

STATE OF MAINE  
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

NORDIC AQUAFARMS, INC

Belfast and Northport  
Waldo County, Maine

A-1146-71-A-N  
L-28319-26-A-N  
L-28319-TG-B-N  
L-28319-4E-C-N  
L-28319-L6-D-N  
L-28319-TW-E-N  
W-009200-6F-A-N

) APPLICATION FOR AIR EMISSION, SITE  
) LOCATION OF DEVELOPMENT,  
) NATURAL RESOURCES PROTECTION  
) ACT, and MAINE POLLUTANT  
) DISCHARGE ELIMINATION  
) SYSTEM/WASTE DISCHARGE LICENSES  
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PRE-FILED REBUTTAL TESTIMONY OF MICHAEL LANNAN

1. I am Michael Lannan, an environmental engineer with experience in all aspects of air quality management, including air permitting, compliance assessments, control technology evaluations and air pollution control designs, dispersion modeling and air monitoring. I have provided air quality, odor control, noise abatement, and dust solutions for municipalities, industries, and government agencies since during my co-operative education days at Northeastern University three decades ago when I was working for a large engineering firm in the air quality group of their planning and permitting division (See Addendum R2-A).

2. This is my 18<sup>th</sup> year at Tech Environmental, and I have been the president of Tech Environmental for the past five years, and Tech Environmental is a consulting firm that specializes in helping facilities, neighbors of facilities, and regulators navigate the permitting process with respect to environmental concerns, and with a special emphasis on nuisance potential. Tech Environmental has offices on Front Street in Belfast, in Waitsfield, Vermont, and in Waltham, Massachusetts.

3. Tech Environmental was retained by Upstream Watch to perform technical reviews of Nordic Aquafarms’ Site Law of Development Act (SLODA) and Chapter 115 Minor New Source applications, specific to federal, state, and local permitting concerns of air, noise, odor, traffic, and solid waste.

4. Tech Environmental was contracted to review several hundred pages of Nordic Aquafarms’ application materials and responses to Requests for Information (RFIs), examine odor control estimates of the proposed Nordic Aquafarms (the proponent), and evaluate if the provided information given in the application and RFIs is adequate for establishing the burden of proof with respect to “No Adverse” conditions.

Nordic Aquafarms SLODA Application Section 22- Odor - Rebuttal

5. The first paragraph in the application text in Section 22 stated *"The Belfast salmon farm will not generate noticeable odors. Modern fish production facilities capture and store byproduct streams in airtight and/or cooled storage, to protect their economic value. Odor in the seafood industry generally emanates from waste exposure to air; with the result of also destroying the value of potential byproducts. In our case, that would lead to economic losses"* (Exhibit R2-A).
6. My initial testimony centered on fact that the primary focus of the odor control section was to prevent odor by keeping fish fresh. The single exhibit provided in the prefilled testimony, and provided here again as Exhibit R2-B was included simply to demonstrate that all fish have odor, both fresh fish and aged fish.
7. The secondary theme discussed in the odor control section of the application was that the odor will not be a nuisance because *"All processes with the potential for creating odors will take place in completely enclosed buildings. Nordic will partner with established recycling and disposal professionals with years of experience in odor control. We have obtained capacity to serve letters from multiple companies for each of these byproduct streams. Through consultation with these partners we will install proven equipment at key areas to ensure additional odor control. We will employ air filtration that may include carbon, biofilters, wet scrubbers, and media"* (Exhibit R2-A).
8. This secondary theme suggests that odor will be present from the solid waste, and the recycling and that the disposal professionals contacted (and included in the appendix) have years of experience with controlling solid waste odors, and can make odor control recommendations. It is our experience that solid waste companies do not provide source odor assessments, only product odor assessments.
9. Simply listing that the fish factory solid waste may include odor control technologies in the application does not demonstrate the use of technology use to control or eliminate odor.
10. As concluded previously this is not an odor control plan for a fish farm.
11. This rebuttal testimony is provided because the information from the testimony provided by Cathal Dineen (Exhibit R2-C) differed from the odor information provided in the application in Section 22.
12. In the testimony provided by Cathal Dineen, Nordic Aquafarms provided new or revised odor concern or control discussions (Exhibit R2-C). These changes include, but are not limited to :
  - A paradigm shift from *"will not generate noticeable odors"* to *"prevent the detection of offensive odors outside of the facility"*
  - A shift from *"Nordic will partner with established recycling and disposal professionals with years of experience in odor control"* to *"Air treatment infrastructure will [be]...selected and installed in collaboration with experts in the field of industrial odor control."*

- A shift from no discussion of odor control for HVAC to *“Odors that are produced will be effectively controlled by the installation of proven air treatment infrastructure in key production buildings. HVAC systems within these buildings will be designed to ensure air is appropriately treated by these air treatment installations.”*
- A shift from no discussion of odor release points to *“HVAC systems route air through air treatment infrastructure. This ensures that all air exiting areas with the potential for harboring offensive odors is treated prior to expulsion.”*

13. The four points analyzed above change the context from “we can do this by odor prevention and solid waste management” to “we will have odor, even with Best Management Practices; we will need to provide odor control all along the way; odor control will be incorporated into our HVAC system; we will release treated air.”

