

October 27, 2021

VIA EMAIL ONLY cindy.l.dionne@maine.gov

Cindy Dionne
Maine Department of Environmental Protection
Bureau of Water Quality
Division of Water Quality Management
State House Station 17
Augusta, Maine 04333-0017

Re: Town of Gouldsboro Comments on American Aquafarms Permit Applications

Dear Ms. Dionne:

The Town of Gouldsboro respectfully submits the following comments regarding the American Aquafarms waste discharge license applications in advance of the October 28, 2021 public meeting. The overarching theme of these comments, and the applications generally, is a lack of information. This application leaves many gaps in information on how these facilities will impact the environment. As you know, the proposed sites are situated within the Town of Gouldsboro, and therefore the Town is uniquely situated to raise these concerns. It is nevertheless important to highlight that the Town has not taken any position on whether or not the licenses should be granted.

These comments are presented in broad categories with specific questions and concerns within each. Considering the criteria as set out in the regulations, there are multiple deficiencies in these applications. *See* 06-096 C.M.R. ch. 521. Respectfully, these applications are simply premature, and the Department should scrutinize every detail provided by American Aquafarms. Far from being the well-established technology currently in use in Norway, you will find that the proposed operations rely on technology that is still in development across the globe. Furthermore, there is a lack of information on many issues relevant to the discharge of waste that would occur. Finally, the applications rely on many assumptions, including that the best-case-scenario is the likely result without accounting for possible—perhaps even probable—challenges that may arise.

It is well-established that this is not intended as an experimental operation. Yet, American Aquafarms proposes a project in a manner and at a scale not previously undertaken. The Town of Gouldsboro urges the Department to carefully examine every angle presented by American Aquafarms before proceeding further on these applications. It is imperative that these concerns are explored, understood, and addressed. While American Aquafarms may ultimately demonstrate that these concerns are or can be alleviated, critical information has yet to be provided, and the Town is concerned for the safety and well-being of its people and environment.

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Note that, although American Aquafarms refers to the proposed pens as “closed,” these comments will refer to them as “semi-closed” or “semi-closed containment systems” to more accurately reflect their interaction with the surrounding water and consistent with publicly available information for the proposed pens. Attached at the end of this letter is an informal appendix of many of the sources referenced in the process of developing these comments.

1. Prematurity of Applications

These applications are premature in several regards. The primary concern here is the unproven capability of an operation of this type and size. That is, a project of this scale and with the plans to grow to harvest size simply has not been undertaken before, here or abroad. It is far too early in the life of this technology for American Aquafarms to represent that it can successfully manage thirty of these pens and raise salmon to harvest size. Other operations elsewhere in the world have begun using this type of containment system. Other operations elsewhere in the world have farmed salmon to harvest size in different containment systems. Other operations elsewhere in the world have farmed large quantities of salmon. None, however, have done all three simultaneously. Even in Norway, which American Aquafarms presents as an example of the success of this type of system, aquaculture farms often do not grow fish to harvest size in semi-closed containment systems but raise salmon to a certain size in such systems before transferring them to traditional open net pens to finish their growth cycle or otherwise use land-based systems. As a result, American Aquafarms is proposing an unproven venture in a water body that is also not fully understood. In fact, a recent project in Canada by a different company was cut short this year due to the immaturity of similar technology, water quality issues, and fish mortality issues.

While many agree that this technology shows promise, research has shown that this particular type of system is not as ubiquitous as it has been presented to be.¹ If it has indeed been used as widely in the manner American Aquafarms proposes, it has failed to demonstrate as much, and this application would be significantly improved if it could identify with specificity how and where such comparable operations are taking place.² In fact, the Department’s regulations

¹ In its answers to questions from the public in May, American Aquafarms made statements such as the following:

- “The closed pen systems are not a new technology, and have been in use since the 1980s. . . . In Norway this technology has been used to raise fish for the full growth cycle.”
- “There are many closed pen operations in Norway that are currently operating. It is hard to compare the scale as each pen in the proposed facility would function as a single system. This is not the largest closed pen aquaculture facility in terms of acreage or in terms of potential environmental impacts.”

