jones.]

## 2. DESCRIPTION OF THE PROJECT

### A. Adding Phoenix Salmon as a co-leaseholder

At the commencement of the hearing, counsel for ASM requested that Phoenix Salmon US Inc. be added to the lease as a co-lessee. Phoenix is a wholly-owned subsidiary of True North Salmon US Inc., as are ASM and a number of other U.S. fish farming companies. According to Exhibit 5, ASM is wholly owned by True North Salmon US Inc., a subsidiary of Cooke Aquaculture Inc. Thus, ASM and Phoenix are affiliated companies, both being wholly owned by True North Salmon US Inc. and ultimately by Cooke Aquaculture Inc.

In response to written questions from the Hearings Officer after the hearing, counsel for ASM informed DMR that "Cooke has been discussing a possible consolidation of US farming operations into one US entity. As currently discussed, that consolidation would take the form of a merger of US farming entities (including Atlantic Salmon of Maine LLC) into Phoenix Salmon US, with Phoenix Salmon US as the surviving entity. True North Salmon US would continue on as the parent holding company for the farming entity. The idea is to simplify the management and operations of US operations" (Letter from P. Andrew Hamilton, Esq. to Diantha C. Robinson, dated July 24, 2007 and contained in Exhibit 1).

The Hearings Officer requested ASM at the hearing to submit all corporate documentation for Phoenix that would have been required by DMR Rule 2.12, had Phoenix been included as a co-applicant on the original application. All required documentation was promptly submitted, the responses to all items are satisfactory, and there appears to be no reason not to grant the request to include Phoenix Salmon US Inc. The identity and experience of the management of the aquaculture operation, as well as their financial and technical capability, will be the same under Phoenix as a lessee as it will be under ASM. If ASM is eventually subsumed into Phoenix, it does not appear that the change would affect the operation of this lease site.

Therefore, I conclude that Phoenix Salmon US Inc. may and will be properly considered as a co-applicant with ASM for this lease and will be included as a co-lessee on the lease.

**B. The Application**

As a member of the Cooke Aquaculture family of companies, ASM is part of the firm's operations in Maine, which currently include hatcheries in Oquossoc, Bingham, and East Machias and 23 net pen lease sites along the eastern Maine coast totaling 479.48 acres. Cooke Aquaculture has 20 years' experience in salmon aquaculture in Maine and Canada and 10 years' experience raising salmon at this site (revised application, sections 9 c and d; Exhibit 5, pp. 6, 7; Miller, direct).

1. Site

ASM previously held an aquaculture lease on 20 acres at this location, acronym MACH CI2, for the net pen culture of Atlantic salmon from 1997 to 2007. ASM inadvertently allowed that lease to lapse without being renewed, and thus the company is now applying for a new lease in the same location.

ASM proposes to expand the size of the new lease to 35 acres by extending the previous site boundaries to the north and west. According to their presentation at the public hearing, the additional space allows for economies of scale in the operation, and the deeper water in the newly-added area will help to minimize the environmental impact of the project (Exhibit 5, p. 15). Mr. Miller & Mr. Lewis agreed at the hearing to use the site coordinates shown for the expanded site in ASM's Power Point presentation as the official description of its boundaries; they appear in Exhibit 5, the printed version, as the 28th page (Miller/Lewis).

By increasing the size of the site, ASM will raise the number of pens from 16 pens arrayed in a 4 x 4 unit grid to 25 pens in a 5 x 5 unit grid. The grid system will cover approximately 15.7 acres, with the cages themselves occupying a surface area of about 5 acres. A 35' x 90' barge moored at the site will house the centralized feeding system; if it is not moored on the site, ASM will obtain a mooring permit from the Town of Cutler (Exhibit 5, pp. 9, 10, Miller, direct).

The previous lease was stocked with approximately 500,000 fish; the new, larger site will be stocked with approximately 750,000 fish, with a projected growout of 700,000 fish for harvest, weighing 6 kg each. The number of fish stocked per acre will drop, from approximately 25,000 in the previous configuration, to approximately 21,425 at the larger site, a 14.3% reduction. Single year class stocking will be used, with target maximum densities of 18-25 kg per cubic meter, according to Mr. Miller (Miller, direct; Exhibit 5, pp. 10, 11).

