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Commissioner Patrick Keliher  
Department of Marine Resources  
21 State House Station  
Augusta, ME 04333-0021  
Date: March 10, 2020  
RE: Nordic Aquafarms

Dear Commissioner Keliher,

The Sierra Club is the oldest environmental advocacy organization in the US. Sierra Club Maine represents 28,000 members and supporters in Maine. We are one of 64 chapters nationally with a greater than 2.5 million members and volunteers. We submit this letter as a replacement to our previous testimony.

The mission of the Department of Marine Resources is: "The Department of Marine Resources is established to **conserve** and develop marine and estuarine resources; **to conduct and sponsor scientific research**; to promote and develop the Maine **coastal fishing** industries; to advise and cooperate with local, state, and federal officials **concerning activities in coastal waters**; and to implement, administer, and enforce the laws and regulations necessary for these purposes..." — Maine Title 12, Chapter 603 §6021.

Sierra Club Maine has deep concerns that the evaluation of the application by Nordic Aquafarms (NAF) and its effect on the Marine Environment has been inadequate to show the full extent of the large-scale impacts of this project. While we appreciate that Ms Mendelson of the DEP would like to restrict the comments to a very narrow analysis of the actual dredge site impact on the in situ fishery, we believe that not only was there no opportunity to include the impact on the fishery as a whole in the NAF review, but the frequently changing parameters of this project and the late filing of construction details at that hearing will impact much more than the six miles of dredge barge traveling and disposal and the actual dredge site. Therefore we submit more extensive commentary

We urge the Department of Marine Resources along with the Department of Environmental Protection to require a full and transparent Environmental Impact Statement on those impacts that includes a **regional cumulative ecosystem risk assessment** as relative to the NRPA filing. It has clearly reached the level of controversy locally that achieves that bar. And broad impacts of this project are far from known. **We formally request an adjudicatory hearing on the marine resource and fishing impact of the NAF project pursuant to 38 M.R.S. § 480-D, sub-§ 9.** Our environment, and all the living creatures that depend on it, deserves



much greater scrutiny than is currently evident in the process to date. The mission of the DMR is to conserve our resources first. Conducting and sponsoring scientific research is also part of your mission. To date there has not been adequate analysis of the extent of impact this project may have on our existing fishery and the animals our fisheries depend upon to thrive.' **Simply put, if you don't look for them, the you won't find significant impacts.**

1) **CAFO:** Nordic Aquafarms (NAF) qualifies as a Contained Animal Feeding Operation (CAFO). Sierra Club's national policy is to oppose CAFO's in general because:

*"CAFOs congregate large numbers of animals in relatively small and confined places, and substitute intensive management, an artificial diet, and heavy application of prophylactic antibiotics and artificial hormones for traditional land and labor practices. Negative impacts include the release of toxic bioactive substances into the environment and food chain, air and water pollution from animal wastes, chronic inhumane treatment of animals, health hazards from noxious fumes, and the diversion of cropland from direct production of human food. CAFOs also accelerate climate change by their disproportionate production of greenhouse gases. The Sierra Club opposes the establishment of new CAFOs, and supports the phasing out of existing operations as expeditiously as possible."*

Nordic Aquafarms has based its advocacy on a proven, proprietary process to assure the City of Belfast and the State of Maine that it will **do no harm** environmentally. However, over the past two years, in checking their **own** website, NAF fails to have produced a single pound of salmon in their flagship salmon production farm. In fact, the date planned to provide that salmon has changed repeatedly. Proof of efficacy of their "proprietary filtration system" is not in evidence. Removal of feed, antibiotics, growth hormones and pathogens are yet to be proven. Water will be transiting the filtration system at a rate of an estimated 320,000 gallons per hour. Endocrine disruptors along with antibiotics are present in water systems worldwide, and causing downstream impacts. The filtration system, the thermal gradient impact, the salinity impact, the nutrients and chemicals are not proven to be removed nor to have **no impact** even in their original plant. (<http://www.nordicaquafarms.com/business-units>) And, the discharge outflow in Norway is in far deeper waters. No analysis of the impact on those waters is presently in evidence.

2) **Is NAF an RAS or an Hybrid RAS?** *"Definition: In a recirculating aquaculture system (RAS) the culture water is purified and reused continuously. A recirculating aquaculture system is an almost completely closed circuit."* This project intends to flow through 7.7 million gallons of water per day 365 days a year. That is



approximately 18% of the total water per day or about 320,000 gallons per hour—approaching 3 billion gallons/year. It does not appear to be a closed Recirculating system (RAS). Therefore, the through-puts are not minimized as suggested in the application, from the applicants own admission. What will they be? We don't know.

Therefore ample further study is required. Again Endocrine disruptors, antibiotics, growth hormones, and pathogens pose a risk to our existing fisheries and there is not adequate information to assess the outcome of this project to date.