² Two companies—Cermaq and Mowi—have been performing trials with similar technology, “but these have not been used to grow fish to harvest size.” See “Norway fisheries minister wants more closed containment.” *Fishfarmingexpert*, Jan. 15, 2021. The same article reports: “Norway already has a variety of on-land and in-water closed and semi-closed containment systems used to grow smolts and post-smolts but *all but the tiniest fraction of the 1.3 million tonnes of salmon produced annually is grown to harvest size in open net pens.*” (Emphasis added.)

request such information. *See* 06-096 C.M.R. ch. 521, § 4(k)(6) (“Each applicant must report the existence of any technical evaluation concerning his wastewater treatment, along with the name and location of similar plants of which he has knowledge.”)

To echo the thoughtful comments presented by the Town of Sorrento, we do not have a clear understanding of the baseline of the water body within which the waste would be discharged. Before applying for and proceeding through the stages of these applications, it is critical to understand the existing status of the water that will be affected. The pertinent regulations include conditions that require the regular monitoring of samples and measurements. *See* 06-096 C.M.R. ch. 523, § 2(j). However, if the baseline of the water body is not fully understood, those measurements will be less meaningful. Importantly, it is the applicant’s responsibility under the regulations to provide the *quality* of the receiving waters if the Department designates this a concentrated aquatic animal production facility. *See* 06-096 C.M.R. ch. 521, § 7(c)(1)(i). It is within American Aquafarms’ and the Department’s abilities to investigate this issue.

American Aquafarms’ applications recognize that “[c]urrently there are no state or federally promulgated best practicable treatment standards for closed-pen aquaculture facilities and the State of Maine has not promulgated numeric ambient water quality criteria for [total nitrogen].” Simplified, it is clear that this is a proposal that the Department and the State are not yet equipped to approve. To proceed without taking extra precautions could have serious consequences. In light of this gap in treatment standards, it would be premature to decide this application without establishing such standards or at least considering the standards for countries where these operations currently exist.

Moreover, it would be extremely beneficial to get expert opinions regarding the potential environmental impact, particularly considering the scale of this project. Little information exists right now regarding these types of pens, even on a smaller scale, so it is imperative to get experts who have greater familiarity with the potential ecological impact to study the area and proposed discharge. While American Aquafarms utilizes the CORMIX model to draw its conclusions, it acknowledges the deficiencies of the model for its use in these circumstances. Attachment 5 to the application, the Ransom Memo, recognizes that it used this model because it is standard for the Department, but it also notes that CORMIX cannot provide a direct solution for the planned discharge in the middle third of the water column. Although using the CORMIX model may be standard for other waste discharge permitting and mixing modeling, this is a unique operation at a unique site—so unique, in fact, that it is one of the few that can house such an operation, as American Aquafarms asserts—so a more appropriate modeling approach should be used. That is, a more comprehensive model should be applied before moving forward. American Aquafarms asserts that the CORMIX model was used in part due to practical concerns, such as time, costs, and data input needs, even though a more comprehensive model would yield better results. However, with a project that has been called “the world’s largest full-cycle aquaculture facility based on closed cages in the sea,” a more comprehensive model seems only appropriate.

2. Lack of Information

Even a cursory review of the applications reveals that there are gaps in the information. Given the enormity of the proposed project, it is inadequate to rely on bald assertions that are not substantiated. Upon review of the application materials, several areas of information would benefit from further evaluation, including: existing water data, storm protection, economic impact, marine life, and chemical usage.

The applications state that the study period of the water was only between July and October. However, the proposed project would operate throughout the year. This provides a picture of only a few months out of the year, which cannot provide an accurate understanding of the water properties during all the times during which waste would be discharged into the water. Relatedly, the applications indicate minimal temperature transfer from the pens to the water, but this issue should be probed further. Importantly, the proposed sites have an unusual bathymetry, and indeed were selected for that very reason, so more information should be sought and produced about how waste might collect and settle in these areas given their unique shape and depth relative to the surrounding sea floor. This is of particular concern if the primary effluent is directed downward out of the pens.