Feeding will be monitored by ASM staff and by underwater cameras or other technology to achieve the most efficient use of feed. According to Mr. Miller, fish will be fed twice daily between May and December; the feeding schedule will be consistent with that at the company's

other sites; and improvements in feeding operations will be implemented as they are developed (Miller, direct; Exhibit 5, pp. 15).

The company presently has no fish processing facilities in Maine, but Mr. Miller testified that Cooke is considering opening a plant in the state at some future time (Miller direct, Ex. 5, p. 7).

2. Permits; Bond

ASM presently has an amended permit from the U.S. Army Corps of Engineers for the expanded level of equipment at the site. The expansion of the site has also been approved by the Maine Dept. of Environmental Protection (DEP) under the General Permit for Waste Discharge (Miller, direct; Ex.5, p. 13). The site on the northwest side of Cross Island is located in ocean waters classified by DEP as Class SB (Matthew Young, DEP, personal communication to Diantha Robinson). The Company currently holds a bond for the site from the previous lease; it will be transferred and upgraded for the proposed lease, according to the application (Exhibit 2, sec. 10(a).)

**C. Site Report**

Mr. Lewis presented the site report that he and Marcy Nelson prepared after visiting the site on May 23, 2007 and documenting the bottom characteristics and flora and fauna of the site with a VideoRay Remote Operating Vehicle (ROV). At the hearing, he showed the film taken with the ROV. The paths of the video transects are depicted in the site report in Figure 2 (Exhibit 3, p. 2).

Currents at the site are moderate to weak at mid-depth, with an average velocity of 9.4 cm/second and a maximum velocity of 23.6 cm/second. The maximum depth found during the video transects was 66 feet on the western edge, decreasing to approximately 55 feet on the eastern side. Estimated minimal water depths at the site are 53.9 to 63.9 feet. Given the proposed size of the fish pens, the site report concludes that a minimum of 24 feet of water will remain between the nets and the sea floor (Exhibit 3, p. 3).

According to the site report, dissolved oxygen levels in the waters at the site have been monitored by DMR over the past ten years and always found to be acceptable for finfish culture. Tidal range is 12.8 feet mean, 14.6 feet spring. The site is not expected to experience ice-over during the winter, although such an event has occurred in the recent past. "Pan ice", sheets of ice that have floated out to sea from shallower areas of the bay, may pass through the site (Exhibit 3, pp. 6, 7).

Other observations made in the site report are noted in Section 3, below.

## 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 if s/he determines that, taking into consideration the number and density of aquaculture leases in an area, the project will not unreasonably interfere with the ingress and egress of riparian owners; with navigation; with fishing or other uses of the area; with significant wildlife habitat and marine habitat or with the ability of the site and surrounding marine and upland areas to support ecologically significant flora and fauna; or with the public use or enjoyment within 1,000 feet of a beach, park, docking facility or certain conserved land owned by the Federal Government, the State Government, or a municipal governmental agency. 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

Mr. Miller testified that the site is at least 1400 ft. from Cross Island, and that the aquaculture operation will not unreasonably interfere with riparian owners' access to and from the shore, in any event. His written testimony also states that "No use of Cross Island by ASM is anticipated" (Miller, direct; Exhibit 5, pp. 17, 22). The application states that "Riparian owners do not use lease site for purposes of land access" (Exhibit 2, sec. 7 (a) (4)).

Mr. Lewis notes in the site report that the site is approximately 1,450 ft. from Cross Island (Exhibit 3, pp 3, 5) and should pose no impediment to riparian ingress or egress. In any event, the four owners of land on Cross Island were notified throughout this proceeding (although it subsequently appears that they were not required to be notified, as their land does not lie within 1,000 feet of the proposed lease site), and no responses were received (Exhibit 1).

The previous lease held for this site by ASM contained the following condition: "lessees and employees shall not land on or use Cross Island in any way except for the purpose of removing materials or trash from the shore or island." While the island is not within 1,000 feet of the proposed lease site, it is relatively close by. No objection was voiced to the condition in the previous lease, and it appears reasonable to repeat this condition in the new lease.

Findings of Fact Regarding Riparian Access:

Therefore, I find that the aquaculture activities proposed for these sites will not unreasonably interfere with the ingress and egress of any riparian owner.