3) **Scale:** Penobscot Bay is the largest embayment on the coast of Maine and is intrinsically important to the impact of the gyre beginning with the Scotian Current that flows in and around Penobscot Bay and feeds the entire Gulf of Maine. Existing ecosystem values may very well be put at grave risk due to the impact of this project by itself, and particularly cumulatively. The economy of Penobscot Bay region is intertwined with the estuary and thus negatively impacting it would have broad reaching effect on our entire bay from Port Clyde around to Stonington just as the ocean circulates throughout the bay.

The size of this project to deliver 30,000 tons of salmon carcasses per year is enormous and at least five times the size of the yet to be proven NAF Fredrikstad project. The amount of fresh water daily infused is 1.7 million gallons, only 500,000 of which come from the city water supply as per agreement with the City of Belfast. The remainder comes from the local aquifer that has been feeding the Little River. The hydrology of that system is not adequately studied to assure neither hardship with local homeowners and farmers, nor impacts on the functions and values of the Little River wetlands and estuary which will have impacts to the benthic habitat in the local intertidal and subtotal zones. **Scale matters** and especially when new technologies are introduced. Starting a project of this size, since they have no actual experience with salmon farming, in this hybrid of “Flow-through and RAS” technology, as an “experiment” is scaled too large to put this whole ecosystem, and and the dependent local economies of Penobscot Bay at risk.

4) **Discharge temperature and salinity:** Inadequate analysis of discharge volume and temperatures in the existing Penobscot Bay has been done. NAF states that their discharge waters will be between 5 and 27 degrees higher than ambient. While NAF indicates that the effluent temperature and salinity are comparable to the Belfast City Water Treatment discharge, an analysis of the cumulative impact of this additional input on the existing benthic habitat of the entire bay is essential. Thermal discharge is increasingly causing anoxia in other ocean aquatic systems that results ultimately in significant die-off. We cannot let that happen here. Stratification is likely



with the thermal pollution trapped underneath. It strains credulity that this volume (7.7mgd) of higher temperature water in an aquatic environment that includes not only some rebounding anadromous species such as salmon, alewives and blue backed herring, but also American Sturgeon, will have no impact. The fact that the marine species that these signal animals feed upon are extremely vulnerable to temperature increases of only one degree is well-known. Five degrees 24 hours a day 365 days a year is bad enough, Thirty degrees more than ambient in winter is unacceptable.

The analysis of the area of impact has been quite limited. It was surveyed only by a diver pulled behind a boat and only in the sub-tidal zone. A single-day analysis that included a diver dragged along the bottom is not an indication of the actual species that exist in this zone, or along side that zone throughout the year. *“The bottom line is that one has to conduct a regional cumulative ecosystem risk assessment to provide a context for the NAF proposal, since there are shifts in the ecosystem baseline in the Gulf of Maine and a multitude of human-based stressors from conflicting ocean uses.”* (David Dow, Retired Woods Hole Oceanographic and Sierra Club Marine Team)

Existing systems in fish hatcheries and wastewater discharge systems may not be up to snuff, but adding this kind of volume in one fell swoop bears much more scrutiny than presently required. Without thorough analysis the cumulative impact of this project may be **the tipping point** we really cannot afford to allow in Penobscot Bay.

5) **Dredge Plan.** The new plan for removal of the dredging material was introduced to the public at a Maine DMR hearing March 2, 2020. The late date of this plan and the poorly described process, including lack of information about the actual route of the barges and how they will be attached to bottom, was not acceptable protocol. It speed with which the permitting process is occurring especially with the moving target of information begs the question as to whether the DEP/DMR actually are looking into the impacts on existing local and state wide economic impacts. There is not adequate time to render a full analysis particularly because of the very inadequate core sampling done outside of the planned route.

The impact of the planned dredge on the benthic habitat, including allowing the spoils to sit on the bottom to be “washed”, indicates a lack of understanding of the damage that water column suspension of toxics including mercury. And it strains credulity that a filter on the de-watered dredge material located on the barge would sufficient to collect suspended mercury and other toxins now covered by silt. We know that the waters in Penobscot Bay mix. The risk to human health of suspension of mercury in the water column and throughout the food chain is great enough that



there needs to be more scrutiny of the project. We ask again that the DEP require an EIS.

6) **Holtra Chem Mercury** From DEP. ***Sample collection methods and handling.** All sampling must be done with core or grab samplers, depending on the depth of the proposed dredging and the nature of the materials. Field notes must be submitted that describe the sample depth, color, horizons, visual grain size, general cohesiveness and any obvious odors of the sediments. Care must be taken to avoid contaminating the sample through improper sampling techniques. Sampling records must be submitted that document the field collection and chain of custody to the time of analysis. Reports must specify the analytical methods followed. Percent recoveries and blanks and the method used must accompany all results. The laboratory QA/QC plan must be filed as required with the ACOE. The Department may request copies of the laboratory QA/QC on a case-by-case basis.*

In no way was the core sampling of the planned disposal dredge done properly. Commingling of the strata samples corrupted the core information and no analysis was done in the intertidal zone. The fact that Ransom Engineering didn't have an amphibious boat that could deposit the tester on land is not an excuse for omitting that data. Simply walking out on the mudflat to take cores at low tide is the solution to that problem.

