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Cooke Aquaculture is an environmental hazard to Puget Sound as it proposes to expand and continue net pen aquaculture. Ecology should deny the permits for the following reasons:

1. Legal challenge.

The decision to issue a Mitigated Determination of Nonsignificance (MDNS) by the Department of Fish and Wildlife (WDFW) to Cooke ended the environment review process prematurely. This is being legally challenged due to the burgeoning amount of scientific evidence that the WDFW failed to consider. If they lose, the court could insist on further environmental reviews and impact statements, reveling further aquaculture risks that may require an overhaul of NPDES permits. In the meantime no permits or leases should be approved.

2. Integral information missing from the SEPA Mitigated Determination of Nonsignificance (MDNS).

This includes plans regarding the methods used to mark steeelhead to distinguish them from wild hatchery-raised fish in the event of an escape. The no-recovery response plan is missing from the application making any assessment of Cooke's pollution prevention plan impossible. Nets are allegedly going to be replaced in Puget Sound follow the 2019 Orchard Rocks incident. Where is the engineer data for the new pen structures? They must be assessed to ensure that they can withstand the Sounds unique and harsh environment; minimizing escapes and other risks.

3. Cypress Island and Orchard Rocks violations.

Have these cases taught us nothing about this company? The pen collapse at Cypress Island and the subsequent accidental release of hundreds of thousands of farmed non-native Atlantic salmon was a result of permit violations. Cooke failed to inspect moorings and anchors, failed to report fish escapes, failed to develop operational plans for key procedures including storing chemicals, disposing of harvest blood, and tracking the number of fish predated.

The partial collapse at Orchard Rocks in October last year; to which Ecology played a response role; shows how recent these violations are and how immediate the threat of escapes are to Puget Sound. Historically inadequate emergency plans and the poor state of surviving pens (as identified by state inspectors and Cooke's own contractors) are both signifiers of deeper mismanagement.Cooke's history of CWA violations should therefore be a red flag on any permit application. The onus must be on them to prove lessons have been learned.

4. HB 2957.

The state's goal to "eliminate...escapement and to eliminate negative impacts to water quality and native fish, shellfish, and wildlife" means permit standards are now tougher. Continuous law violators such as Cooke should be held to account by re-examining past breaches. HB 2957's new

standards should ensure that applications are not waved through due to prior application approvals, existing infrastructure and history in the state.

5a. Fish Effluent

The fish species may have changed in Cooke's permit application but the pollution and risks are the same, or even increased! Fish farms are known the world over for creating dead zones due to the presence of huge volumes of waste, parasites and medication. Cooke's current permit application does nothing to address or eliminate these vast negative impacts. NPDES should re-examine existing data on these discharges during their review.

5b. Fish Waste

Huge volumes of food manages to pass through the pens alongside even larger volumes of fish poop. This attracts wild fish to the sea pens due to the strength of tidal zones and subsequent dispersal. This happens to such an extent that some species often swim in and out of the pens and are caught alongside farmed fish during harvesting days. This not only disrupts the migration, learning patterns and feeding strategies of wild fish but can also put top predators such as orcas at risk. These predators in turn also produce waste themselves. They pose a risk to nets and can consume endangered fish species (e.g. ESA-listed Chinook and steelhead) also attracted to the farm. Effluent doesn't only come from the fish that Cooke owns but from those attracted to the site. They are responsible for all of it.

5c. Amplification and Discharge of Viruses, Parasites, and Diseases

The increase in waste, food, dead fish parts, parasites and medication results in the presence of excessive nutrients that lead to algal blooms, which, when combined with climate change, can increase the risk of ecological die-offs. There is no filtration system for this waste. It is simply left to its own devices to pollute the surrounding fresh water. The phosphorus and nitrogen released on a daily basis is the equivalent of that produced by the city of Tacoma and the combined output of the cities of Port Angeles, Everett, Bellingham, and Tacoma respectively. The impact zone or footprint of fish farm pollutants clearly goes far beyond those found immediately below the nets and should be assessed accordingly.

Ecology should utilize the Pacific Northwest National Laboratory's Salish Sea Model, a predictive ocean-modeling tool developed by the federal government for coastal estuary research, restoration planning, water-quality management, and climate change response. This tool could analyze how discharge and pollution from net pens travels through the dynamic, tidal marine environment, therefore allowing Ecology to better evaluate the risk the pollution poses and the geographic range the pollution would impact.

Parasites thrive in factory farm conditions. The ocean is no different. Disease and parasites spread easily through water on to surrounding wild hosts, whilst dead fish parts containing a concoction of negative elements including pathogens, parasites, pharmaceuticals and chemicals are also scavenged. As previously stated there are no shortage of wild animals attracted to the free meals dished out by Cooke; including ESA-listed Chinook salmon and bull trout.

Such pathogens fall within the definition of pollutants, and the NPDES permit review should ensure that Cooke's plans will eliminate the risk of these pollutants harming the integrity of the Sound ecosystem and the biological integrity of its wild species. Whilst Cooke are required to

remove body parts from the water, there is currently no mandate for state testing before disposal. This should be seriously considered, as it is a surefire way to assess conditions in the nets and the wider environment.
5d. Discharge of antibiotics and medical effluent.