**B. Navigation**

ASM will base its operations on land in Machiasport, at a pier the company uses as a base for its operations at several net pen sites in Machias Bay. Company personnel will travel by boat to the site as follows: feeding crew, once daily; maintenance and feed delivery crew, once daily; divers, twice a week; harvest vessel, daily during harvesting periods. Harvesting will take place for about 80 days during the last six-month period of the two-year growout cycle (Miller, direct; Exhibit 5, pp. 14, 15).

Mr. Miller testified that the site is located more than 1,400 ft. from the shore of Cross Island, leaving open a "broad navigational passage" between the island and the proposed lease site. Most of the boat traffic in the area is composed of local fishermen, and there is no history of conflict between their navigational needs and that of ASM's previous aquaculture operation on the site. According to Mr. Miller, the site is not located in a recognized navigational channel (Miller direct; Exhibit 5, p. 18).

The application states that most boat traffic in the area is commercial fishing boats, typically 20-40 ft. long, engaged in seasonal lobster fishing, and that recreational boat activity is minimal, just occasional smaller (16-25. ft.) boats or kayaks (Exhibit 2, sec. 7 (b)(1).

The site report notes that no moorings were located within the proposed lease boundaries at the time of the site visit, other than a few buoys belonging to ASM. Mr. Miller testified that he marked the site 30 to 40 days prior to the hearing, as required by DMR rules.

With the expansion in size of the lease, the site report states that "[a]pproximately 1,400 feet of navigable water would exist between Cross Island and the eastern lease boundary and approximately 2.3 miles of navigable water would exist between the farm boundaries and the mainland to the west. Vessels traveling to the north or south likely would naturally give this area a wide berth to avoid the peninsula that creates the western extent of Cross Island. Most vessels are expected to travel to the west (or outside) of the proposed lease site" (Exhibit 3, p. 5).

According to the site report, the Cutler Harbormaster, Mr. Robert Cates, indicated that the proposed lease "would not interfere with navigation in designated channels, any moorings within the proposed lease boundaries, with any traditional storm anchorages, or with shorefront property owner access." He opined that the mooring system as described in the application was "adequate and appropriate" (Exhibit 3, p. 8).

Mr. Miller testified that ASM will mark the lease site in accordance both with DMR rules and with U.S. Coast Guard requirements. This was a condition of the previous lease, and that condition will be included in any lease for the proposed site.

The evidence shows that lease operations have been conducted in the vicinity of this site over the past ten years. Vessel traffic in Machias Bay moves primarily west of the site, and there is no evidence of conflict with commercial and recreational fishing traffic or with recreational boating in the area. The site has been and will be properly marked, and it will not interfere with any moorings, docks, or anchorages, nor will it interfere with navigation in general in the area.

Findings of Fact Regarding Navigation

Therefore, I find that the aquaculture activities proposed for these sites will not unreasonably interfere with navigation.

**C. Fishing & Other Uses**

Mr. Miller testified that there is limited lobster fishing at the lease site; that under the previous ASM lease, lobster fishing has been allowed within the open areas inside the lease boundaries, but not within the grid of fish pens; and that ASM works closely with lobster fishermen in Machias Bay to identify and resolve issues regarding lobstering on aquaculture lease sites. The application states that most boat traffic in the area is commercial fishing boats, typically 20-40 ft. long, engaged in seasonal lobster fishing, and that the site is not fished for scallops or sea urchins (Exhibit 2, sec. 7 (b)(1).

Mr. Miller requested the exclusive use of the area occupied by the fish pens, moorings, and barges, as well as a prohibition on dragging within the lease site or hand scalloping under the pens. His main concern is that there be no lobstering within the grid of pens and no dragging on the lease site; lobstering outside the grid of structures is acceptable to ASM (Miller/Lewis). Mr. Miller testified that ASM will "encourage continued access to the lease site area outside of the pen and mooring array for lobstering" (Miller/Robinson; Exhibit 5, p. 23).

The DMR site report prepared by Mr. Lewis notes that while he observed no commercial or recreational fishing at the time of his visit, fishing in the area "is likely to be a seasonal occurrence." The report also notes that "Lobster fishing has been observed in the area surrounding the operational farm during past years" (Exhibit 3, p. 4).

