

Rich Passage Estates Homeowners' Association

Rich Passage Estates Homeowners' Association
Bainbridge Island, Washington

The attached documents provide public comments by the Rich Passage Estates Homeowners' Association related to the application by Cooke Aquaculture for National Pollutant Discharge Elimination System Permit modifications. Thank you for this opportunity to engage in this public process.

Rich Passage Estates Homeowners' Association
PO Box 11683
Bainbridge Island, WA 98110

October 26, 2020

Laurie Niewolny, Water Quality Program
Washington State Department of Ecology

Dear Laurie Niewolny,

This letter and attachments provide public comment on the application to the Washington Department of Ecology by Cooke Aquaculture for the modification of National Pollutant Discharge Elimination System Permits (NPDES) associated with the proposed farming of steelhead in pens located in Rich Passage.

We are requesting that discussions to modify the NPDES permits be tabled until the Wild Fish Conservancy lawsuit challenging the Department of Fish and Wildlife is concluded. Both the science and net pen guidance that supports the proposed modification are based on a thirty-year-old Environmental Impact Statement for Atlantic salmon. Both should be reevaluated with respect a species change to native fish and their impacts on threatened and endangered species. Additionally, the State of Science in Puget Sound, Washington was never completed and there has been no public comment on the latest draft version.

In May of this year, the Environmental Protection Agency made a determination that the marine net pens in Puget Sound “*are likely to adversely affect*” several ESA-listed species of fish. That document is attached. As a result, NOAA is charged with preparing a related Biological Opinion which, in part, addresses the NPDES permit modification relative to water quality standards. Ecology should delay any NPDES permits until this analysis is completed and NOAA issues its Biological Opinion.

Attached is a resubmission of our previous public comments for review and response recognizing that some items may have been mentioned in the revised draft. Also attached are the shoreline permits for reference that are listed on the application. These decades-old permits, under which the industry is grandfathered, are not aligned with many provisions of the current Shoreline Master Program and provide few water quality protections.

Ecology’s one virtual meeting appears to have been effective in soliciting little more than a few responses primarily by the applicant. The general opinion of the public is that Net Pen Aquaculture should be phased out because of the pollution it causes and risk of escapements as well as impacts to our threatened and endangered species. Ecology should conduct appropriate comment through multiple meetings and not the “one and done” during unprecedented times. For example, the Draft Aquatic Plant and Algae Management General Permit and Padilla Bay Tributaries Bacteria TMDL Public Comment are each holding two public workshops and hearings. During the legislative

hearings for EHB 2957, the issue of net pens was **the** topic that legislators heard the most about that legislative session.

Net Pen Structural Integrity Assessment Report

Of particular concern is the timing of inspections related net pen structures “approximately every two years” when net pens are fallow as they are at this time. The last inspection, to our knowledge, occurred in December of 2017 nearly three years ago. These pens need to be in good working order to receive fish, but also to ensure structural integrity in the highly-trafficked waters of Rich Passage even if pens are fallow. Ecology should not delay this inspection process on the timing of Cooke’s permit approvals.

From the draft permit S7. NET PEN STRUCTURAL INTEGRITY ASSESSMENT REPORT:

In accordance with RCW 77.125.060, the permittee must obtain a marine engineering firm to conduct inspections to assess structural integrity of the net pens. Inspections must occur within two years of the effective date of the permit if not completed and to be done routinely, approximately every two years, when net pens are fallow, and must mooring assessments related to escapement potential, structural integrity, permit compliance, and operations. The net pen structural integrity assessment reports must include current Doppler data, topside and be certified by a licensed professional engineer and submitted to Ecology within 60 days of the completion of the inspections.

S7	Net Pen Structural Integrity Assessment Report (includes Doppler current assessment)	Approximately every two years	Within 2 years of permit issuance
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RCW 77.125.060 does not state that “inspections must occur within two years of the effective date of the permit...” which appears to be language that Ecology has added.

RCW 77.125.060

Facility operator must hire marine engineering firm to conduct inspections.

(1) For marine finfish aquaculture, the facility operator must hire, at their own expense, a marine engineering firm approved by the department to conduct inspections. Inspections must occur **approximately every two years, when net pens are fallow**, and must include topside and mooring assessments related to escapement potential, structural integrity, permit compliance, and operations.

(2) Any net pen facility must be found to be in good working order to receive fish.

(3) If the facility is found to be in imminent danger of collapse or release of finfish, the director may require the operator to remove fish or deny a fish transfer permit.

[2018 c 179 § 12.]

<https://app.leg.wa.gov/RCW/default.aspx?cite=77.125.060>

From WDFW:

“WDFW SEPA 19-056 Determination Marine Aquaculture Permit Approval 24 • EHB 2957 requires that approximately every two-years, when net-pens are fallow, each of Cooke’s facilities must be inspected by an independent marine engineering firm, approved by WDFW, and to receive fish the facility must be considered in good working order. In December 2019, a Consent Decree was reached between Cooke and Wild Fish Conservancy, where both parties agreed that before Cooke restocks any of their net-pen facilities, they are required to conduct a load analysis of the mooring and cage systems using environmental condition data that are consistent with the Norwegian aquaculture standard NS 9415. As part of the inspections mandated by EHB 2957, WDFW will require that Cooke provide an engineering analysis certifying that the net-pens conform to the parameters derived from the NS 9415 standard. Each net-pen facility will be evaluated independently as conformity to parameters derived from the NS 9415 standards require evaluation of the environmental conditions (e.g., currents, winds, waves, depth) specific to that netpen facility.”

The net pens in Rich Passage have been fallow since the following dates:

- Fort Ward April 2018
- Clam Bay August 2019
- Orchard Rocks September 2020

In October 2019, the Orchard Rock South net pens were partially stocked. As you are aware, a hole in a pontoon caused the southern end to sink. The primary mitigation for fish escapements is prevention regardless of species. The Rich Passage Pens are beyond or near the end of their useful lives per the Department of Natural Resource lease agreement. Two years have passed without inspection and the pens here are fallow. There have been structural problems here and the applicant had previously submitted a permit for net pen replacement with the City of Bainbridge Island. The pens in Rich Passage have not been certified to receive fish regardless of species.

The permit should be denied generally, but denied until all inspections and repairs have taken place. Permit language allows the potential for the applicant to delay inspections until August of 2021 or later.

AKART

Similarly, AKART has been added and is not a condition of the permit modification, but with reapplication in 2024.

WAC 173-226-070

<https://apps.leg.wa.gov/WAC/default.aspx?cite=173-226-070&pdf=true>

Technology-based treatment requirements and standards reflecting all known, available, and reasonable methods of prevention, treatment, and control required under RCW **90.48.010**, **90.48.520**, **90.52.040**, and **90.54.020**

AKART

S10. AKART ANALYSIS REPORT contains the following language

In accordance with WAC 173-240-110, the permittee must conduct an analysis for all known, available, and reasonable methods of treatment or AKART. The analysis must include an economic and treatment analysis of the range of culturing techniques, including but not limited to all known in-water and uplands systems for the purpose of improved water quality of the effluent, reduced discharge, and less feed waste. Analysis shall also include the evaluation of best management practices and technology improvements to in-water systems that will lead to improved water quality of the effluent, reduced discharge, and less feed waste. Report must be submitted with the application for the renewal of this permit as required in S6.

S10	AKART Analysis Report	Once	With reapplication: January 31, 2024
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On September 18, 1996, Ecology issued NPDES permits including the three in Rich Passage. Eight of these permits were administratively extended, without modification (other than to reflect the change in ownership), in 2007 and again in 2012. When was the last AKART analysis?

The public has voiced repeated concerns regarding discharges of feces, uneaten food, antibiotics, nitrogen and metals and their impacts on water quality and threatened and endangered species.

AKART should be a condition of the permit modification not the potential renewal of the permit in 2024.

Discharges to Marine Waters

In response to the reporting of the discard of debris from the harvesting operations into the Puget Sound waters, we were informed via phone conversation that Ecology considers the reported activity de Minimis in terms of water quality, but “technically” not in compliance with the permit requirements which should have resulted in at least a warning letter. The industry should be held to the requirements of the permit. The permit does not nor should it specify a matter of degree which is subject to interpretation. The permit should include language that is consistent with WDFW: *The discard of carcasses, fish parts, or offal is also a violation of Cooke's NPDES permit.*

WDFW:

10. Prior to harvest, Cooke must provide WDFW, DNR, and Ecology the approximate dates for harvest. Within one month after harvesting is completed Cooke must provide to WDFW, DNR, and Ecology a report documenting the facility harvested, dates in which harvesting occurred, the total number of fish harvested per day, and any complications that may have occurred during harvesting. Cooke must report immediately if any live fish escaped during harvesting, or if any fish carcass, parts, or offal were discarded into the Puget Sound waters. The discard of carcasses, fish parts, or offal is also a violation of Cooke's NPDES permit. Cooke also must report the number and species of bycatch caught during harvesting. If requested by WDFW, DNR, or Ecology, Cooke must allow appropriately trained personnel from these agencies to monitor the harvesting activities.

From Ecology's pollution prevention plan:

6.3 Carcass and Leachate Disposal During Harvesting

During harvesting operations, the harvest boat shall be tied securely to the net pens adjacent to the pen that is being harvested. The harvest fish are pumped from the pen and onto the harvest boat. Blood water from the harvesting operations (leachate) shall be contained within the fish harvesting machine that is located on the harvest boat. The harvested fish and blood water are contained and stored inside the fish holds of the harvest boat.

Upon completion of the harvesting operation by the harvest boat at the facility, the harvested fish and blood water are transported by the harvest boat to the upland fish processing plant. The harvested fish and the blood water are then pumped off the vessel at the fish processing plant and the blood water is disposed of into the sanitary sewer system located at the fish processing plant.

6.4 Solid Waste Storage and Disposal Practices

Solid wastes generated by the daily operation of the sites include feed bags, wooden pallets, used line, ordinary household wastes, and other non-hazardous items. Proper containment, handling and storage of these waste materials shall be the priority of all employees to ensure these materials do not enter the water. These items shall be stored in secured containers or bundles before transport to a land-based facility. Solid waste is collected and routinely removed from the facilities and transported to the land-based support facilities for proper disposal and/or recycling.

Earlier, Ecology had indicated via email that:

Pollution prevention plan must include

9. How solid and biological wastes are collected, stored, and ultimately disposed of at an upland facility. Among the solid wastes of concern are:

- a. Any fish mortalities under normal operations.*
- b. Fish mortalities due to a fish kill involving more than five percent of the fish within one week.*
- c. Blood and waste from harvesting operations*

Again, the language in the NPDES should be consistent with WDFW:

The discard of carcasses, fish parts, or offal is also a violation of Cooke's NPDES permit.

Training

A key component of preventing fish escapes and pollution is appropriate training. From the Fish Escape Prevention Plan, the applicant states that:

Cooke will train all staff on the requirements and procedures of the Operations and Maintenance Manual, Pollution Prevention Plan, Fish Escape Prevention Plan, and Fish Escape Reporting and Response Plan annually by March 30 of each calendar year. New employees will be trained during their three-month probationary period. Additional training will be provided if plans are updated or changed. An employee training log will be maintained by the Site Manager at each location and will be updated as needed. Updated training logs are sent to the General Manager, Permit Coordinator and Business Support Analyst.

While Ecology reserves the right to inspect records with regard to training, actual inspections have only been recorded in PARIS three to four times in the past fourteen years. Given the poor record of the applicant, Ecology should consider more frequent site visits or request of records. Ecology should consider a response simulation exercise to verify the operator's ability to execute the plan.

Compliance Inspection Without Sampling

Date	Fort Ward	Orchard Rock	Clam Bay
December 2017	X	X	X
September 2015	X	X	X
November 2011		X	
October 2006	X	X	X

The fact that Ecology felt compelled to create an entire section related to *unusual events*, points to training deficiencies and/or inability of the operator to respond to potential emergency events.

Pollution and Threats to the Marine Environment

For two weeks now neighbors are watching with disgust as decades of industrial waste from marine finfish operations is being lifted from the seafloor in what we understand is from the 70's and 80's. The location is marked by the six or more orange buoys shown in the photos below.

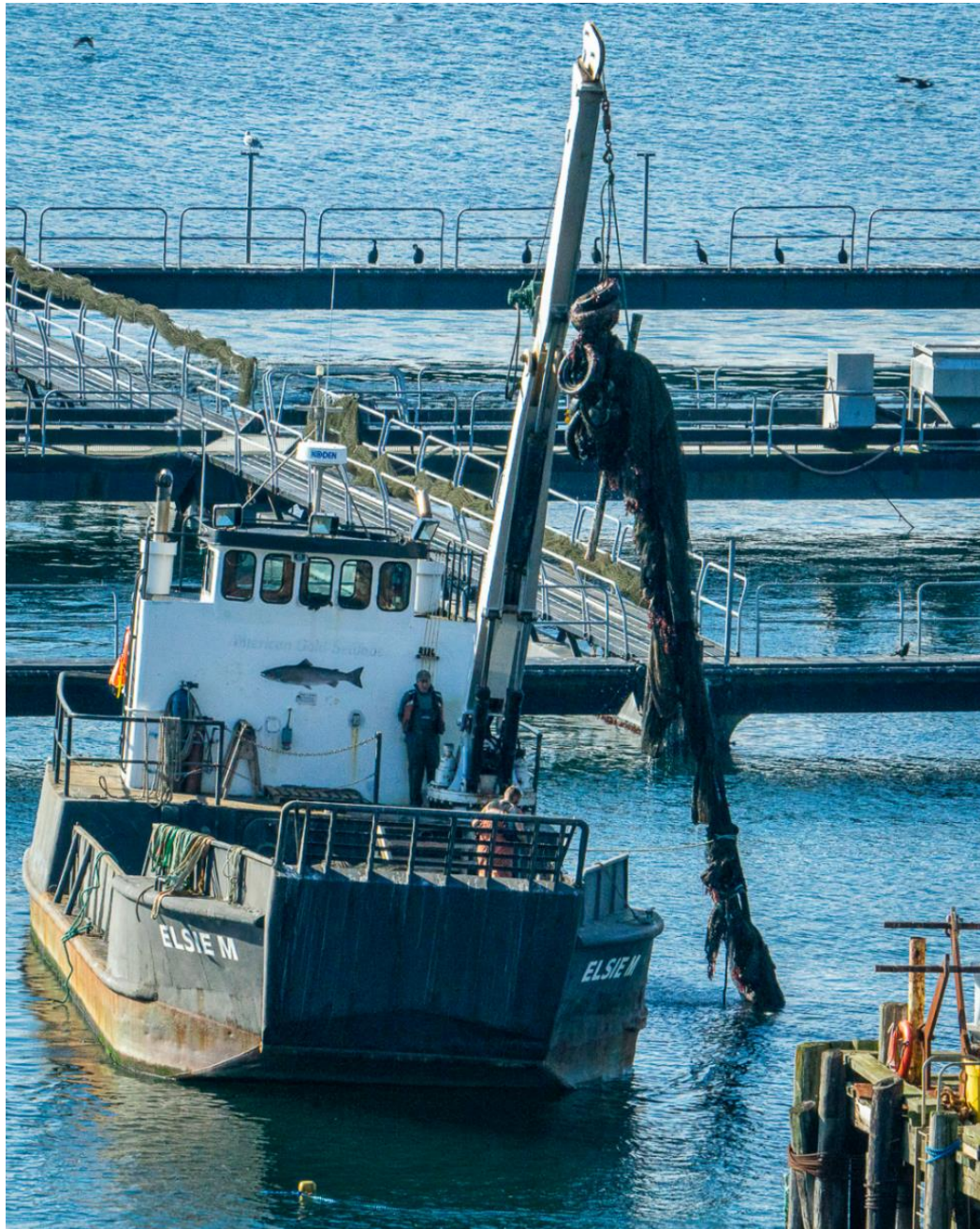
October 25, 2020



Buoy adjacent to protected Orchard Rocks Conservation area October 26, 2020



See the photo below of a net entangled in tires which was removed from the seafloor. October 24, 2020



Every NPDES permit disallows this type of dumping. Even our decades-old, two-paged, shoreline permit conditions that discarded net must be removed.

From the NPDES draft Operations and Maintenance Manual 7.4.4.

Dropped or Lost Nets

Any net accidentally dropped or lost during a storm event and not recovered immediately will be marked by GPS coordinates, a buoy, and reported to Ecology within 24 hours. The net will be recovered within 30 days and Ecology will be notified on the date it is recovered. Additional information on dropped or lost nets, major repair, or structural issues, can be found in the Fish Escape Prevention Plan, Sections 3 and 4. For more information on Emergency Structural Problems, notifications, and reporting, see the Fish Escape Prevention Plan, Section 2

From previous permits that were administratively approved in later versions ... *Permit No. WA-003153-4 Issuance Date: October 26, 2007 Expiration Date: October 26, 2012 Minor Modification Date: May 30, 2008.*

17. When in use, predator nets shall be maintained above the sea floor at all times. Nets may not impede the current flow or tidal exchange so as to contribute to the deposition of solids that would impair water quality standards. The storage of predator control or containment nets on the sea floor is prohibited. Any net accidentally dropped or lost during a storm event that is not recovered immediately shall be tagged with a float, positioned using differential GPS, and reported to Ecology within 24 hours. The net shall be recovered within 30 days from the date lost, unless Ecology allows a longer time in an individual case. Ecology shall be notified on the date the net is recovered.

From the current NPDES permit. No surprises here...the exact same language.

3. Operating Requirements

r. When in use, predator nets shall be maintained above the sea floor at all times. Nets may not impede the current flow or tidal exchange so as to contribute to the deposition of solids that would impair water quality or sediment standards. The storage of predator control nets on the sea floor is prohibited. Any net accidentally dropped or lost during a storm event that is not recovered immediately shall be tagged with a float, positioned using differential GPS, and reported to Ecology within 24 hours. The net shall be recovered within 30 days from the date lost, unless Ecology allows a longer time in an individual case. Ecology shall be notified on the date the net is recovered.

Net recovered from the sea floor October 26, 2020



Chains recovered from the sea floor as well as recovered nets onboard the vessel.

October 26, 2020



Tires recovered from the industrial operation. Photo taken October 24, 2020



The Department of Ecology says on its homepage, *We're proud to protect, preserve, and enhance Washington's environment for current and future generations.*

Who's watching here? Ecology? The Industry? Not even Cooke apparently for the last four years until now with respect to issue mentioned in the above section regardless of the fact that the same permit coordinator has been in place through several industry owners. The public is watching here and paying the price with threats that the industry has created to our public waters and endangered species.

On April 29, 2019 Cooke agreed to pay the State the full \$332,000 penalty for the Cypress Island disaster in Puget Sound. A little over two months later on July 11, 2019, Ecology issued the current NPDES permit.

<https://ecology.wa.gov/About-us/Get-to-know-us/News/2019/April-29-Cooke-Aquaculture-will-pay-full-penalty>

Elsewhere, in October of 2019, just weeks after Cooke Aquaculture agreed to pay the state more than \$150,000 to settle numerous violations at several of its salmon net pen sites in eastern Maine, the Department of Marine Resources is asking for public comment on the company's application for a 20-year lease renewal.

<https://www.mdislander.com/maine-news/cooke-aquaculture-seeks-renewal-of-salmon-pen-lease>

It all appears somewhat familiar and an NPDES permit modification is yet to be decided.

Cooke has proven to be an unreliable applicant as evidenced by their abysmal record in Washington during their short tenure. It is difficult to believe that the company who was responsible here for repeated water quality violations, structural failures and the Cypress Island disaster is capable of self-monitoring and self-reporting. Additional layers of requirements are not a guarantee of compliance. While the changes to the NPDES permit seem appropriate in theory, we seriously question the industry's ability to execute. Locally, the City of Bainbridge Island has pledged their support for an alternate Department of Natural Resources lease application submitted by the Wild Fish Conservancy to lease the waters now leased by the industry with the creation of Resolution 2020-18. We support the Conservancy's plan to restore polluted and industrialized waters to their natural state for the conservation of Puget Sound's ecosystem, and for the use, benefit, and enjoyment of present and future generations.

We strongly urge the Department of Ecology to deny the NPDES permit modifications.

Sincerely,

A handwritten signature in black ink that reads "Kathleen D. Hansen". The signature is written in a cursive style with a large, sweeping flourish at the end of the name.

Kathleen D. Hansen
Director
Rich Passage Estates HOA



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

WATER
DIVISION

May 29, 2020

Dr. Kim Kratz
Assistant Regional Administrator
National Marine Fisheries Service
Oregon & Washington Coastal Area Office
510 Desmond Drive Southeast, Suite 103
Lacey, Washington 98503-1263

Dear Dr. Kratz:

On April 8, 2011, the Environmental Protection Agency and National Marine Fisheries Service completed the Endangered Species Act Section 7 consultation on the Washington State Department of Ecology's Sediment Management Standards (WAC 173-204-412) regarding marine finfish rearing facilities. Following the collapse of a net pen facility near Cypress Island in August 2017, and the following escapement recovery efforts, Wild Fish Conservancy supplemented the existing litigation regarding disease transmission against both agencies. On August 7, 2018, in *Wild Fish Conservancy v. EPA et al*, 331 F. Supp. 3d 1210 (W.D. Wash. 2018), the Court issued an order denying the federal agencies' motion for judgment on the pleadings and addressing the legal duty of both agencies with regard to reinitiation of ESA consultation and the scope of such consultation.

The EPA disagrees with the Court's holding that it retains sufficient discretion over previously approved state water quality standards to reinitiate consultation. However, consistent with the Court's order, the EPA sent NMFS a letter requesting the reinitiation of consultation on October 1, 2018, which NMFS accepted in a response dated October 3, 2018.

Enclosed is the 2020 Biological Evaluation Addendum prepared by the EPA to facilitate the reinitiation of formal consultation with NMFS. The Addendum incorporates the following new information since the 2008 and 2010 BEs:

- Disease transfer from Atlantic salmon net pen fish to Pacific salmon, primarily relying on a letter from NMFS dated January 12, 2016, and accompanying memo.
- An escapement event that occurred on or around August 19, 2017, at Cooke Aquaculture's Site 2 net pen off Cypress Island and the follow up and the associated response actions.
- Updated National Pollutant Discharge Elimination System permitting actions by the Department of Ecology to minimize escapement risk and covers the planned transition at

existing commercial net pens facilities to raise steelhead instead of Atlantic salmon, which must be phased out by 2022 per Washington state law.

- The EPA NPDES general permit which currently covers tribal enhancement net pen facilities and the reissuance of the general permit in late 2020. The EPA plans to expand the scope of the general permit to include federal research facilities and to allow for the marginal expansion of tribal enhancement facilities. The tribal enhancement facilities raise and release native salmonids and the federal research facilities will raise native fish (Pacific salmon, sablefish, etc.).

In accordance with ESA Section 7(a)(2), the EPA is hereby providing our analysis of potential effects on listed species and critical habitat resulting from the EPA’s approval of portions of the Sediment Management Standards at the Washington Administrative Code 173-204, including new information since the previous BEs. The EPA’s effects determinations for the species under NMFS’s purview are presented in Section 8 of the BE Addendum and summarized below.

	Species	ESU/DPS/Population	Species Effects Determination	Critical Habitat Designation	Critical Habitat Effects Determination
1	Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Puget Sound ESU	LAA	Yes	NLAA
2	Chum Salmon (<i>Oncorhynchus keta</i>)	Hood Canal summer-run ESU	LAA	Yes	NLAA
3	Steelhead (<i>Oncorhynchus mykiss</i>)	Puget Sound, DPS	LAA	Yes	NLAA
4	Bocaccio (<i>Sebastes paucispinis</i>)	Puget Sound/Georgia Basin DPS	LAA	Yes	NLAA
5	Yelloweye Rockfish (<i>Sebastes ruberrimus</i>)	(Puget Sound/Georgia Basin DPS)	LAA	Yes	NLAA
6	North American Green Sturgeon (<i>Acipenser medirostris</i>)	Southern DPS	NLAA	Yes	NLAA
7	Pacific Eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	NLAA	Yes	NLAA
8	Humpback Whale (<i>Megaptera novaeangliae</i>)	Pacific Coast, Mexico DPS and Central America DPS	NLAA	No	--
9	Killer Whale (<i>Orinus orca</i>)	Southern Resident, DPS	NLAA	Yes	NLAA

LAA – likely to adversely affect

NLAA – may affect, but not likely to adversely affect

We respectfully request your concurrence on the Agency's determinations for the species and critical habitat that are not likely to be adversely affected.

For the species and critical habitat that are likely to be adversely affected by the Agency's proposed action, we request that you notify the EPA of your agreement to reinstate formal consultation within 30 days from the receipt of this letter. As described in the duration and extension of formal consultation section at 50 CFR 402.14(e), we anticipate receiving the biological opinion from NMFS within 135 days of initiating formal consultation and if an extension is necessary, procedures in this section will be followed.

The EPA appreciates the technical support from your staff, including the ongoing coordination to discuss NMFS's information needs. We remain available to provide any additional assistance and/or clarification of the enclosed Addendum.

If you have any questions or wish to discuss this matter further, please call me at (206) 553-1855 or contact Matthew Szelag, the EPA staff lead, at (907) 271-1208 or szelag.matthew@epa.gov.

Sincerely,

**DANIEL
OPALSKI**

Digitally signed by
DANIEL OPALSKI
Date: 2020.05.28
15:12:12 -07'00'

Daniel D. Opalski
Director

Enclosure

cc (e-copy): Jennifer Quan, NMFS
Jeff Vanderpham, NMFS
Caitlin Imaki, NMFS

**ADDENDUM TO THE UPDATED BIOLOGICAL EVALUATION
DATED DECEMBER 13, 2010**

**REGARDING THE EPA CLEAN WATER ACT ACTION ON
WASHINGTON'S MARINE FINFISH REARING FACILITY PROVISION
CONTAINED IN THE SEDIMENT MANAGEMENT STANDARDS AT
WASHINGTON ADMINISTRATIVE CODE 173-204-412**

PREPARED FOR:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE

PREPARED BY:
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE, SUITE 155
SEATTLE, WA 98101

May 29, 2020

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Preface

In the Biological Evaluation of April 17, 2008, and supplemented on August 6, 2008 (collectively referred to as the 2008 BE),¹ the EPA concluded that the approval of certain new and revised water quality standards at WAC 173-204, Washington's Sediment Management Standards, were not likely to adversely affect listed fish species or marine mammals or their designated critical habitat areas since the effects of such approval would be insignificant.

The EPA's approval, following the completion of Endangered Species Act consultation in 2008, of Washington's Sediment Management Standards was challenged in court by Wild Fish Conservancy. On April 28, 2010, the U.S. District Court for the Western District of Washington issued an order setting aside the 2008 consultation on Washington's Sediment Management Standards on grounds that the EPA and NMFS had failed to consider two NMFS recovery plans for Puget Sound Salmon and Southern Resident Killer Whales. *Wild Fish Conservancy v. U.S. Env'tl. Prot. Agency*, No. C08-156-JCC, 2010 U.S. Dist. LEXIS 41838, pp. 15-16 (Apr. 28, 2010). Following the Court's decision, the EPA reviewed the two NMFS recovery plans along with the data in the original 2008 BE and other updates to information and analysis and issued an Addendum to the 2008 BE on December 13, 2010 (referred to as the 2010 BE).²

1. National Marine Fisheries Service. 2007. Puget Sound Salmon Recovery Plan. Shared Strategy for Puget Sound adopted by National Marine Fisheries Service. Volumes I and II.³

2. National Marine Fisheries Service. 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Seattle, Washington.⁴

Following a review of the information presented in the recovery plans, the EPA determined that although net pen operations in accordance with the provisions at WAC 173-204 may affect ESA listed species or their critical habitat, such effect is not likely to adversely affect (NLAA) the three species of salmonids and the southern resident killer whale. Therefore, the EPA reaffirmed the NLAA and no effect determinations contained in the 2008 BE. The EPA also provided an analysis and a NLAA determination for the three additional listed species of rockfish in Puget Sound: bocaccio, canary, and yelloweye rockfish. ESA consultation was completed on April 8,

¹ April 17, 2008. Supplemented August 6, 2008. U.S. EPA Region 10. *Biological Evaluation of Washington's Marine Finfish Rearing Facility Provision Contained in the Sediment Management Standards*. Prepared for U.S. Fish & Wildlife Service and National Marine Fisheries Service.

² December 13, 2010. U.S. EPA Region 10. *Update to the Biological Evaluation Submitted April 17 and August 6, 2008, Regarding EPA Action on Washington's Marine Finfish Rearing Facility Provision Contained in the Sediment Management Standards*. Prepared for National Marine Fisheries Service.

³ Available online at:

https://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/puget_sound/puget_sound_chinook_recovery_plan.html

⁴ Available online at:

https://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/killer_whale/recovery_plan.html

2011,⁵ and the EPA re-approved the applicable provisions on April 22, 2011.⁶

On November 4, 2015,⁷ Wild Fish Conservancy filed new litigation alleging that the informal consultation concluded in April 2011 was arbitrary, and that the EPA and NMFS had a duty to reinitiate consultation based on new information related to disease outbreak. On December 7, 2017, following the collapse of a commercial net pen and escape of Atlantic salmon, Wild Fish Conservancy filed a second amended complaint supplementing its litigation to claim that the net pen collapse presented additional information requiring both federal agencies to reinitiate consultation.⁸ The EPA acknowledged the net pen failure in a letter to NMFS on December 14, 2017.⁹ On August 7, 2018, the Court issued an order denying the federal agencies' motion for judgment on the pleadings and addressing the legal duty of both agencies with regard to reinitiation of consultation and the scope of such consultation.¹⁰ *Wild Fish Conservancy v. EPA et al*, 331 F. Supp. 3d 1210 (W.D. Wash. 2018).

The EPA disagrees with the Court's holding that it retains sufficient discretion over previously approved state water quality standards to reinitiate consultation. However, consistent with the Court's order, the EPA sent NMFS a letter requesting the reinitiation of consultation on October 1, 2018,¹¹ which NMFS accepted in a response dated October 3, 2018.¹²

This 2020 BE Addendum incorporates new information on several different topics. First, additional information regarding disease transfer from Atlantic salmon net pen fish to Pacific

⁵ April 8, 2011. Letter from William W. Stelle, Jr., Regional Administrator, NMFS to Jannine Jennings, Water Quality Standards Unit, EPA Region 10, *Re: Endangered Species Act Section 7 Informal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Proposed Approval of Finfish Rearing Facility Provision Contained in the Sediment Management Standards Rule Promulgated by the Washington State Department of Ecology (HUC 17110019, Puget Sound)*.

⁶ April 22, 2011. U.S. EPA Region 10. Letter from Michael A. Bussell, Director Office of Water and Watersheds, EPA Region 10 to Mr. Kelly Susewind and Mr. Jim Pendowski, Department of Ecology, *Re: EPA's Re-Approval of Washington's Revised Sediment Management Standards (WAC 173-204) including the Marine Finfish Rearing Facility Provision, as submitted on June 3, 1996*.