Many pharmaceuticals used by the industry to treat disease such as yellow mouth require a 30- day waiting period before they can be safely consumed. As with parasites, these chemicals can easily infiltrate the ocean via food and body parts. Any wild fish caught in the vicinity of a fish farm could potentially expose the consumer - both human or animal - to chemicals in breech of FDA consumption regulations.

Cooke also submitted unspecified probiotic supplements on their SEPA checklist. What exactly are these? Yet again important information is missing. Microbe introduction into the surrounding environment may negatively impact wild fish populations. These supplements should be detailed, and a plan for monitoring surrounding areas and fish populations for colonization or excess growth of these bacteria should be required. This monitoring should also test for growth of antibiotic resistance in nearby areas.

Likewise, data on the risks of antibiotic resistance in marine mammals needs to be investigated alongside its effect on humans; especially in the current climate.

6. The change in species poses new and different risks.

Salmon are a non-native species. The steelhead Cooke wants to farm are biologically-altered, domesticated steelhead. The risks that have been assessed against apply to salmon only. The 1990 EIS is therefore no longer fit for purpose.

"A minimum distance of separation between farms and river mouths" has never been considered and adopted in state policy, as section 5.7.2.2 of the 1990 EIS would require for aquaculture involving native fish (and as is required in many other nations). Since escapes, and their risks to threatened steelhead and rainbow trout, constitute pollution and are within the scope of Ecology's review, this guidance and an analysis of the proximity of pens to steelhead spawning rivers should be included in Ecology's review of these NPDES permits. In addition, the assessment of risks from pollution (including diseases) should account for the migration corridors in areas like Rich Passage, which may concentrate wild salmon near the pens.

The behavioral response of wild steelhead to a large aggregation of wild steelhead may be different than it was to Atlantic salmon. If wild schools are attracted to the captive domesticated steelhead in pens, the pollution from the pens may do greater harm to hatchery-reared steelhead and to threatened wild Puget Sound steelhead.

Despite treatment to render the fish infertile (triploid), many fish in the pens will be capable of reproducing. When a net pen collapses, it will release more fertile female steelhead than exist in many endangered wild steelhead runs. When an escape happens, it will be nearly impossible to manage a recovery effort that removes farmed steelhead and does no harm to endangered wild steelhead and bull trout, endangered and threatened salmon, endangered southern resident killer whales, and other protected wildlife in Puget Sound.

The escape of steelhead from any of the Puget Sound aquaculture facilities, whether from small scale leakage or catastrophic facility failure, will pose risks to native salmon, steelhead, and rainbow trout rearing in nearshore marine habitats and rivers due to competition for food and foraging space. This will be particularly true in the case of Cooke's proposed triploid (treatment to render the fish infertile) steelhead because as noted in Cooke's materials, triploid fish have appetites that are likely to be considerably greater than wild juvenile salmon and steelhead due to the faster inherent growth rate of these triploid fish. This means escapees may out compete wild steelhead, or indeed predate upon them.

7. Escape prevention and the adequacy of Cooke's escape prevention and escape response plans must be carefully considered in this permit process.

The captive, biologically altered steelhead are weaker versions of their wild cousins. Under the Clean Water Act they are considered a pollutant that must be removed from the natural environment if they escape.

Cooke has a poor record on escapes. They have failed to include a "non-recovery" option to their escape response plan in their permit application in order to satisfy the SEPA review process.

Not all biologically altered fish are infertile. Any escapees can potential go on to mate and subsequently weaken wild fish populations. Female captive steelhead will vastly outnumber endangered wild populations making it a virtually impossible task to ensure a full recovery following a net pen collapse. Wild and endangered populations of steelhead, bull trout and salmon will inevitably be killed during the recovery process; with wider negative implications for endangered southern resident killer whales, and other protected wildlife in Puget Sound.

Cooke does not have a plan to mark their stock in case of an escape. This is key to an escape recovery. If you cannot identify a fish, breaches can be denied by the company. Are these two glaring omissions intentional given Cooke's history? I think so.

8. Ecology should not issue NPDES permits until Cooke has initiated and received agreement from all local, state, federal, and tribal governments.

In conclusion there are no positive inputs that fish farms bring to the wild environment or to their poor factory farmed inhabitants; especially those managed by Cooke Aquaculture. They give us their waste and their escapees. That is all.

Tribal governments have already requested government to government consultation with the State over Cooke's NPDES permit application, and at least seven tribal governments submitted comments during the SEPA process expressing concerns over Cooke's proposal and requesting the Department of Fish and Wildlife withdraw their SEPA determination that ended the environmental review process and require a comprehensive environmental impact statement. I can't blame them. This is a disaster waiting to happen. It is not if, but when.

This company clearly cannot be trusted. For the sake of our environment and beautiful wildlife, Cooke Aquaculture should be made an example of.