The site report summarizes the Cutler Harbormaster's comments regarding fishing as follows: "...Mr. Cates indicated that [commercial] lobster fishing does take place within the proposed lease boundaries. He felt that if fishermen were allowed to fish along the outside boundaries of the lease site the impact would be minimal. He expressed concern that boat activity on and off the lease site may cause loss of traps due to the propellers' cutting lines. He stated that scallop fishing does take place in Machias Bay although he was not sure how much dragging is done within the proposed lease site, if any" (Exhibit 3, p. 8).

Other Aquaculture Sites: there are five finfish farms within Machias Bay, according to the site report. The site MACH CI (25 acres), another ASM site off the northwest side of Cross Island, is the nearest to the proposed site, at 707 feet to the south. Other sites include Cutler West (MACH CW, 10 acres), 1.29 miles northeast; and, to the southwest, Stone Island (MACH ST, 10 acres, 2.86 miles distant); Starboard Island (MACH II, 40 acres, 3.21 miles distant); and Libby Island (MACH LI, 20 acres, 3.70 miles distant) (Exhibit 3, p. 7). All of these sites are owned

ultimately by Cooke Aquaculture: Cutler West is held by the subsidiary Maine Coast Nordic, and the other four sites are owned by ASM.

The evidence supports a finding that the proposed aquaculture project will not interfere unreasonably with fishing and boating activities in the area or with other aquaculture sites. ASM has requested exclusive use of the area occupied by the pen and mooring array and a prohibition on hand scalloping under the pens, and this will be granted; lobstering in the open areas of the site outside the pen and mooring array will be permitted.

ASM has also requested DMR to prohibit dragging within the entire lease site. According to 12 MRSA §6957 (1), dragging and trawling are prohibited within 3oo feet of any floating aquaculture equipment, if the equipment is marked as provided in subsection 1-A of the statute.[1]

Findings of Fact Regarding Fishing & Other Uses

Therefore, I find that the aquaculture activities proposed for these sites will not unreasonably interfere with fishing or other uses of the area.

## D. Habitat, Flora & Fauna

The application contains a letter from MDIF&W confirming that no designated or pending Essential or Significant Wildlife Habitats would be affected by this proposed lease (Exhibit 2, attachment 5b), and Mr. Miller so testified (Miller/Robinson). The application also

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[1] **§6957. Fishing near floating equipment**

**1. Prohibition.** A person may not operate a vessel using drags, otter trawls, pair trawls, beam trawls, scottish seines or midwater trawls to fish for or take finfish, shellfish, sea urchins or any other marine organisms within 300 feet of any suspended culture floating cages, tray racks or other floating equipment authorized in a lease issued by the commissioner under section 6072, if the equipment is marked in accordance with subsection 1-A.

[1995, c. 169, §2 (amd).]

**1-A. Markings.** The owner of a suspended culture floating cage, tray rack or other floating equipment shall mark the area in which a vessel is prohibited under subsection 1 with at least 4 anchors, each marked by a yellow buoy at least 2 feet in diameter.

[1995, c. 169, §2 (new).]

**2. Penalty.** A violation of subsection 1 is a Class D crime, except that, notwithstanding Title 17-A, section 1301, the court shall impose a minimum fine of $1,000 that may not be suspended.

[1995, c. 169, §2 (amd).]

PL 1993, Ch. 723, §1 (NEW).
PL 1995, Ch. 169, §2 (AMD).

***[The text of DMR's rules on marking aquaculture leases is included at the end of this document.]***

states that there are no known fish migration routes in the area and that area is open to shellfish harvesting (Exhibit 2, sec. 5a).

Mr. Miller testified that benthic surveys of the site show few significant commercial species, and the proposed aquaculture operation will not unreasonably affect flora and fauna existing at the site (Miller, direct; Exhibit 5, p. 20). Mr. Lewis notes in the site report that "no eel grass or other submerged aquatic vegetation was documented during the May 23, 2007 underwater video survey or during any other SCUBA surveys previously conducted on or around the site" (Exhibit 3, p. 8).

ASM supplied a summary of the site's environmental history (Exhibit 7), prepared by Chris Heinig of MER Assessment Corporation; MER prepared the original baseline survey of the site on August 15, 1995. The summary describes both the original survey findings and the results of site monitoring over the ten years of the previous lease. Mr. Heinig was unable to be present at the hearing; Mr. Miller testified to the contents of Exhibit 7.