⁷ November 4, 2015. Case 2:15-cv-01731. WFC V. U.S. EPA and NMFS. *Complaint for Declaratory and Injunctive Relief*.

⁸ November 22, 2017. Case 2:15-cv-01731-BJR. WFC V. U.S. EPA and NMFS. *Plaintiff's Motions to Supplement Pleadings and Amend Case Schedule*.

⁹ December 14, 2017. Letter from Michael Lidgard, Acting Director, Office of Water and Watersheds, EPA Region 10 to Mr. Kim Kratz, Assistant Regional Administrator, NMFS, *Re: August 2017 Puget Sound Net Pen Failure*.

¹⁰ August 7, 2018. Case 2:15-cv-01731-BJR. WFC V. U.S. EPA and NMFS. *Order Denying (1) Federal Defendants' Motion for Judgment on the Pleadings and (2) Cooke Aquaculture's Motion to Dismiss*.

¹¹ October 1, 2018. Letter from Daniel D. Opalski, Director Office of Water and Watersheds, EPA Region 10 to Mr. Kim Kratz, Assistant Regional Administrator, NMFS *Re: Request to Reinitiate Endangered Species Act Section 7 Consultation on the Environmental Protection Agency's Approval of Washington State Department of Ecology's Sediment Management Standards (WAC 173-204-412) Regarding Marine Finfish Rearing Facilities*.

¹² October 3, 2018. Letter from Barry A. Thom, Regional Administrator, NMFS, to Dan Opalski Director Office of Water and Watersheds, EPA Region 10, *Re: Request to Reinitiate April 8, 2011 Endangered Species Act Section 7 Consultation on the Environmental Protection Agency's Approval of Washington State Department of Ecology's Sediment Management Standards (WAC 173-204-412) Regarding Marine Finfish Rearing Facilities (refer to NMFS No.: NWR-2010-6071)*.

salmon has been included, primarily relying on a letter from NFMS dated January 12, 2016,¹³ and accompanying memo in response to a request from the EPA on December 16, 2015.¹⁴ Second, further information regarding an escapement event that occurred on or around August 19, 2017, at Cooke Aquaculture’s Site 2 net pen off Cypress Island, including the follow up and the associated response has been included in this 2020 BE Addendum. The Addendum incorporates updated National Pollutant Discharge Elimination System (NPDES) permitting actions by the Washington State Department of Ecology (Ecology), to minimize escapement risk and covers the planned transition at commercial net pen facilities to raise steelhead instead of Atlantic salmon which must be phased out by 2022. Lastly, the Addendum discusses facilities covered by the current EPA NPDES general permit (WAG132000),¹⁵ which covers tribal enhancement facilities. In their reissuance of the general permit in late 2020, EPA plans to expand the scope of the general permit to include federal research facilities and to allow for the marginal expansion of tribal enhancement facilities. The tribal enhancement facilities raise and release native salmonids and the federal research facilities will raise native fish (Pacific salmon, sablefish, etc.). Please note that throughout this Addendum, the EPA will refer to both the currently covered tribal enhancement facilities and the soon to be covered federal research facilities broadly as “facilities covered under EPA’s NPDES GP.” The current EPA general permit cites, but does not necessarily rely on, the Sediment Management Standards at WAC 173-204 for their permitted operations, and the reissued NPDES GP will be similar in this regard.

Given the gap between the 2010 BE and this 2020 Addendum, the EPA is providing updated information to be considered in this ESA consultation. Below is a crosswalk that explains the updates to each section of the 2010 BE that are included in this 2020 Addendum. The updates include:

1. Updates to the **Background** to revise the number of net pen facilities included in the consultation and Ecology’s permitting activities and moratorium on Atlantic salmon net pens
2. Minor updates to the **Description of the Agency Action** to reflect changes to the provisions at WAC 173-204
3. Updates to the **Description of the Action Area** to note the net pen facilities included in this consultation

¹³ January 12, 2016. Letter from Kim W. Kratz, Ph.D., Assistant Regional Administrator, Oregon Washington Coastal Office, NMFS, to Dan Opalski, Director Office of Water and Watersheds, EPA Region 10 with enclosed memo dated December 17, 2015 from Dr. Dickhoff to Dr. Kratz *Re: Scientific Review of Intent to Sue U.S. Environmental Protection Agency and National Marine Fisheries Service for violations of the Endangered Species Act associated with consultation of Washington State’s Revised Sediment Management Standards for Marine Finfish Facilities dated 25 August 2015.*

¹⁴ December 16, 2015. Letter from Daniel D. Opalski, Director Office of Water and Watersheds, EPA Region 10 to Mr. William Stelle, Administrator, West Coast Region, NMFS *Re: Washington’s Sediment Management Standards regarding Netpen Facilities.*

¹⁵ September 9, 2015. EPA Region 10. Tribal Marine Net Pen Enhancement Facilities NPDES General Permit for Washington. WAG132000. <https://www.epa.gov/sites/production/files/2018-03/documents/r10-npdes-washington-tribal-net-pen-gp-wag132000-final-permit-2015.pdf>

4. Updates to the **Species Status and Life History** to include newly listed species of North American Green Sturgeon and Pacific Eulachon along with steelhead, bocaccio and yelloweye rockfish designated critical habitat since 2010
5. The **Environment Baseline** remains largely unchanged except where noted
6. Updates to the **Analysis of Effects** regarding the indirect effects associated with disease transfer, escapement events, permitting activity to minimize escapement risk/additional net pen facilities, and new native species reared
7. The **Cumulative Effects** section remains unchanged
8. New **Summary of Findings** to reflect the EPA's revised determinations
9. The **Sediment Testing Methodology Provisions** section remains largely unchanged except where noted
10. **References**
11. Updated **Maps**

1. Background

In 1991, the EPA approved Washington's Sediment Management Standards (SMS). On June 3, 1996, Ecology submitted revisions to WAC 173-204, which included minor revisions to the sediment testing methodology provisions and a new section for marine finfish rearing facilities at WAC-173-204-412. These revisions were subject to the Alaska Rule¹⁶ since they were adopted by Washington and submitted to the EPA for review prior to May 30, 2000, and the EPA took no action prior to that date. In accordance with 40 CFR 131.21(c)(1), Washington's 1996 sediment management standard revisions went into effect for Clean Water Act purposes as soon as they were effective under state law.

The addition of the marine finfish rearing facility section exempts net pen facilities in Puget Sound from portions of Washington's sediment management standards, underneath and around the immediate area of the net pen. The section also states that sediment quality compliance and monitoring requirements of net pen facilities are addressed through the NPDES permitting program. The section provides for a special sediment impact zone by rule within and including a distance of 100 feet from the outer edge of net pen facility structures; consequently, such facilities and their associated discharges are exempt from marine sediment quality standards, sediment impact zone maximum criteria, and sediment impact zone standards at WAC 173-204-415. The section also allows Ecology to authorize sediment impact zones beyond 100 feet via NPDES permits or administrative actions, subject to increased monitoring. The rule provides no exemptions to compliance with Washington's water quality standards for net pen facilities.

For commercially operated net pens, the Washington State Department of Natural Resources (WDNR) issues a site license for each facility (lease expiration date) and the Washington Department of Fish and Wildlife (WDFW) regulates disease control, fish health and escape management at each facility.

¹⁶ Rule specifying that new and revised standards adopted by States and authorized Tribes on or after May 30, 2000, become "applicable standards for Clean Water Act purposes" only when approved by EPA.
<https://www.federalregister.gov/documents/2000/04/27/00-8536/epa-review-and-approval-of-state-and-tribal-water-quality-standards>

Currently, there are four active commercially operated Atlantic salmon net pen facilities in Puget Sound operated by Cooke Aquaculture. Previously, there were eight active facilities, but due to the collapse of Site #2 off Cypress Island and the closure of the Port Angeles (Ediz Hook) net pen, among others off Cypress Island, the number of facilities has been reduced to four since the 2010 BE. The remaining net pens include one near Hope Island (Skagit Bay) and three in Rich Passage near Bainbridge Island. Although the operator may pursue using some of the previously active net pens in the future, the potential effects from those sites would be similar to the sites evaluated in this BE Addendum.

Ecology reissued NPDES permits for the four active commercially operated net pen facilities on July 11, 2019.¹⁷ The updated NPDES permit requirements allow Ecology to ensure that facilities are meeting water quality standards until the Atlantic salmon net pens are phased out. In 2018, following the collapse of Cooke's net pen facility Cypress Island—Site 2 and the resulting escape of approximately 250,000 Atlantic salmon, the Washington State Legislature passed House Bill 2957, phasing out marine rearing of all Atlantic salmon as the facility aquatic lands leases expire by 2022.¹⁸ More information regarding new permitting activity for these facilities is provided in the Analysis of Effects section of this BE Addendum.

These facilities are expected to be converted to steelhead (all-female triploid rainbow trout) facilities, as indicated in a permit application submitted by Cooke Aquaculture Pacific, LLC, to WDFW on January 18, 2019.¹⁹ On January 21, 2020, WDFW approved Cooke's application after completing the State Environmental Policy Act (SEPA) process.²⁰ The five-year permit enables Cooke to farm all-female, sterile (triploid) rainbow trout/steelhead in Puget Sound and applies to existing net pens in Puget Sound where Cooke holds valid aquatic land leases with the Washington Department of Natural Resources. This includes four pens currently operating near Rich Passage and Skagit Bay, but may later extend to three additional net pens owned by Cooke. Ecology is currently in the process of revising the NPDES permits authorizing Cooke to transition to rearing steelhead and is accepting public comments until June 8, 2020.²¹

To ensure a complete review and analysis in this 2020 Addendum, the EPA is also including facilities covered under EPA's NPDES GP. There are significant differences (such as the sizes of the facilities and types of operations, species raised such as Coho or sablefish, etc.) between the permittees covered under the EPA NPDES GP and Ecology's permitting of large commercial net

¹⁷ Washington Department of Ecology. Atlantic salmon net pen individual permits. Accessed May 26, 2020. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-individual-permits/Net-pens>

¹⁸ March 26, 2018. Washington State House Bill 2957. Nonnative Finfish—Marine Aquaculture—Escape. Chapter 179, Laws of 2018.

¹⁹ January 18, 2019. Cooke Aquaculture Pacific, LLC. Fin Fish Aquaculture Permit – Plan of Operation. All-female Triploid Rainbow Trout (*Oncorhynchus mykiss*).

²⁰ January 21, 2020. WDFW. Justification for the Mitigated Determination of Non-Significance (MDNS) for Washington Department of Fish and Wildlife SEPA 19-056 and for the Approval of Cooke Aquaculture Pacific's Marine Aquaculture Permit Application. https://wdfw.wa.gov/sites/default/files/2020-01/marine_aquaculture_permit_justification-01-31-20.pdf

²¹ Washington Department of Ecology. Salmon net pen water quality individual permits. Accessed May 26, 2020. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-individual-permits/Net-pens>

pen facilities. The permitting regulations distinguish between these two types of net pen facilities found in Puget Sound are discussed in more detail below in the Analysis of Effects.

2. Description of the Agency Action

The following is a list of the SMS provisions which could affect aquatic life and were addressed in the 2008 and 2010 BEs.

- WAC 173-204-200 (13): Definition of “Marine finfish rearing facilities.”
- WAC 173-204-315(1)(b)(ii)
- WAC 173-204-315(2)(b)
- WAC 173-204-315 (2)(d)
- WAC 173-204-320 (3)(d)
- WAC 173-204-412 (2): Applicability of marine finfish rearing facilities.
- WAC 173-204-412 (3)(a) and (3)(b): Sediment monitoring requirements of marine finfish rearing facilities.
- WAC 173-204-412 (4), (4)(a), (4)(a)(i), (4)(a)(ii) and (4)(b): Sediment impact zones for marine finfish rearing facilities.
- WAC 173-204-420 (3)(c)(iv)
- WAC 173-204-520 (3)(d)(iv)

This 2020 Addendum updates the following two provisions from the 2010 BE. These changes have no effect on the outcome of the consultations from 2010 and 2008. The remainder of the provisions have not been revised and there are no new additional provisions in the SMS to be included in this consultation.

1. On December 18, 2015, the EPA approved a minor non-substantive edit to the definition of “*marine finfish rearing facilities*” at WAC 173-204-200 (13).²² The revisions are reflected below in strikeout. This minor revision has no effect on the updated consultation.

(13) “Marine finfish rearing facilities” (~~shall~~) means those private and public facilities located within state waters where finfish are fed, nurtured, held, maintained, or reared to reach the size of release or for market sale.

2. The second provision that was revised is WAC 173-204-520(3)(d)(iv). *Juvenile polychaete Puget Sound marine sediment cleanup screening levels and minimum cleanup level biological criteria.*

The state deleted and substantively replaced this provision as part of its revisions to the SMS in 2013. On December 18, 2015, the EPA rescinded its 2008 approval of this provision because it

²² December 18, 2015. Letter from Dan Opalski, Director, Office of Water and Watershed, EPA Region 10 to Maia Bellon, Director, Washington Department of Ecology, *Re: EPA’s Approval and Decision on Revisions to Washington’s Sediment Management Standards (SMS), Chapter 173-3014 WAC* and enclosed Technical Justification.

determined that Part V of the SMS is not a water quality standard. Therefore, this provision is no longer relevant to the consultation and this Addendum.

Note that the revisions outside of WAC 173-204-412 (and the definition of marine finfish rearing facilities) relate to sediment testing methodology. They were originally described in the EPA's August 6, 2008 supplement to the 2008 BE. The EPA reevaluated its conclusions in the August 6, 2008 supplement based upon new information and has not modified these conclusions since the provisions are applicable only to sediment testing methodology. See Section 9 of this Addendum for more information.

3. Description of the Action Area

The action area subject to this consultation on the SMS is the Puget Sound. The definition of Puget Sound has not been revised since the 2008 and 2010 consultation. Puget Sound is defined in the SMS at WAC-173-204-200(20): "Puget Sound basin" or "Puget Sound" means: (a) Puget Sound south of Admiralty Inlet, including Hood Canal and Saratoga Passage; (b) The waters north to the Canadian border, including portions of the Strait of Georgia; (c) The Strait of Juan de Fuca south of the Canadian border; and (d) All the lands draining into these waters as mapped in water resources inventory areas numbers 1 through 19, set forth in water resources management program established pursuant to the Water Resources Act of 1971, chapter 173-500 WAC.

The SMS for marine finfish rearing facilities are applicable to all commercially operated net pen facilities in Puget Sound, regardless of species reared. In this addendum, facilities covered under EPA's NPDES GP are also evaluated. Although the EPA's approval action of the SMS does not apply to, and thus the action area does not include, any waters within Indian Country (i.e., Native American reservations, Indian communities, and trust lands).

The EPA's view of the action area is informed by its understanding of the areas that may be affected directly or indirectly by its approval of the SMS related to marine finfish rearing facilities. Furthermore, the effects of the action – whether direct or indirect – occur within Puget Sound; therefore, the EPA continues to define the Puget Sound as the area that may be affected by this action. However, the EPA understands the concerns associated with escaped fish movement and recovery efforts related to the 2017 net pen collapse. To address such concerns, the EPA has chosen to voluntarily consider the effects of its action on freshwater steelhead critical habitat and freshwater Eulachon habitat and is making a corresponding effects determination in this Addendum.

4. Species Status and Life History of Fish Species Assessed

Subsequent to the 2010 BE and the addition of three rockfish species, two new species have been listed – North American Green Sturgeon and Pacific Eulachon (southern DPS). In addition, steelhead and two species of rockfish critical habitats have been designated for Puget Sound. Effective March 24, 2017, Canary Rockfish were delisted. The species status and life history for these newly listed species and critical habitat has been added below.

Please note the numbering in this section is consistent with the 2010 BE. There are no updates to 4.B.1. Chinook salmon and 4.B.2. Chum Salmon.

4.B.3. Steelhead Puget Sound DPS (Updated Critical Habitat)²³

Critical Habitat

Critical habitat designation for the Puget Sound steelhead was proposed on January 14, 2013. The areas under consideration include watersheds in Puget Sound and the Strait of Juan de Fuca in Washington.

Critical habitat was designated for the remaining five of Oregon and Washington listed steelhead on September 2, 2005 (70 FR 52630). Indian lands are excluded from critical habitat for these populations.²⁴

On February 24, 2016, NMFS issued a final rule designating critical habitat for threatened Puget Sound steelhead (81 FR 9251). The specific areas designated include approximately 2,031 miles (3,269 km) of freshwater and estuarine habitat in Puget Sound, including areas in the upper Elwha River that were not occupied by steelhead at the time of designation but that were determined to be essential for the conservation of the species. In keeping with the ESA and NMFS's past practice, the final designation excludes approximately 70 miles (113 km) of streams in Indian lands, 1,361 miles (2,190 km) of streams associated with approved Habitat Conservation Plans, and 28 miles (45 km) of streams associated with military lands where potential impacts on national security outweigh the benefits of designation as critical habitat. NMFS also excluded all habitat areas in three watersheds (Lake Washington, Lake Sammamish, and Sammamish River watersheds) where the economic impacts were deemed to outweigh the benefits of designation. A critical habitat map for this species is shown in the Maps section and is also available online.²⁵

On December 30, 2019, NFMS issued a recovery plan for the Steelhead Puget Sound DPS.²⁶

4.B.4. Bocaccio Puget Sound/Georgia Basin DPS

²³ This information has been adapted from the EPA's *Revised Biological Evaluation for the General NPDES Permit for Offshore Seafood Processing Discharge within Federal Waters Off the Coasts of Washington and Oregon Permit No. WAG520000*. Revised May 2017. <https://www.epa.gov/sites/production/files/2017-06/documents/r10-npdes-offshore-seafood-gp-wa-or-wag520000-biological-evaluation-2017.pdf>

²⁴ Further information from NMFS provided on ESA Critical Habitat for Puget Sound Steelhead website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_planning_and_implementation/puget_sound/steelhead_recovery_workshop_2013/stone_habitat.html

²⁵ NMFS. Map of Designated Critical Habitat for Puget Sound Steelhead. Accessed May 26, 2020. https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/steelhead/ssteelhead_ps.pdf

²⁶ December 20, 2019. NOAA Fisheries. ESA Recovery Plan for the Puget Sound Steelhead Distinct Population Segment (*Oncorhynchus mykiss*). <https://www.fisheries.noaa.gov/resource/document/esa-recovery-plan-puget-sound-steelhead-distinct-population-segment-oncorhynchus>

Critical Habitat was designated for Bocaccio on November 13, 2014 (79 FR 68041). Critical habitat is found throughout Puget Sound. The specific areas in the final designation include 590.4 square miles of nearshore habitat and 414.1 square miles of deepwater habitat. A critical habitat map for this species is shown in the Maps section and is also available online.²⁷

Species range, critical habitat, life history and ecology, and population trends and risks for Bocaccio Puget Sound/Georgia Basin DPS can be found at https://www.westcoast.fisheries.noaa.gov/publications/protected_species/other/rockfish/final_yel_loweye_rockfish_and_bocaccio_recovery_plan_508.pdf

4.B.5. Canary Rockfish Puget Sound/Georgia Basin DPS

Effective March 24, 2017, Canary Rockfish were delisted²⁸ and therefore are no longer part of this analysis.

4.B.6. Yelloweye Rockfish Puget Sound/Georgia Basin DPS

Critical Habitat was designated for Yelloweye Rockfish on November 13, 2014 (79 FR 68041). Critical habitat is found throughout Puget Sound. The specific areas in the final designation includes 414.1 square miles of deepwater habitat. A critical habitat map for this species is shown in the Maps section and is also available online.²⁹

Species range, critical habitat, life history and ecology, and population trends and risks for Yellow Rockfish Puget Sound/Georgia Basin DPS can be found at https://www.westcoast.fisheries.noaa.gov/publications/protected_species/other/rockfish/final_yel_loweye_rockfish_and_bocaccio_recovery_plan_508.pdf

4.B.7. North American Green Sturgeon³⁰

The North American green sturgeon was officially divided into two Distinct Population Segments by the NMFS on January 29, 2003 (68 FR 4433). The Southern DPS, which includes

²⁷ NMFS. Map of Designated Critical Habitat for Bocaccio, Canary, and Yelloweye Rockfish Distinct Population Segments. Accessed May 26, 2020.

https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/other/rockfish/pugetsoundrockfishch8_25_14.pdf

²⁸ 82 FR 7711. January 23, 2017. Endangered and Threatened Species; Removal of the Puget Sound/Georgia Basin Distinct Population Segment of Canary Rockfish From the Federal List of Threatened and Endangered Species and Removal of Designated Critical Habitat, and Update and Amendment to the Listing Descriptions for the Yelloweye Rockfish DPS and Bocaccio DPS. <https://www.federalregister.gov/documents/2017/01/23/2017-00559/endangered-and-threatened-species-removal-of-the-puget-soundgeorgia-basin-distinct-population>

²⁹ NMFS. Map of Designated Critical Habitat for Bocaccio, Canary, and Yelloweye Rockfish Distinct Population Segments. Accessed May 26, 2020.

https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/other/rockfish/pugetsoundrockfishch8_25_14.pdf

³⁰ This information has been adapted from the EPA's *Revised* Biological Evaluation for the General NPDES Permit for Offshore Seafood Processing Discharge within Federal Waters Off the Coasts of Washington and Oregon Permit No. WAG520000. Revised May 2017. <https://www.epa.gov/sites/production/files/2017-06/documents/r10-npdes-offshore-seafood-gp-wa-or-wag520000-biological-evaluation-2017.pdf>

any coastal or Central Valley, California populations south of the Eel River in California (the only known population being in the Sacramento River), was listed as Threatened on April 7, 2006 (71 FR 17757).³¹

Species Range

Green sturgeon are the most broadly distributed, wide-ranging, and most marine-oriented species of the sturgeon family. The green sturgeon ranges from Mexico to at least Alaska in marine waters, and is observed in bays and estuaries up and down the west coast of North America (Moyle et al., 1995).

Critical Habitat

Critical habitat for the Southern DPS of North American green sturgeon was designated on October 9, 2009 (74 FR 52300). A critical habitat map for this species is shown in the Maps section and is also available online.³²

All of the freshwater riverine parts of the critical habitat are in California; there are none in Oregon or Washington.

Coastal bays and estuaries included in the critical habitat designation include Coos Bay, Winchester Bay, Yaquina Bay, and Nehalem Bay in Oregon; Willapa Bay and Grays Harbor in Washington; and the Lower Columbia River estuary in both states. Critical habitat in bays and estuaries includes tidally influenced areas as defined by the elevation of mean higher high water. The boundary between coastal marine areas and bays and estuaries are delineated by the COLREGS lines (33 CFR 80).

The marine portion of the critical habitat includes all U.S. coastal marine waters out to the 60 fathom (fm.) (110 m) depth bathymetry line (relative to MLLW) from Monterey Bay, California north and east to include waters in the Strait of Juan de Fuca, Washington. The Strait of Juan de Fuca includes all U.S. marine waters: in Clallam County east of a line connecting Cape Flattery, Tatoosh Island, and Bonilla Point, British Columbia; in Jefferson and Island counties north and west of a line connecting Point Wilson and Partridge Point; and in San Juan and Skagit counties south of lines connecting the U.S.-Canada border and Pile Point, Cattle Point and Davis Point, and Fidalgo Head and Lopez Island. Critical habitat in coastal marine areas is defined by the zone between the 60 (fm.) depth bathymetry line and the line on shore reached by mean lower low water (MLLW), or to the COLREGS lines.

The primary constituent elements of nearshore coastal marine critical habitat areas that are essential for the conservation of the Southern DPS of green sturgeon are:

- (i) Migratory corridor: a migratory pathway for the safe and timely passage within marine and between estuarine and marine habitats.
- (ii) Water quality: nearshore marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants (e.g., pesticides, organochlorines, elevated levels

³¹ Further information from NMFS provided on Green Sturgeon website accessed on May 26, 2020.

https://www.westcoast.fisheries.noaa.gov/protected_species/green_sturgeon/green_sturgeon_pg.html

³² NMFS. Map of Designated Critical Habitat for Southern DPS of Green Sturgeon. Accessed May 26, 2020.

https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/greensturgeon_ch_maps.pdf

of heavy metals) that may disrupt the normal behavior, growth, and viability of sub-adult and adult green sturgeon.

(iii) Food resources: abundant prey items for sub-adults and adults, which may include benthic invertebrates and fishes.

Certain areas in the Strait of Juan de Fuca and Whidbey Island, Washington that are owned or controlled by the Department of Defense, or designated for its use, are excluded from critical habitat.

All Indian lands of the Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw as well as the Coquille Indian Tribe in Oregon; and the Hoh, Jamestown S'Klallam, Lower Elwha, Makah, Quileute, Quinault, and Shoalwater Bay Tribes in Washington are excluded from critical habitat designation.

Life history and ecology

Green sturgeon are long-lived, slow-growing fish. Mature males range from 4.5-6.5 feet (1.4-2 m) in "fork length" and do not mature until they are at least 15 years old (Van Eenennaam, 2002), while mature females range from 5-7 feet (1.6-2.2 m) fork length and do not mature until they are at least 17 years old. Maximum ages of adult green sturgeon are likely to range from 60-70 years (Moyle, 2002).

Green sturgeon are believed to spend the majority of their lives in nearshore oceanic waters, bays, and estuaries. Early life-history stages reside in fresh water, with adults returning to freshwater to spawn when they are more than 15 years of age and more than 4 feet (1.3 m) in size. Spawning is believed to occur every 2-5 years (Moyle, 2002). Adults typically migrate into fresh water beginning in late February; spawning occurs from March-July, with peak activity from April-June (Moyle et al., 1995). Females produce 60,000-140,000 eggs (Moyle et al., 1992). Juvenile green sturgeon spend 1-4 years in fresh and estuarine waters before dispersal to saltwater (Beamsederfer and Webb, 2002). They disperse widely in the ocean after their out-migration from freshwater (Moyle et al., 1992).

The only available feeding data on adult green sturgeon shows that they eat benthic invertebrates including shrimp, mollusks, amphipods, and even small fish (Moyle et al., 1992).

Population trends and risks

Little data on current population sizes exists and data on population trends is lacking. The principal factor in the decline of the Southern DPS is reduction of the spawning area to a limited section of the Sacramento River. Other threats to the Southern DPS include insufficient freshwater flow rates in spawning areas, contaminants (e.g., pesticides), bycatch of green sturgeon in fisheries, potential poaching (e.g., for caviar), entrainment by water projects, influence of exotic species, small population size, impassable barriers (dams) to spawning grounds, and elevated water temperatures.³³

³³ Further information from NMFS provided on Green Sturgeon website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/green_sturgeon/green_sturgeon_pg.html

4.B.8. Pacific Eulachon (Southern DPS)³⁴

Eulachon (*Thaleichthys pacificus*), commonly called smelt, candlefish, or hooligan, are a small, anadromous fish from the eastern Pacific Ocean. The Southern DPS of the species was listed as threatened on April 13, 2011 (76 FR 20558).³⁵

Species range

Eulachon are endemic to the eastern Pacific Ocean, ranging from northern California to southwest Alaska and into the southeastern Bering Sea. In the continental United States, most Eulachon originate in the Columbia River Basin. Other areas in the United States where Eulachon have been documented include the Sacramento River, Russian River, Humboldt Bay and several nearby smaller coastal rivers (e.g., Mad River), and the Klamath River in California; the Rogue River and Umpqua Rivers in Oregon; and infrequently in coastal rivers and tributaries to Puget Sound, Washington. Eulachon occur in nearshore ocean waters and to 1000 feet (300 m) in depth, except for the brief spawning runs into their natal (birth) streams.³⁶

Critical habitat

Sixteen specific areas within the states of California, Oregon, and Washington, of which thirteen are in Washington and Oregon, were designated as critical habitat for the southern Distinct Population Segment (DPS) of Pacific Eulachon on October 20, 2011 (76 FR 65324). The designated areas are a combination of freshwater creeks and rivers and their associated estuaries, comprising approximately 539 km (335 mi) of habitat.

Critical habitat for this DPS includes portions of the Umpqua River, Tenmile Creek, and Sandy River in Oregon; Grays River, Skamokawa Creek, Elochoman River, Cowlitz River, Toutle River, Kalama River, Lewis River, Quinault River, and Elwha River in Washington; and Columbia River in both states. Tribal lands of four Indian tribes are excluded from designation.

A critical habitat map for this species is shown in the Maps section and is also available online.³⁷

Life history and ecology

Eulachon typically spend 3 to 5 years in saltwater before returning to freshwater to spawn from late winter through mid-spring. Spawning grounds are typically in the lower reaches of larger snowmelt-fed rivers with water temperatures ranging from 39 to 50° F (4-10° C). Spawning occurs over sand or coarse gravel substrates. Eggs are fertilized in the water column. After

³⁴ This information has been adapted from the EPA's *Revised* Biological Evaluation for the General NPDES Permit for Offshore Seafood Processing Discharge within Federal Waters Off the Coasts of Washington and Oregon Permit No. WAG520000. Revised May 2017. <https://www.epa.gov/sites/production/files/2017-06/documents/r10-npdes-offshore-seafood-gp-wa-or-wag520000-biological-evaluation-2017.pdf>

³⁵ Further information from NMFS provided on Eulachon website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/eulachon/pacific_eulachon.html

³⁶ Further information from NMFS provided on Eulachon website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/eulachon/pacific_eulachon.html

³⁷ NMFS. Map of Designated Critical Habitat for Southern DPS of Eulachon. Accessed May 26, 2020. https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/other/eulachon/eulachon-ch-maps.pdf

fertilization, the eggs sink and adhere to the river bottom. Most Eulachon adults die after spawning. Eulachon eggs hatch in 20 to 40 days. The larvae are then carried downstream and are dispersed by estuarine and ocean currents shortly after hatching. Juvenile Eulachon move from shallow nearshore areas to mid-depth areas. Within the Columbia River Basin, the major and most consistent spawning runs occur in the mainstem of the Columbia River as far upstream as the Bonneville Dam, and in the Cowlitz River.³⁸

Population trends and risks

Eulachon abundance exhibits considerable year-to-year variability. However, nearly all spawning runs from California to southeastern Alaska have declined in the past 20 years, especially since the mid-1990s. From 1938 to 1992, the median commercial catch of Eulachon in the Columbia River was approximately 2 million pounds (900,000 kg) but from 1993 to 2006, the median catch had declined to approximately 43,000 pounds (19,500 kg), representing a nearly 98 percent reduction in catch from the prior period. Eulachon returns to British Columbia rivers similarly suffered severe declines in the mid-1990s and, despite increased returns during 2001 to 2003, presently remain at very low levels. The populations in the Klamath River, Mad River, Redwood Creek, and Sacramento River are likely extirpated or nearly so.

