

## **REFERENCES AND NEW DATA ATTACHMENTS:**

**Attachment #1** : from Holly Faubel's written comments to the Whole Oceans permit application for Maine Pollution Discharge Elimination Permit, and Maine Waste Discharge License , dated 10/28/2018, page 1

“TO: Gregg Wood

FROM: Holly Faubel

10/28/2018

RE: Whole Oceans, LLC Pollution Discharge Elimination and Maine Waste Discharge Permit

In accordance with *Application Processing Procedures for Waste Discharge Licenses*, 06-096 CMR, 522, I am submitting these comments on the revision of the draft permit amended on Sept. 10th 2018 before close of comment period, end of day Oct. 29, 2019, for inclusion in Item 10 of DEP's 9/28/18 Proposed Draft Fact Sheet, ME0037478, W00910-6F-A-N. (1)

I was in receipt of this Amended permit after two requests and it was delivered on 10/26/2018. Like many members of the public, I was under the impression, that Whole Oceans would be discharging their effluent into a greenhouse facility as per their publicly posted website materials, rather than into Penobscot Bay. “

**Attachment #2:** from Holly Faubel's written comments to the Whole Oceans permit application for Maine Pollution Discharge Elimination Permit, and Maine Waste Discharge License , dated 10/28/2018, page 3

*“The presence of mercury in all of Maine’s waters is well documented. Yet the design of Whole Oceans proposed facility does not take mercury mitigation into consideration. Indeed, the location of the intake pipe sandwiched between the two outflow pipes of Whole Oceans proposed facility would seem to be problematic. The mercury that is present in Maine’s surface waters combined with the remnants of the residual mercury in the bed of the previous industrial paper factory, would seem to serve as a concentration source point. “*

*According to the DEP “To date the waters of Maine, due to mercury pollution are only approved for hatcheries”.(1)*

DEP has stated (1) *“The permittee discharges into estuarine waters of the Penobscot River which is strongly influenced by fresh water during high spring flows, large rainfall events, and during ebb tides. These condition make it difficult to accurately define the mixing characteristics of the permittees facility at any given point in time” . “Given the uncertainty of river flows to the east and west of Verona Island this permittee is to conduct a dye study once Phase 1*

*operations have commenced and steady state conditions with eggs, fry and smolts and adult fish in grow out tanks have been achieved.” The process of going from eggs to adult is going to take two years at a minimum. In the meantime, what assurances and bond does Whole Oceans give to the public local residents, recreational users, shellfish gatherers and growers, and sea vegetable farmers that their waters are not going to be polluted due to a lack of testing.”*

**Attachment # 3:** from Holly Faubel’s written comments to the Whole Oceans permit application for Maine Pollution Discharge Elimination Permit, and Maine Waste Discharge License , dated 10/28/2018, page 3

*“While warm weather testing might suffice for nitrogen levels, ammonia by DEPs own statements, is one of the most toxic pollutants in terms of the fish and shellfish health in the receiving waters. There are scientific reports (University of Illinois, Urbana) that show ammonia, the most toxic pollutant, is more hazardous to fish at colder temperatures.”*

**Attachment # 4:** from Final Report to U.S. Environmental Protection Agency Region V, Chicago, Illinois Walter Redmon, Project Officer, Effects of Cold Temperature on Toxicity of Ammonia to Rainbow Trout, Bluegills, and Fathead Minnows Contract Report 68-01-5832/B Center for Aquatic Ecology Keturah A. Reinbold and Stephen M. Pescitelli October 1982, reprinted January 1990, Center for Aquatic Ecology Illinois Natural History Survey 607 E. Peabody Dr. Champaign, IL 61820 .

*“ABSTRACT - The acute toxicity of un-ionized ammonia to rainbow trout (*Salmo gairdneri*), bluegill (*Lepomis macrochirus*), and fathead minnow (*Pimephales promelas*) was determined under flow-through conditions at low temperatures (3-5 0 C) typical of winter conditions and at higher temperatures typical of summer conditions for each species. The purpose was to determine whether ammonia toxicity differs under different seasonal temperature conditions. The 96-h LC50 values from replicate tests with rainbow trout averaged 0.47 mg/L un-ionized ammonia nitrogen (NH<sub>3</sub>-N) at 3-5 0C and 0.76 mg/L NH<sub>3</sub> -N at 13-150C. For bluegill, LC50 values averaged 0.32 and 1.35 mg/L NH<sub>3</sub>-N at 4-50C and 24-250 C, respectively, while at the same temperature ranges LC50 values for fathead minnow were 0.60 and 1.17 mg/L NH<sub>3</sub> -N, respectively. Thus, across the temperature span experienced from summer to winter for each species, bluegill appeared to be the most sensitive of the three species to the effect of low temperature on ammonia toxicity.”*