As described by Mr. Miller, the summary concludes that during the period 1998 to 2000, under the previous ASM lease, the site "suffered a period of substantial benthic deterioration...due to improper husbandry practices. After a recovery period from 2001-2003, fish were successfully grown on site from 2003 to 2005 with only slight to moderate effects to the bottom, indicating that, if proper husbandry practices are used, the site can be operated without excessive deterioration of the benthic habitat" (Exhibit 5, p. 24).

As stated in Mr. Heinig's report, the site has been surveyed since 1995, before ASM received its original lease in 1997. In the site report, Mr. Lewis refers to this history of monitoring and surveying, and summarizes the results of his May 23, 2007 site visit and video transects. At the hearing, although Mr. Heinig was unable to be present, Mr. Lewis testified that he had reviewed Mr. Heinig's assessment of the site (Exhibit 7) and that he "agreed completely" with its description of the site's history.

The site report notes that the bottom of the site is soft mud and clay, with rare outcroppings of rock; the bottom is flat, sloping gradually to the west and deeper water. Most of the sediment consists of clay; the area is depositional. The primary flora is a "brown benthic-diatom algae typical of soft bottom habitats." Other unattached drift algae were observed; there was very little fauna, including one sea scallop, lobster burrows, and eel holes, but no animals were observed (Exhibit 3, p. 3).

The site report notes that DMR divers have made numerous SCUBA dives at the site to investigate the conditions there in addition to many hours of video produced in monitoring the site during the 10 years of the previous lease[2]. Based on this accumulated history of observations, the site report notes that "fauna more typically associated with the [fish] farm during operation

[2] The number of dives was accidentally omitted from the site report, but well in excess of 75 dives have been made on the site by DMR personnel and others during the past ten years. (Personal communication from DMR Scientist Marcy Nelson to Diantha Robinson.)

include mud shrimp and mysid shrimp..., lobster, rock crabs...and anemones... One unusual observation in the vicinity of the operational farm has been the presence of a large (10-14 feet) shark of unknown species (speculated as either Great White or Mako) that has frequented the area in 2003 and 2004" (Exhibit 3, p. 4).

The report concludes that the reason few fauna were observed during the site visit may be either the time of year or possibly the fact that animals were attracted to the site during previous visits when the fish farm was in operation. Reference sites nearby, however, not influenced by the most recent fish farming operations in 2003-04, "showed a somewhat lifeless, mud bottom that was very similar to the bottom observed on May 23rd" (Exhibit 3, p. 4).

It appears that the site is not likely to have a deleterious effect on the limited number of species residing there and that the lessons learned from the experience of the previous lease are most likely to result in operations that do not unreasonably interfere with the ecological health of the site and the flora and fauna that inhabit it.

Findings of Fact Regarding Habitat, Flora & Fauna

Therefore, I find that the aquaculture activities proposed for these sites will not unreasonably interfere with significant wildlife habitat and marine habitat or with the ability of the lease site and surrounding marine and upland areas to support ecologically significant flora and fauna.

**E. Public Use & Enjoyment**

According to Mr. Miller and to the Cutler Harbormaster, there are no public beaches, parks, or docking facilities, within 1,000 feet of the proposed lease site. ASM does not anticipate using Cross Island in the course of its operations (Miller, direct; Exhibit 5, p. 22; Exhibit 3, p. 8).

Although the bulk of the land on Cross Island is owned in fee by the U.S. Fish and Wildlife Service, the island is more than 1,000 feet distant from the proposed lease site, so the question of whether this property meets the definition of "conserved lands" in 12 MRSA § 6072 (7-A)(F) does not arise.

Findings of Fact Regarding Public Use and Enjoyment:

Therefore, I find that the aquaculture activities proposed for these sites will not unreasonably interfere with the public use or enjoyment within 1,000 feet of a beach, park, docking facility, or certain conserved land owned by the Federal Government, the State Government, or a municipal governmental agency.