Habitat loss and degradation threaten Eulachon, particularly in the Columbia River basin. Hydroelectric dams block access to historical spawning grounds and affect the quality of spawning substrates through flow management, altered delivery of coarse sediments, and siltation. The release of fine sediments from behind a U.S. Army Corps of Engineers sediment retention structure on the Toutle River has been negatively correlated with Cowlitz River Eulachon returns 3 to 4 years later and is thus implicated in harming Eulachon in this river system, though the exact cause of the effect is undetermined. Dredging activities in the Cowlitz and Columbia rivers during spawning runs may entrain and kill fish or otherwise result in decreased spawning success.

Eulachon have been shown to carry high levels of chemical pollutants, and although it has not been demonstrated that high contaminant loads in Eulachon result in increased mortality or reduced reproductive success, such effects have been shown in other fish species. Eulachon harvest has been curtailed significantly in response to population declines. However, existing regulatory mechanisms may be inadequate to recover Eulachon stocks.

Global climate change may threaten Eulachon, particularly in the southern portion of its range where ocean warming trends may be the most pronounced and may alter prey, spawning, and rearing success.³⁹

5. Environmental Baseline

The environmental baseline of Puget Sound and the surrounding area is largely unchanged from the previous consultation; however, additional studies and new information are provided

³⁸ Further information from NMFS provided on Eulachon website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/eulachon/pacific_eulachon.html

³⁹ Further information from NMFS provided on Eulachon website accessed on May 26, 2020. https://www.westcoast.fisheries.noaa.gov/protected_species/eulachon/pacific_eulachon.html

throughout this Addendum. The human population of the Puget Sound region has continued to grow and as a result the pollution sources have also increased. However, as noted above, the number of commercial Atlantic salmon net pen facilities has been reduced from eight to four and the state of Washington has passed legislation to phase out non-native net pen rearing entirely by 2022. Additionally, it is expected that these four facilities will transition to rearing steelhead prior to the 2022 deadline. The EPA has also incorporated facilities covered under EPA's NPDES GP into this analysis as discussed in more detail below.

Water quality standards enhance the effectiveness of many of the state, local, and federal water quality programs, including point source permit programs, nonpoint source control programs, development of total maximum daily load limitations (TMDLs), and ecological protection efforts. Data acquired during chemical, physical, and biological monitoring studies is utilized in evaluating the quality of the State's waters and designing appropriate water quality controls. Waters identified as "water quality limited" are included on the CWA section 303(d) list, submitted to the EPA biennially. None of the currently permitted net pen facilities operate in areas that are listed as impaired for sediment on Ecology's most recent 303(d) list of impaired waters.

6. Analysis of Effects

The EPA's approval of Washington's revised sediment management standards, and in particular the marine finfish rearing facility provision at WAC 173-204-412, did not directly affect ESA listed or proposed species. However, there are potential indirect effects to ESA listed species and critical habitat through NPDES permitting that includes the revised SMS provisions that the EPA approved in 2008. Therefore, the effects analysis below updates the 2010 BE based on new information for the potential indirect effects from the EPA's prior approval action. This analysis reflects the current number of commercial net pen facilities being reduced from eight to four, the change in species being raised, and includes facilities covered under the EPA's NPDES GP. While the operator may pursue using some of the previously active sites in the future, the potential indirect effect would be similar to those analyzed in this BE Addendum.

The Analysis of Effects in the EPA's 2010 BE, Section 6.A.:

The EPA's 2010 analysis, incorporated herein (in italicized text) and updated in the next section, assumed there would not be an increase in the number of net pen facilities in Puget Sound, that Atlantic salmon would be the fish species reared in those net pen facilities, and that the regulatory structure would remain intact.

The EPA's approval and ESA determinations are based on the following six key findings along with information contained within the recovery plans.

- *The designated uses of Puget Sound are protected.*
- *Net pen facilities have an insignificant impact on aquatic life in Puget Sound.*
- *The existing regulatory framework for net pens provides protection to surrounding habitat and other species.*
- *The effects on the benthic community are accounted for and monitored.*

- *The closure procedures of net pen facilities ensure the aquatic environment is restored to baseline levels.*
- *The indirect effects of net pen facilities carry a low risk.*

These six findings, described in further detail below, are supported by information contained in the following three documents:

1) “Beneficial Environmental Effects of Marine Finfish Mariculture” J.E. Rensel and J.R.M. Forster. July 2007.

This report discusses the findings of a NOAA survey that was conducted from 2004-2006 at a commercial net pen farm in northern Puget Sound. The study found that net pens in Puget Sound provide a beneficial effect since they provide enhanced habitat for diverse populations of invertebrates and seaweeds. Therefore, the biofouling associated with net pens can be considered “beneficial” to species diversity and richly-populated marine food webs. The study also found that vaccines are typically used in place of antibiotics, sea lice problems do not exist due to natural salinity levels and facility siting location accounts for depth and current conditions that distribute net pens wastes over large areas where it may be incorporated into the food web.

2) “Review of Potential Impacts of Atlantic Salmon Culture on Puget Sound Chinook Salmon and Hood Canal Summer-Run Chum Salmon Evolutionarily Significant Units” F. William Waknitz. June 2002.

This NOAA technical memorandum examines the impacts of Atlantic salmon net pens on threatened salmon species found in Puget Sound. The report finds that escaped Atlantic salmon present a low risk to infect wild salmon, a low risk to compete with wild salmon for food or habitat, and a low risk to adversely impact Essential Fish Habitat. The study also finds there to be little risk regarding: hybridization between Atlantic and Pacific salmon; colonization of wild salmon habitat; Atlantic salmon feeding on Pacific salmon; pathogen transmission from Atlantic salmon to wild salmon; and, antibiotic-resistant bacteria development as a result of Atlantic salmon farming.

3) “The Net-pen Salmon Farming Industry in the Pacific Northwest” Colin Nash. September 2001.

This NOAA technical memorandum evaluates the risks associated with salmon net pen farming in the Pacific Northwest. This analysis finds the following issues carry the most risk: the impact of bio-deposits from farm operations on the environment beneath the net pens, the impact on benthic communities by the accumulation of heavy metals, and the impact on non-target organisms by the use of therapeutic compounds. Several of these issues have been addressed by Puget Sound facilities since this report was written in 2001. This memorandum finds several issues which carry a low risk: the physiological effect of low dissolved oxygen levels, the toxic effect of hydrogen sulfide and ammonia from net pen bio-deposits, the toxic effect of algal blooms, changes in the epifaunal community caused by the organic waste accumulation in sediments, the proliferation of human pathogens in the aquatic environment, the proliferation of

fish and shellfish pathogens in the aquatic environment and the increased incidences of disease among wild fish. The technical memorandum also finds the escape of Atlantic salmon and the impact of antibiotic-resistant bacteria on native salmonids to carry very little or no risk.

Update to Section 6.A.6. of the 2010 BE: Indirect Effects of Net Pen Facilities.

This Addendum incorporates new information on the following indirect effects. First, additional information regarding disease transfer from Atlantic salmon net pen fish to Pacific salmon has been included, primarily relying on a letter from NFMS dated January 12, 2016,⁴⁰ and accompanying memo. Second, further information regarding an escapement event that occurred on or around August 19, 2017, at Cooke Aquaculture's Site 2 net pen off Cypress Island and the follow-up and the associated response has been included in the Addendum. This Addendum also discusses potential future uses of commercially operated net pen facilities as steelhead rearing facilities instead of Atlantic salmon rearing facilities. Lastly, the Addendum discusses facilities covered by the current EPA NPDES general permit (WAG132000),⁴¹ which covers tribal enhancement facilities. In their reissuance of the general permit in late 2020, EPA plans to expand the scope of the general permit to include federal research facilities and to allow for the marginal expansion of tribal enhancement facilities. The tribal enhancement facilities raise and release native salmonids and the federal research facilities will raise native fish (Pacific salmon, sablefish, etc.). The current EPA general permit cites, but does not necessarily rely on, the Sediment Management Standards at WAC 173-204 for their permitted operations, and the reissued NPDES GP will be similar in this regard. The effects from the EPA NPDES GP are also discussed in the context of disease transmission and escape.

Disease Transmission

The information regarding disease transfer from Atlantic net pen fish to Pacific salmon is summarized below, relying primarily on a letter from NFMS dated January 12, 2016,⁴² and accompanying memo dated December 17, 2015.

On August 25, 2015, the EPA requested NOAA Fisheries' views on the allegations raised by Wild Fish Conservancy regarding an outbreak of infectious hematopoietic necrosis virus (IHNV) in 2012 at the Atlantic salmon net pen facilities near Rich Passage off Bainbridge Island. This request was made as a result of Wild Fish Conservancy's notice of intent to sue issued in August

⁴⁰ January 12, 2016. Letter from Kim W. Kratz, Ph.D., Assistant Regional Administrator, Oregon Washington Coastal Office, NMFS, to Dan Opalski, Director Office of Water and Watersheds, EPA Region 10 with enclosed memo dated December 17, 2015 from Dr. Dickhoff to Dr. Kratz *Re: Scientific Review of Intent to Sue U.S. Environmental Protection Agency and National Marine Fisheries Service for violations of the Endangered Species Act associated with consultation of Washington State's Revised Sediment Management Standards for Marine Finfish Facilities dated 25 August 2015.*

⁴¹ September 9, 2015. EPA Region 10. Tribal Marine Net Pen Enhancement Facilities NPDES General Permit for Washington. WAG132000. <https://www.epa.gov/sites/production/files/2018-03/documents/r10-npdes-washington-tribal-net-pen-gp-wag132000-final-permit-2015.pdf>

⁴² January 12, 2016. Letter from Kim W. Kratz, Ph.D., Assistant Regional Administrator, Oregon Washington Coastal Office, NMFS, to Dan Opalski, Director Office of Water and Watersheds, EPA Region 10 with enclosed memo dated December 17, 2015 from Dr. Dickhoff to Dr. Kratz *Re: Scientific Review of Intent to Sue U.S. Environmental Protection Agency and National Marine Fisheries Service for violations of the Endangered Species Act associated with consultation of Washington State's Revised Sediment Management Standards for Marine Finfish Facilities dated 25 August 2015.*

2015. On January 12, 2016, NMFS responded via letter and an accompanying memo dated December 17, 2015 from Walton Dickhoff, Ph.D., Director, Environmental and Fisheries Sciences Division, Northwest Fisheries Science Center (NWFSC). That memo outlines scientific opinions on the information provided by Wild Fish Conservancy and concludes that the information provided does not substantiate the claims and that there were substantial errors in the assumptions and analysis of impacts.

In short, NOAA Fisheries' NWFSC's experts concluded that the technical claims in the notice of intent to sue were not supported by the best available scientific and commercial information. After reviewing NWFSC's memo, NMFS concluded that the factual allegations presented by Wild Fish Conservancy do not establish any potential for new or different effects of the commercial salmon farms in Puget Sound from what was already considered in the EPA's consultation with NOAA Fisheries that concluded on April 8, 2011, following the submission of the EPA's 2010 BE.

In addition, on March 5, 2019, NMFS provided additional documents to the EPA regarding disease transfer to be considered in this consultation building on those that have been part of the previous record for this consultation. These are listed in the table below. Although the EPA has reviewed these documents, and is including them in the administrative record, the EPA is relying upon the technical expertise from NMFS in evaluating these studies in detail. The EPA does not have additional technical information beyond what has been supplied by NMFS on this topic.

In the EPA's assessment of the technical information provided by NMFS, the EPA notes the following key findings regarding disease risk and transmission:

- “The 2012 outbreak of IHNV in Atlantic salmon does not represent a new or unexpected event, but is an example of the previously reported observation that diseases in Atlantic salmon farms are caused by local pathogens that they obtain from local Pacific salmon. This is known to occur, and was considered thoroughly in the original report by Nash et al., 2001. The 2012 netpen outbreak conforms to that description and is not a new phenomenon that was not previously considered.”... “For any Chinook salmon or steelhead that did become infected, the probability that the infection progressed to cause disease or mortality is extremely unlikely, and not expected to occur.” (Gael Kurath, page 6).
- “The ubiquitous nature of piscine orthoreovirus (PRV), its apparent historic presence in wild Pacific salmonid stocks in the Pacific Northwest and the lack of clear association with disease in Pacific salmonids suggest the virus poses a low risk to wild species of Pacific salmonids.” (T.R. Meyers, page 2).
- “In response to reported findings of infectious salmon anaemia virus (ISAV) in British Columbia (BC), Canada, in 2011, U.S. national, state and tribal fisheries managers and fish health specialists developed and implemented a collaborative ISAV surveillance plan for the Pacific Northwest region of the United States. ...All 4,962 completed tests were negative for ISAV RNA. Results of this surveillance effort provide sound evidence to support the absence of ISAV in represented populations of free-ranging and marine-

farmed salmonids on the northwest coast of the United States.” (Gustafson, L.L., Creekmore, L.H., Snekvik, K.R., Ferguson, J.A., Warg, J.V., Blair, M., Meyers, T.R., Stewart, B., Warheit, K.I., Kerwin, J. and Goodwin, A.E, pages 1-2).

- “Our analysis showed evidence of Heart and skeletal muscle inflammation (HSMI) histopathological lesions over an 11-month timespan, with the prevalence of lesions peaking at 80-100% in sampled fish, despite mild clinical signs with no associated elevation in mortalities reported at the farm level.” (Di Cicco, E., Ferguson, H.W., Schulze, A.D., Kaukinen, K.H., Li, S., Vanderstichel, R., Wessel, Ø., Rimstad, E., Gardner, I.A., Hammell, K.L. and Miller, K.M., page 1).
- “Viral genome sequencing revealed no consistent differences in (Piscine orthoreovirus Strain) PRV-1 variants intimately involved in the development of both diseases suggesting that migratory chinook salmon may be at more than a minimal risk of disease from exposure to the high levels of PRV occurring in salmon farms.” (Di Cicco E, HW Ferguson, KH Kaukinen, AD Schulze, S Li, A Tabata, OP Günther, G Mordecai, CA Suttle, and KM Miller, page 599).
- “We conclude that the longer-term presence of PRV in BC prior to 2001 has not been adequately described and that the evidence that the virus was introduced from Norway is more robust than the hypothesis that PRV is endemic to the eastern Pacific Ocean.” (Kibenge, M.J., Wang, Y., Morton, A., Routledge, R. and Kibenge, F.S., page 5).
- “Importantly, infectious salmon anemia virus, salmonid herpesvirus, salmon alphavirus, and infectious pancreatic necrosis virus were not detected. Furthermore, while the agents associated with proliferative gill disease (*D.lep*, *Ca.B.cys*, and gill chlamydia) were all detected, few fish showed evidence of lesions associated with this multifactorial disease. The majority of agents detected on BC salmon farms were known to be endemic, but new findings include the marine detections of some infectious agents reported to only cause freshwater or hatchery-based diseases (*Flavobacterium psychrophilum* and *Ichthyophthirius multifiliis*.” (Laurin, E., Jaramillo, D., Vanderstichel, R., Ferguson, H., Kaukinen, K.H., Schulze, A.D., Keith, I.R., Gardner, I.A. and Miller, K.M., page 220).
- “Overall, the assessment concluded that IHNV attributable to Atlantic Salmon farms in the Discovery Islands poses minimal risk to Fraser River Sockeye Salmon abundance and diversity under the current fish health management practices.” (Mimeault, C., Wade, J., Foreman, M.G.G., Chandler, P.C., Aubry, P., Garver, K.A., Grant, S.C.H., Holt, C., Jones, S.R.M., Johnson, S.C. and Trudel, M., page v).
- “These results suggest that PRV transfer is occurring from farmed Atlantic salmon to wild Pacific salmon, that infection in farmed salmon may be influencing infection rates in wild salmon, and that this may pose a risk of reduced fitness in wild salmon impacting their survival and reproduction.” (Morton, A., Routledge, R., Hrushowy, S., Kibenge, M. and Kibenge, F, page 1).

- “... we tested a subset of these samples for infectious salmon anaemia virus (ISAV) RNA with three additional published molecular assays, as well as for RNA from salmonid alphavirus (SAV), piscine myocarditis virus (PMCV) and piscine orthoreovirus (PRV). All samples (n = 2,252; 121 stock cohorts) tested negative for RNA from ISAV, PMCV, and SAV. In contrast, there were 25 stock cohorts from Washington and Alaska that had one or more individuals test positive for PRV RNA; prevalence within stocks varied and ranged from 2% to 73%. The overall prevalence of PRV RNA-positive individuals across the study was 3.4% (77 of 2,252 fish tested).” (Purcell, M.K., Powers, R.L., Evered, J., Kerwin, J., Meyers, T.R., Stewart, B. and Winton, J.R, page 347).

The EPA has discussed the scientific finding with NMFS and concluded that its analysis of effects for species and critical habitats remains unchanged from the findings in the 2010 BE regarding disease transmission. Further details are available in the December 17, 2015 memo by NWFSC and the documents identified in the table below and the EPA is relying upon the technical expertise from NMFS in evaluating these studies in more detail.

Date	Author(s)	Title/Journal
8/1/17	Gael Kurath, M.S., Ph.D., U.S.G.S. Western Fisheries Research Center, Microbiologist	Scientific Review of the Risk Posed to Endangered Pacific Salmon in Puget Sound, Washington, by an Outbreak of the Salmon Virus, IHNV in Atlantic Salmon Farm Netpens in Puget Sound. RE: Case No. 2:15-CV-01731-MJP, <i>Wild Fish Conservancy v. United States Environmental Protection Agency and the National Marine Fisheries Service</i> . USGS. 26 pages.
9/17	T.R. Meyers, Alaska Department of Fish and Game, Juneau Fish Pathology Laboratory	Piscine Orthoreovirus (PRV) in the Pacific Northwest Appears to be of Low Risk to Wild Pacific Salmonids. The Pacific Northwest Fish Health Protection Committee. 6 pages.
8/28/18	Gustafson, L.L., Creekmore, L.H., Snekvik, K.R., Ferguson, J.A., Warg, J.V., Blair, M., Meyers, T.R., Stewart, B., Warheit, K.I., Kerwin, J. and Goodwin, A.E	A systematic surveillance programme for infectious salmon anaemia virus supports its absence in the Pacific Northwest of the United States. <i>Journal of fish diseases</i> , 41(2), pp.337-346.
2/22/17	Di Cicco, E., Ferguson, H.W., Schulze, A.D., Kaukinen, K.H., Li, S., Vanderstichel, R., Wessel, Ø., Rimstad, E., Gardner, I.A., Hammell, K.L. and Miller, K.M.	Heart and skeletal muscle inflammation (HSMI) disease diagnosed on a British Columbia salmon farm through a longitudinal farm study. <i>PLoS One</i> , 12(2), p.e 0171471.
4/23/18	Di Cicco E, HW Ferguson, KH Kaukinen, AD Schulze, S Li, A Tabata, OP Günther, G Mordecai, CA Suttle, and KM Miller.	The same strain of Piscine orthoreovirus (PRV-1) is involved in the development of different, but related, diseases in Atlantic and Pacific Salmon in British Columbia. <i>FACETS</i> 3:599–641.
11/30/17	Kibenge, M.J., Wang, Y., Morton, A., Routledge, R. and Kibenge, F.S.	Formal comment on: Piscine reovirus: Genomic and molecular phylogenetic analysis from farmed and wild salmonids collected on the

		Canada/US Pacific Coast. PloS one, 12(11), p.e 0188690.
8/29/18	Laurin, E., Jaramillo, D., Vanderstichel, R., Ferguson, H., Kaukinen, K.H., Schulze, A.D., Keith, I.R., Gardner, I.A. and Miller, K.M.	Histopathological and novel high-throughput molecular monitoring data from farmed salmon (<i>Salmo salar</i> and <i>Oncorhynchus</i> spp.) in British Columbia, Canada, from 2011–2013. Aquaculture.
12/1/17	Mimeault, C., Wade, J., Foreman, M.G.G., Chandler, P.C., Aubry, P., Garver, K.A., Grant, S.C.H., Holt, C., Jones, S.R.M., Johnson, S.C. and Trudel, M. Fisheries and Oceans Canada (DFO).	Assessment of the Risk to Fraser River Sockeye Salmon Due to Infectious Hematopoietic Necrosis Virus (IHNV) Transfer from Atlantic Salmon Farms in the Discovery Islands, British Columbia. Canadian Science Advisory Secretariat (CSAS).
12/12/17	Morton, A., Routledge, R., Hrushowy, S., Kibenge, M. and Kibenge, F	The effect of exposure to farmed salmon on piscine orthoreovirus infection and fitness in wild Pacific salmon in British Columbia, Canada. PloS one, 12(12), p.e 0188793.
9/6/17	Purcell, M.K., Powers, R.L., Evered, J., Kerwin, J., Meyers, T.R., Stewart, B. and Winton, J.R	Molecular testing of adult Pacific salmon and trout (<i>Oncorhynchus</i> spp.) for several RNA viruses demonstrates widespread distribution of piscine orthoreovirus in Alaska and Washington. Journal of fish diseases, 41(2), pp.347-355.

Additionally, the EPA has discussed the scientific findings on disease transfer with NMFS and understands that similar disease transmission concerns remain relevant between net pen facilities raising native species (Coho, sablefish, future steelhead facilities, etc.) and wild salmon; however, the risks and pathways may vary. The analysis of the net pen facilities in this Addendum addresses the low risk associated with disease transfer between the additional native species and wild salmon.

Escapement

Information regarding an escapement event that occurred on or around August 19, 2017, at Cooke Aquaculture’s Site 2 net pen off Cypress Island and the follow up and the associated response is summarized below.

On March 5, 2019, NMFS provided documents to the EPA regarding the 2017 escapement event to be considered in this consultation. These are listed in the table below. Although the EPA has reviewed these documents and is including them in the administrative record, the EPA is relying upon the technical expertise from NMFS in evaluating these studies in more detail and providing analysis. The EPA does not have further technical information beyond what has been supplied by NMFS on this topic.

In the EPA’s assessment of the technical information provided by NMFS, the EPA notes the following key findings regarding the escapement event:

- “Cooke reacted to the August 19 failure with substantial resources in an attempt to save the net pen again. When its efforts were unsuccessful, the company then turned to

stabilizing the collapsed structure, extracting the dead fish, and salvaging the pen. Cooke removed the surface portions of the net pen by September 24. Although Cooke stated by letter that it had removed all debris from the bottom of Deepwater Bay, an inspection by DNR on October 27 showed that substantial debris remained. DNR required further cleanup that lasted into January 2018.” (D Clark, K Lee, K Murphy, A Windrope, pages 7-8).

- As a result of the 2017 net pen failure and escapement event, 56,810 fish were recovered and between 186,149-205,849 fish were not recovered. 390 fish were recovered through beach seining in Deepwater Bay by Cooke and the smelt fishery caught 2,261 fish in the San Juan Islands through beach seining efforts. (D Clark, K Lee, K Murphy, A Windrope, page 111 and page 97).
- “Recovering fish from Puget Sound required a detailed understanding of co-management, fish regulations, fish science and an existing relationship with the fishing fleets. In the future, it may be more effective for DFW and co-managers to work together to design and implement recovery efforts with input and support from the net pen operator. The combined recovery effort could be tested and refined similar to the preparations for oil spill response.” (D Clark, K Lee, K Murphy, A Windrope, page 112).
- “The recovery response plan was not adequately detailed and future response plans need to be tailored to the site such that they reflect site-specific conditions, geography, currents and best approaches for recovery given those specifics. Initial recovery efforts were successful as the fish kept close to shore and were within the immediate area. As the recovery period moved past the first few weeks, however, the fish became widely dispersed or died and recovery became very difficult. In the future, recovery efforts should be immediate and comprehensive prior to dispersal.” (D Clark, K Lee, K Murphy, A Windrope, page 112).
- “1) To date, there is no evidence that the escaped Atlantic salmon were eating native fauna nor is there evidence that they were sexually mature. 2) Over time, the fish in the marine system contracted native pathogens and have shown decreasing health status. 3) Atlantic salmon have been found in a limited number of rivers in Puget Sound (Skykomish and Skagit rivers). Atlantic salmon have not been seen at any DFW hatchery despite monitoring. There is no indication that Atlantic salmon have been caught in Nooksack drainage or at Whatcom Creek Hatchery drainage. DFW was present at the chum spawns in late fall at Bellingham Technical College and did not see any Atlantic salmon in Whatcom Creek. 4) The limited numbers of Atlantic salmon found in the freshwater system appear healthy. There is no evidence that they were feeding in the freshwater system nor were they sexually mature. The Atlantic salmon in freshwater may survive for some time.” (D Clark, K Lee, K Murphy, A Windrope, page 113).
- “The 2017 Deepwater Bay releases were significant in size but follow a long period of minimal releases in Washington State and British Columbia and do not redefine the declining trend in Washington or B.C.” (Rensel, J.E., page 2).

- “No self-sustaining runs of Atlantic salmon have been established in either Washington State or British Columbia, either from repeated intentional plantings by government agencies starting many decades ago or from farmed salmon escapes. It is apparent that the vast majority of these fish do not survive very long outside aquaculture facilities as stomachs of recaptured fish in marine or freshwater are almost always empty. Five hundred fish stomachs were sampled from recovered fish in the 2017 Deepwater Bay releases. All stomachs were empty and that pattern occurs for the vast majority of other releases in the past.” (Rensel, J.E., page 2).
- “Cooke agrees with many of the lessons learned, particularly with respect to need for greater and closer coordination with the state, tribes, and the federal government. Cooke has already drafted revisions to its Fish Escape and Response Plan, is evaluating whether other operational changes may be needed and invites continued dialogue with agencies on how to improve regulatory oversight of its operations.” (Steding, D.J., page 11)

The EPA has discussed the scientific finding and lessons learned from the 2017 escapement event with NMFS. The EPA has concluded that its analysis of effects for certain species should be modified from the not likely to adversely affect (NLAA) finding in the 2010 BE to likely to adversely affect (LAA) due to the escapement risks and associated response. Although the inbreeding risk between the two species is low as a result of the escapement, adverse effects to listed species and take could occur from the process of collecting escaped fish (and facility debris) and potential bycatch of ESA-listed species. See 6.B., 6.C., and 6.D. below for the analysis of those effects and the EPA’s modification of the determinations to species and critical habitat. Further details are available in the documents identified in the table below and the EPA is relying upon the technical expertise from NMFS in evaluating these studies in more detail.

Date	Author(s)	Title/Journal
1/30/18	D Clark, K Lee, K Murphy, A Windrope.	2017 Cypress Island Atlantic Salmon Net Pen Failure: An Investigation and Review. Washington Department of Natural Resources. Olympia, WA. 120 pages. ⁴³
2018	Rensel, J.E. (Jack)	Escaped Atlantic Salmon in Washington State. Prepared by Rensel Associate Aquatic Sciences for Cooke Aquaculture Pacific, Inc. 59 pages.
1/29/18	Steding, D. J.	Letter to Investigation and Review Panel, RE: Draft of Incident Review Board Report. January 29, 2018.

As noted previously, the EPA has discussed the scientific findings on escapement with NMFS and understands that escapement risks remain relevant between net pen facilities raising native species that are not intended for release (sablefish, future steelhead facilities, etc.) and wild salmon. The proposed steelhead rearing activities would only raise sterile all-female triploid trout; therefore, if escapement were to occur it is the EPA’s understanding that the fish would

⁴³ January 30, 2018. D Clark, K Lee, K Murphy, A Windrope. *2017 Cypress Island Atlantic Salmon Net Pen Failure: An Investigation and Review*. Washington Department of Natural Resources. https://www.dnr.wa.gov/sites/default/files/publications/aqr_cypress_investigation_report.pdf?vdqi7rk

have a low likelihood of reproduction. While the EPA anticipates that steelhead would not prey on other species, the Agency is relying upon the technical expertise from NMFS in evaluating the potential risks of steelhead escapement and any subsequent reproduction and competition for space and resources. The inclusion of these facilities in this Addendum addresses the low risk of escapement and the interaction between the additional native species and wild salmon. Fish from salmon enhancement facilities (like those covered under the EPA’s NPDES GP) will be released into the wild at a future date, and their time in the net pens only serves to imprint the fish for purposes of return. Therefore, the inclusion of those facilities in this Addendum does not impact the analysis of effects due to escapement.

NPDES Permitting Actions to Minimize Risk

Lastly, this Addendum incorporates updated NPDES permitting actions by Ecology to minimize escapement risk and the upcoming phase out and moratorium on non-native fish species rearing by 2022, as well as the inclusion of facilities covered under the EPA’s NPDES GP. This Addendum also discusses the proposed rearing of steelhead trout in the net pens facilities previously used for Atlantic salmon.

NPDES permitting regulations for net pen facilities are found in the following regulations: 40 CFR Part 451, 40 CFR Part 122.24, and 40 CFR Part 122 appendix C, which together comprise the permitting regulatory requirements for different types of net pen facilities. One main difference is that net pen facilities that produce 100,000 pounds or more per year of aquatic animals, except for facilities rearing native species released after a growing period of no longer than 4 months to supplement commercial and sports fisheries, must follow the Effluent Limitation Guidelines (ELGs) at 40 CFR part 451. Facilities that do not fall under the ELGs may require an NPDES permit to discharge if the facility operates for more than 30 days per year, produces more than 20,000 pounds of harvest or release weight of aquatic animals per year, and feeds more than 5,000 pounds of food during the calendar month of maximum feeding.

Commercially Operated Net Pen Facilities

As indicated in the Background section, currently there are four commercial net pen facilities still in operation in Puget Sound. The 2010 BE evaluated impacts from eight facilities, but due to the collapse of Cooke’s net pen facility Cypress Island—Site 2 and the closure of the Port Angeles (Ediz Hook) net pen facility among others off Cypress Island, the number of active facilities has been reduced to four, including three in Rich Passage near Bainbridge Island (Clam Bay, Fort Ward, and Orchard Rocks) and one near Hope Island (Skagit Bay). The locations are shown on the maps included at the end of this Addendum.

Below is a table with information on the four current commercial net pen facilities in Puget Sound permitted by Ecology:

Waterbody	Rich Passage (Clam Bay)	Rich Passage (Fort Ward)	Rich Passage (Orchard Rocks)	Skagit Bay (Hope Island)
Facility Owner	Cooke Aquaculture	Cooke Aquaculture	Cooke Aquaculture	Cooke Aquaculture
Permit Number	WA0031526	WA0031534	WA0031542	WA0031593
Latitude	47° 34’ 17’’ N (47.57139)	47° 34’ 30’’ N (47.5750)	47° 34’ 30’’ N (47.5750)	48° 24’ 28’’ N (48.4078)

Longitude	122° 32' 25'' W (-122.54028)	122° 31' 30'' W (-122.5250)	122° 31' 50'' W (-122.5306)	122° 33' 32'' W (-122.5589)
Net Pen Area (in feet)	1010 x 185	650 x 185	900 x 185	10 pens approximately 80 square feet
Minimum Water Depth at Site ^	65 feet	45 feet	45 feet	Between 113 and 80 feet
Lease Acreage	98.62 total (for all Rich Passage facilities)	98.62 total (for all Rich Passage facilities)	98.62 total (for all Rich Passage facilities)	31.47
Lease Expiration Date⁴⁴	11/10/2022	11/10/2022	11/10/2022	3/31/2022
Current Species	Atlantic Salmon	Atlantic Salmon	Atlantic Salmon	Atlantic Salmon
Future Species	Native species	Native species	Native species	Native species

^ Depths are given at Mean Lower Low Water (MLLW).