**Attachment # 5:** from Holly Faubel’s written comments to the Whole Oceans permit application for Maine Pollution Discharge Elimination Permit, and Maine Waste Discharge License , dated 10/28/2018, page 5

“The purpose of Public Comments and Answers is to give the public at large input into the application process, and hopefully more than rudimentary responses. As such, the above Comments and Request for Response are being submitted in order to address public concerns in a manner that will elicit specific data that will address these important issues. The intent is that by doing so the public's concerns can be addressed, the public and DEP will have more substantive quantitative data to evaluate, and in the long run Whole Oceans operations will be the better for it.”

**Attachment # 6:** Maine People's Alliance and Natural Resources Defense Council, Inc. vs. HoltraChem Manufacturing Company, and Mallinckrodt Inc. Case 1:00-cv-00069-JAW”. Document 829 published 09/02/15. Pages indicated below:

Page 9

*“... the presence of a large pool of [mercury] contaminated mobile sediments (estimated at 320,000 tonnes) that has been trapped in the upper estuary” through “hydrodynamic processes”. Id. at ES-7. “*

Page 12

*“Plaintiffs point out that the level of mercury in species such as lobsters, rock crabs, black ducks, and eels exceeds the safety standards established by the state of Maine, as well as the EPA reference dose established by the federal government. “*

Page 40

*“In general, there are two types of mercury: inorganic and organic. “*

Page 40

*“The type of organic mercury that most concerns the scientists is methylmercury,..”*

Page 40

*“There is a process by which inorganic mercury becomes organic or methylmercury called methylation. Id. 32:10-24. Once released into the environment, inorganic mercury is ingested by bacteria and through their biochemical activity, a methyl group is attached. Id. As a result, what was inorganic mercury is released into the environment as methylmercury. Id. 31:8-13.*

Page 40

*Methylmercury is in orders of magnitude more toxic than inorganic mercury. Id. 31:14-17. Scientists have recognized that there is a significant human health risk with methylmercury. The impact is most acute in the fetuses of exposed pregnant women.*

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*Children born to women who had high mercury levels during pregnancy tend to experience a neurological developmental lag when compared with children born to women without elevated levels. Once the mercury-exposed child reaches school age, they have been documented to have slower motor speed, a poor concentration span, delays in language acquisition, and impaired cognitive function.”*

Page 41

*“Methylmercury exposure is exacerbated by four phenomena: bioaccumulation, biomagnification, mobility, and non-degradability.*

Page 41

*Bioaccumulation means that if a species [ingests] another species with mercury, the predator assimilates the mercury into its body and the mercury becomes attached to its tissues. Rudd 32:2-9.*

Page 41

*Biomagnification refers to the principle that as mercury travels up the food chain, the higher up the food chain, the more concentrated the levels of methylmercury. Id. 31:14-32-4. Thus, predator concentrations are many orders higher than concentrations at the bacterial levels. Id. 31:23-32:1.*

Page 41

*Furthermore, although over time some mercury and methylmercury becomes buried in sediment, it remains possible for mercury in either form to become mobile with the stirring of the water Case 1:00-cv-00069-JAW Document 829 Filed 09/02/15 Page 41 of 61 PageID #: 12797 42 currents, become deposited, and then to become re-suspended with further agitation. Id. 142:3-14.*

Page 42

*Finally, unlike many other elements, methylmercury does not break down over time. Fisher 692:19-20 (“[Mercury] doesn’t break down the way an organic compound breaks down.”). The most common source for methylmercury exposure to humans comes from eating fish and shellfish. HoltraChem, 211 F. Supp. 2d 245.*

Page 42

*When a person eats fish or shellfish, which have a high methylmercury concentration level, the mercury is nearly completely absorbed through the digestive process. Grandjean 794:19-25. The mercury is taken up into blood, circulated throughout the body, including penetrating the brain, and only a small amount is excreted. Id.*

Page 42

*Once ingested, methylmercury stays in the body for several months. Id. 795:13-19. In a month and a half or forty five days, humans lose about fifty percent of mercury levels that existed directly after ingestion.”*