**F. Source of Organisms**

ASM proposes to raise Atlantic salmon (*Salmo salar*) on this site, as it has done before; it is also requesting that the lease allow cultivation of a number of other species, as it explores the

potential of polyculture at this site. These additional species include halibut (*Hippoglossus hippoglossus)*; cod (*Gadus morhua)*; arctic charr (*Salvelinus alpinus*); blue mussels (*Mytilus edulis)*; scallops (*Placopectin magellanicus*; American or eastern oyster (*Crassostrea virginica)*; dulse (*Rhodymenia palmata, Palmaria palmata*); nori/laver (*Porphyra umbilicalis, Porphyra purpurea, Porphyra amplissim)*; bloodworms (*Glycera dibranchiata*); and sand worms (*Nereis virens)*. Exhibit 6 describes the proposed culture techniques for each species.

According to Mr. Miller, who describes this aspect of the project in Exhibit 5 as "multi-trophic aquaculture", ASM will concentrate primarily on raising Atlantic salmon and blue mussels. The mussels will not require feeding, as they will filter nutrients from the ambient seawater. ASM will continue to evaluate other species for polyculture as technology and market conditions permit (Miller, direct; Exhibit 5, pp. 8, 9).

Mr. Miller testified that Cooke Aquaculture operates three hatcheries which raise Atlantic salmon smolt for its fish farms. Using a "family based broodstock program", they select fish for desirable traits, cross-breed them, raise smolts from the eggs, grow them out at the aquaculture sites to approximately 12 lbs. in size, and evaluate the resulting fish at harvest for traits they wish to promote. These fish are bred, in turn, to continue producing new fish with consistent, desirable traits. Fish raised in the hatcheries are marked as required by the DEP and the U.S. Army Corps of Engineers to identify them as differing from wild Atlantic salmon, which are a Federally-designated endangered species (Miller, direct; Exhibit 5, p. 7 ).

The other species which ASM is seeking authority to raise will be obtained from approved sources, as noted in the cultivation plan (Exhibit 6). Mr. Miller testified that these sources "will be evaluated on a case by case basis in collaboration with regulatory officials" (Exhibit 5, p. 21). These sources are not finally identified in every case, but those mentioned include: Halibut and cod from University of Maine or Great Bay Aquaculture; Arctic charr from Pisciculture des Alleguanays of Quebec; blue mussels from wild stock, scallops from wild stock or a hatchery; oysters from a hatchery; dulse from wild stock or an approved supplier; nori/laver from an approved supplier such as the University of Maine; and bloodworms and sand worms from Cooke hatchery stock or from an approved supplier.

It is clear that the company has a definite plan for obtaining all its stock, although it is not now possible for it to finally commit to definite sources in every case, other than for the Atlantic salmon that is the major species to be reared at the site. Thus, DMR has sufficient basis upon which to find that there are available sources for the various species that ASM proposes to cultivate.

Mr. Lewis testified, however, that ASM should carefully confirm with DEP the conditions necessary on the sea bottom of the site for polyculture operations to take place. If ASM proceeds with its polyculture (or multi-trophic aquaculture) plan at some time during the lease term, it will be the first such undertaking in Maine, according to Mr. Lewis. He explained that, in monitoring the fish farming site for environmental compliance, DEP samples the bottom; if the nature of the

bottom and/or the dominant species there are found to have changed, this can trigger regulatory action, because the DEP NPDES permit prohibits ASM from altering the benthic environment of the site (Lewis, direct).

Such changes in the benthic environment, Mr. Lewis testified, can occur in three ways associated with potential polyculture activities. First, harvesting bottom-cultured shellfish by dragging could conflict with DEP's rule against dragging as a method of site remediation. Second, shellfish raised on rafts that incur heavy drop-off of individuals to the bottom (particularly mussels and oysters) can foul the bottom, trap debris, and promote decay, creating anoxic conditions, *Beggiatoa* matting, and harm to existing species on the site. Third, the development of species on the bottom that were not growing on the site initially, such as bloodworms and sand worms, may produce a change in the dominant species on the site, potentially violating the NPDES permit.

Mr. Lewis emphasized the need for clear and continuing dialogue between the leaseholder(s) and DEP to avoid potential problems (Lewis, direct). Mr. Miller noted that he found Mr. Lewis's testimony "helpful", and ASM's attorney agreed and noted that the company has good communications with DEP.

From DMR's perspective, polyculture (or multi-trophic aquaculture), the cultivating of multiple species in a manner that allows them to coexist successfully on a site or even to interact in a way that improves the environmental conditions on the site, has the potential to enhance the diversity and sustainability of aquaculture projects.