Regarding storm protection, the application materials assert simply that the state of overpressure in the pens will protect against disruptions from storms. However, this is not the only risk factor or concern associated with storms. The ability of the polymer sack to withstand external pressures says nothing about the connections of the pipes that will be responsible for transporting waste from the pens to the barge (and the barge to the vessel for eventual transport and transfer to the on-shore facility). The materials also do not discuss the consequences of a storm on the barge itself. The materials raise more questions than they answer, for example:

- What is the ultimate consequence of a storm on the appendages to the pens, such as discharge pipes?
- How many days can the pens operate without power before backup systems fail?
- What happens if the waste systems fail? For example, if there is a severe storm event that prevents the normal processing of waste, how many days can the system continue to collect waste before there is a problem with waste or discharge backup?
- Have the systems been tested for possible failures? If so, how? Against what threats?

These and other questions remain unanswered with respect to the consequences of storms. The volume of waste that will be created by thirty pens will be enormous, and the full potential consequences of severe weather events must be considered.

One of the application questions asks the applicant to demonstrate that the increased pollutant load will result in important social and economic benefits to the State if the discharge will diminish the remaining assimilative capacity of the receiving water. American Aquafarms

reports that it does not intend to discharge pollutants,³ so it does not describe the benefits and instead refers to the CORMIX modeling memorandum. Elsewhere in its application materials, American Aquafarms underscores the state of the market for imported salmon and the local jobs its operations would support. However, it does not explain to what extent it might displace existing salmon markets and fishing or other water operations; the possible detrimental impacts on the economy if the operations harm tourism; how much of the economic benefit would, in fact, stay local instead of flowing to out-of-state and international business interests; or how the economic benefits would be altered by underperformance of fish harvest or other operational challenges. Furthermore, salmon are carnivorous, and it would be helpful to know whether wild fish will be utilized as feed and, if so, whether the quantity of fish needed for feed will offset any of the benefits of this operation. Another question that arises is whether the economic benefits are curtailed—and if so, how severely—in the event of high mortality rates in the fish. In short, the application does not give a full picture of the economic impact on the State. The Town has a unique concern in this regard because it stands to experience the biggest potential direct impact given the location of the pen sites and the proposed land facility.

There are other gaps in information, as well. The applications assert that antibiotics will not be used except as needed, but it is unclear when they might be needed and, when they are used, how they would change the discharge analysis. Other semi-closed containment systems have experienced at least some diseases among the fish, so it is entirely possible that diseases might become an issue. It would be useful to discern now, before the issue arises, what the different impact might be when those antibiotics are introduced. Additionally, the secondary effluent created by the dewatering process is expected to be discharged back into the water, but the application materials did not describe what, if any, treatment that discharge will get before being released back into the water.

Similarly, other points of waste removal create potential opportunities for accidental release into the water. There are pipes between the pens and barge, the transfer from the barge to the vessel, and eventual transfer from the vessel to the on-shore facility, and all of those transfer points have risks of failure that could result in the release of waste into the water. It is critical to understand what those risks are, how such an event would be handled, and what the consequences might be in the water.

Furthermore, the impact on marine life is not fully understood. At the very least, it is well known that other fishing and aquaculture operations currently exist in the area. The discharge created by

³ The regulations define “pollutant” as “dredged spoil, solid waste, junk, incinerator residue, sewage, refuse, effluent, garbage, sewage sludge, munitions, chemicals, biological or radiological materials, oil, petroleum products or byproducts, heat, wrecked or discarded equipment, rock, sand, dirt and industrial, municipal, domestic, commercial or agricultural wastes of any kind.” 06-096 C.M.R. ch. 520, § 2 (emphasis added). Given what we know of the proposed pens, there will be primary and secondary effluent, coming from the pens themselves and the discharge water from the dewatering process on the barge, respectively. At the very least, American Aquafarms should elaborate on what it means, then, when it represents that it will not discharge pollutants.

the salmon pens will necessarily disrupt, at least to some degree, the other marine life. Although American Aquafarms insists that ninety percent of solid waste will be collected in the sediment traps within the pens, and therefore never reach the outside water, ten percent of a large number is still a large number. The size of this operation would create huge volumes of waste from salmon excrement and feed, and even ten percent of that waste is substantial. This is to say nothing of dissolved waste, because the ninety percent figure represents only particulate waste to be collected in the sediment traps.