Page 44

*“d. A Mobile Pool of Sediment - One of the puzzles about the mercury contamination of the Penobscot River has been why the River has not entirely flushed the mercury into the ocean.”*

Page 44

*“Dr. Wayne R. “Rocky” Geyer presented a convincing explanation for the comparatively slow recovery of the Penobscot River estuary. 6 Tr. of Proceedings 1143:16-1163:25 (ECF No. 765) (June 10, 2014); 7 Tr. of Proceedings 1169:11-1272:4 (ECF 767) (June 11, 2014) (Dr. Geyer) (Geyer).*

Page 44

*The Court finds Dr. Geyer’s testimony persuasive and adopts his expert opinions. Dr. Geyer is an expert in the circulation and sediment transport processes in estuaries and the coastal ocean. Geyer 1144:7- 12. He holds a Ph.D. in physical oceanography and works at the Woods Hole Oceanographic Institution. Id. 1146:11-15; 1143:18-21.*

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*Once mercury is released into a river, it hitches a ride on minute pieces of sediment as it travels downstream. Id. 1149:3-14 (“[T]he mercury is mostly bound to the sediment, so that the -- the transport of mercury is mostly associated with the transport of the sediment.”). Some of the sediment is deposited on the river bed and over time is layered over with ensuing generations of less toxic sediment.*

Page 44-45

*Dr. Geyer focused on what happens to the sediment as it nears Penobscot Bay, and it turns out the sediment is subject to tidal forces and a salt barrier that affects the movement of sediment into the Bay. “*

Page 9

*“Due to the “continuing risk to biota and human consumers,” the Phase II Report “recommends the establishment of a Remediation Program” that would Case 1:00-cv-00069-JAW Document 829 Filed 09/02/15 Page 9 of 61 PageID #: 12765 10 “involve[] three types of active remediation procedures.” Id.*

Page 10

*These include some targeted removal of “contaminated mobile sediments” and “replacement with clean sediments,” as well as dispersal of a mercury “binding agent” in Mendall Marsh to lower total mercury concentrations and retard the production of methylmercury. Id.”*

**Attachment # 7:** from email regarding FOAA request to Department of Marine Resources, November 13, 2018

“ **From:** "Mendelson, Meredith" <[Meredith.Mendelson@maine.gov](mailto:Meredith.Mendelson@maine.gov)>

**Date:** November 13, 2018 at 8:49:15 AM EST

**To:** "[andrewsteve@icloud.com](mailto:andrewsteve@icloud.com)" <[andrewsteve@icloud.com](mailto:andrewsteve@icloud.com)>

**Subject: RE: FOAA request to DMR**

Hello Mr. Stevenson,

I am sorry for the delay in fulfilling your request. We have some data that needed to be excluded due to federal and state confidentiality provisions for landing statistics, so I had to ask staff to re-run some of the queries that had already been completed. I'm hopeful I will be able to get it to you within a couple of days.

In the meantime, the website I referenced regarding the Penobscot Bay Mercury Study data and reports is here:

<http://www.penobscotmercurystudy.com/>

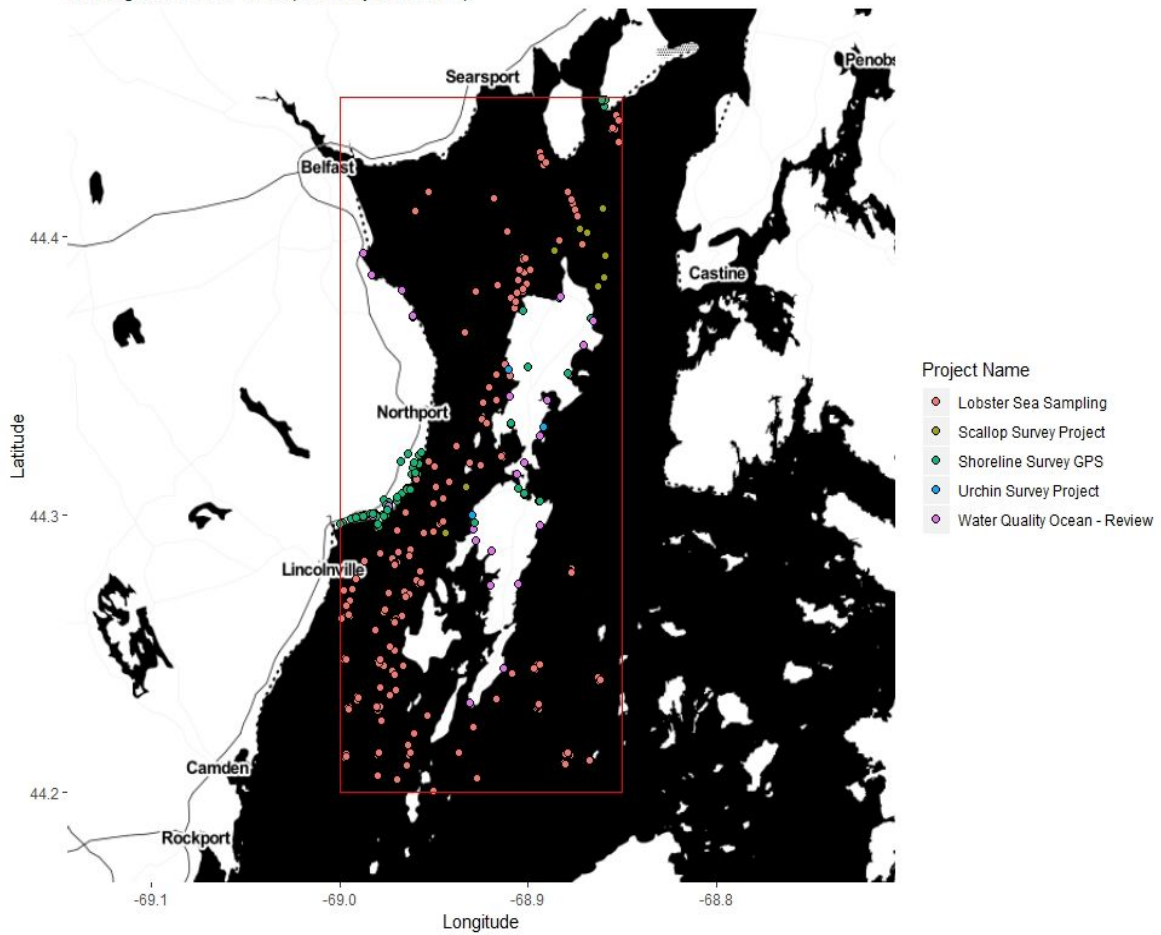
Thanks,

Meredith “

**Attachment # 8:** Maine Department of Marine Resources sampled 2014

**Maine DMR Sample Locations**

Sampled after 01/01/2014 and located between latitudes 44.2 to 44.45 and longitudes -69 to -68.85 (shown by the red box).



**Attachment #9:** PHASE III ENGINEERING STUDY REPORT Penobscot River Estuary, Maine Prepared for: United States District Court District of Maine Prepared by: Amec Foster Wheeler Environment & Infrastructure, Inc. 511 Congress Street Portland, Maine 04101 Project No. 3616166052 September 2018 Executive Summary.

Page 9

*“Although the Estuary has recovered significantly since the period of peak mercury discharge, the Phase II Study estimated it will take well over 100 years for mercury concentrations in Estuary sediment to decrease to a level consistent with regional background concentrations in sediment at the predicted rate of system recovery (PRMSP 2013).”*

Page 4

*“The Penobscot River Mercury Study Panel concluded that the slow rate of decline of mercury concentrations in the Estuary is attributable, in part, to the presence of a large pool of mercury-affected mobile sediment retained in the Estuary and its associated recycling within the Estuary under the influence of the tide. “*