In addition the photos provided beg the question about what the researcher was actually looking for since they opened the core sample, thereby causing contamination of the core. It is known that there is a deposited residue of Mercury in the upper Penobscot Bay. Re-suspending that mercury, which has already caused major closure of fishing ground in the mouth of the Penobscot River, **is a hazard we must not allow**. More work must be done to evaluate the sediment as per the standards required by the Holtra Chem/ Mallinckrodt adjudication. This fact alone should prompt an Environmental Impact Statement (EIS) with much greater analysis of the issues at hand. Add to that the presence of the active pockmarks in Belfast Bay and you have another serious level of concern that requires analysis.

7) **Essential Fish Habitat/ Endangered Species Anadromous fish and bottom of food chain impacts**-According to ACOE, "This project will have an adverse effect on a total of 14.62 acres of EFH." This project will impact a greater area in Penobscot Bay than simply the disrupted pipeline area. One cannot isolate the rest of the bay from the impact of the construction nor from the outflow. All of the impacted species exist in an aqueous environment that depends upon its cleanliness and freedom from toxic substances including antibiotics, growth hormones and bioactive substances. Anadromous species are rebounding. Sightings of Sturgeon and Salmon are reported from West Penobscot Bay to Pulpit Harbor, North Haven and up the Penobscot River. Their habit of upstream movement is preceded by periods of time along the coast as they migrate. In addition, the spawn of



anadromous species live in the waters adjacent to river outflow for a period of time prior to their dispersal to the open ocean. The animals they feed upon live in the sub-tidal and inter-tidal zones. Impact to these areas must be analyzed. We have spent too much time and effort with the removal of the five dams on the Penobscot River and the subsequent return of schooling anadromous fish to allow NAF to build without much more proof that they will do no harm to our aquatic environment. The proximity of the dredge and pipeline to EFH will cause impacts in the whole marine estuary.

9) **Impacts on the Existing Marine Fisheries Economy-** The DMR must “*conserve marine resources. . . promote and develop our coastal fishing industries*”. The lobster and shellfish industries that exist in Penobscot Bay are at risk from this project should the mercury sediment be suspended in the bay at significant levels. These industries are mostly smaller scale and family owned businesses that support a much broader part of our local economy. It is cavalier to consider a proposal of this scale of NAF which seeks to hire an outside number of 100 individuals without considering the thousands of individuals employed around Penobscot Bay providing service to and working on the water associated with these industries. We do not have the luxury to allow a large industrial entity to put Penobscot Bay at risk without doing the due diligence to evaluate the impacts. **Simply saying it isn’t going to have an impact is not enough.**

10) **Climate Change:** The Gulf of Maine is at risk due to Climate change and is one of the most quickly warming bodies of water on the planet. From Sierra Club’s policy statement:

*“ Climate Change and Agriculture: Climate change threatens the stability of our global food systems, as farmers depend upon relatively stable climate systems to plan for production and harvest. . . . Industrial agricultural and food system practices are a significant contributor to climate change, and it is essential that they be transformed to minimize generation of greenhouse gases and maximize carbon sequestration in plants and soils. . . . The non-therapeutic use of antibiotics in livestock should be eliminated.”*

NAF application promises to minimize impacts on our changing climate. They have not convinced us that their management plan meets the projected carbon footprint in either the construction or operation phases, the impact of the transportation of goods to and from the factory, the forested wetlands impacts, or the bioactive chemical, thermal and salinity impacts on marine life in Penobscot Bay. We fail to take the climate into consideration at our peril and the peril of all life on earth. An independent and transparent life cycle analysis of the project’s climate impact must be done to verify the accuracy of NAF’s own submissions.



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### **Conclusion:**

Based upon the current information about the NAF application and existing analysis, the impact of this project on Penobscot Bay would be huge. Sierra Club opposes new CAFO construction- NAF is a CAFO. Because the project has so many moving parts and even up to this past week has changed the dredging process, there needs to be greater care taken on the analysis. Due to the following: lack of proven history or technology in their flagship operation, lack of climate impact consideration, the sheer scale of the project, inadequate analysis of thermal and salinity analysis, lack of a dredge application, improper core sampling and consideration of the mercury present on site, the potential impact to the burgeoning rebounding anadromous species and the potential impact on the economy of the lobster fisheries already present in Penobscot Bay, this outsized project has proven itself unqualified for approval at present. Sierra Club Maine urges the Department of Marine Resources to require a full and transparent **Environmental Impact Statement of this project that includes a regional cumulative ecosystem risk analysis** in its NRPA process. In addition Sierra Club Maine requests **an adjudicatory hearing on the marine resource and fishing impact of the NAF project pursuant to 38 M.R.S. § 480-D, sub-§ 9**. Our environment, and all the living creatures that depend on it, deserves much greater scrutiny than is currently evident in the process to date.

Respectfully Submitted,

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