Information obtained from WDNR and Ecology draft permits.

In 2018, following the collapse of Cooke's net pen facility Cypress Island—Site 2 and the resulting escape of approximately 250,000 Atlantic salmon, the Washington State Legislature passed House Bill 2957, phasing out marine rearing of Atlantic salmon as the facility aquatic lands leases expire in 2022. Under the provisions of House Bill 2957, Ecology is authorized to renew the NPDES permits for the marine Atlantic salmon net pen facilities until the leases administered by DNR expire. Until Atlantic salmon farming is officially banned from Puget Sound starting in 2022, companies are required to have water quality discharge permits (NPDES permits). The updated permits incorporate lessons learned from the Cypress Island net pen failure and include closure requirements for the phaseout.

Ecology issued new NPDES permits for these four commercial net pen facilities on July 11, 2019.⁴⁵ The previous permits for these facilities were issued in 2007 and administratively extended in 2012. The NPDES permits require Best Management Practices (BMPs), monitoring, and reporting to ensure water quality standards are met. These facilities are operated to rear fish for harvest and market sale. Uneaten fish food, fish feces, antibiotics and the accidental release of Atlantic Salmon are the primary pollutants resulting from the operation of these facilities. The requirements in the permits allow Ecology to ensure that facilities are meeting water quality standards.

Additional protective measures in the updated 2019 permits include:

- Increasing underwater video monitoring of net pens.
- Conducting inspections to assess structural integrity of the net pens and submit inspection reports certified by a qualified marine engineer to Ecology.

⁴⁴ December 21, 2018. Personal communication with Jeff Vanderpham, NMFS. Information regarding Washington DNR aquatic leases.

⁴⁵ Washington Department of Ecology. Atlantic salmon net pen individual permits website. Accessed May 26, 2020. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-individual-permits/Net-pens>

- Improving net cleaning and maintenance procedures to prevent biofouling and fish escape.
- Requiring the permittee to develop site specific response plans in the event of a fish release, and to conduct and participate in preparedness trainings.
- Requiring improved maintenance of the net pens.
- Maintaining contact information to notify area tribes in the event of a fish release.⁴⁶

The fact sheet for the permits summarizes the updated requirements as follows:

“This permit increases the frequency of sediment sampling from twice per permit cycle to annually between August 15 and September 30, and to conduct additional sediment monitoring within two weeks before or after each fish harvesting. Underwater video survey is also required annually rather than twice per permit cycle. Daily dissolved oxygen (DO) sampling at the edge of the pens in August and September has been added to the permit, to verify that aeration of the pens, a BMP employed to maintain DO levels within the pens, is effective during this critical period. Monitoring of current velocity has been added to this permit, as strong currents contribute to wear on the net pen structures. With this issuance of the permit, the Permittee is required to use the Water Quality Permitting Portal to submit electronic discharge monitoring reports (DMRs) and other required permit submittals and reports.

As part of the required pollution prevention plan, fish escape prevention plan, and fish escape reporting and response plan, this permit adds requirements related to engineering documents, notification of structural issues and repairs, net cleaning to prevent excess biofouling, and staff training in escape prevention and response.”⁴⁷

While these NPDES permitting requirements for Atlantic salmon net pen facilities should reduce the risk of escapement and the effects of response efforts related to an escapement event interfering with listed species and their critical habitat, they do not eliminate them. These permitting activities do not affect facilities covered by the EPA’s NPDES GP.

As indicated elsewhere in this Addendum, all-female triploid rainbow trout are expected to replace Atlantic salmon at all commercial net pen facilities. On January 21, 2020, WDFW approved an application from Cooke Aquaculture to farm all-female, sterile (triploid) rainbow trout/steelhead in Puget Sound. Ecology is now in the process of revising the NPDES permits to authorize the transition to rearing steelhead and is accepting public comments until June 8, 2020. Those potential indirect effects have been discussed above.

Facilities Covered Under the EPA’s NPDES General Permit

Out of an abundance of caution, the EPA is including facilities covered under the EPA’s NPDES GP which cites, but does not necessarily rely upon, the SMS at WAC 173-204, in this 2020

⁴⁶ Washington Department of Ecology. Atlantic salmon net pen individual permits website. Accessed May 26, 2020. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-individual-permits/Net-pens>

⁴⁷ Washington Department of Ecology. Atlantic salmon net pen individual permits website. Fact Sheets. Accessed May 26, 2020. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-individual-permits/Net-pens>

Addendum. There are significant differences (including duration, size, operation, etc.) between the permittees covered under the EPA’s NPDES GP, which applies to tribal enhancement and federal research facilities, and those covered under Ecology’s NPDES permits for large commercial net pen facilities for fish harvest and sale.

The EPA’s NPDES GP, which expires October 31, 2020, covers five tribal enhancement facilities⁴⁸ and specifically limits coverage to facilities rearing and releasing native fish species. One federal facility does not yet have permit coverage but is expected to be covered by the reissued EPA NPDES GP by the end of 2020. The reissued EPA NPDES GP anticipates including the facilities listed in the table below:

Facilities Covered Under the EPA’s NPDES GP

Waterbody	Agate Pass	Elliott Bay	Peale Passage	Port Gamble	Quilcene Bay	Clam Bay
Facility Operator	Suquamish Tribe	Suquamish Tribe	Squaxin Island Tribe	Port Gamble S’Klallam Tribe	Skokomish Tribe	NOAA (Manchester Research Station)
Coverage Status	Covered	Covered	Covered	NOI Submitted	NOI Submitted	Applied – will be covered under new general permit
EPA Permit #	WAG132001	WAG132002	WAG132003	WAG132004	WAG132005	N/A
Latitude	47.7036	47.6222	47.2004	47.8454	47.7893	47.5734
Longitude	-122.5750	-122.3676	-122.9042	-122.5738	-122.8519	-122.5456
lbs of fish	45,000	90,909	47,500	45,850	13,000	58,429
# Months/Year	March-June (4)	March-June (4)	January-June (6)	February – May (4)	January-May (5)	Year-round

⁴⁸ September 9, 2015. EPA Region 10. Tribal Marine Net Pen Enhancement Facilities NPDES General Permit for Washington. WAG132000. <https://www.epa.gov/sites/production/files/2018-03/documents/r10-npdes-washington-tribal-net-pen-gp-wag132000-final-permit-2015.pdf>

April 30, 2015. EPA Region 10. Fact Sheet. Tribal Marine Net Pen Enhancement Facilities NPDES General Permit for Washington. WAG132000. <https://www.epa.gov/sites/production/files/2018-03/documents/r10-npdes-washington-tribal-net-pen-gp-wag132000-fact-sheet-2015.pdf>

Lease Acreage	5.5	Unknown	20.89	1.62	Unknown	Unknown
Current Species	Coho	Coho	Coho	Coho	Coho	Sablefish
Min Clearance to Seafloor (ft)	15	15	9.7	23		
Mean Low Water Depth (ft)	45	40	24.5	48	30	~36 (unknown tide)
Current (cm/sec)	206 (max)	77	7	82	257	

NOI – notice of intent

In the EPA’s NPDES GP, the Total Organic Carbon (TOC) reference value table for sediment characterization directly underneath each net pen facility from the SMS was used. Also, the EPA cited the SMS regulations and net pen provisions in the factsheet in response to Ecology’s CWA section 401 certification. However, the EPA did not permit the allowance of a sediment impact zone. The permit already includes language prohibiting anoxic sediments beneath the net pens and dissolved oxygen water column monitoring and evaluation.

In addition, the EPA acknowledges the existence of other net pens in Puget Sound, however, since there are no NPDES permits associated with these facilities, the SMS regulations at WAC-173-204-412 do not apply. Therefore, these facilities are not analyzed in this BE Addendum.

6.B. ANALYSIS OF EFFECTS ON FISH SPECIES

The analyses in this Addendum and the previous BEs with the support of the NOAA technical memorandums, conclude that the marine finfish rearing facility provision is protective of designated uses, including those related to wild salmon in Puget Sound, and net pen facilities carry an insignificant risk of negatively affecting wild salmon. However, due to escapement concerns and effects following the 2017 net pen collapse, the EPA has concluded that its approval of WAC 173-204-412 **is likely to adversely affect** the following listed species:

<i>Oncorhynchus tshawytscha</i>	Chinook Salmon (Puget Sound ESU)
<i>Oncorhynchus keta</i>	Chum Salmon (Hood Canal summer-run ESU)
<i>Oncorhynchus mykiss</i>	Steelhead (Puget Sound, DPS)
<i>Sebastes paucispinis</i>	Bocaccio (Puget Sound/Georgia Basin DPS)
<i>Sebastes ruberrimus</i>	Yelloweye Rockfish (Puget Sound/Georgia Basin DPS)

Note that this determination is a result of the indirect effects of the operation of commercial net pen facilities. There is a low risk of competition between the escaped fish and ESA-listed species. The risk is also low associated with bycatch of ESA-listed species during potential recovery efforts.

The EPA has concluded that its approval of WAC 173-204-412 is unchanged from the 2010 BE as escape from commercial net pens is not likely to create an increased risk to non-salmon species. This analysis has been updated to include North American Green Sturgeon (Southern DPS) and Pacific Eulachon (Southern DPS). Therefore, the EPA has concluded its action **may affect, but is not likely to adversely affect** the following listed species:

<i>Acipenser medirostris</i>	North American Green Sturgeon (Southern DPS)
<i>Thaleichthys pacificus</i>	Pacific Eulachon (Southern DPS)

6.C. ANALYSIS OF EFFECTS ON MARINE MAMMALS

The EPA has concluded that its approval of WAC 173-204-412 is unchanged from the 2010 BE as escape from commercial net pens is not likely to create an increased risk to marine mammals. Therefore, the EPA has concluded its action **may affect, but is not likely to adversely affect** the following listed species:

<i>Megaptera novaeangliae</i>	Humpback Whale (Pacific Coast, Mexico DPS and Central America DPS)
<i>Orinus orca</i>	Killer Whale (Southern Resident, DPS)

6.D. EFFECTS OF THE ACTION ON CRITICAL HABITAT

The listed species with designated critical habitat analyzed in the 2010 BE are Chinook salmon (Puget Sound ESU), Chum salmon (Hood Canal summer-run ESU), and Killer Whale (Southern Resident, DPS). This Addendum has been updated to include critical habitat for Steelhead (Puget Sound, DPS), North American Green Sturgeon (Southern DPS), Pacific Eulachon (Southern DPS), Bocaccio (Puget Sound/Georgia Basin DPS) and Yelloweye Rockfish (Puget Sound/Georgia Basin DPS).

After evaluating escape concerns and effects following the 2017 net pen collapse, the EPA has concluded that its approval of WAC 173-204-412 **may affect, but is not likely to adversely affect** critical habitat for the following listed species. Despite concluding likely to adversely affect due to escapement and response efforts for these species, critical habitat is not implicated in the same manner as the species themselves.

<i>Oncorhynchus tshawytscha</i>	Chinook Salmon (Puget Sound ESU)
<i>Oncorhynchus keta</i>	Chum Salmon (Hood Canal summer-run ESU)
<i>Oncorhynchus mykiss</i>	Steelhead (Puget Sound, DPS)
<i>Sebastes paucispinis</i>	Bocaccio (Puget Sound/Georgia Basin DPS)
<i>Sebastes ruberrimus</i>	Yelloweye Rockfish (Puget Sound/Georgia Basin DPS)

This analysis has been updated to include North American Green Sturgeon (Southern DPS) and Pacific Eulachon (Southern DPS) critical habitat. As with the determination above, the EPA has concluded its action **may affect, but is not likely to adversely affect** the critical habitat for the following listed species:

Acipenser medirostris
Thaleichthys pacificus

North American Green Sturgeon (Southern DPS)
 Pacific Eulachon (Southern DPS)

Consistent with the 2010 BE, the EPA is not revising the analysis of effects on critical habitat for the Killer Whale (Southern Resident, DPS) as escapement risk and the EPA’s action **may affect, but is not likely to adversely affect** critical habitat for that marine mammal species.

7. Cumulative Effects

The findings for this section are unchanged from the 2010 BE.

8. Summary of Findings

Table 8-1 Species and Critical Habitat that this Consultation May Affect (LAA or NLAA).⁴⁹

	Species	ESU/DPS/Population	Critical Habitat Designation
1	Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Puget Sound ESU	Yes
2	Chum Salmon (<i>Oncorhynchus keta</i>)	Hood Canal summer-run ESU	Yes
3	Steelhead (<i>Oncorhynchus mykiss</i>)	Puget Sound, DPS	Yes
4	Bocaccio (<i>Sebastes paucispinis</i>)	Puget Sound/Georgia Basin DPS	Yes
5	Yelloweye Rockfish (<i>Sebastes ruberrimus</i>)	(Puget Sound/Georgia Basin DPS)	Yes
6	North American Green Sturgeon (<i>Acipenser medirostris</i>)	Southern DPS	Yes
7	Pacific Eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	Yes
8	Humpback Whale (<i>Megaptera novaeangliae</i>)	Pacific Coast, Mexico DPS and Central America DPS	No
9	Killer Whale (<i>Orinus orca</i>)	Southern Resident, DPS	Yes

Table 8-2 summarizes the EPA’s determinations, updated from the 2010 BE, for ESA-listed species, under NOAA jurisdiction, analyzed for the EPA’s approval of Washington’s marine finfish rearing facility provision, WAC 173-204-412.

Table 8-2 LAA Summary of Findings.

Species	ESU/DPS/Population	Effects Determination for the EPA’s Approval of WAC 173-204-412
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Puget Sound ESU	LAA

⁴⁹ March 7, 2019. Personal communication with Jeff Vanderpham, NMFS. Species list/critical habitat for net pen consultation.

Chum Salmon (<i>Oncorhynchus keta</i>)	Hood Canal summer-run ESU	LAA
Steelhead (<i>Oncorhynchus mykiss</i>)	Puget Sound, DPS	LAA
Bocaccio (<i>Sebastes paucispinis</i>)	Puget Sound/Georgia Basin DPS	LAA
Yelloweye Rockfish (<i>Sebastes ruberrimus</i>)	Puget Sound/Georgia Basin DPS	LAA

LAA – Likely to adversely affect

Table 8-3 summarizes the EPA’s determinations, updated from the 2010 BE, for ESA-listed species, under NOAA jurisdiction, analyzed for the EPA’s approval of Washington’s marine finfish rearing facility provision, WAC 173-204-412.

Table 8-3 NLAA Summary of Findings.

Species	ESU/DPS/Population	Effects Determination for the EPA’s Approval of WAC 173-204-412
Humpback Whale (<i>Megaptera novaeangliae</i>)	Pacific Coast, Mexico DPS and Central America DPS	NLAA
Killer Whale (<i>Orinus orca</i>)	Southern Resident, DPS	NLAA
North American Green Sturgeon (<i>Acipenser medirostris</i>)	Southern DPS	NLAA
Pacific Eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	NLAA

NLAA – May affect, but is not likely to adversely affect

Table 8-4 summarizes the EPA’s determination of No Effect for ESA-listed species, under NOAA jurisdiction, analyzed for the EPA’s approval of Washington’s marine finfish rearing facility provision, WAC 173-204-412. These findings are unchanged from the 2010 BE.

Table 8-4 NE Summary of Findings.

Species	ESU/DPS/Population	Effects Determination for the EPA’s Approval of WAC 173-204-412
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Snake River Fall Run Lower Columbia River Upper Columbia River Spring Run Snake River Spring/Summer Run	NE
Chum Salmon (<i>Oncorhynchus keta</i>)	Columbia River	NE
Coho Salmon (<i>Oncorhynchus kisutch</i>)	Lower Columbia River	NE
Sockeye Salmon (<i>Oncorhynchus nerka</i>)	Ozette Lake	NE

Species	ESU/DPS/Population	Effects Determination for the EPA's Approval of WAC 173-204-412
Steelhead (<i>Oncorhynchus mykiss</i>)	Snake River Basin Lower Columbia River Upper Columbia River Basin Middle Columbia River	NE
Southern Sea Otter (<i>Enhydra lutris neries</i>)		NE
Green Sea Turtle (<i>Chelonia mydas</i>)		NE
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)		NE

NE – No effect

Table 8-5 summarizes the EPA's determinations, updated from the 2010 BE, for critical habitat, under NOAA jurisdiction, analyzed for the EPA's approval of Washington's marine finfish rearing facility provision, WAC 173-204-412.

Table 8-5 Critical Habitat Summary of Findings.

Species	ESU/DPS/Population	Effects Determination for the EPA's Approval of WAC 173-204-412
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Puget Sound ESU	NLAA
Chum Salmon (<i>Oncorhynchus keta</i>)	Hood Canal summer-run ESU	NLAA
Steelhead (<i>Oncorhynchus mykiss</i>)	Puget Sound, DPS	NLAA
Killer Whale (<i>Orinus orca</i>)	Southern Resident, DPS	NLAA
Bocaccio (<i>Sebastes paucispinis</i>)	Puget Sound/Georgia Basin DPS	NLAA
Yelloweye Rockfish (<i>Sebastes ruberrimus</i>)	Puget Sound/Georgia Basin DPS	NLAA
North American Green Sturgeon (<i>Acipenser medirostris</i>)	Southern DPS	NLAA
Pacific Eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	NLAA

NLAA – May affect, but is not likely to adversely affect

9. Sediment Testing Methodology Provisions

The EPA is not changing the results of the findings in the 2010 BE for these provisions and the listed species/critical habitat covered in the 2010 BE (with the exception of WAC 173-204-520(3)(d)(iv)). As noted above, *WAC 173-204-520(3)(d)(iv). Juvenile polychaete Puget Sound marine sediment cleanup screening levels and minimum cleanup level biological criteria*, is no longer included in this ESA consultation. The state deleted and substantively replaced this

provision as part of its revisions to the SMS in 2013. On December 18, 2015, the EPA rescinded its 2008 approval of this provision and no longer views Part V of the SMS to be WQS. Therefore, this provision is no longer part of the consultation and this Addendum.

See the 2010 BE for more information and details on the remaining sediment testing methodology provisions. Because these provisions that the EPA included in the 2010 BE are solely focused on the quality of the control and reference sediment samples for juvenile polychaete growth and larval bivalve survivorship that serve to improve the reliability of test results for benthic community protection, the EPA concludes this action **may affect, but is not likely to adversely affect** endangered or threatened species or designated critical habitat for the following new species and critical habitat listed since 2010:

- North American Green Sturgeon, Southern DPS
- Pacific Eulachon, Southern DPS
- Steelhead Puget Sound DPS Critical Habitat
- Bocaccio Puget Sound/Georgia Basin DPS Critical Habitat
- Yelloweye Rockfish Puget Sound/Georgia Basin DPS Critical Habitat

10. References

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3. National Marine Fisheries Service. 2007. Puget Sound Salmon Recovery Plan. Shared Strategy for Puget Sound adopted by National Marine Fisheries Service. Volumes I and II. https://www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/recovery_plan_ning_and_implementation/puget_sound/puget_sound_chinook_recovery_plan.html
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5. April 8, 2011. Letter from William W. Stelle, Jr., Regional Administrator, NFMS to Jannine Jennings, Water Quality Standards Unit, EPA Region 10, *Re: Endangered Species Act Section 7 Informal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Proposed Approval of Finfish Rearing Facility Provision Contained in the Sediment Management Standards Rule*

Promulgated by the Washington State Department of Ecology (HUC 17110019, Puget Sound).

6. April 22, 2011. U.S. EPA Region 10. Letter from Michael A. Bussell, Director Office of Water and Watersheds, EPA Region 10 to Mr. Kelly Susewind and Mr. Jim Pendowski, Department of Ecology, *Re: EPA's Re-Approval of Washington's Revised Sediment Management Standards (WAC 173-204) including the Marine Finfish Rearing Facility Provision, as submitted on June 3, 1996.*
7. November 4, 2015. Case 2:15-cv-01731. WFC V. U.S. EPA and NMFS. *Complaint for Declaratory and Injunctive Relief.*
8. November 22, 2017. Case 2:15-cv-01731-BJR. WFC V. U.S. EPA and NMFS. *Plaintiff's Motions to Supplement Pleadings and Amend Case Schedule.*
9. December 14, 2017. Letter from Michael Lidgard, Acting Director, Office of Water and Watersheds, EPA Region 10 to Mr. Kim Kratz, Assistant Regional Administrator, NMFS, *Re: August 2017 Puget Sound Net Pen Failure.*
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12. October 3, 2018. Letter from Barry A. Thom, Regional Administrator, NMFS, to Dan Opalski Director Office of Water and Watersheds, EPA Region 10, *Re: Request to Reinitiate April 8, 2011 Endangered Species Act Section 7 Consultation on the Environmental Protection Agency's Approval of Washington State Department of Ecology's Sediment Management Standards (WAC 173-204-412) Regarding Marine Finfish Rearing Facilities (refer to NMFS No.: NWR-2010-6071).*
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NMFS *Re: Washington's Sediment Management Standards regarding Netpen Facilities.*

15. September 9, 2015. EPA Region 10. Tribal Marine Net Pen Enhancement Facilities NPDES General Permit for Washington. WAG132000.
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16. Rule specifying that new and revised standards adopted by States and authorized Tribes on or after May 30, 2000, become “applicable standards for Clean Water Act purposes” only when approved by EPA. <https://www.federalregister.gov/documents/2000/04/27/00-8536/epa-review-and-approval-of-state-and-tribal-water-quality-standards>
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[ml](#)

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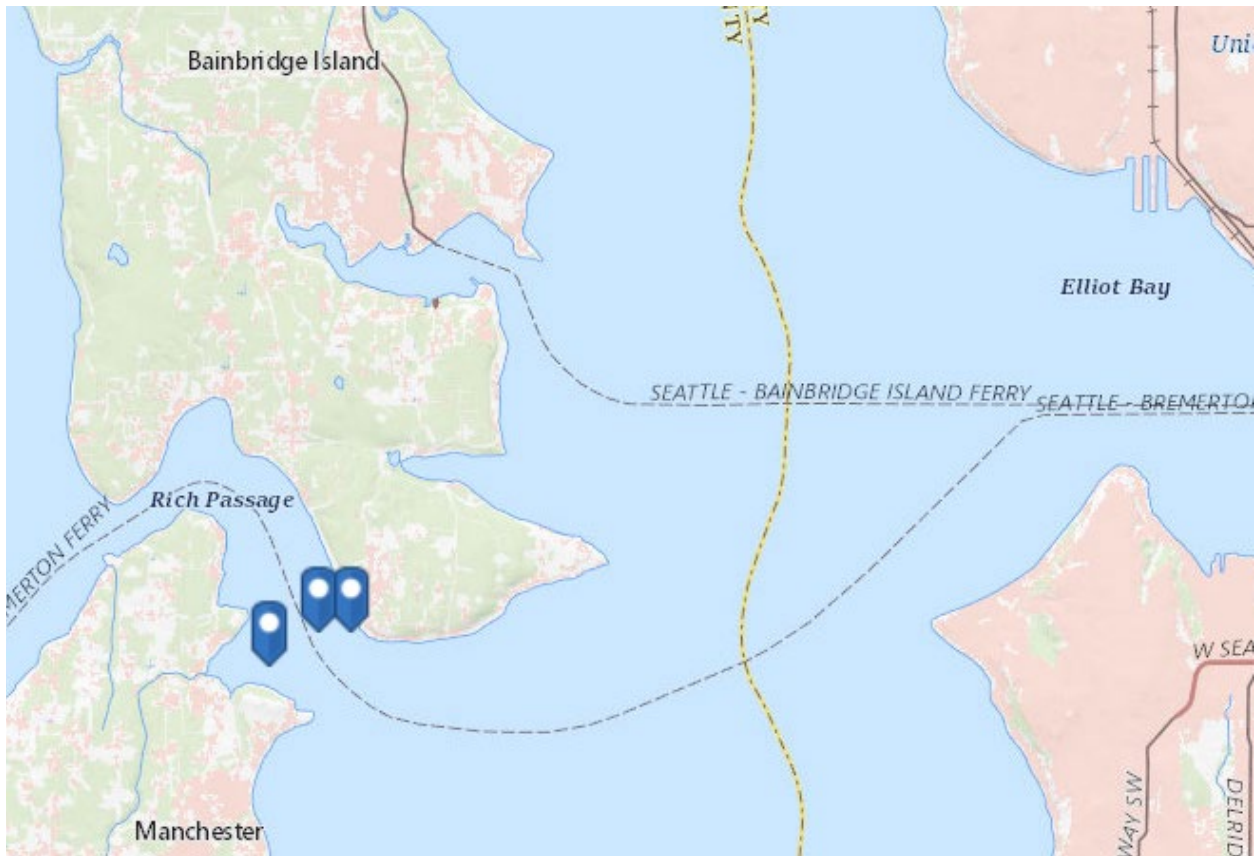
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11. Maps

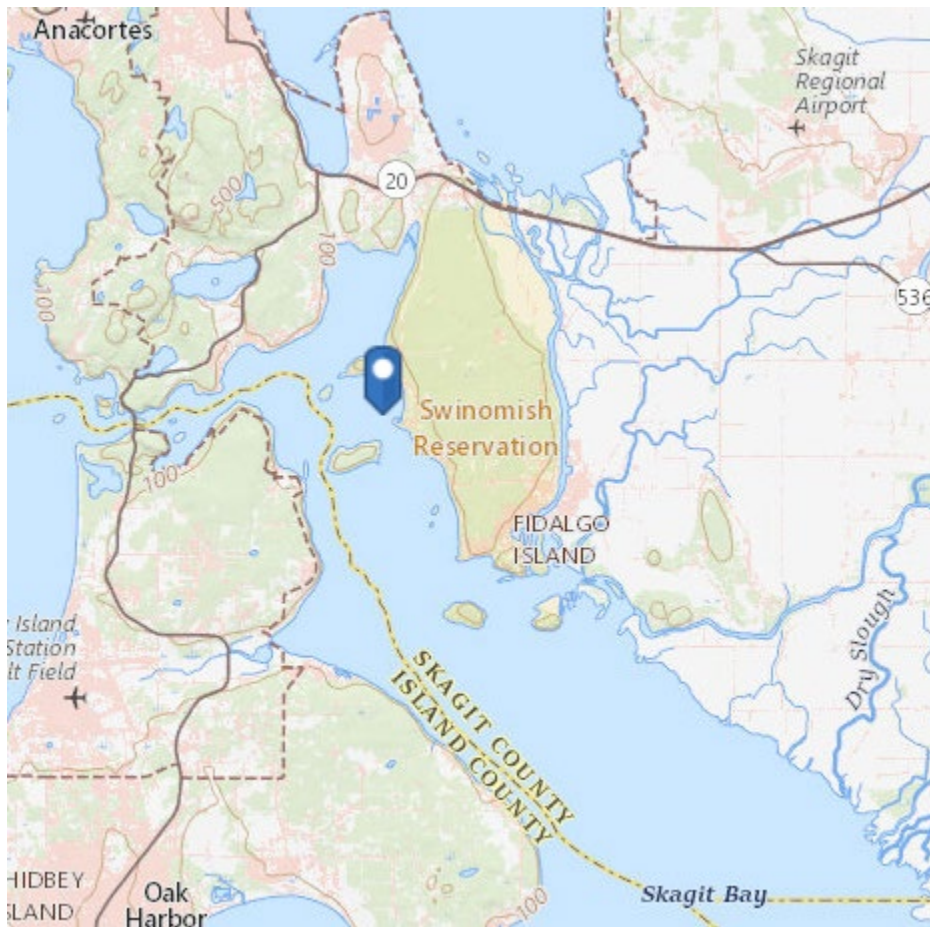
Figure 1. Rich Passage Atlantic Salmon Rearing Facilities



From Ecology (accessed May 26, 2020):

<https://ecology.wa.gov/DOE/media/Images/WATER-SHORELINES/Water%20quality/Regs%20Permits/3-netpens.PNG>

Figure 2. Hope Island (Skagit Bay) Atlantic Salmon Rearing Facility



From Ecology (accessed May 26, 2020): <https://ecology.wa.gov/DOE/media/Images/WATER-SHORELINES/Water%20quality/Regs%20Permits/skagit-netpen.PNG>

Figure 3. Facilities Covered Under EPA's General Permit



Figure 4. Puget Sound Steelhead Critical Habitat



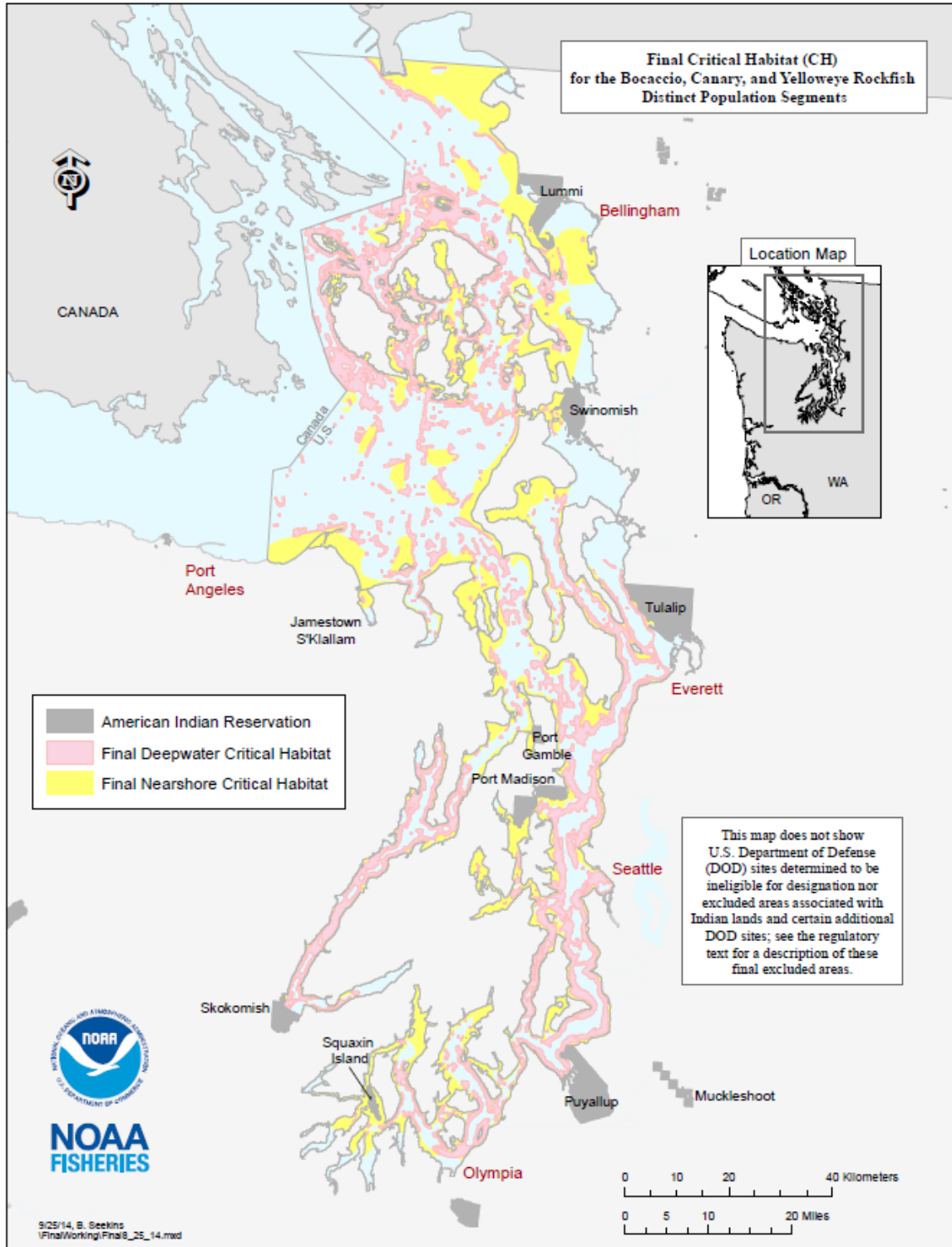
Final Critical Habitat
Puget Sound Steelhead