Findings of Fact Regarding Source of Organisms

Therefore, I find that the applicant has demonstrated that there is an available source of halibut (*Hippoglossus hippoglossus)*; cod (*Gadus morhua)*; arctic charr (*Salvelinus alpinus*); blue mussels (*Mytilus edulis)*; scallops (*Placopectin magellanicus*; American or eastern oyster (*Crassostrea virginica)*; dulse (*Rhodymenia palmata, Palmaria palmata*); nori/laver (*Porphyra umbilicalis, Porphyra purpurea, Porphyra amplissim)*; bloodworms (*Glycera dibranchiata*); and sand worms (*Nereis virens)* to be cultured for the lease site.

**G. Light**

According to the application and Mr. Miller's testimony, underwater lights (100 and 400 watts) will be used to prevent maturation of fish, but these lights will not be used at the water's surface (Miller, direct; Exhibit 2, sec. 3(b)(4)); Exhibit 5, p. 11). These lights would constitute "husbandry lighting", for purposes of the rule on lighting, 2.37(a) (8). Otherwise, ASM does not plan to use lights at the site, except "in unusual circumstances such as storm events and possible harvesting" (Exhibit 2, sec. 3(b)(5)). Thus, it appears that such lighting as is likely to be used at the site complies with DMR requirements.

Findings of Fact Regarding Light

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

## H. Noise

In its application ASM describes several items of equipment that will produce noise on the site and the schedules on which they will be operated (Exhibit 2, sec. 3b). According to the application, the equipment is equipped with mufflers, and according to Mr. Miller, ASM will "work to minimize background noise of generators" (Ex. 5 p. 12).

As noted in the site report, several activities associated with the project are potential sources of noise, including outboard and diesel boat motors, power-washers and feed blowers powered by gasoline motors, and possibly a generator. Each of these would be equipped with a muffler, and noise levels "would be comparable to other commercial fishing activities in the area." The site report concludes that the level of noise at the proposed site will be similar to that experienced during operations at the site in the past when the previous lease was in force.

It appears that ASM will comply with DMR rule 2.37 (A) (9) regarding control of noise at the site by muffling equipment as much as possible. The company operated a net pen operation at this site for the past ten years, and no issues with respect to noise over the course of that lease have been raised in the course of this proceeding. As the site report notes, noise levels will be comparable to other commercial fishing activities in the area. In addition, the application notes (sec. 7b) that recreational boat traffic in the area is minimal, so there is little human activity that is likely to be disturbed by any noise generated at the site.

Findings of Fact Regarding Noise

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

## I. Visual Impact

As described in the application and in Mr. Miller's testimony, the project will consist of 25 fish pens arranged in a 5 x 5 grid (Exhibit 2, sec. 2(a-d); Exhibit 5, pp. 9. 10). Vessels serving the site include a 40 ft. lobster boat and two barge style boats of 50 and 60 feet each (Exhibit 2, sec. 3(A) (1)). Although the application notes that the colors are subject to change, the fish pens will likely be colored black; the nets, red; the bird cover, black; and the feeding system barge, almond or gray (Exhibit 2, sec. 2(h)). In general, these are non-contrasting colors as required by DMR Rule 2.37 (A)(10).

The feeding barge is the major structure to be used at the site; it measures 30 ft. long by 90 ft. wide by 45 ft. in height, although when empty, the top of the barge is no more than 20 ft.

above the waterline (Exhibit 2, sec. 2(e)(1)), the maximum height for structures as provided in DMR Rule 2.37(A)(10). According to Mr. Miller, "ASM will implement DMR rules that currently regulate structure height" (Exhibit 5, p. 12).

Twenty-five net pens and a 30 x 90-ft. feeding barge will certainly be visible from the waters around the proposed site; there do not appear to be any structures planned for the site that are not essential to the aquaculture operation there, however, and these structures meet the requirements of DMR Rule 2.37 (A)(10).

Findings of Fact Regarding Visual Impact

Therefore, I find that the proposed lease 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, and taking into consideration the number and density of aquaculture leases in the area, I conclude that:

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

2. The aquaculture activities proposed for this site will not unreasonably interfere with navigation.

3. The aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area.

4. The aquaculture activities proposed for this site will not unreasonably interfere with significant wildlife habitat and marine habitat or with the ability of the lease site and surrounding marine and upland areas to support 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 a beach, park, docking facility or certain conserved land owned by the Federal Government, the State Government, or a municipal governmental agency.