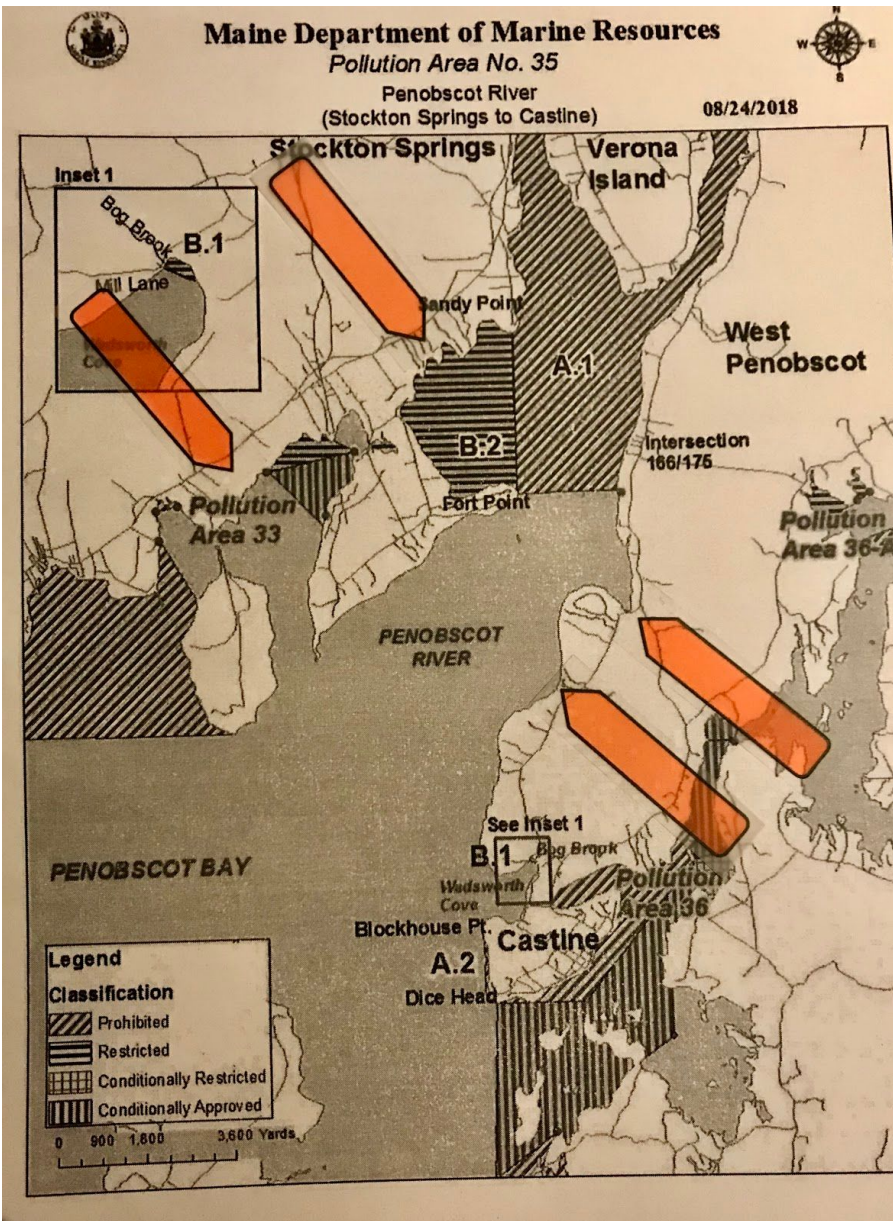


**ATTACHMENT # 10:**

Page 2 of Holly Faubel’s Public Comments re: Whole Oceans permit application submitted 10/28/2018

“As per DEP’s statement on Page 3 (1) “Where high quality waters of the State are an outstanding resource, that water quality will be maintained and protected”.

The receiving waters immediately at the outfalls indicated are listed as SC Waters, Maine Department of Marine Resources Pollution Area 35 as shown in the photo below:



These waters are designated as Critical Salmon Habitat (as per DEP’s Penobscot Rivershed, with Licensed Dischargers and Critical Salmon habitat overlay) for the endangered Wild Atlantic Salmon whose numbers are just beginning to recover. It is also habitat and migratory path Endangered Atlantic and Short Nosed Sturgeon. The orange arrows in the diagram (left) indicate those areas just below the proposed measured outflow that could be further restricted due to the discharge of Whole Oceans operation. This discharge won’t even be measured for the first two years of operation. “

**Attachment # 11** Electronic Code of Federal Regulations

e-CFR data is current as of December 13, 2018, page 1

“ 45. Mercury and compounds”

**Attachment # 12:** Clean Water Act , Section 502, General Definitions, 1972, page 1, item 13

“ (13) The term "toxic pollutant" means those pollutants, or combinations of pollutants, including disease-causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.”

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Healthy planet.  
Healthy people.

**THE CONSERVATION FUND**  
What is RAS? BASED FISH FARMING SYSTEMS (RAS)

This video was produced by our partners at The Conservation Fund, one of America's largest environmental non-profits with a dual charter to pursue environmental preservation and economic development. Through their Freshwater Institute, they have been directly advising Whole Oceans with this project.