See Federal Register notice for detailed description of critical habitat (81 FR 9252, February 24, 2016)
DOC-NOAA Fisheries-West Coast Region

From NOAA Fisheries (accessed May 26, 2020):
https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/steelhead/steelhead_ps.pdf

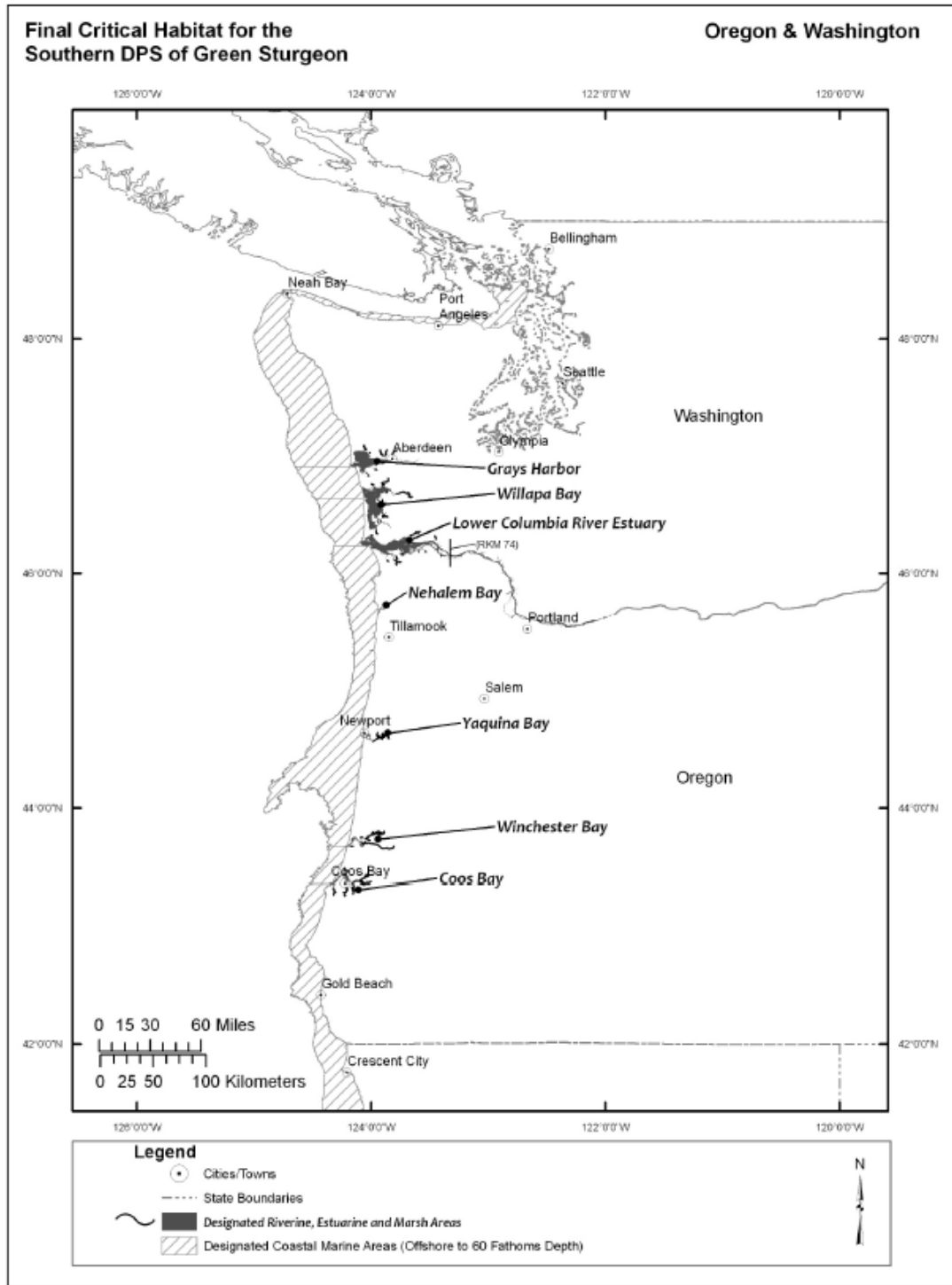
Figure 5. Bocaccio and Yelloweye Rockfish Critical Habitat



From NOAA Fisheries (accessed May 26, 2020):

https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/other/rockfish/pugetsoundrockfishch8_25_14.pdf Note: Effective March 24, 2017, Canary Rockfish were delisted.

Figure 6. Green Sturgeon Critical Habitat



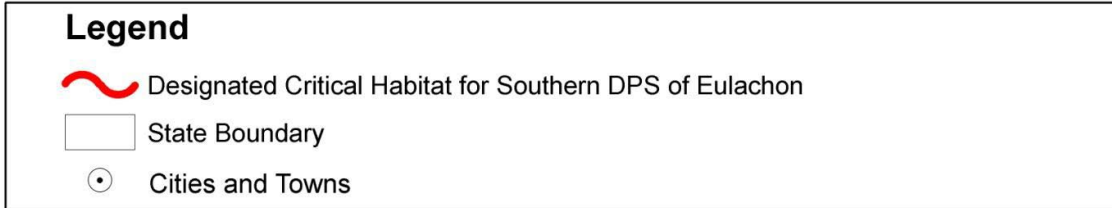
See Federal Register Notice for detailed description of critical habitat (74 FR 52300)
DOC-NOAA Fisheries-West Coast Region

From NOAA Fisheries (accessed May 26, 2020):

https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/greensturgeon_ch_maps.pdf

Figure 7. Eulachon Critical Habitat

**Final Critical Habitat for
the Southern DPS of Eulachon Northern Oregon & Washington**



From NOAA Fisheries (accessed May 26, 2020):
https://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/other/eulachon/eulachon-ch-maps.pdf

SHORELINE MANAGEMENT ACT OF 1971
PERMIT FOR SHORELINE MANAGEMENT SUBSTANTIAL DEVELOPMENT

NOTE - THIS PAGE FOR
LOCAL GOVERNMENT USE
ONLY

APPLICATION NO. 503

Administering Agency Kitsap County

Date Received January 25, 1988

Approved X Denied _____

Date June 13, 1988

Type of Action (Check if appropriate)

- Substantial Development Permit
- Conditional Use
- Variance

Pursuant to Chapter 90.58 RCW, a permit is hereby granted to

Global Aqua USA, Inc.

355 Ericksen, Suite 421 (Name of Applicant)
Bainbridge Island, WA 421

to undertake the following development (Please be specific) Replacement and reconfigurat
of existing floating netpens based on current state of the art standards and equipment.

Saltwater Site #1

upon the following property (please list the legal description, i.e., section to
the nearest quarter section, township, range)

SEE ATTACHED

The project will (be/~~not be~~) be within shorelines of statewide significance
(RCW 90.58.030). The project will be located within a (environment) Conservancy
designation. The following master program provisions are applicable to this development
(please state the master program section or page number)

USE ACTIVITIES - Section II - Aquaculture, p. 7-5 - 7-6

Section IV - Commercial Development, p. 7-10 - 7-11

EXHIBIT I

LEGAL DESCRIPTION
SW I Clam Bay

That portion of the bed of Clam Bay, owned by the State of Washington, situate in front of Government Lots 2 and 4, Section 15, Township 24 North, Range 2 East, W.M., included in a tract described as follows:

Commencing at U.S.C. and G.S. Monument "Middle," having a Y Coordinate of 215,334.05 and an X Coordinate of 1,577,992.46, as referred to the Washington Coordinate System, North Zone, and running thence S 4° 01' 19.734" E 1,875.456 feet to a point having a Y Coordinate of 213,463.213 and an X Coordinate of 1,578,124.098, and true point of beginning of this description, continuing thence S 4° 01' 19.734" E 802.337 feet, to a point on the four fathom line in front of said Government Lot 2, having a Y Coordinate of 212,662.852 and an X Coordinate of 1,578,180.286, thence easterly along said four fathom line 1,516.0 feet, more or less, to a point having a Y Coordinate of 212,085.50 and an X Coordinate of 1,579,515.46, thence N 31° 23' 10.563" E 573.977 feet to a point having a Y Coordinate of 212,575.49 and an X Coordinate of 1,579,814.39, thence N 48° 47' 30.397" W 804.936 feet to a point having a Y Coordinate of 213,105.78 and an X Coordinate of 1,579,208.82, and thence N 71° 45' 48.706" W 1,142.180 feet to the true point of beginning.

Rich Passage Estates Homeowners' Association
PO Box 11683
Bainbridge Island, WA 98110

Dear Ms. Niewolny,

Please accept the following public comments from the Rich Passage Estates Homeowners' Association located on Bainbridge Island, Washington related to the Department of Ecology's announcement of permit modifications related to Cooke Aquaculture's application to raise all-female, triploid steelhead in its net pens on Bainbridge and Hope Island. The goal of the Department of Ecology should be to solicit public comment that will aid in the development of a robust NPDES permit that will ensure that a potential net pen operator is in compliance with maintaining water quality standards at the highest level.

Troubling, is the notion of forging ahead with this public comment during a global pandemic and constrained opportunities for public input. This net pen modification should include opportunities for public meetings when considered safe under Governor Inslee's Stay Home, Stay Healthy order. Ecology is the same agency that spanned 20+ months from the expiration of the last NPDES, October 26, 2017, to the issuance of the current permit on July 11, 2019 surrounding the Cypress Island disaster. There, Ecology provided several public comment opportunities in the communities where net pens operate. There is no urgency to populate Puget Sound net pens with Steelhead while the net pen operator has the necessary permits in place to continue farming Atlantic salmon for the near term. Further, there is no rush to proceed with the issuance of modifications to the NPDES permits until a determination has taken place related to lawsuits against the Washington Department of Fish and Wildlife brought by environmental groups.

As some of the closest neighbors to a Cooke facility, we are conveying concerns surrounding the lack of available updated science, resistance by Ecology to modify certain aspects of the permit conditions in the last NPDES permit, the company's failure to fully incorporate the lessons learned from the Cypress Island net pen disaster, issues related to transparency, and Cooke's appalling record in Washington State and elsewhere.

Updated permits issued in July 2019 incorporate lessons learned from the net pen failure

Lessons learned from the net pen collapse at a Cooke Cypress Island site in August 2017 and the investigation are reflected in the updated permits issued in July 2019. To protect Washington waters as much as possible, additional protective measures in the permits include:

- *Increasing underwater video monitoring of net pens*
- *Conducting inspections to assess structural integrity of the net pens and submit inspection reports certified by a qualified marine engineer to Ecology*
- *Improving net cleaning and maintenance procedures to prevent biofouling and fish escape*
- *Requiring the permittee to develop site specific response plans in the event of a fish release, and to conduct and participate in preparedness trainings*
- *Requiring improved maintenance of the net pens*
- *Maintaining contact information to notify area tribes in the event of a fish release*

Updated Science-Based Approach

Commenters on both sides of the proposal to modify the NPDES permit have recommended a science-based approach to decision making. Science is objective. It is not political.

The reality here is that the risks and guidance to mitigate the impacts are based on decades old science and outdated assumptions. The passage below is from the Department of Ecology fact sheet for NPDES permits and states that the conclusions from NOAA, which drive much of the guidance, are based on three major assumptions which may no longer be valid:

In 1990, at the direction of the Legislature, WDFW published a programmatic environmental impact statement of net pen aquaculture (Parametrix 1990). Risk to native fish by Atlantic salmon was determined to be low.

In 2002, NMFS published its review (Waknitz et. al 2002, NOAA Tech. Memo NMFS-NWFSC-53) of the impacts Atlantic salmon net pen aquaculture would pose to Puget Sound Chinook and Hood Canal summer-run chum salmon. This was done because the two native species were listed as threatened under the ESA in 1999.

Their conclusions were caveated with three major assumptions: 1) the industry remains near the current size at the time of the assessment (2002), 2) the net pens only reared Atlantic salmon, and 3) no new Atlantic salmon stocks than already are present be farmed in the net pens.

The NMFS concluded there were no serious or moderate risks posed by the Atlantic salmon net pen industry to native fish. Their findings included that there was one element with no risk, some with low risk, and some with little risk.

There was no risk of adverse genetic interaction from transgenic salmon because there are currently no transgenic salmon being commercially cultured. Transgenic fish, as defined in WAC 220-370-100, are not permitted (the regulatory authority being WDFW) to be used in Washington State.

After Cooke purchased assets from Icicle Seafood in 2016, they attempted to increase the limit on the size of net pen acreage by 150% in Rich Passage. Cooke has had an industry pattern of growth through acquisition and expansion which is counter to assumption number 1. From the Cooke story on their website: *“In recent years, we have embarked on an aggressive plan for growth, including acquisitions and an ongoing strategic search for development opportunities.”*

Steelhead have never been raised in salt water net pens on this scale in Washington State or elsewhere. Cooke has provided no evidence that they have experience in raising steelhead which is not consistent with assumptions 2 and 3.

The raising of Rainbow Trout and Steelhead in fresh water commercial applications has a long history of problem free operation. The risks for fresh water and marine water are different as are the mitigations to reduce risk. The following excerpt provides some relevant information on the U.S. Trout Industry as a whole. The U.S. Trout industry appears to use environmentally sustainable and responsible means in **fresh water**.
https://en.wikipedia.org/wiki/Rainbow_trout

*“Rainbow trout are commercially farmed in many countries throughout the world. The practice began in the late 19th century,[45] and since the 1950s commercial production has grown dramatically.[46] Worldwide, in 2007, 604,695 tonnes (595,145 long tons; 666,562 short tons) of farmed rainbow trout were harvested with a value of about US\$2.6 billion.[46] The largest producer is Chile. In Chile and Norway, sea cage production of steelhead has expanded to supply export markets. Inland production of rainbow trout to supply domestic markets has increased in countries such as Italy, France, Germany, Denmark and Spain. Other significant trout-producing countries include the U.S., Iran, the United Kingdom,[46] and Lesotho.[47] **While the U.S. rainbow trout industry as a whole is viewed as ecologically responsible,[48] trout raised elsewhere are not necessarily farmed with the same methods.[45]***

About three-quarters of U.S. production comes from Idaho, particularly the Snake River area,[45] due in part to the quality and temperature of the water available there.[49] California and Washington also produce significant numbers of farmed trout. In the east, Pennsylvania, North Carolina and West Virginia have

farming operations.[45][50] Rainbow trout farming is one of the largest finfish aquaculture industries in the U.S.[45] They are raised inland in facilities where raceways or ponds have continuously flowing water with little pollution and a low risk of escape. The U.S. industry is noted for using best management practices.[48] Imports constitute only about 15 percent of farmed rainbows sold in the U.S., and nearly all domestic production is consumed within the country; very little is exported. The U.S. produces about 7 percent of the world's farmed trout.[45] Rainbow trout, especially those raised in farms and hatcheries, are susceptible to enteric redmouth disease. A considerable amount of research has been conducted on redmouth disease, given its serious implications for rainbow trout farming. The disease does not infect humans.[51]"

With respect to Steelhead, or Rainbow Trout raised in saltwater, the U.S industry has not employed responsible measures. Per the Seafood Watch (Seafood Watch U.S. Farmed Trout March 28, 2006)

Rainbow trout is also marketed as 'steelhead or 'steelhead trout'. US farmed steelhead trout is raised in the same manner as farmed rainbow trout and therefore, is also included in this recommendation. A relatively small amount of farmed rainbow trout is also imported, however, production techniques for imported trout can be significantly different from the domestic production techniques. Imported farmed trout can be raised in saltwater net pens, which release waste directly in the ocean. Due to differences in production method, imported farmed trout are not included in this recommendation.

Similarly, the use of triploid Rainbow Trout by State Agencies for recreational purposes is consistent with State Goals related for the use of public waters. While controversial from angler's perspectives, there is a balance to catch large fish versus species preservation. Note, the program of using triploid rainbow trout in lakes and streams for recreational purposes in Washington was discontinued in 2017.

Unfortunately, for the second year in a row no triploid rainbows are being released due to state budget constraints. These popular fish are known as eating machines and really provided a boost to the trout fishery with their novelty. In the past they were purchased from an outside vendor. (Seattle Times March 26, 2019 Andy Walgamott)

Fresh-water rainbow trout/Steelhead are not the same as a large-scale first-time experiment in a marine environment that Cooke is now proposing. Cooke cited the following study in their annotated bibliography (Carasco et al 1998).

"In spite of the growing commercial use of triploids, their reproductive development remains poorly understood. Evidence to date indicates that the reproductive effects of induced triploidy vary in different fish species and between the sexes, from complete or partial sterility to functional reproduction."

While the use of induced triploidy in Rainbow Trout has been common, there has been limited **adoption** by the aquaculture industry with respect to marine salmonids. Below is an abstract from a researcher at the University of New Brunswick.

"The concept of using induced triploidy as a means of providing sterile fish for aquaculture and fisheries management is not new, having been first suggested over 30 years ago. Triploid Atlantic salmon were first produced almost 25 years ago, and they have been evaluated in the European, North American and Australian aquaculture industries. Through this work it has been demonstrated that it is easy to mass produce triploid salmon and that, when combined with simple and proven methods for producing all- female populations, triploidy is highly effective at suppressing gonadal development in Atlantic salmon. However, aside from Tasmania, there is currently no use of triploid Atlantic salmon in commercial aquaculture. This paper will review the development of triploidy as a management tool and outline some of the limitations of

triploid performance that have influenced the decisions of industry not to adopt this technology. Finally, suggestions will be made for how to approach genetic and husbandry improvements to enhance the potential of triploid Atlantic salmon in commercial culture.” (Tillmann J. Benfey, Triploid Atlantic salmon: current status and future prospects, 2009)

Previous owners and Cooke never acted on using Sterile Same Sex fish in the 30 years of operation.

This only became critical when the public and State Legislators sent a strong message limiting their future operations. Absent the passage of State Law, Cooke might still not be considering farming sterile monosexual fish of any species. When researching Triploid Salmonids online, a significant number of the research articles only address the commercial aspects such as growth rates, efficiency, and the potential for aquaculture. Very little information is available about issues of verification, adaptive to feeding, and dispersion from escapes. Most research on Steelhead was related to freshwater and almost none was focused on Marine environments. Even in the research cited by Cooke in their application, there is non-conclusive evidence plus a conclusion that more research needs to be done.

Nowhere in Cooke’s SEPA Checklist does Cooke state that they have had any experience farming sterile female Atlantic salmon or Steelhead on the scale that they are proposing in marine waters or dealing with the residual risks associated with triploid fish. This appears to be their first experiment for their global company. Washington State waters should not be used as a commercial aquaculture experiment.

“What Cooke is proposing right now is something that isn’t done in Washington, which is to raise the species in marine net pens for the entire duration of their grow out,” says Warheit. “No one is doing that in marine waters.” (Ken Warheit-- WDFW, From Crosscut, August 5, 2019)

To date the only experiments that we know of in the United States related to raising ocean steelhead in sea cages are the following: The University of New Hampshire and Maine have focused on the viability of raising steelhead in small sea cages that contain 2,000 fish in order to help commercial fisherman supplement their income. The focus has not been on either the effects of triploidy or environmental impacts but on commercial techniques to produce marketable fish.

“Chambers says Maine’s long, protected coastline offers many feasible spots to set up steelhead trout farms. Additionally, Chamber’s team hopes to develop submergible systems that could be sited farther offshore and be pushed under the surface of the water in the face of bad storms that otherwise could toss the pens around, damage them and potentially allow the trout to escape into the sea. If do they get out, they could cross-breed with wild fish, but proponents argue these fish have been stocked in lakes and river here for almost 60 years, and some have made their way to the ocean of their own accord without wreaking havoc. Another objection often heard to ocean-farmed fish is that they can pass diseases on to surrounding wild fish, but this IMTA approach helps keep diseases down, Chambers says. He also made it clear these pens are intended for small-scale farming, not for industrial fish production.” (Portland Press Herald, 2014)

Another project proposal by Chambers raises the question of marketability and scale of implementation:

<https://seagrants.unh.edu/project/research/seawater-acclimation-juvenile-steelhead-trout-onchorhynchus-mykiss>

One observation we, as well as commercial growers in Canada, have made over three years working with this species is that a portion of the cultured population (~10%) is stunted. This results in: (1) difficulty in the harvesting schedule because not all individuals are ready for market at the same time; and/or (2) loss of a portion of the crop if some individuals never reach market size.

“We are interested in finding the cause(s) of stunting, and trying to minimize or eliminate it. One potential cause relates to acclimation of the fish from their freshwater hatchery environment to seawater. In nature, juvenile steelhead trout migrate from freshwater rearing habitats, through estuaries, to ocean environments -

- a process that can take from weeks to months depending on the strain of steelhead. During this migration they undergo smoltification, a complex morphological, behavioral and physiological process that alters their appearance, behavior, and their osmoregulation from ion retention to ion excretion. In contrast to the gradual transition from fresh, to estuarine, to salt water that occurs in nature, cultured steelhead are typically moved from a freshwater hatchery directly into seawater, which may impair physiological functions in some individuals, and cause them to be stunted.

We propose to test the hypothesis that the rapid transfer of steelhead from fresh to salt water (no acclimation) can result in stunting. Further, we hope to determine if the length of time spent in estuarine (low salinity) conditions affects the proportion of stunted individuals. In a subsequent Sea Grant proposal, we plan to hold steelhead in replicate cages near the Jackson Estuarine Lab for varying lengths of time before moving them to the coast, and compare their survival, growth, blood chemistry and size frequency distribution to fish moved directly into seawater with no acclimation.

If fortunate enough to be funded by N.H. Sea Grant, the funding would not be available until 2014. We hope to gather some preliminary data in 2013, refine our methods, and work on the logistics of holding the fish at two different locations. Accomplishing this work would ensure our chances of success in the full proposal. Further, the supplies we purchase this year would decrease our budget request in the full proposal.

Our plan for 2013 would include purchasing 1000 steelhead trout (200g average weight) in late April. This number is needed since we see a small proportion of stunted fish, and we need to ensure an adequate sample size of small individuals. Half the fish would be held in a small net pen located in the estuary near Jackson Lab, and half the fish would be located in a similar net pen at the Judd Gregg Marine Research Facility. Temperature and salinity data loggers would be attached to both net pens to record these environmental variables. Fish would be fed 5% of their body weight in two daily feedings, and the number and size of any mortalities would be recorded. On the first day, and at weekly intervals thereafter, a random sample of fish from each location would be anesthetized, weighed, and measured. On the same schedule, a blood sample (caudal vein) from a random sample of 20 individuals would be obtained, and blood osmolarity would be measured. At the end of three weeks, fish held near JEL would be moved by boat (estuarine water in insulated containers) to a separate net pen at the coast. Sampling of length, weight, survival and blood chemistry would continue, for both groups of fish, over the following three weeks.

This project would give us good preliminary data on the value of acclimation, and allow us to work on the logistics of maintaining fish at a new location Great Bay (e.g. mooring a cage, feeding the fish twice per day).

As indicated, we have been working with six commercial fishermen on steelhead trout aquaculture over the last two years. In order to continue our outreach goals and support of this group, they would participate in this preliminary research, and we would donate the fish to them, for on growing and marketing, when we completed our studies.”

Basically, these experiments demonstrate that the focus is on growing and not protecting the environment or native species and nothing anywhere near the scale that Cooke is proposing.

The experiment that should be undertaken is using land-based, closed-containment systems. Cooke is presently experimenting with land-based systems in Chile. Why not here?

<https://thefishsite.com/articles/cooke-set-for-several-land-based-farms>

“The first of these projected projects will be in Chile, with the exact terms set to be finalised next month, while the deliveries of the land-based systems are forecast to occur between Q4 2019 and Q4 2021.”

DFW in their response to public comments provided a clear statement of the intent of EHB 2957. One of the key elements along with eliminating fish escapes is **that guidance be updated.**

1.1. 2018 law sunseting non-native finfish marine net-pen aquaculture

*EHB 2957: “AN ACT Relating to reducing escape of nonnative finfish from marine finfish aquaculture facilities.” EHB 2957 became 2018 session law June 7, 2018, after passing the Washington Legislative House on February 14, 2018 and Senate on March 2, 2018, and signed by Governor Inslee on March 22, 2018. In signing the bill, Governor Inslee issued a partial veto, deleting Section 1 of the bill from the enacted law. The Governor stated that “[s]ection 1 is unnecessary to implement the bill and [he does] not agree with all the assertions made in this section.” Despite the Acts title, the law’s intent is three-fold: (1) the elimination of commercial nonnative finfish marine aquaculture; (2) the elimination of escapes of finfish from commercial marine net-pens; and (3) **the completion of a guidance document for the planning and permitting of commercial finfish marine net-pen aquaculture.** With Governor Inslee’s veto of Section 1, the new law does not characterize commercial marine net-pen aquaculture as posing unacceptable risks to native salmon or the marine environment.*

The Governor’s decision to veto Section 1 of the bill ended all net pen guidance that began in 2016 which was based on guidelines published in 1986 and science best industry practices at that time with regard to Atlantic salmon. Since the operator has requested a change in species, there is a critical need to update both the guidance and the science as it relates to the raising of steelhead in marine net pens.

Ecology adopted discharge standards representing AKART for marine salmon net pens as part of chapter 173-221A WAC. From the permit fact sheets:

In 1995, Ecology adopted discharge standards representing AKART for marine salmon net pens as part of chapter 173-221A WAC. The adoption of these standards was required by RCW 90.48.220. In accordance with the marine salmon net pen discharge standards, the permit requires the same operational requirements applicable to all facilities (WAC 173-221A-110(4)). These requirements address feeding, disease control chemicals, chemical storage, and the development and implementation of a Pollution Prevention Plan designed to reduce or prevent the discharge of pollutants.

Prior to the issuance of the previous (2002) permit, the PCHB heard testimony on three alternative technologies to marine net pens. The Board ruled that none of the technologies constituted AKART because they were not technologically reliable and/or economically feasible, and dismissed with prejudice all AKART issues relating to all structural alternatives to net pens. Ecology will implement AKART in this permit by requiring compliance with the requirements in WAC 173-221A-110(4).

We recommend that the guidance be updated with current science and best industry practices with respect to raising steelhead in marine net pens. The State should withdraw their Mitigated Determination of Non-Significance, issue a Determination of Significance, and draft an Environmental Impact Statement to assess the full impacts of this proposed permit modification.

State Guidance for the Developing Marine Net Pen Aquaculture

If the document referenced in the links below was used to guide decision making related to the NPDES permit then, no decision to modify the NPDES permits should be made until the public has a chance to comment on State of Science on Net-Pen Aquaculture in Puget Sound, Washington. That document according the website:

- *Was not formally peer reviewed, although experts in marine aquaculture contributed to its development.*
- *Contains portions which may be inconsistent with the state's understanding of the biological, physical, and cultural environment in Washington.*
- *Is but one source of information that state agencies are using to inform their recommendations.*
- *Does not necessarily represent the management or policy views of the state.*

<https://fortress.wa.gov/ecy/ezshare/sea/Shorelines/StateScience.pdf>

<https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Aquaculture/State-guidance-for-net-pens>

No decision to modify the NPDES permits should be made until the public has a chance to comment on State of Science on Net-Pen Aquaculture in Puget Sound, Washington.

Conducting inspections to assess structural integrity of the net pens and submit inspection reports certified by a qualified marine engineer to Ecology

7.4.3 Net Pen Structural Integrity Report

Approximately every two years, when the farm site is fallow, Cooke contracts a licensed engineering firm to conduct inspections and assess structural integrity of the net pens. Inspections include environmental data and projections for the farm location, cage component, and mooring assessments related to escapement potential, structural integrity, permit compliance, and operations. The net pen structural integrity assessment reports are certified by a licensed professional engineer and submitted to Ecology within 60 days.

To our knowledge, no inspection of this type has taken place for some of the net pens whose permits are under consideration that have been fallow for an extended period e.g. Fort Ward Pens. The last inspection, listed on Ecology's PARIS website, was conducted in December of 2017. If the net pen operator is working to comply with this element of the permit, why hasn't an inspection occurred? If some inspections have occurred, then they are not available on the PARIS website?

To further compound the process, two pens in the Orchard Rocks South Rocks array contain fish and the rest have been empty for many months. When does the testing occur? When all pens are fallow: Clam Bay, Orchard Rocks and Fort Ward? This means that the time line could be extended, depending on when pens are stocked, harvested and fallowed, well beyond the "Approximately every two year" permit requirement.

The need for increased inspections is highlighted during Ecology's last public comment period:

Response: *This requirement was codified in law in RCW 77.125.060 - Facility operator must hire marine engineering firm to conduct inspections. EHB 2957 was signed and it stated (bolded added): A new section is added to chapter 77.125 RCW to read as follows:*

1) For marine finfish aquaculture, the facility operator must hire, at their own expense, a marine engineering firm approved by the department to conduct inspections. Inspections must occur approximately every two years, **when net pens are fallow**, and must include topside and mooring assessments related to escapement potential, structural integrity, permit compliance, and operations.”

Ecology interprets and conditioned the permit to have the assessment done approximately every two years but more importantly when it's fallow. Ecology added more clarity to this special condition to better define. It now states “. Inspections must occur within two years of the effective date of the **permit if not completed and to be done routinely, approximately every two years**, when net pens are fallow, and must include current Doppler data, topside and mooring assessments related to escapement potential, structural integrity, permit compliance, and operations.