6. The applicant has demonstrated that there is an available source of Atlantic salmon (*Salmo salar*); halibut (*Hippoglossus hippoglossus)*; cod (*Gadus morhua)*; arctic charr (*Salvelinus alpinus*); blue mussels (*Mytilus edulis)*; scallops (*Placopectin magellanicus*; American or eastern oyster (*Crassostrea virginica)*; dulse (*Rhodymenia palmata, Palmaria palmata*); nori/laver (*Porphyra umbilicalis, Porphyra purpurea, Porphyra amplissim)*; bloodworms (*Glycera dibranchiata*); and sand worms (*Nereis virens)* 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. Phoenix Salmon US Inc. will be included as a co-lessee on the lease.

## 5. DECISION

Based on the foregoing, the Commissioner grants the requested lease of 35 acres to the applicants, Atlantic Salmon of Maine and Phoenix Salmon US Inc., for ten years from the date of this decision for the purpose of cultivating Atlantic salmon (*Salmo salar*); halibut (*Hippoglossus hippoglossus)*; cod (*Gadus morhua)*; arctic charr (*Salvelinus alpinus*); blue mussels (*Mytilus edulis)*; scallops (*Placopectin magellanicus*; American or eastern oyster (*Crassostrea virginica)*; dulse (*Rhodymenia palmata, Palmaria palmata*); nori/laver (*Porphyra umbilicalis, Porphyra purpurea, Porphyra amplissim)*; bloodworms (*Glycera dibranchiata*); and sand worms (*Nereis virens)* using net pen, suspended, and bottom culture techniques. The applicants shall pay the State of Maine rent in the amount of $100.00 per acre per year. The applicants shall post a bond or establish an escrow account pursuant to DMR Rule 2.40 (2) (A) in the amount of $25,000, conditioned upon their performance of the obligations contained in the aquaculture lease documents and all applicable statutes and regulations.

## 6. 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)[3]. 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:

1. The lease shall be marked in accordance with DMR Rule 2.80 and with U.S. Coast Guard requirements. The lessees shall notify DMR of the Coast Guard marking requirements, once they are determined.

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[3] 12 MRSA §6072 (7-B) provides that:

> "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."

2. Lobstering is allowed in open areas of the lease outside the pen and mooring array but is prohibited within the pen and mooring array; hand scalloping is prohibited under the pens.

3. The lessees, their agents and their employees shall not land on or use Cross Island in any way except for the purpose of removing aquaculture materials or trash from the island.

**7. REVOCATION OF LEASE**

The Commissioner may commence revocation procedures if he determines that substantial aquaculture has not been conducted within the preceding year or that the lease activities are substantially injurious to marine organisms. If any of the conditions or requirements imposed in this decision, in the lease, or in the law is not being observed, the Commissioner may revoke the aquaculture lease.

**8. DATE AND SIGNATURE**

**Dated:** _____

_____
**George D. Lapointe (Commissioner)**
**Department of Marine Resources**

**9. LIST OF EXHIBITS**

1. DMR Case File

2. Application of Atlantic Salmon of Maine (ASM), dated February 6, 2007

3. DMR Site Report, dated June 4, 2007

4. Compact disc of Power Point presentation by Cooke Aquaculture (without corrections) (1 disc)

5. Paper copy of Power Point presentation, with corrections noted by hand by the Hearings Officer (29 pages)

6. Cultivation Plan Summary Cross Island North for Non-Traditional Species, by ASM dated July, 2007 (2 pages)

7. MER Assessment Corporation, Cross Island North salmon aquaculture site, Brief summary of site history (2 pages)

## ***DMR MARKING RULES- 2.75 & 2.80***:

### 2.75 Minimum Lease Maintenance Standards

1. Each lessee shall mark the lease in a manner prescribed by the Commissioner in the lease.

2. Each lessee shall maintain his aquaculture lease in such a manner as to avoid the creation of a public or private nuisance and to avoid substantial injury to marine organisms.

3. Each lessee is obligated for the routine collection and proper disposal of all errant gear, errant equipment, or errant solid waste from the lease site.

### 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.