14. Merely stating odor prevention thorough Best Management Practices demonstrated adequate provision for control of odors, was easily refuted as inadequate by the simple table provided in my previous pre-filed testimony. Additional testimony is now required to demonstration whether or not the proponent has made adequate provisions for odor control under Maine DEP Site Law, now that proponent is rightfully admitting that it is necessary. Maine DEP Site Law Rules, 06-096 Chapter 375 Section 17. Adequate Provisions for the Control of Odor states the follow (Exhibit R2-D):

- A. *“Standard. The applicant shall make adequate provision for controlling odors.*
- B. *Submissions. The application for approval of any development likely to be the source of offensive odors shall include evidence that affirmatively demonstrates that the applicant has made adequate provision for the control of odors, including, but not limited to, the following information:*

*(1) the identification of any sources of odors from the development;*

*(2) an estimation of the area which would be affected by the odor, based on experience in dealing with the material or process used in the development, or similar materials or processes; or*

*(3) proposed systems for enclosure of odor-producing materials and processes, and proposed uses of technology to control, reduce or eliminate odors.*

- C. *Terms and Conditions. The Department may, as a term or condition of approval, establish any reasonable requirement to ensure that the applicant has made adequate provision for the control of odors.”*

15. The proponent has not identified all sources of odor. From Tech’s experience the provided list of potential sources of odor from the source description should include at least, but not be limited to:

- a) Ensilage of mortalities,
- b) HVAC equipment at each and in every building,
- c) Chemical and fuel deliveries and charging of tanks or vessels with these materials,
- d) Fish hatchery and associated activities,
- e) Smolt operations and associated activities,
- f) Fish harvesting, slaughtering, and fileting operations,
- g) Wastewater treatment pumping operations,
- h) Storage of Fresh Feed and Spoiled Feed,
- i) Wastewater treatment operations,
- j) Water treatment operations,
- k) Wastewater residuals handling, storage, and disposal operations,
- l) Water treatment residuals handling, storage, and disposal operations,
- m) Fish harvesting waste handling, storage, and disposal operations,
- n) Doorways and garage doors that must remain open at times for operations,
- o) Power plant operations and exhaust stacks ,
- p) All other exhaust stacks (including the odor control systems exhausts).

16. With many of the areas identified above, the odor potential will be directly related to age. This is seen in solid waste disposal, wastewater sludge age, and in the fish odor potential. The Exhibit R2-E is Figure 1 directly from Exhibit R2-B with color coding. The color coding is from blue vertical bar on the left where fresh fish odor dominates to the red vertical bar on the right where decay dominates. The key here again, is that in every stage there are compounds present above the odor detection threshold and therefore, odor potential must be examined from each of the sources above.

17. The proponent does not discuss the extent of area that may be adversely affected by odor potential. This odor potential must be evaluated on a "good day" and a "bad day". Neighbors will not care whether odor experienced (which is an olfactory stimulation) is from a normal process condition or an upset condition. Odor is odor, so all possible operating conditions must be considered when considering adequate provisions, and all potential areas of impact both off site and onsite must be identified. Adequate provisions for odor control must include upset possible upset scenarios that may include events such as major mortality event, storms, and power outages, reduce water supply situations etc.

18. The proponent does not provided a detailed discussion in their testimony or section 22 to demonstrate that they have provided "Adequate Provisions for the Control of Odors". The proponent suggesting that they will contact industrial odor control vendors in the future does not provide adequate provisions.

19. A fully-vetted conceptual design for a project of this magnitude and complexity must be completed before any applications can be submitted. It is very possible that the odor control requirements will be cost prohibited. This project would not be the first project that was not financially or technically feasible because the actual capital and operational costs for odor control were never considered during planning and permitting.

20. Ventilation is paramount to proper odor control function and reliability. There are no

discussions in the application about on how a facility with city-sized wastewater treatment systems, city-sized water treatment systems, city-sized pump stations, city-sized power plants, city-sized solid waste handling facilities, a fish factory, millions and tons of fish, a slaughterhouse, and an education center will be properly powered, heated or conditioned. This project simply cannot be approved without a fully-vetted HVAC/odor control design completed first.

21. Just recently the proponent changed the heating for hundreds of thousands square feet of building from propane heating to heat pumps. Exactly how this will affect the odor control design has not been addressed.
22. As a result of this analysis of the available information and my testimony, it is my professional opinion that this project has not properly evaluated its odor potential on a normal day.
23. As a result of this analysis of the available information and my testimony, it is my professional opinion that this project has not properly considered adequate provisions for the control of odor for its odor potential on a normal day.
24. As a result of this analysis of the available information and my testimony, it is my professional opinion that this project has not properly considered proposed uses of technologies proposed to reduce odor for its odor potential on a normal day.
25. As a result of this analysis of the available information and my testimony, it is my professional opinion that the department may not establish any reasonable requirements to ensure that the applicant has made adequate provision for the control of odor without the proponent fully developing the odor potential and without vetting the conceptual odor designs for normal operations.
26. As a result of this analysis of the available information and my testimony, it is my professional opinion that this project has not properly considered its odor potential on a “non-normal”, upset condition day.
27. As a result of this analysis of the available information and my testimony, it is my professional opinion, that this project has not properly considered adequate provisions for the control of odor for its odor potential on a “non-normal”, upset condition day.
28. As a result of this analysis of the available information and my testimony, it is my professional opinion that this project has not properly considered proposed uses of technologies proposed to reduce odor for its odor potential on a “non-normal”, upset condition day.
29. As a result of this analysis of the available information and my testimony, it is my professional opinion that the department may not establish any reasonable requirements to ensure that the applicant has made adequate provision for the control of odor without the proponent fully developing the odor potential and without vetting the conceptual odor designs for “non-normal”, upset condition operations.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date:

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Printed Name:

Title:

Parties Assisting:

Name:

Address:

Signature: \_\_\_\_\_

Name:

Address:

Signature: \_\_\_\_\_