Also from WDFW related to net pen inspections:

In December 2019, a Consent Decree was reached between Cooke and Wild Fish Conservancy, where both parties agreed that before Cooke restocks any of their net-pen facilities, they are required to conduct a load analysis of the mooring and cage systems using environmental condition data that are consistent with the Norwegian aquaculture standard NS 9415. As part of the inspections mandated by EHB 2957, WDFW will require that Cooke provide an engineering analysis certifying that the net-pens conform to the parameters derived from the NS 9415 standard. Each net-pen facility will be evaluated independently as conformity to parameters derived from the NS 9415 standards require evaluation of the environmental conditions (e.g., currents, winds, waves, depth) specific to that net- pen facility.

The structural integrity of the pens becomes even more critical as the net pen structures age. Risk assessments should include both the impact and likelihood of an event over the life of an asset. There have been a number of events over the lifetime of net pens in Washington State and the probability of an event likely increases with age.

Mott MacDonald | Rich Passage Orchard Rocks
Atlantic Salmon Net Pens Engineering Assessment

4 Net Pen Structure

The three Rich Passage net pen structures were initially permitted and installed in the mid 1970's per the lease documents. The net pen structures have undergone several structural improvements, including complete replacement of the floating structures and anchoring equipment during its service life. The lease documents state the last replacement cycle began in 2000 when all three cage structures in Rich Passage (Clam Bay, Fort Ward and Orchard Rocks) were replaced with new steel floating structures. From GoogleEarth, the Orchard Rocks net pens appear to have been installed between 1994 and 5/31/2002. Orchard Rocks facility is composed of two separate net pen structures that are connected together with synthetic lines. Based on all available information, the age of the net pen structures (but not the mooring lines) is estimated to be approximately 17 years for Orchard Rocks. They are referred to by Cooke as Orchard Rocks North (ORN) and Orchard Rocks South (ORS). There are a total of 20 pens at Orchard Rocks north and south.

From the current DNR lease:

1.) Cage Descriptions and Useful Life of Improvements

The three Rich Passage net pen structures were initially permitted and installed in the mid 1970's. The cages have undergone several structural improvements, including the complete replacement of the floating structures and anchoring equipment since this time. The last replacement cycle began in 2000 and all three cage structures in Rich Pass (Clam Bay, Fort Ward and Orchard Rocks) were replaced with new steel cages.

The new cages have an average expected service life of approximately 15 years. Life spans of steel cage structures are variable depending upon exposure to storm energy, wave heights, wave frequencies, the corrosiveness of the marine environment, and the operational and maintenance programs of a company. Over the past 25 years, cage manufactures have made significant technological and structural advances in the design and the materials utilized to construct marine net pens. These advances have greatly increased the efficiency, durability, safety and life-span of the sea cages. The current cages deployed at the sites are well within the design and engineered capacity for this type of application.

Any modification of the NPDES permit should be conditioned on strict adherence to inspections that are required "approximately" every two years and the requirements of other legal actions. A decision to modify the current NPDES permit should be tabled until all pens are inspected and deficiencies addressed.

Structural integrity of the net pens and Emergency Contact Protocol

An NPDES permit that requires a structural engineering assessment every two years does not absolve the net pen operator of its duty to report and address structural deficiencies in the interim and we understand that the net pen operator is already supposed to be conducting visual inspections.

Recently, we observed and documented, in October of 2019, disregard for structural deficiencies which were apparent to the public and indications of the lack of appropriate contact information needed in case of emergency. According to the NPDES permit in place at the time:

The Permittee must maintain all structural and mechanical systems associated with the net pens, including but not limited to floats, walkways, mooring points, and all components of the anchoring systems in good working order. Maintenance and repairs to the structural or anchoring systems shall be documented and records maintained on site and available to Ecology upon request, as well as reported to Ecology as specified in Section S9.

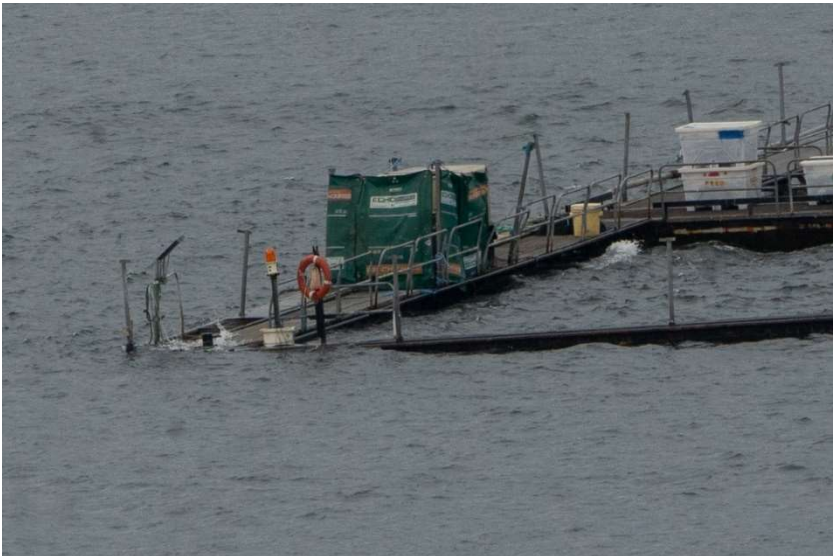
The net pen structure, Orchard Rocks South shown in the photo below, with the southeast corner low and submerged for several days was, did not appear to be "in good working order". While the corner pen did not contain fish, it does support equipment and there are fish in at least two of the Orchard Rocks South pens at the other end. The low level of the pens was reported to Cooke Management on 10/20/20 who responded in part, "it is typical for that end to ride low on a flood tide." According to the farms DNR lease, the pens in Rich Passage are "designed to withstand maximum wave heights in excess of 12 feet." We are wondering how this compromised pen would have fared in a major storm or if it had been fully stocked?

Here are our observations:

On October 15th we observed the pens in Orchard Rocks south much lower than usual.



October 16, 2019 photo shows submerged corner of pen with what appears to be a generator covered with noise-abatement material and mort containers nearby



October 16, 2019

Photo shows a work boat on its way to Clam Bay



Photo taken about one hour before high tide on October 16, 2019



October 17, 2019

A generator appears to have been moved and noise abatement material removed to the walkway.



October 18, 2019



October 19, 2019

Photo of what appears to be noise abatement material floating in the pen



We observed what looked like noise abatement material floating in the submerged pen on 10/19/19. Later that same day, a neighbor emailed that what looked like something from the fish farm had washed up on the shore of nearby Fort Ward Park. We reported this to an employee on the dock who said he didn't have any contact information other than "Ronnie" on the Clam Bay side. The information was reported to farm management by us and, to our knowledge, debris retrieved the next day.

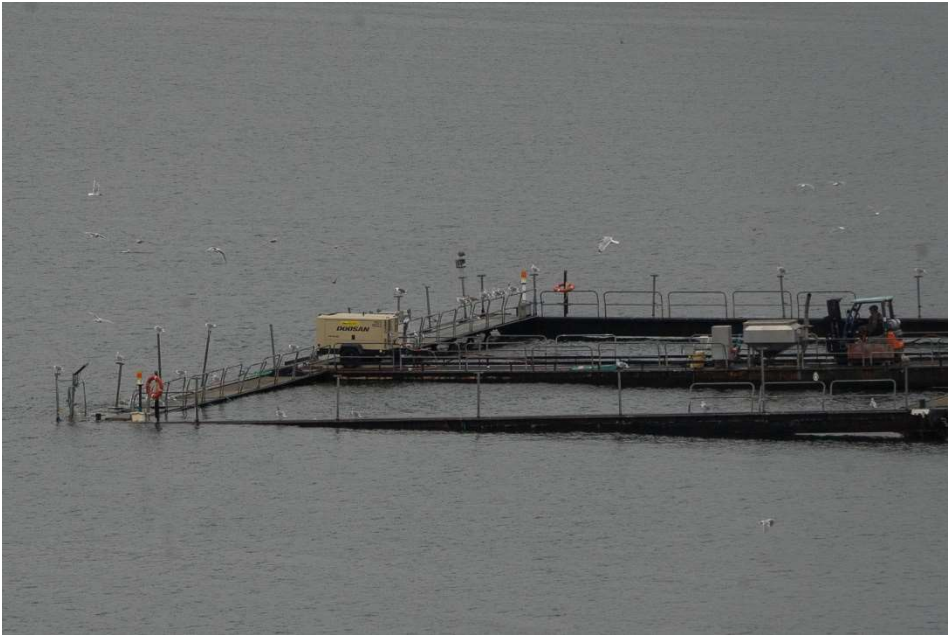
Photo of noise-abatement material washed up on the shore of Fort Ward Park



On October 20, 2019 we, reached out to Cooke Management with notice of the sinking pen.

Cooke's response: *"The south end of the farm is empty and has been for months. Please do not make uninformed assumptions. Divers are checking but it is typical for that end to ride low on a flood tide."*

October 20, 2019 10:00AM Photo showing forklift operator on the pen



October 20, 2019

Photo of diver in the small boat

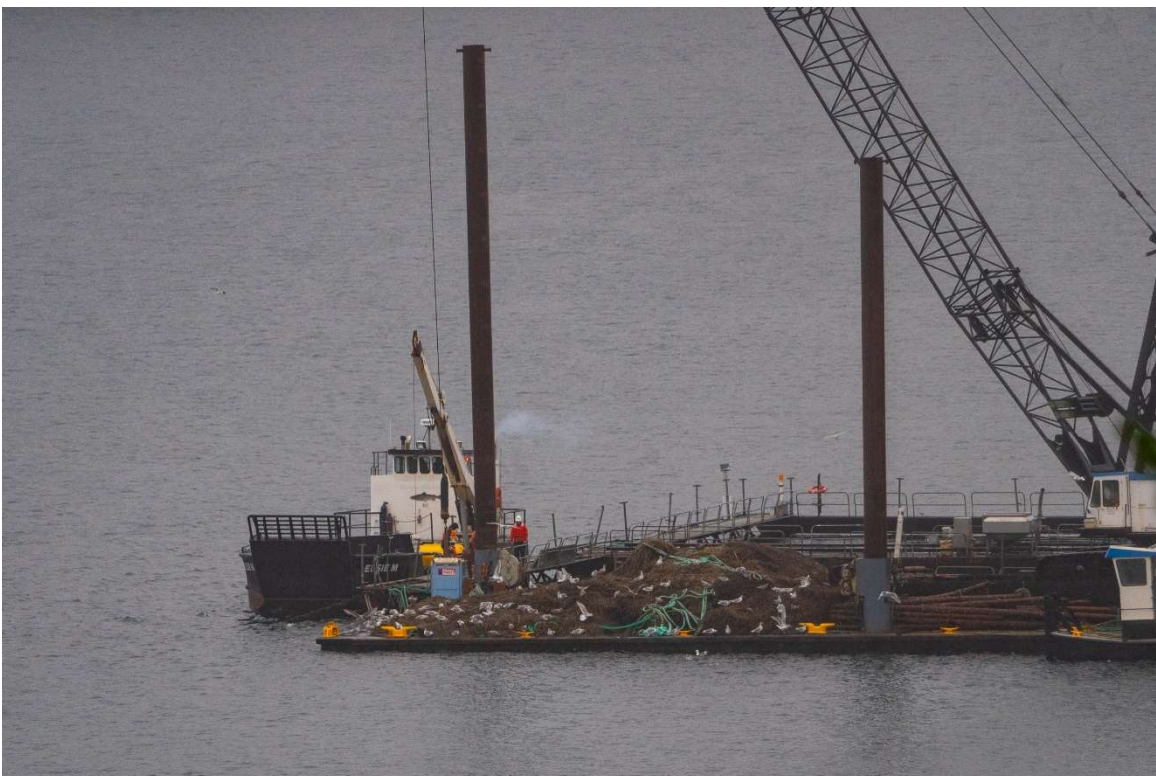


We are aware that the cause was a leaky pontoon that required days of work to re-engineer the net pen structure.

Media accounts minimized the failure by referring to a “dime-sized” hole in a pontoon, but the facts remain. The farm did not report a sinking net pen for days and did not do so until alerted by the Deputy Director of WDFW who, coincidentally, was visiting nearby and called the Coast Guard to secure the perimeter.

In this incident it is questionable if Cooke even noticed the sinking pen.

Needed repairs to the pen spanned over several days: Two photos taken on October 22, 2019



We are aware that updated NPDES guidance is in place to address this type of failure.

Steel Flotation Pontoons	Excess corrosion or mechanical damage leading to loss of airtight chambers in steel pontoons.	<ul style="list-style-type: none"> ■ Maintenance and repair reporting and recordkeeping through Weekly Surface Inspection Reports. ■ Annual below-surface inspections. ■ Ultrasonic survey of metal thickness of steel pontoons every two years. ■ Inspections every two years by marine engineering firm assessing structural integrity, mooring analysis, and analysis of risk.
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We do know, from direct conversation, that an employee who was on duty had little in the way of contact information to retrieve the debris that was washed ashore in the park. We have little confidence in the farm’s ability to reach out in the event of escapement or emergency. It is our understanding that the farm attempted to reach the Department of Ecology by email during the sinking net pen incident when a contact number is available, even to the public, online or from past Emergency Contact lists. The same 24-hour phone number has been in place for the Department of Ecology SW Regional Office in the past and is listed today in the farm’s current NPDES permit.

This is not the first failure in Cooke’s Emergency Contact protocol: A power boat incident that occurred in November 2018 and documented in Cooke’s 2018 annual Fish Release Report received by Ecology on 1/28/19, says that emergency personnel were unable to reach farm employees and that Cooke’s focus had been on *“improving how the company could notify various state and federal agencies...during an emergency situation.”*

Incident Response Review

Lastly, it should be mentioned that there was an incident during the past year that created an opportunity to test the agency contact procedures. In November, a small pleasure craft accidentally ran into one of the marine net pens during the middle of the night. While the fiberglass vessel suffered damage to the bow when it struck the steel net pen system, the cage system and fish containment nets were not damaged. A Coast Guard vessel was the first to arrive at the scene shortly after it was hailed by the vessel operator. There was however challenges for the Coast Guard and other emergency services to locate a contact number for Cooke representatives that caused some delay in communication to Cooke staff. A Cooke employee was eventually contacted and arrived at the site in the early morning hours. The Cooke employee did an assessment of the situation and determined there were no signs of damage to the stock containment nets and there was no risk of fish escapement posed by the vessel strike. The employee communicated this information to other Cooke management during the early morning

nours and that they would be doing a precautionary below surface inspection near the boat with the Cooke divers at first light in the morning. The state agencies were notified by Cooke personnel later that same morning with more details about the incident and specifically that company divers had completed a below surface check and confirmed there was no damage to the containment net or cage system. Cooke also made arrangements that same day with Ecology to facilitate the transport of an Ecology employee out to the fish pens to do an independent assessment of the event.

While the incident was minor, it did point out areas that could be improved upon in communications during an unusual event such as this and more specifically some challenges that occurred with information flow. Over the past several years, the primary focus by Cooke has been on improving how the company would notify various state and federal agencies and other emergency management services during an emergency situation. Less attention had been given as to how the emergency management services could find contacts for Cooke personnel during an emergency event if they were the first to arrive on scene.

A debrief conference call with the stakeholders was initiated by the Department of Natural Resources shortly afterwards that included state personnel from DNR, DOE and DFW and Cooke representatives. The focus of the conference call was to review what worked and what could be improved upon. As a result of this discussion, updated Cooke employee contact information has since been provided to the U.S. Coast Guard Sector Puget Sound and the Joint Harbor Operations Center (JHOC) dispatch personnel. Cooke contact information has also been provided to the various local law enforcement agencies and particularly the marine patrol units with jurisdiction near the net pen farm areas. Additionally, the company has since installed new emergency contact information signage at the various net pen sites and on the outside of nearby onshore Cooke office buildings at Bainbridge Island and Port Angeles. These actions should further improve the communications and information flow between company personnel, state agencies and the emergency management services.

The company is committed to working with the agencies on improving fish escape prevention, response and reporting procedures and continuing to raise a much needed future protein source in a sustainable manner that has minimal impact to the environment.

Sincerely,



Kevin Bright, Cooke Aquaculture Pacific
Permit Coordinator

The fish farm has a long history of inability to maintain an appropriate emergency contact protocol even though the same permit coordinator is in place even to this day. After a 2011 fire at a Bainbridge Island net pen, conclusions in a Department of Ecology report stated that:

SUMMARY AND CONCLUSIONS

It was evident in the early stages of this fire and spill event that local authorities had no contact numbers for the management or responsible officials for the net pens. Since this event, American Gold Seafoods has provided the City of Bainbridge Island and Kitsap County emergency personnel with contact numbers.

American Gold Seafoods - Saltwater IV Orchard Rocks~WA0031542~11-03-11.pdf	Inspection Related
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Adobe Acrobat
Document

We are aware that NPDES permit calls for: *Requiring the permittee to develop site specific response plans in the event of a fish release, and to conduct and participate in preparedness trainings.*

The response during the sinking net pen incident leads us to doubt that the farm is able to follow and implement the requirement from Cooke's Pollution Prevention plan:

Cooke facility staff and Site Managers will be trained on the policies, procedures, and practices contained in the Plans. Staff training will occur annually for current employees and within the first 3-month probationary period for a new employee. If the plans are updated or changed, staff will be provided training on the new material. Annual training will occur by March 30th of each calendar year. The Site Manager will maintain an employee training log for each specific location and provide an updated copy of that log to the General Manager, Permit Coordinator and Business Support Analyst as updates or new training activities are made.

The annual training will cover safe handling practices, spill prevention and spill response procedures, review the locations of spill kits and contents, and emergency notification procedures. The training will include a full review of each facility's O & M Manual, Pollution Prevention Plan, Fish Escape Prevention and Fish Escape Response and Reporting Plans. The instructor will determine whether an employee understands the plan as it relates to their job duties and can competently perform the tasks described in the Plans. The Employee Training Log will include the instructors' name and signature, the employees' name and signature, the date of instruction and determination of competency.

The Fish Feeding Technicians are trained on the job through an apprenticeship. This Fish Feeding Technician's main duty is to supervise the feeding process to ensure the maximize ingestion of feed by the fish stocks and to reduce the occurrence of feed loss. Site Managers and employees receive periodic training on the latest feeding science research by outside professionals and researchers, and Cooke corporate staff.

We have documented failures in the emergency contact protocol in 2011, 2018 and 2019 here on Bainbridge Island alone. While records may be available to Ecology upon inspection, there is no internal or external audit to ensure that the process is being followed and that records are reliable.

Ecology should require, at the net pen operator's expense, an internal and external audit to ensure the reliability of training and emergency response protocols.

Marine Mammal Predation and Public/Worker Safety

We have concerns regarding the number of marine mammals that have significantly increased since first reported to the Department of Fish and Wildlife, Ecology and DNR in January 2020 and the possibility of escapements with their increasing numbers as well as impacts on public safety. Photos and videos in January document sea lions lining only the west side of the Orchard Rocks South pen and swimming freely in a pen containing Atlantic salmon. We were told by WDFW that:

Sea lion activity around these net-pens is normal, but seasonal, and what have you have documented is not out of the ordinary. At this point the net-pen structure itself and the sea lion activity on, in, and around the net-pens do not present a risk of escapes. Cooke is required to report back to us if the situation changes.

The number of sea lions has almost doubled than when first reported. We have been recently told by WDFW that the net pen structure is not at risk of collapse. WDFW calculations for 250 marine mammals is a combined weight of 75 tons. What are the impacts, in terms of water quality, from hundreds of marine mammals rafting on a man-made atoll? Many long-time residents here concur that there have **never** been marine mammals on the pens in these numbers. Additionally, if marine mammals can breach predator netting and swim freely in pens containing fish, how are fish, potentially, not able to escape?

Marine mammals are attracted to the pens for a reason. Sea lions are known to eat five to seven percent of their weight in food each day---about eighteen kilograms of fish and squid for a typical male. If not Atlantic salmon, except for the one who swam freely in the pen, then they may well be attracted to other fish that converge on the area including endangered species.

Escape Prevention, Response, and Reporting:

Other, often small-scale escapes, termed leakage, may occur due to errors during transfer of fish, maintenance errors, or small holes in nets caused by predators, floating debris, or vandalism (Jensen et al. 2010). Leakage of salmon from farms is typically undetectable (Britton et al. 2011, Fisher et al. 2014). There is a growing understanding that more gradual, low-level leakage of fertile fish can have a greater negative demographic and genetic impact on native species than the rarer, large-scale escape events (Baskett et al. 2013, Yang et al. 2019).

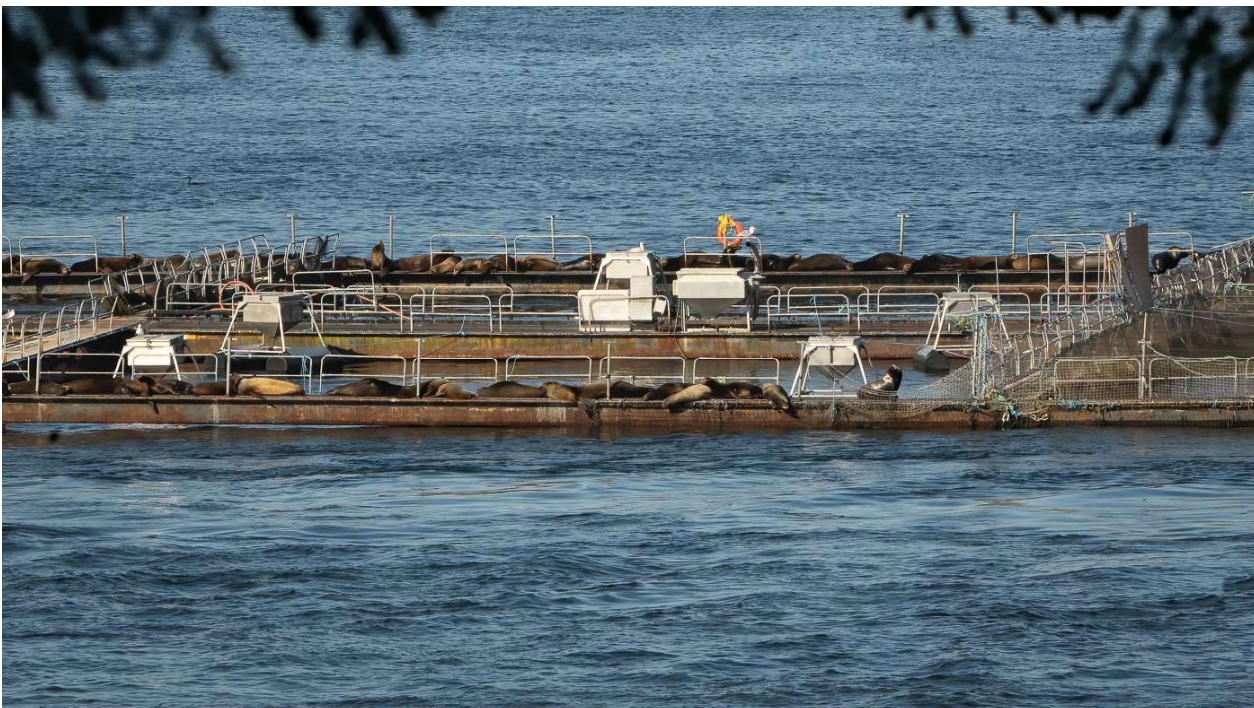
From WDFW Permit

Cooke must report to WDFW Fish Health Supervisor, Lead Veterinarian, or Aquaculture Coordinator within 24 hours of discovery of any fish that has been observed to have escaped from any net-pen facility or during transfer into or out of a net-pen facility, regardless of numbers of fish involved (i.e., the minimum reporting number is one)

December 8, 2019 East side of Orchard Rocks South



May 5, 2020 East side of Orchard Rocks South (pens to the right of the marine mammals contain fish)



Disconcerting, were farm worker initial attempts, allowed by NOAA, to displace these animals by traversing the walkway where they raft. The sea lions jumped back almost immediately after workers passed. The supply ship that had circled the pens, in what appeared to be an attempt to displace the sea lions, only temporarily forced them to nearby beaches where residents and kayakers are now threatened by the irascible and five-month residents on Cooke net pens. One area resident shared this recent account:

“On Monday June 1 A Boston Whaler was operating as a safety boat for a swimmer in front of our house. One Sea Lion approached, not a pack of 6-10 and the boat pulled the woman from the water. What will it take to realize that those pens attract Sea lions and that they aren't amiable toothless mammals. I imagine they could be eradicated if depredation permits were issued, but that's unlikely. Will it take a few kayakers or swimmers to be injured or killed for anyone to see the folly of this operation in such tight quarters?”

Efforts are currently under way to exclude them from Orchard Rocks with the use of some type of above-water skirting. The results remain to be seen. Cooke has a responsibility to put measures in place on all pens to reduce marine mammal predation and to protect the public and its own workers.

The population of marine mammals can be deterred by employing the guidance in the NPDES draft when pens are fallow. **This could be a clean set of predator nets or other barrier put in place after harvest to deter marine mammals on all net pen structures. Another way to prevent marine mammal predation and potential fish escapements is to disallow the partial stocking of a net pen array.** An additional benefit would be to ensure that all pens in an array are fallow at the same time and prevent delays in the net pen inspections that are required “approximately” every two years.

5. Review of Critical Structural Components

Floating marine net pen cage systems consist of a semi-rigid steel or plastic floating structure held in place by a series of external mooring lines attached around the perimeter of the structure. The fish containment nets (stock nets) attach to the floating cage structure above the surface of the water. The bottom of each square stock net attaches to sinker tubes or other types of weighting systems that submerge and hold the net in place. The combination of the semi-rigid floating structure and the net weighting system creates the open growing space (fish pen) in which the fish can be reared. Additional netting materials cover the surface of each fish pen to prevent avian predation and surround the perimeter of the submerged stock nets to protect against marine mammal predation.

Maintenance of Net Pen Structures

We have continued concerns regarding the methods for the maintenance of net pens structures that may be required and its impact on water quality. We are requesting, as we have in the past, that Cooke provide documentation that containment measures are in place for overwater maintenance/repair like the pounding off of rust on Orchard Rocks pens by sometimes multiple workers that took place from February 2018 until September 2018. There, the City of Bainbridge received multiple noise complaints, some from over a mile and a half away, which were mistakenly dismissed and closed by a city code compliance officer as related to an expired permit for dock repairs.

Photo of workers hammering rust off the Orchard Rocks facility 2018



In addition to the noise complaints with the city, Ecology was contacted as **no containment measures were observed. For all incidents related to noise and pollution, the public has to provide evidence that an infraction has taken place. Cooke is not required, in these instances, to provide evidence that their procedures are actually being followed and is allowed to continue on their good word. We urge you to employ the same type of proof from the net pen operator that you require from the public to ensure that containment measures are actually in place like photos or video evidence.**

In another example, while a permit to do work on the Bainbridge dock calls for replacement of creosote covered piles, we were told that no creosote-covered piles were actually removed and that the process would take place over three years (because the permitting was *easier*). At the time of the construction, a floating boom around the entire perimeter of the work area was required, but no boom was ever observed.

To our knowledge, the last phase has not been completed and the creosote-covered piles remain.

<https://ci-bainbridgeisland-wa.smartgovcommunity.com/PermittingPublic/PermitDetailPublic/Index/e11514bd-2df5-4218-877c-a68200f7df89? conv=1>

<https://ci-bainbridgeisland-wa.smartgovcommunity.com/PermittingPublic/PermitDetailPublic/Index/da07ef48-b0b8-46c6-af71-a61101186dc0? conv=1>

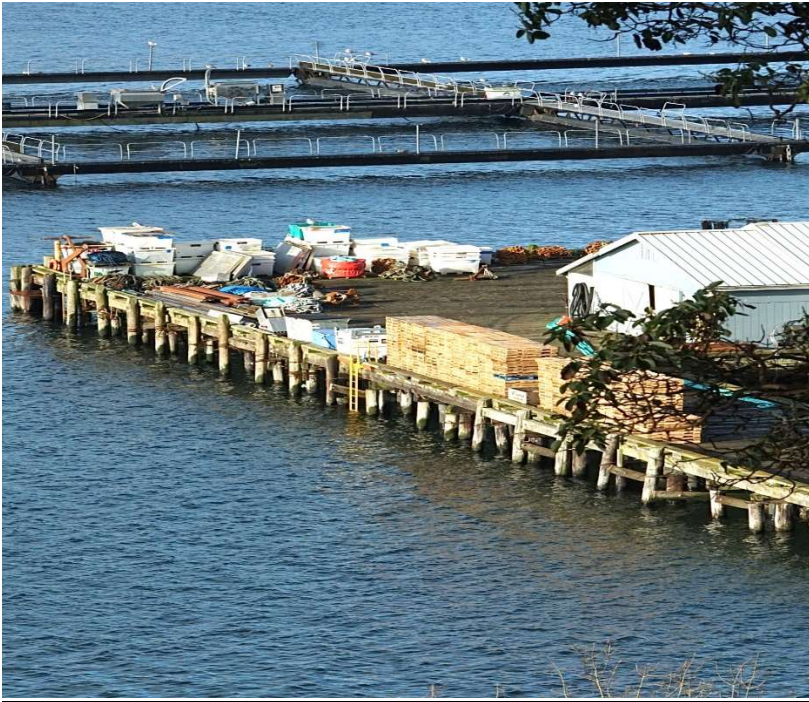
Solid Waste Disposal

We are again, as we have in the past, requesting a specific collection interval...weekly, bi-weekly related to the collection of recyclables like pallets and feed bags. This would prevent over accumulation as shown in the photo below and increased likelihood of their ending up in the water as has happened in the past. Permit language is not specific in terms of **how often** materials should be collected. **With no specific guideline, the net pen operator is the arbiter of what is routine and there is no basis for enforcement by the State agency.**

Solid Waste Storage and Disposal Practices

Solid wastes generated by the daily operation of the sites include feed bags, wooden pallets, used line, ordinary household wastes, and other non-hazardous items. Proper containment, handling and storage of these waste materials shall be the priority of all employees to ensure these materials do not enter the water. These items shall be stored in secured containers or bundles before transport to a land-based facility. Solid waste is collected and routinely removed from the facilities and transported to the land-based support facilities for proper disposal and/or recycling.