Additional questions and concerns that do not fall into broad categories include the following:

- The applications note that the flocculant is “organic and ecologically friendly,” but it is unclear what this means, especially in relation to *this* environment.
- Is more data available on the risk of algal blooms? If not, how can that data be generated?
- How much do we know about the tides and currents as they relate to dilution and mixing?
- How will the structures interfere with the existing tidal regimen and movements of marine life throughout the year?
- What is the risk of diseases, such as piscine orthoreovirus (PRV), cardiomyopathy syndrome (CMS), infectious salmon anemia (ISA), and gill disease (GD) that have been reported in other operations, and what preventative or corrective measures are expected to be taken? If measures are taken, how might they contribute to waste discharge?
- What is the expected amount of *dissolved* waste into the water? How will that impact water quality?
- If medicine is used to treat sea lice, should that become an issue, how would that affect other local species, especially other crustaceans?
- If the stun and bleed process is happening on the barge, what is done to the waste produced from that process, and how might that impact water quality and marine life?

These are just some of the many concerns created by the proposed operations. Among the many regulatory requirements governing this application, the provision for new sources and new discharges requires the applicant to provide information on the expected treatment of wastewater. 06-096 C.M.R. ch. 521, § 4(k)(3)(i). Although some of that information has been provided, as explained above, there remain unanswered questions. Similarly, the regulations require detailed information about effluent characteristics, but, as noted, the application has several holes in its information preventing a full understanding of the characteristics of the potential discharge. 06-096 C.M.R. ch. 521, § 4(k)(5).

Given the scale and investments in this project, it is incumbent on the Department to ensure that all pertinent information is made available.

3. Reliance on Assumptions; Inaccurate or Conflicting Information

These applications rely on numerous assumptions about how this technology would operate and impact the surrounding environment and include inaccurate or conflicting information.

As a preliminary matter, the entire application relies on an assumed best case scenario. American Aquafarms presents information as though everything will work without any flaws, which would be ideal, but it is not realistic. Not only should the Department concern itself with the impact of waste when things are operating as they should, but it should contemplate the impact of waste when operations fail or malfunction. One example of this is the intent that the pens will collect ninety percent of particulate waste, but what if that number is only eighty-five percent—how does that change the analysis? It cannot be taken for granted that the systems, which have never before been used in this way at this scale, will perform perfectly, not to mention the potential for human error. In its answer to a question at the May information session regarding what could go wrong, American Aquafarms pivoted and touted the reduced risks associated with “closed pen systems,” choosing only to explain that it “has added in contingency plans and extra layers of security.” This failure to acknowledge even the possibility of error is concerning, and it would provide security to the Town to have a clearer understanding of what to expect if problems should arise.

Moreover, there is not complete data on this water and how its tides and currents function, but the applications rely on the assumption that they will adequately dilute and mix waste. As mentioned before, the CORMIX model is not comprehensive, yet its use is assumed to be good enough for this project, even though it is widely accepted that this operation would far exceed what has been done before. Such conclusions should not be drawn when examining an unproven project. It should not be assumed that the tides and currents, which would dilute waste in other circumstances, will similarly map onto this project and this waste. If, for example, assumptions are made on how tidal waters and currents in coastal Norway help dilute discharge, then it would behoove everyone involved to have a full understanding of how these waters are different and what the consequences of those differences are.