February 2, 2020 shows an over accumulation of pallets

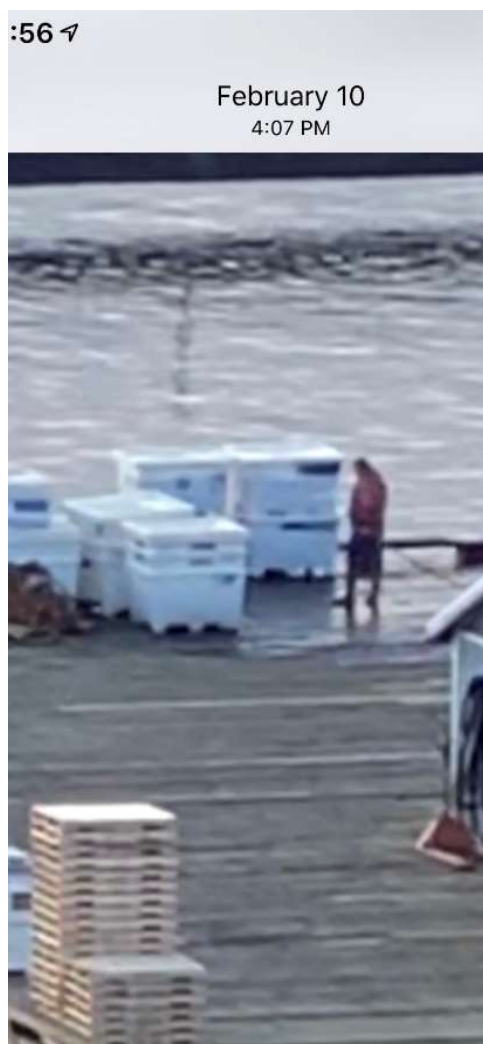


Additionally, the sound barrier that washed ashore the park in October was not marked as Cooke property nor were Cooke personnel aware that it was missing even though it had been floating in the sunken pen prior to its release.

Preventable Discharges to State Waters

We are encouraged that the intentional pressure washing of equipment that resulted in fines had ended, but were surprised to document twenty minutes of washing of the dock in February of 2020 which included the outsides of containers that held dead fish or morts that were being stored on the dock. We understand that morts are supposed to be in totes lined with plastic and while not pressure washed per se, see no reason to wash the outside of these containers slated for transport or the dock itself.

Screen shot from video taken February 10, 2020



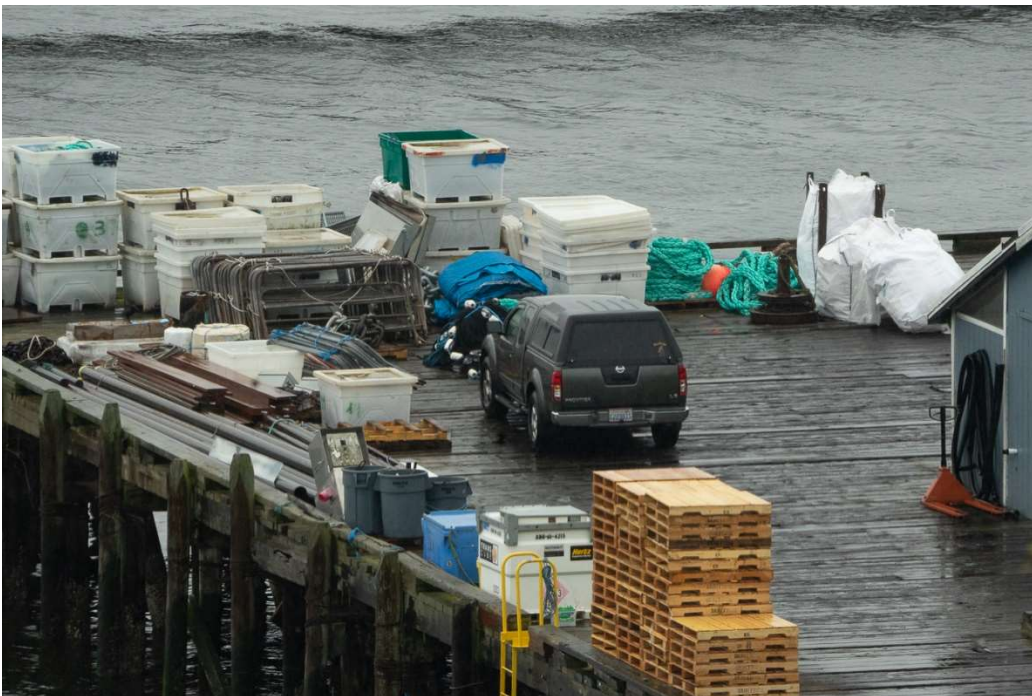
The four totes in the back contain dead fish shown in the close-up shot February 10, 2020



Any washing of containers that hold dead fish should be prohibited to prevent discharges to State waters.

Additionally, the dock is often traveled by eighteen wheelers, delivery drivers and workers in their personal vehicles who may not wish to walk the length of the dock from the parking area.

May 25, 2020



Permit language:

9. Discharges

No discharges are allowed of sanitary waste, floating solids, visible foam (other than in trace amounts), or oily wastes that produce sheen on the surface of the receiving water

Below is the Best Management Practices Manual that was sent to me in the past by Ecology:

<https://fortress.wa.gov/ecy/publications/documents/95056.pdf>

While parking over water might be restricted under general provisions of the Bainbridge Island Shoreline Master Program (SMP), we told by a former city planner that: *“The aquaculture facility predates the City, so there is no conditional use permit. They are essentially “grandfathered” and many of the City’s SMP do not apply to the facility.”*

According to Cooke’s NPDES application materials for their current NPDES permit modifications, the shoreline permit in place was issued by the Kitsap County Department of Community Development on June 13, 1988, over thirty years ago. (Permits 502 for Fort Ward and Orchard Rocks pens and Permit 503 for Clam Bay)

Parking of personal vehicles over water should be prohibited to prevent accidental discharges to Washington State waters.

Improving net cleaning and maintenance procedures to prevent biofouling and fish escape

With all due respect, we feel that it is important to address, once again, net washing procedures. From the Department of Ecology’s last public comment period:

From Rich Passage Home Owners Association, authored by Kathleen Hansen, letter sent to Ecology postmarked 2/16/2019

Comment: *At the end of the growing cycle all stock and predator nets must be removed from the facility by barge and transferred to an upland facility for complete cleaning and repair. And in-situ washing of nets with pressurized seawater may only be used during the growing cycle to minimize biofouling.*

Response: *Comment noted. In the Pollution Prevention Plan submitted in the application materials Cooke identifies net washing practices that are similar to your request but do not specify barging nets offsite.*

1. No anti-foulant paint will be used on the netting materials at the farm sites.

2. Fish containment nets are typically pulled to the surface once per year. Net rotations or net changes can occur during the production cycle of the fish and clean fish containment nets can be rotated into the farm during the growing period to minimize the amount of marine fouling growth on the nets.

3. Nets will be frequently rinsed in-situ with pressurized seawater to minimize bio-fouling growth. If large amounts of growth begins to occur it will be collected and taken to an upland soil composting facility.

4. At the end of the growing cycle after the fish have been harvested out, the nets are removed from the water and transported to a land based cleaning and repair facility.

5. Cleaning and repair of the nets is to be carried out by an approved net repair facility that is designed for this purpose. Materials washed from the nets will be captured and disposed of properly.

Comment: *During in-situ washing how are portions of the net pen structure itself not affected by underwater washing as reference in Section 2. O&M Manual Components, Subsection s? “The Permittee may not pressure wash any portion of the net pen structure or any equipment....”*

Response: *Comment noted. This requirement is meant to prevent intentional washing of the structure.*

Please require that nets be barged offsite and not warehoused on the dock. This would prevent additional discharges to State waters ensure that materials are captured and disposed of properly as required in point 5. *Cleaning and repair of the nets is to be carried out by an approved net repair facility that is designed for this purpose. Materials washed from the nets will be captured and disposed of properly.*

Nets, after removal have been stored on the dock in the past and Ecology can prevent unwanted discharges to Washington State waters by requiring that they be removed directly by barge.

Additionally, we are requesting that the Department of Ecology strictly adhere to point 4 of the permit language. *4. At the end of the growing cycle after the fish have been harvested out, the nets are removed from the water and transported to a land based cleaning and repair facility.*

From our public comment for the last NPDES permit:

Like thousands of others, we are well aware of the dangers of poor net-maintenance as demonstrated by the failures and mismanagement at Cypress Island. Last summer, at the end of the growing cycle, instead of predator nets being removed from the Fort Ward Pens here on Bainbridge, nets were cleaned by divers using power washers...the spray shooting many feet into the air.



The response from Ecology was:

“I spoke to Kevin Bright with Cooke regarding this activity. Kevin indicated that all the nets were removed from the Orchard Rocks site, but only the stock nets had been removed from the Fort Ward site. The reason was that Cooke anticipated approval of a transfer permit from DFW to re-stock the Fort Ward site. The permit was eventually was denied due to problems with the fish they were going to stock. Cooke has procured new smolts to stock the Fort Ward pens and timing will not allow for removal of the predator net. Ecology is not overly concerned that the predator net was not removed (even though it is not in complete compliance with the Pollution Prevention Plan), and that it is being pressure washed in place. In situ pressure washing is in compliance with Cooke’s Pollution Prevention Plan. Net biofouling is not contingent on the presence of fish in the pens. Mussels and other marine organisms will accumulate regardless, especially during the summer months. So if nets are present, diligent washing of the nets is considered a BMP. A greater concern for Cooke

could be the transfer of any legacy fish health problems from the previous stocking being transferred to the next crop of fish from the uncleaned net. However even if the nets were removed there could still be transfer from the floating structure itself. “

Ecology appears to acknowledge that:

1. Cooke was not in complete compliance with its own Pollution Prevention Plan
2. No matter what cleaning methods are employed (in situ or net removal) there still could be transfer of fish health problems from the structure itself

Additionally, a warning letter to Cooke from Ecology for unpermitted net washing was issued August 25, 2016 for discharges. This warning letter followed a month-long incident of power washing stock nets into State waters. Cooke explained this activity as a cost saving measure that was approved by management. Prior net pens owners were known to transport nets at the end of the growing season by truck which left foul discharges on Bainbridge roads. The previous Cooke GM communicated that nets would be shipped away from the pens by barge.

In Attachment A, Cooke states that in 2012, it switched company-wide to a “single stocking production plan that allows ample time for the containment nets to be removed from the farms and transported to an upland net washing facility for complete cleaning and repairs”. These upland facilities are designed to handle the nets and dispose of materials properly. Cooke’s practices during the last two production cycles are inconsistent with their pollution prevention plan or best practices as described in Attachment A. On paper, Cooke’s recommendations seem reasonable. Actual practice, however, seems to favor actions that are expedient and cost efficient. A lack of specificity in permits makes it difficult for State agencies to ensure that the proper practices are being followed.

To date, no fish have been stocked in the Fort Ward Pens. The operator should not have the option of short-cutting the net cleaning process at the end of the growing cycle.

We are asking that the net cleaning procedures at the end of the growing cycle be strictly adhered to in the future. The net pen operator should be in full compliance with the NPDES guidelines. Less than optimal cleaning such as cleaning with hand-held washers, should not be conditioned on the farm’s desire to stock pens quickly at the end of a growing cycle when more rigorous net cleaning at a net cleaning facility is required as a condition of the permit.

Impacts of large-scale dispersal of feed

In 2019, over twelve million pounds of fish food was dispensed into Puget Sound, four percent of which was medicated feed according to annual feed reports in Ecology’s PARIS website. All of this feed is not eaten by the fish in the net pens. Anecdotal evidence leads us to believe that some of this feed makes its way into the surrounding waters and is responsible for attracting other types of fish to the net pens themselves.

- The Orchard Rocks group of net pens alone, for example, accounted for nearly 28% of the total amount of food dispersed in 2019 and is operating in 60% of its total pens for the current grow-out cycle.
- Fisherman regard the area near the pens as a fishing hot spot and can often be seen fishing right next to the net pen structures containing fish.
- Long-distance swimmers have begun to be threatened by marine mammals that are drawn to the pens and avoid, what they describe as, murky and fishy-tasting waters.
- The creation of an artificial attraction to pens by migratory seabirds.

May 13, 2020 Fishing next to Orchard Rocks



May 31, 2020 Fishing next to Orchard Rocks



Keep in mind that the Orchard Rocks South net pens are now the pens that are overrun with sea lions and are the only pens in Rich Passage that contain fish. What other types of native fish are attracted to the pens or pass through the pens themselves? We understand from the Pollution Prevention Plan dated 2017 that:

Feed quantities are recorded for each fish pen every day. The Feed Conversion Rates (FCR's) and Specific Feed Rates (SFR's) are to be closely monitored for signs of over feeding or under feeding.

The interest from fisherman, sea birds, and marine mammals would lead us to believe that, despite those efforts, something is leading to the attraction to the pens themselves.

January 26, 2020 Seabirds near Orchard Rocks pens



February 4, 2020 Seabirds near Orchard Rocks pens



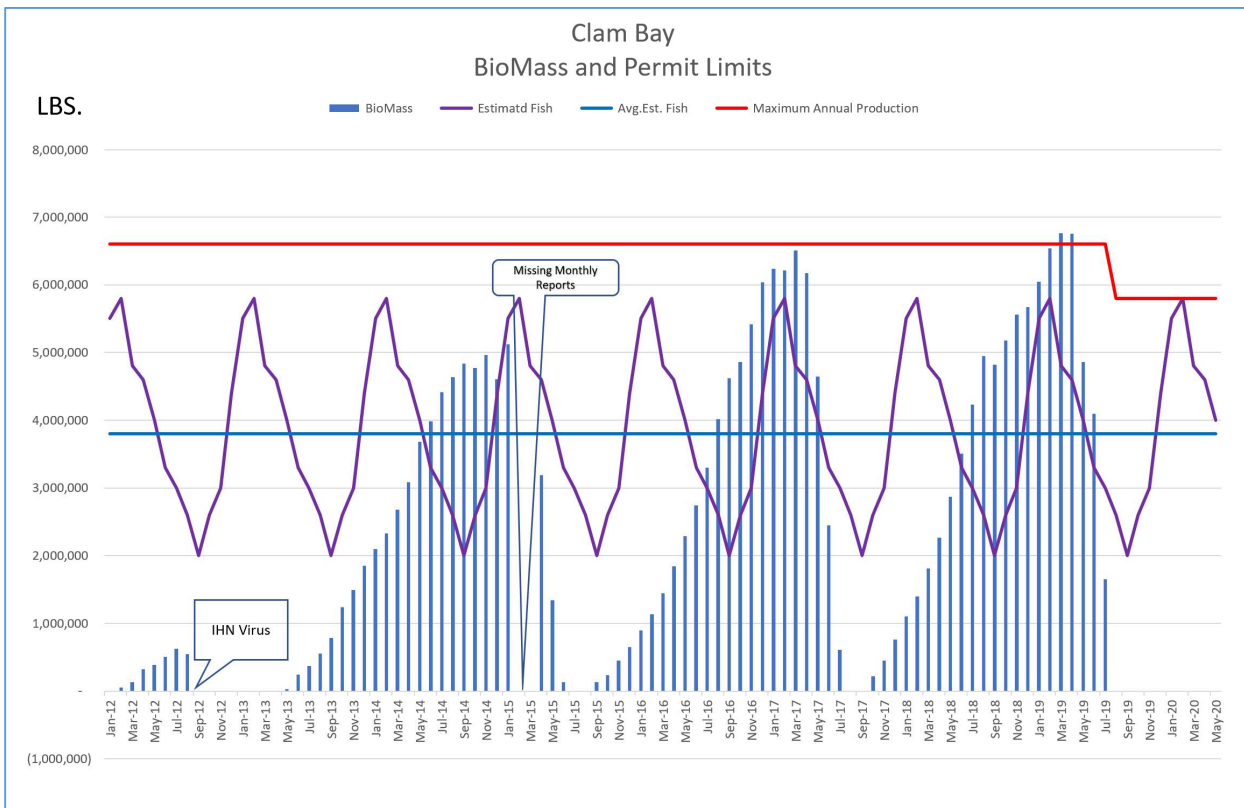
Data Monitoring Reports

We have concerns regarding how monthly monitoring reports are analyzed. Is the agency simply looking for exceptions or is there an overall model where trends can be visualized? In 2017 during net pen Guidance meetings, it was determined that monthly reports were being filed when they were input into PARIS rather than when they are received. Now they are categorized by date received, but the PARIS database is not organized or easily searchable. There is no transparency in terms of how the data is analyzed upon receipt.

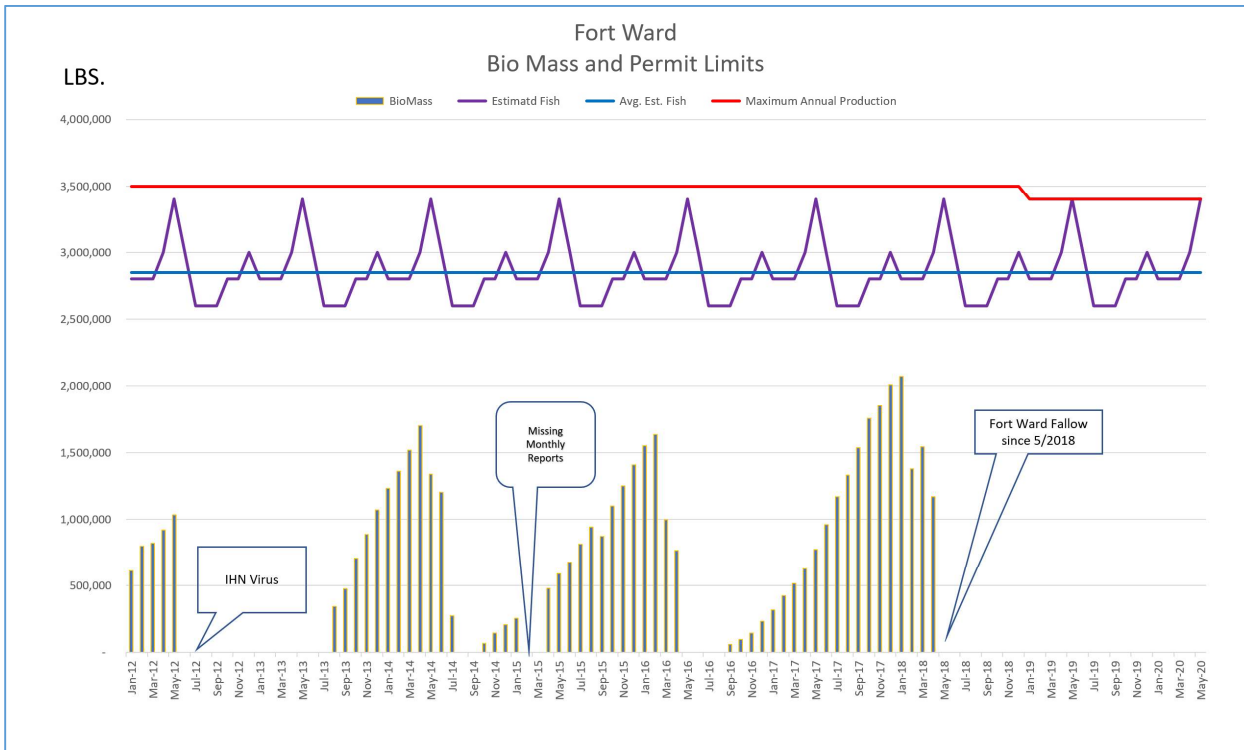
Bio Mass Data

Below, monthly bio mass data for Bainbridge Island Net Pens was analyzed from 2012 to present (Prior and Current NPDES Permits) along with permit application maximums and estimated fish. Most Sites when viewed independently appear to be operating generally within the permit parameters with some exceptions: Ecology failed to notice the significant decrease in Bio Mass during the 2012 IHN virus. Reported by the media but seemingly unreported by Ecology as well as missing reports on PARIS for February and March 2015.

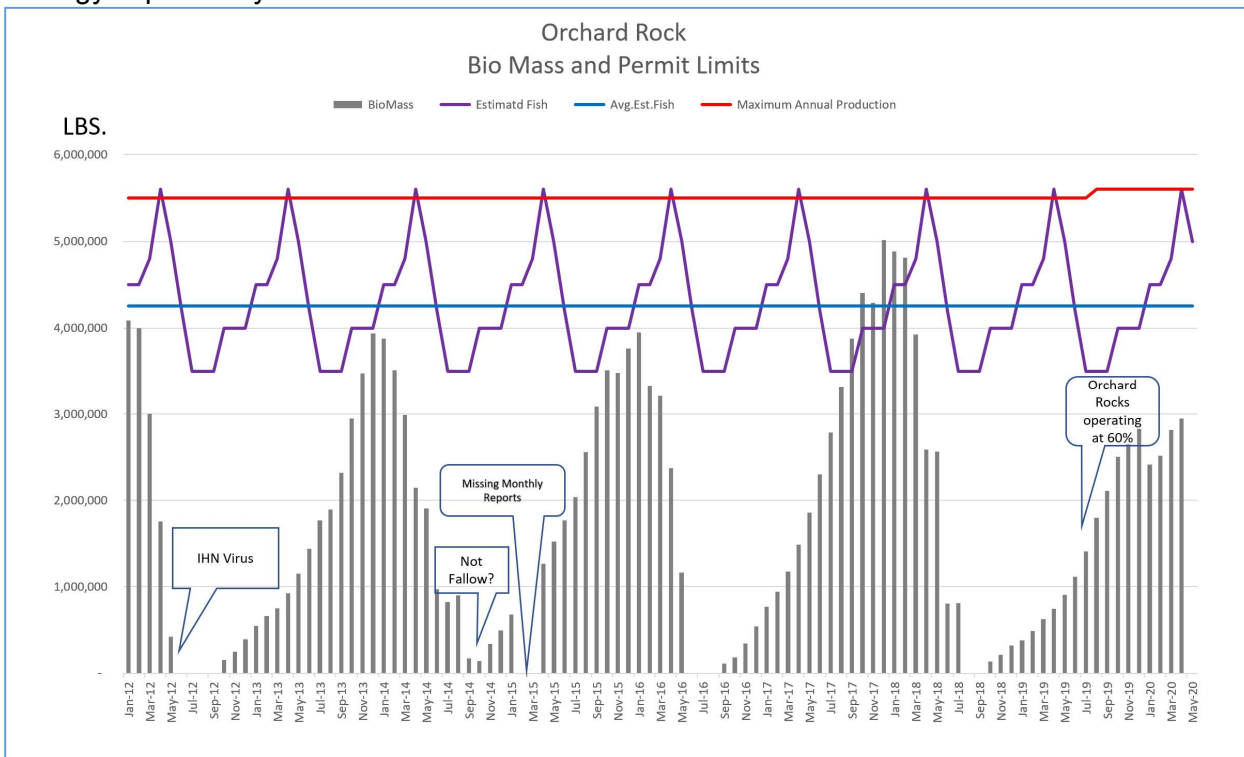
Clam Bay is reaching or exceeding the Production Maximum during the production cycles. Can Ecology explain why?



Fort Ward is operating significantly under due to long fallow periods for some unknown reason. Can Ecology explain why? Note: Fort Ward was denied a Fish Transfer Permit at the end of their last cycle in 2018.



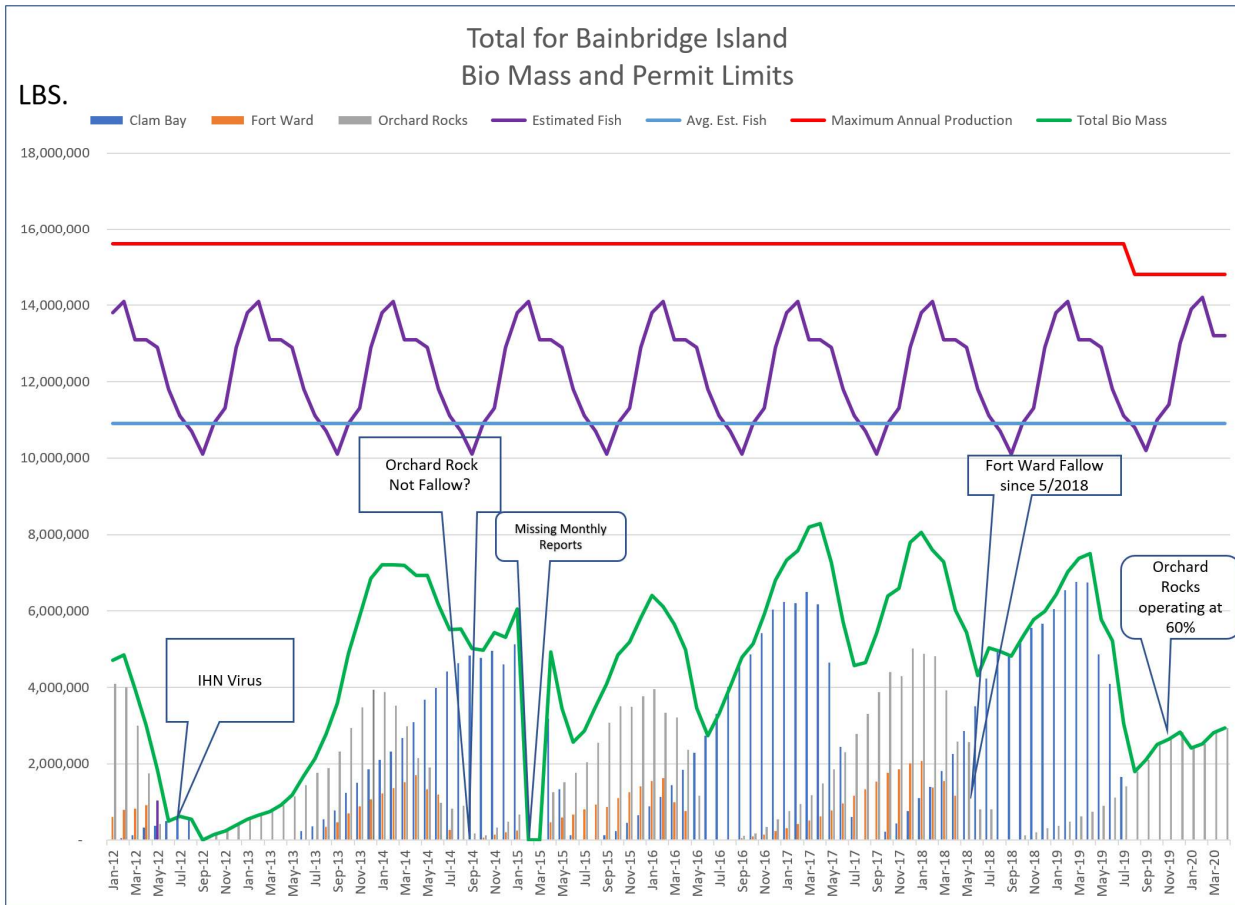
Orchard Rock appears to be within parameters currently operating at 60% capacity (12 of 20 pens) Orchard Rock appears to not have been allowed to stay fallow for two months in the 2014 production cycle. Can Ecology explain why?



Concerns:

If all sites were operating at their permit maximum level with their production cycles aligned in Rich Passage, there would be significant increases in biomass, regular and medicated feed, and fish waste above the historical levels and this could potentially lead to in a net loss in water quality.

Ecology needs to take into consideration a worst-case scenario.



The Department of Ecology should proceed with caution to prevent a situation in Washington like the one that occurred with Cooke in Maine:

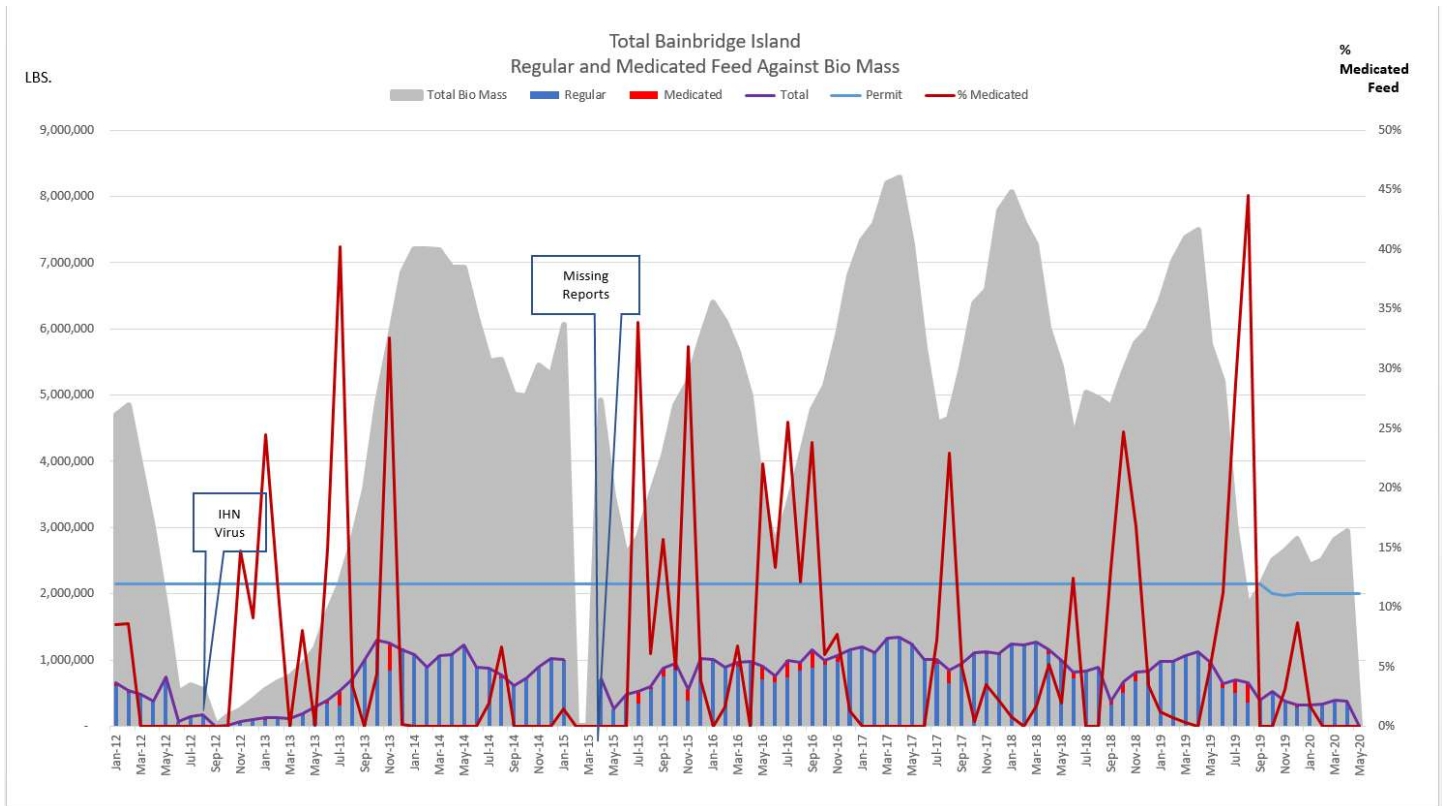
The Maine Department of Environment Protection has settled with Cooke Aquaculture for \$156,213 for a number of violations concerning its net pen facilities, an amount which will go to the funding of the Marine Rearing Atlantic Salmon Machias River Project.

Cooke violated the terms of the Maine Pollutant Discharge Elimination System (MEPDES) general permit for net pen aquaculture -- which was attained in 2014 -- by exceeding the maximum biomass in its pens and failing to submit a number of required notices and pieces of documentation.