In the same vein, and as mentioned above, it is inappropriate to assume that data collected between July and October is adequate to fully understand the behavior and state of the water throughout the year. The data is attainable for one who is willing to seek it out; the size and investment of this proposal suggests that American Aquafarms has the capability to obtain the most accurate data, and it should do so. It would be in its own best interest, in fact, to get that information, notwithstanding the cost, because to fail to get the most accurate information on the front end could threaten its entire endeavor if its assumptions later prove to be wrong. Indeed, it would be an economic waste to invest the money to bring the whole project together only to find after operations begin that the water cannot support these pens while also protecting the water body. Again, these are issues relevant to the *quality* of the receiving waters. See 06-096 C.M.R. ch. 521, § 7(c)(1)(i).

Moreover, as discussed in the prematurity section, American Aquafarms' insistence that this technology has been around for decades in Norway and is in wide use is inaccurate, and it assumes that the technology that has been used on smaller scales can be scaled up without issue. While it is important to expect and plan to have operations run as intended, and as they have in different operations, it is equally if not more important to produce and provide information on what the impact would be if the project does not hit all its targets. Multiple articles have stated that semi-closed containment systems are not widely used in Norway to grow fish to harvest size. American Aquafarms has also described its proposal as using cutting edge technology, but it cannot both be cutting edge and have been in use in Norway for so many years.⁴ Ultimately, the assumption that these semi-closed pens can be used safely and precisely on this scale lacks a strong basis.

There are also instances of conflicting information in the applications. American Aquafarms has stated that no medicines or chemicals would be added to the pens or feed, other than vaccinations during the freshwater phase, but it nevertheless lists on-site chemicals intended to be used for disinfecting, ensilage, and flocculants. Why would these not be considered medicines or chemicals that would find their way into the water body? Similarly, as noted in footnote three, American Aquafarms also states that it will not discharge pollutants, but it is unclear how that can possibly be true under the circumstances. At the very least, these issues need further elaboration.

Final Comments

Preliminary research suggests that a project such as this may not be approved in Norway under its regulatory scheme. If Norway is the standard by which American Aquafarms is measuring its technology and project, it is worth exploring the aspects of this proposal that would prevent Norway from approving it. Among other things, Norwegian regulations⁵ limit production quantities—called maximum allowed biomass—and in the absence of similar state or federal regulations, it would be helpful to understand why such limitations exist in Norway and what the consequences of the volume of fish here would be. Norway also limits the number of fish per pen at any given time, imposes a production fee, and limits the number of licenses it grants. The fact that Norway, which is one of the world's leaders in salmon farming, is carefully monitoring these kinds of farms should serve as a signal to the Department to proceed with extreme care and attention to detail and to refuse to accept assumptions as adequate for determining environmental

⁴ One academic paper published in 2017 explained that as of the time of study in 2016 there were “no [semi-closed containment systems] in commercial production . . . as they [were] all prototypes.” Simen Aleksander Haaland, *Semi-closed containment systems in Atlantic salmon production*, Norwegian University of Science and Technology, June 2017, at 6.

⁵ The two primary laws in Norway that regulate these kinds of aquaculture developments are the Aquaculture Act (17 June 2005) and the Food Safety Act (19 December 2003).

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impact. Indeed, existing information for semi-closed containment systems used in this way at this scale is sparse. With that understanding, the importance of being thorough and getting this right the first time cannot be overstated. Considering American Aquafarms' commitment to sustainability and causing no harm, it should have no issue addressing these reasonable concerns.

Thank you for your time and attention to this matter. To reiterate, the Town is not advocating for or against the applications, but it takes its responsibility to the people and environment very seriously and makes its comments with the goal of protecting their safety and well-being. The Town and its resident rely on these waters for their livelihoods, recreation, and other daily life activities. We look forward to hearing from and continuing to work with you.

Sincerely,

A handwritten signature in black ink, appearing to read 'TAP', followed by a long horizontal line extending to the right.

Timothy Pease
TAP/REST/leb

cc: Yvonne (Eve) P. Wilkinson,
Town Manager, Town of Gouldsboro,
town.manager@gouldsborotown.com

Appendix: Sources Consulted

General references

<https://americanaquafarms.com/>

<https://www.dfo-mpo.gc.ca/aquaculture/publications/ssat-ets-eng.html>

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Section 1

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Section 3

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