We recommend that production maximums be reduced to align with historical levels and an annual maximum to control for a worst-case scenario.

Feed Data

For our purposes the analysis of feed, both regular and medicated, is shown in relation to biomass for 2012 until present using data available from the PARIS website for the Rich Passage net pens. In section S2.L. Antibiotic Resistance Monitoring of the current NPDES permit, Ecology is required to monitor unusually high usage levels of antibiotics by the Permittee.



The graph below appears to show consistent peaks in the use of medicated feed use. What monitoring is performed by Ecology?

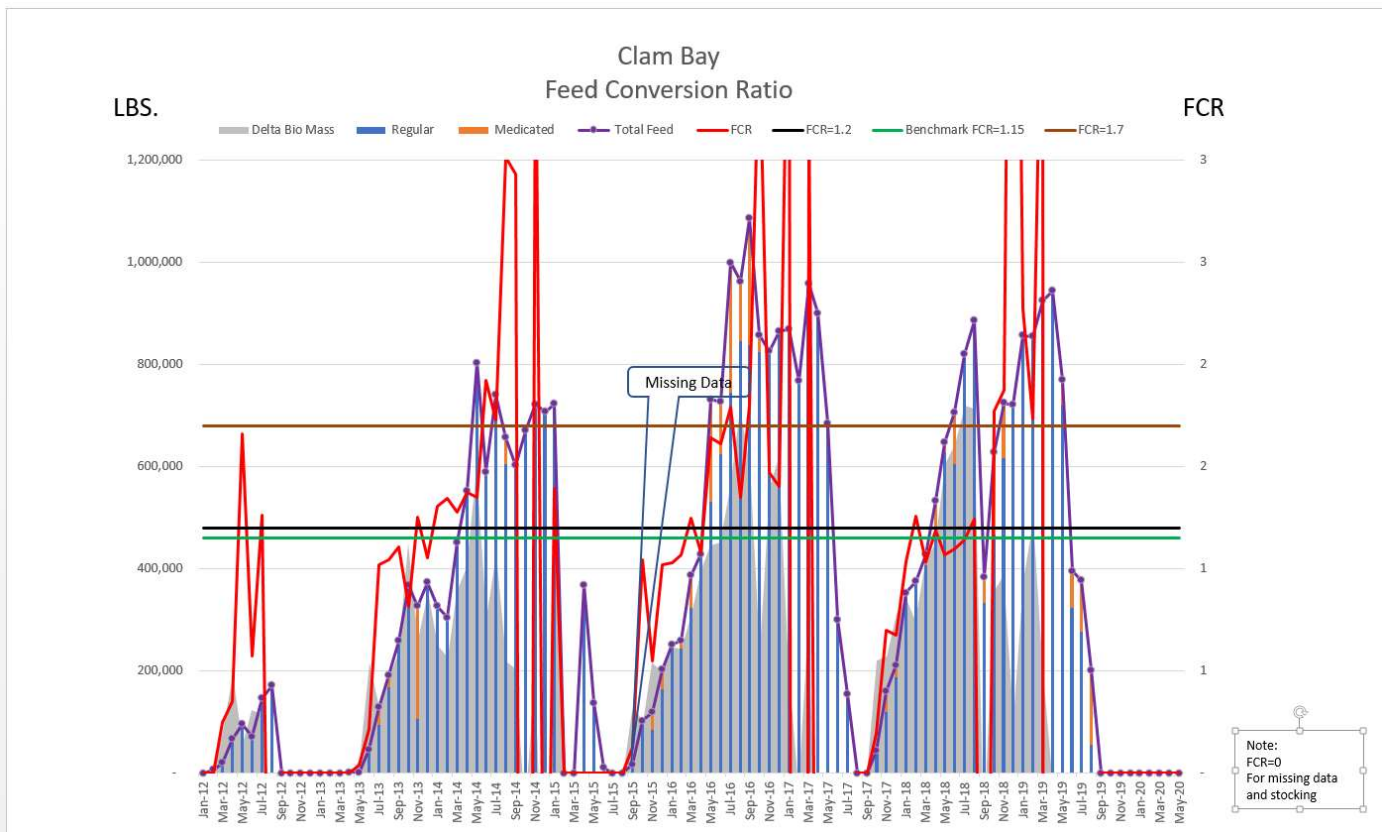
It is our understanding that medicated feed is generally removed prior to harvest. Why does the NPDES permit not contain specific requirements regarding the use of medicated feed during the harvest cycle?

We are also concerned that in all pens it appears, from review of your data, that medicated feed is consistently dispensed when pens are first stocked with what should be healthy fish. Can Ecology explain why?

Has Ecology ever audited the company's feed invoices compared to DMR data to test for reasonableness?

We are aware that: "Current biomass and feed reporting allows Ecology to calculate FCR providing a monthly monitoring point to compare with other months and note abnormalities. Currently, FCRs range from 1.2 to 1.7." (Related response from Ecology from last comment period.) Typically, Atlantic salmon need 1.15 kilograms of feed per one kilogram of body weight which is considered good for Atlantic salmon.

Not being fish scientists, we tried to view the simple relationship between Total Feed and delta Bio Mass for each month using the limited data available to the public. Using Clam Bay as an example, below, there would appear to significantly more variability than was described in Ecology's response during the last comment period. The Feed Conversion Ratio is critical to determining and controlling pollution from uneaten food and fish waste.



We recommend that a model for calculation and visualization be developed and additional data be added to the DMR data available to the public. These would include but not be limited to:

- Starting number of fish
- Number and weight of harvested fish
- Monthly Average Weight of Fish (based on sample)
- Monthly mortalities

The data needs to be auditable and independently verified. **Washingtonians have the right to know what is happening in Public waters.** Ecology has a responsibility to be transparent. It's easy to understand why the public in generally distrustful of the net pen operator and even the State agencies.

Other DMR Measures

During the 2017-2019 NPDES permitting process the Department of Ecology did not re-evaluate AKART based on an assumption that the net pen leases would be gone in the 2022. Because of the change in species, this is no longer a valid assumption and the Department should re-evaluate AKART before a determination of this permit.

Typically AKART is re-evaluated with each permit reissuance. However, with the passage of HB 2957, the marine Atlantic salmon net pen industry in Washington State will be phased out by 2022. Ecology concludes requiring any major changes to net pen siting is not feasible in the limited time the pens can continue to operate. With the legislative ban taking effect and the short anticipated lifespan of the industry, Ecology has determined that it is more important to reissue the permits for the net pens and continue to implement lessons learned since the previous permit issuance, and since the 2017 Cypress Island failure.

Update AKART parameters for the current NPDES Permit.

Impacts on Water Quality from Harvesting Operations

We understand from the permit that:

6.3 Carcass and Leachate Disposal During Harvesting

During harvesting operations, the harvest boat shall be tied securely to the net pens adjacent to the pen that is being harvested. The harvest fish are pumped from the pen and onto the harvest boat. Blood water from the harvesting operations (leachate) shall be contained within the fish harvesting machine that is located on the harvest boat. The harvested fish and blood water are contained and stored inside the fish holds of the harvestboat.

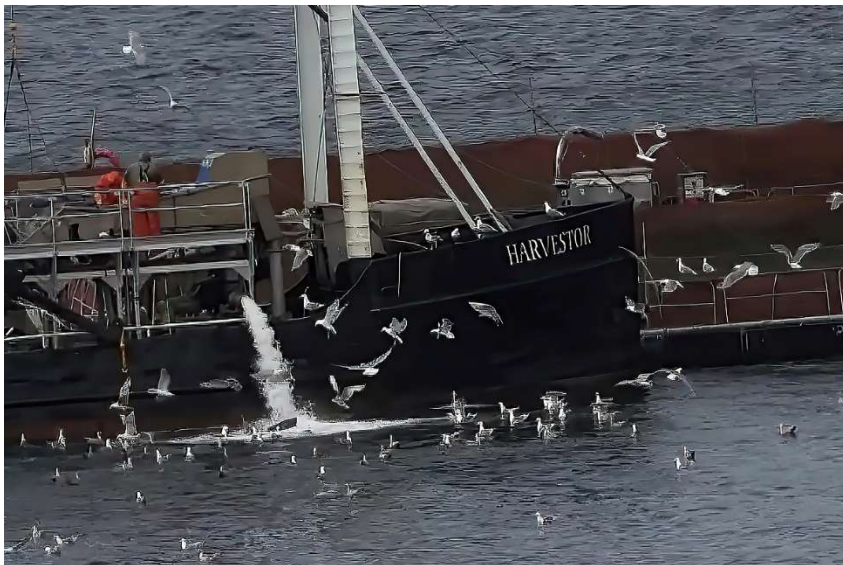
Upon completion of the harvesting operation by the harvest boat at the facility, the harvested fish and blood water are transported by the harvest boat to the upland fish processing plant. The harvested fish and the blood water are then pumped off the vessel at the fish processing plant and the blood water is disposed of into the sanitary sewer system located at the fish processing plant.

More on the harvesting process from the Cypress Island incident report:

The harvest vessel comes alongside the net pen and rigs a 12-inch diameter hose connection from a stock pen to a fish vacuum pump on the vessel. By pulling up on the sides of the stock net, the fish are crowded into a small location. Use of a grading net allows larger fish to be sorted for harvest first. The smaller fish stay in the stock containment net to grow for several more weeks before they too are harvested. The harvested fish are sucked through a pipe to a vacuum pump. Passing through the pump, which is designed to operate without the valves touching the fish, the fish are conveyed to a dewatering table. Workers stun and bleed the fish. The fish are placed in the hold, typically with refrigerated seawater. The vessel sails to Seattle where the fish are processed. All blood and any offal from the stunning and bleeding process is contained on the vessel and discharged into the sanitary sewer system in Seattle.

We're wondering then, **what** attracts large numbers of sea birds and marine mammals to the discharge from the Harvester pictured below during the harvesting operation? Has the discharge ever been tested? What is the potential impact from that outflow on water quality?

Harvesting operation Orchard Rocks net pen May 15, 2020



Harvesting as related to all three state agencies:

1. *Prior to harvest, Cooke must provide WDFW, DNR, and Ecology the approximate dates for harvest. Within one month after harvesting is completed Cooke must provide to WDFW, DNR, and Ecology a report documenting the facility harvested, dates in which harvesting occurred, the total number of fish harvested per day, and any complications that may have occurred during harvesting. Cooke must report immediately if any live fish escaped during harvesting, or if any fish carcass, parts, or offal were discarded into the Puget Sound waters. The discard of carcasses, fish parts, or offal is also a violation of Cooke's NPDES permit. Cooke also must report the number and species of bycatch caught during harvesting. If requested by WDFW, DNR, or Ecology, Cooke must allow appropriately trained personnel from these agencies to monitor the harvesting activities.*

We encourage Ecology to test the outflow from harvesting activities to ensure their compliance with water quality standards.

Ecology should not ignore Cooke's record

We have attempted to address the modification objectively with constructive criticisms and solutions, but from the public's view point, it is impossible to ignore Cooke's past and ongoing behaviors. Cooke purchased the pens in Washington State in 2016. Let's take a look a time line of their corporate behaviors to gain a perspective on how they choose to operate as a company that is "...dedicated to producing a high-quality seafood in a sustainable and environmentally sound manner."

Documented incidents in Washington State:

Date	Description	Source
August 25, 2016	Warning Letter: National Pollutant Discharge Elimination System	Department of Ecology PARIS
May 2017	Anchor Slip/Break Clam Bay	Confirmed by facility personnel and photos.
July 24, 2017	Ecology Illicit discharge noncompliance notification	Department of Ecology PARIS
August 23, 2017	Notice of Violation	Department of Ecology PARIS
AUGUST 22, 2017	It's open season on Atlantic salmon as the public is urged to help mop up a salmon spill from an imploded net holding 305,000 fish at a Cooke Aquaculture fish farm near Cypress Island . In a statement Tuesday morning, Cooke said "exceptionally high tides and currents coinciding with this week's solar eclipse" caused the damage. Cooke estimates several thousand salmon escaped following "structural failure" of a net pen.	https://www.thenewstribune.com/news/local/article168636307.html

Date	Description	Source
October 10, 2017	Just a week after the state Department of Fish and Wildlife approved shipment of 1 million more farmed Atlantic salmon to Cooke Aquaculture's fish farm near Bainbridge Island, another state agency says it has found a hole in the nets and corrosion in the structure of the facility. The Department of Natural Resources on Monday notified Cooke that it is in default of the terms of its lease at its Rich Passage operation. It ordered the facility repaired within 60 days, or the department may cancel the company's lease for the facility, which operates over public bed lands.	https://www.seattletimes.com/seattle-news/environment/fish-farm-has-60-days-to-fix-nets-outside-seattle-as-1-million-atlantic-salmon-move-in/
December 12, 2017	Administrative Order and Notice of Penalty Without water quality protections in place, Cooke Aquaculture Pacific (Cooke) has repeatedly cleaned dirty equipment and discharged polluted wastewater into Puget Sound. Cooke operates commercial Atlantic salmon net pens in Washington state.	Department of Ecology PARIS
December 17, 2017	Cooke Aquaculture must shut down and remove its Port Angeles Atlantic salmon farm after the state deemed it unsafe and illegal and canceled its lease.	https://www.seattletimes.com/seattle-news/environment/violations-prompt-washington-state-to-cancel-atlantic-salmon-farm-lease-at-port-angeles/
January 30, 2018	Cooke Aquaculture Pacific vastly underrepresented the scope of a catastrophic Atlantic salmon net-pen spill at its Cypress Island farm last August and misled the public and regulators about the cause, according to a new report by state investigators that blames the pen collapse on company negligence. The investigation found that Cooke lowballed the number of escaped fish by more	https://www.seattletimes.com/seattle-news/fish-farm-caused-atlantic-salmon-spill-state-says-then-tried-to-hide-how-bad-it-was/

Date	Description	Source
	than half, and did not do essential maintenance at its farm, causing the escape	
February 18, 2018	Cooke Aquaculture inspection finds problems at 2 other Atlantic salmon pens. At the Fort Ward facility in Rich Passage, inspectors found chain links on an anchor line had lost up to 75 percent of holding capacity because of corrosion. At Cooke's Hope Island facility, five miles from the mouth of the Skagit River, inspections conducted by Cooke also "do not appear in accordance with manufacturer's recommendations or industry standards," the report found.	https://www.seattletimes.com/seattle-news/environment/cooke-aquaculture-inspection-finds-problems-at-2-other-operations/
Feb-Sept 2018	Workers hammer rust off Orchard Rocks pens	Personal observations and communication from Ecology
Oct 15-20, 2019	Orchard Rocks net pen sinking due to hole in pontoon	Personal observations and photos
December 18th, 2018	The Washington Department of Fish and Wildlife considers the exotic strain of PRV to be an unacceptable risk to native stocks of Pacific salmon. Under the conditions of its permit, Cooke Aquaculture Pacific was required to destroy the fish.	https://www.seattletimes.com/seattle-news/environment/fish-farmer-destroys-800000-juvenile-atlantic-salmon-due-to-disease-second-purge-in-past-year/
October 22, 2019	"A small hole was identified in one bulkheaded pontoon on the Southeast portion of the Orchard Rocks net pen and we completed the necessary welding repairs immediately today. We will also have an engineer onsite tomorrow to assess the welding repair and pontoon. There were no fish in the corner section of the pen where the pontoon required repair," said a Cooke Aquaculture representative in a statement	https://www.king5.com/article/news/local/no-salmon-released-when-cooke-aquaculture-pen-sinks/281-b4741721-30f3-402a-bd2a-017edcc87b7b

These types of incidents are not just unique to Cooke here in Washington State. Below is a recap of events in North America:

Approximate Date	Description	Source
March 4, 2016	<p>New Brunswick-based multi-national farmed salmon producer Cooke Aquaculture had nothing but bad news during the past month, including yet another product recall from the Canadian Food Inspection Agency (CFIA), a valuable complaint from the mayor of the town housing Cooke's Nova Scotia headquarters and a notice to consumers to avoid eating Cooke's primary product, Atlantic salmon grown in Nova Scotia, New Brunswick and Newfoundland.</p> <p>Government product recalls</p> <p>In late January, CFIA issues a recall notice for salmon products produced by subsidiary True North Salmon, based on evidence that the fish might contain particles of a foreign substance. In 2012, CFIA issues a recall warning when Cooke distributed framed mussels which were alleged to contain marine biotoxins. Also in 2012, three Cooke executives - including CEO and founder Glenn Cooke - faced federal felony charges for dumping gallons of deadly insecticides near their salmon cages in the Bay of Fundy.</p>	http://www.southcoasttoday.ca/content/more-troubles-cooke-aqua-product-recall-do-not-buy-notice-farmed-salmon-loan-demands
September 11, 2017	<p>Atlantic salmon, believed to be part of a cohort that escaped from a U.S.-based fish farm on Aug. 19, are being hauled in by anglers fishing out of French Creek on mid-Vancouver Island. Cameron Wheatley, owner of the French Creek Store at the marina just north of Parksville, received the head of an apparent Atlantic salmon from a local angler late Sunday morning, Sept. 10. He is freezing the head, along with two more fish heads and one whole farm-raised salmon, to turn over to Fisheries and Oceans Canada</p>	https://fisherynation.com/archives/63166
October 12, 2017	<p>Cooke Aquaculture offered to pay a premium price for Atlantic salmon caught by the Lummi Nation after a major spill from the company's Cypress Island fish farm if the tribe would not advocate getting rid of net pen aquaculture. The tribe tartly rejected the offer. "Your demand to keep quiet for a few extra dollars is insulting," Timothy Ballew II, chairman of the Lummi Indian Business Council, responded in a Sept. 14 letter. Nell Halse, vice president for communications for Cooke, said Wednesday the offer "was not an attempt to muzzle or insult the Lummi Nation, but rather an effort to</p>	https://mynorthwest.com/781546/lummi-chairman-calls-bribery-attempt-insulating-and-preposterous/?show=comments#comments

Approximate Date	Description	Source
	negotiate toward common ground and respect the interests and concerns of both parties at the table	
March 30, 2018	Cooke Aquaculture harvested all the fish at its site near Gaultois last October following the detection of five fish with the infectious disease, and did so again in a facility on the south coast of Newfoundland in February.	https://aquaculturemag.com/2018/04/03/isa-virus-found-in-salmon-at-southern-newfoundland-aquaculture-site/
April 3, 2018	Freedom of Information Act request asking for the status of a \$25 million loan extended to Cooke Aquaculture in 2012. A newspaper article disclosed that Cooke Aquaculture is eligible for \$4 million in “loan forgiveness” to fund a university research chair named after the company. The \$800,000 spent by Cooke funded a chair held by an industry friendly researcher.	https://www.halifaxexaminer.ca/featured/cooke-aquaculture-is-eligible-for-4-million-in-loan-forgiveness-to-fund-a-university-research-chair-named-after-the-company/#1 . We’re giving Cooke Aquaculture a free research cha
May 17, 2018	For the second time in five years, a Canadian salmon aquaculture firm has admitted in a New Brunswick courtroom to illegally using a pesticide known to kill lobsters for treating salmon off an island that abuts the Maine border. Cooke was fined \$500,000 Canadian.	https://bangordailynews.com/2018/05/17/business/report-canadian-salmon-firm-admits-using-lobster-killing-pesticide-near-maine-border/
August 7, 2018	<p>Between 2,000 and 3,000 fish escaped from Cooke Aquaculture's Hermitage Bay salmon farm on Newfoundland's south coast in July, the company confirms. Incident happened after net extensions were sewn onto a pen at the operation. extensions were sewn onto a pen at the operation.</p> <p>The escape of thousands of farmed salmon on the south coast of Newfoundland is a significant concern, as is the lack of public notification about the incident.</p>	<p>https://www.asf.ca/news-and-magazine/salmon-news/salmon-escaped-from-cooke-aquacultures-farm-company-confirms</p> <p>https://fisherynation.com/archives/tag/cooke-aquaculture</p>

Rich Passage Estates Homeowners' Association
 PO Box 11683
 Bainbridge Island, WA 98110

Approximate Date	Description	Source
December 14, 2018	British Columbia will phase out 17 commercial salmon farms off the northeast coast of Vancouver Island to aid in the migration and restoration of wild West Coast salmon runs, under an agreement between the B.C. government and Aboriginal First Nations	https://www.seattlepi.com/local/politics/article/British-Columbia-salmon-orca-fish-farm-phase-out-13467254.php
August 20, 2019	A pipe broke at the Deer Island Bay of Fundy Cooke facility while fish were being transferred from a net pen to a boat for sea lice treatment. Initial estimates by Cooke Aquaculture set the total of escapees at 2,500, but company representatives have since lowered that estimate to 1,000 fish, Researchers for the Atlantic Salmon Federation have captured and removed 53 Atlantic salmon from a New Brunswick river	https://www.asf.ca/news-and-magazine/news-releases/salmon-escape-in-bay-of-fundy
October 9, 2019	Maine Department of Agriculture finds that unacceptable fish handling incidents have occurred at the Bingham hatchery after a video went viral.	https://www.timesrecord.com/articles/maine-1/bingham-aquaculture-facility-kept-fish-in-cruel-unsanitary-conditions-group-says/
October 16, 2019	As part of a consent agreement with the Maine Department of Environmental Protection, Cooke Aquaculture has agreed to pay \$156,213 to fund the Marine Rearing Atlantic Salmon Machias River Project, which aims to breed and restore native populations of Atlantic salmon in the Machias River. Cooke violated its operating permit by having too many fish in one or more pens, failing to conduct environmental sampling, and failing to follow a variety of clerical procedures that include timely filing of complete and accurate pollution sampling reports and timely submissions of fish spill prevention plans. The infractions violated the terms of Cooke's operating permit, DEP rules and state law. "The administrative consent agreement was created to determine a path forward and to start anew - wipe the slate clean," Cooke spokesman Joel Richardson said.	https://bangordailynews.com/2019/10/16/news/down-east/canadian-salmon-firm-will-pay-156k-over-fish-pen-violations-to-fund-salmon-restocking/ https://www.seafoodsource.com/news/aquaculture/cooke-to-pay-fine-for-overstocking-maine-salmon-farms-not-conducting-environmental-testing
October 31, 2019	Just weeks after Cooke Aquaculture agreed to pay the state more than \$150,000 to settle numerous violations at several of its salmon net pen sites in eastern Maine, the Department of Marine Resources is asking for public comment on the company's application for a 20-year lease renewal.	https://www.ellsworthamerican.com/maine-news/waterfront/dmr-seeks-comment-on-cooke-aquaculture-lease-renewal/

Approximate Date	Description	Source
November 6, 2019	Last week, the Atlantic States Marine Fisheries Commission, the partnership, or “interstate compact,” that sets harvest limits for 27 fisheries up and down the Atlantic Coast, officially accused Virginia of allowing Omega Protein to overfish,, In a December 2017 press release on the deal, Cooke hinted at a new use: “The animal feed ingredients produced by Omega Protein are an important component in Cooke Aquaculture’s production of healthy Atlantic salmon, making this acquisition a strategic move that greatly enhances Cooke’s vertical integration.” So instead of rockfish, maybe the Bay’s menhaden will be feeding farm-raised salmon in Canada.	https://fisherynation.com/archives/ag/cooke-aquaculture

Decisions to modify water quality permits should include Cooke’s record both past and present. The addition of more restrictions here is not a guarantee of future compliance.

Ecology should absolutely consider Cooke’s record in its decision to modify NPDES permits.

Conclusions

In some senses, we’re on the paradoxical road to Abilene where a group of people collectively decide on a course of action that is counter to the preferences of many. The general consensus among the public here is that marine net pen aquaculture should not be allowed to continue, but that is not what the current law allows.

Past experiences and ongoing patterns of behavior with this net pen operator alone should be enough to deny permit modifications and the continued operation of net pens in Puget Sound. Without incorporating the additional corrective measures as bulleted below, it is difficult to assess, control and mitigate critical aspects of the NPDES permit. We are asking the Department of Ecology to strongly consider each of the points below that have the potential to: provide needed information, improve water quality standards and reduce the risks associated with the net pen operations, and those designed to increase transparency:

- Discussions to modify the NPDES permits should be tabled until the lifting of Governor Inslee’s Stay Home, Stay Healthy proclamation has ended and Washington residents are afforded the opportunity to comment in the communities where these net pens currently operate.
- Discussions to modify the NPDES permits should be tabled until related lawsuits challenging the Department of Fish and Wildlife are concluded.

- We recommend that the guidance be updated with current science and best industry practices with respect to raising steelhead in marine net pens. The State should withdraw their Mitigated Determination of Non-Significance, issue a Determination of Significance, and draft an Environmental Impact Statement to assess the full impacts of this proposed permit modification.
- No decision to modify the NPDES permits should be made until the public has a chance to comment on State of Science on Net-Pen Aquaculture in Puget Sound, Washington.
- Any modification of the NPDES permit should be conditioned on strict adherence to inspections that are required “approximately” every two years and any other legally-binding provisions.
- A decision to modify the current NPDES permit should be tabled until all pens are inspected and deficiencies addressed.
- Ecology should require an internal and external audit to ensure the reliability of training and emergency response protocols.
- Require a clean set of predator nets or some other type of barrier after harvest on all pens to prevent predation by marine mammals on other stocked pens and disallow the partial stocking of pens in a particular net pen array to provide for public and worker safety.
- Require proof such as photo evidence or videos to document that containment measures are in place for activities related to structural maintenance that have the potential to impact water quality.
- Implement a specific collection interval...weekly, bi-weekly related to the collection of recyclables like pallets and feed bags to reduce the likelihood of discharge to State waters.
- Any washing of containers that hold dead fish should be prohibited to prevent discharges to State waters.
- Parking of personal vehicles over water should be prohibited to prevent accidental discharges to Washington State waters.
- Nets, after removal have been stored on the dock in the past and Ecology can prevent unwanted discharges to Washington State waters by requiring that they be removed directly by barge.
- Strict adherence to provisions related to the net cleaning requirement that at the end of the growing cycle, after the fish have been harvested out, that nets are

removed from the water and transported to a land based cleaning and repair facility.

- The Feed Conversion Rates (FCR's) and Specific Feed Rates (SFR's) calculated by the Department of Ecology should be made available in the PARIS website.
- We recommend that a model for calculation and visualization be developed and additional data be added to the DMR data available to the public. These would include but not be limited to:
 - Starting number of fish
 - Number and weight of harvested fish
 - Monthly Average Weight of Fish (based on sample)
 - Monthly mortalities
- Update AKART parameters for the current NPDES Permit.
- We recommend that production maximums be reduced to align with historical levels and an annual maximum to control for a worst-case scenario.
- We encourage Ecology to test the outflow from harvesting activities to ensure their compliance with water quality standards.
- Ecology should absolutely consider Cooke's record in its decision to modify NPDES permits. This alone should be enough to grant a denial to permit modifications.

SHORELINE MANAGEMENT ACT OF 1971
PERMIT FOR SHORELINE MANAGEMENT SUBSTANTIAL DEVELOPMENT

NOTE - THIS PAGE FOR
LOCAL GOVERNMENT USE
ONLY

APPLICATION NO. 502
Administering Agency Kitsap County
Date Received January 25, 1988
Approved X Denied _____
Date June 13, 1988

Type of Action (Check if appropriate)

- Substantial Development Permit
 Conditional Use
 Variance

Pursuant to Chapter 90.58 RCW, a permit is hereby granted to

Global Aqua USA, Inc.

355 Ericksen, Suite 421 (Name of Applicant)
Bainbridge Island, WA 98110

to undertake the following development (Please be specific) Replacement and reconfiguration
of existing floating netpens based on current state of the art standards and equipment.

upon the following property (please list the legal description, i.e., section to
the nearest quarter section, township, range)

SEE ATTACHED

The project will (be/~~not be~~) be within shorelines of statewide significance
(RCW 90.58.030). The project will be located within a (environment) *SEE BELOW
designation. The following master program provisions are applicable to this development
(please state the master program section or page number)

USE ACTIVITIES - Section II - Aquaculture, p. 7-5 - 7-6

Section IV - Commercial Development, p. 7-10 - 7-11

- * Salt Water II, Fort Ward - Urban
Salt Water IV - Orchard Rocks

**LEGAL DESCRIPTION
SW II Fort Ward**

That portion of the bed of Rich Passage, owned by the State of Washington, situate in front of a portion of Government Lot 1, Section 15, Township 24 North, Range East, W.M., included in a tract described as follows:

Commencing at the section corner common to Sections 10, 11, 14, and 15, in said township and range running thence S 84° 06' 17" W 472.63 feet, thence S 72° 14' W 295 feet, more or less, to the line of extreme low tide and true point of beginning of this description, continuing thence S 72° 14' W 105 feet, thence N 17° 46' W 175 feet, thence N 72° 14' E 105 feet, more or less, to the line of extreme low tide, and thence southerly along said line of extreme low tide to the true point of beginning.

LEGAL DESCRIPTION
SW IV Orchard Rocks

That portion of the bed of Rich Passage, owned by the State of Washington, situate in front of a portion of Government Lot 1, Section 15, Township 24 North, Range 2 East, W.M., included in a tract described as follows:

Commencing at the Northeast corner of Section 15, Township 24 North, Range 2 East, W.M., and running thence S 83° 30' W 1,600 feet to the point of beginning, thence due west 608 feet, thence due south 1,093 feet, thence due east 608 feet, thence north 1,093 feet to the point of beginning, containing an area of 16 acres, more or less

Conditions:

1. The uses of the subject site are limited to the uses proposed in the applications for Substantial Development Permit and Shoreline Conditional Use Permit. Any other uses will be subject to further review pursuant to the requirements of the Kitsap County Zoning Ordinance and Kitsap County

Shoreline Management Master Program. Approval of this application shall not be construed as approval for more extensive utilization of the subject site than is authorized by the permits if granted nor shall it imply any precedential value for other commercial developments in the area.

2. The applicant shall be required to satisfy and or obtain the following permit approvals:

State of Washington:

Department of Fisheries hydraulic project approval
Department of Fisheries aquatic farm registration
Department of Fisheries salmon egg importation permit
Department of Ecology water quality certification
Department of Agriculture annual food processing license.

Federal:

US Army Corps of Engineers Section 10/404 permit

3. There shall be no activity conducted on the site which would create hazards of fire, explosion or other danger.
4. The applicant shall implement annual monitoring as described in Section 6.3 of the Recommended Interim Guidelines (pp. 42 to 46) and submit results to Kitsap County Health Department, Kitsap County Department of Community Development and State and Federal agencies.
5. No over-the-water structures shall be permitted, except net pens.
6. Discarded nets under SWII must be removed.
7. The net pen/aquaculture operation will not preclude residential uses of the upland properties or water-oriented recreational uses associated therewith.
8. No transfer of ownership or subleases of the total or any part of the facility may be granted without prior review by Kitsap County to insure consistency with the Shoreline Management Act, Kitsap County Shoreline Management Master Program and the individual shoreline permit.