August 14, 2022

Sent via online portal at: https://wq.ecology.commentinput.com/comment/index?id=5gTtQ

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Olympia, WA 98504-7696

RE: Concentrated Animal Feeding Operation (CAFO) General Permits Reissuance

Dear Chelsea Morris,

Thank you for the opportunity to make comment on the Concentrated Animal Feed Operations (CAFO) General Permits Reissuance. Please add the following comment from Orca Conservancy to the administrative record.

Established in 1996, Orca Conservancy is a 501c3 Washington State nonprofit working on behalf of *Orcinus orca*, the killer whale, and protecting the wild places on which it depends. Our urgent attention focuses on the 74 remaining members of the critically Endangered Southern Resident killer whales (SRKWs)[1] which continues to inhabit the waters of Washington State.

On November 18, 2005, after evaluating the five listing factors of the Endangered Species Act, 16 U.S.C. §§ 1531-1544, National Marine Fisheries Service (NMFS) issued a final ruling listing the Southern Resident Killer Whale a distinct population segment (DPS), as endangered under the Act. The SRKW population is comprised of three pods (identified as J-, K-, and L-Pod) and is arguably the most familiar killer whale population to the general public.

[1] Center for Whale Research, Friday Harbor, WA. August 2022.

Ninety percent of SRKWs diet consists of Chinook salmon (*Oncorhynchus tshawytscha*) and they are heavily dependent on wild, healthy salmon populations for their survival[2], social cohesion[3], and reproductive success.[4] However, most wild Chinook salmon populations of the northeastern Pacific have recently experienced a decline in abundance and productivity[5],[6],[7].

Of the 14 species of salmon and steelhead trout in Washington State having been deemed endangered, 10 are lagging recovery goals and five of those are considered "in crisis."[8] The decline in salmon populations can be attributed to numerous factors, including habitat loss, overharvesting, hydropower and other barriers to passage, and warming temperatures.[9] Scientific data tells us water temperature is one of the most critical factors in salmonid incubation. Meaning, salmon at any stage need cold, clean, oxygenated water to survive, and optimal temperatures vary depending on the species and life stage. As a keystone species, salmon are also essential to the health of terrestrial, aquatic, and marine ecosystems in Washington State.[10]

Pathogens, excess nutrients, and other contaminants present in animal waste further endanger salmon by creating hypoxic and/or toxic environments that kill off their food sources.[11] This, in turn, hurts other species depending on salmon as a food source, impacting marine and aquatic life all along the food chain.

Science and evidentiary records also continue to factually document the severe environmental risks CAFOs pose to species listed under the Endangered Species Act (ESA). This includes, but is not limited to, water quality standards under the Clean Water Act (CWA): "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters," 33 U. S. C. §1251(a); the "national goal" being to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U. S. C. §1251(a)(2). Notably, if a CAFO facility discharges pollutants without a permit or has a permit but does not meet the permit requirements, the facility not only violates Washington law, but also violates the federal CWA.

[2] Ford JKB, Ellis GM, Olesiuk PF, Balcomb KC. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator? Biol Lett. 2010; 6: 139–142. pmid:19755531
[3] Foster EA, Franks DW, Morrell LJ, Balcomb KC, Parsons KM, van Ginneken A, et al. Social network correlates of food availability in an endangered population of killer whales, *Orcinus orca*. Anim Behav. 2012; 83: 731–736.
[4] Vélez-Espino LA, Ford JKB, Araujo HA, Ellis G, Parken CK, Sharma R. Relative importance of chinook salmon abundance on resident killer whale population growth and viability. Aquat Conserv Mar Freshw Ecosyst. 2015; 25: 756–780.
[5] Ohlberger J, Ward EJ, Schindler DE, Lewis B. Demographic changes in Chinook salmon across the Northeast Pacific Ocean. Fish Fish. 2018; 19: 533–546.
[6] Dorner B, Catalano MJ, Peterman RM. Spatial and temporal patterns of covariation in productivity of Chinook salmon populations of the northeastern Pacific Ocean. Can J Fish Aquat Sci. 2018; 75: 1082–1095.
[7] Schindler D, Krueger C, Bisson P, Bradford M, Clark B, Conitz J, et al. Evidence of decline of Chinook Salmon Populations and Recommendations for Future Research. Arctic-Yukon-Kuskokwim Chinook salmon Research Action Plan. 2013 [cited November 23, 2021]. Available from: http://www.aykssi.org/wp-content/uploads/AYK-SSI-Chinook-Salmon-Action-Plan-83013.pdf.
[8] Washington Governor's Salmon Recovery Office, "2020 Sate of Salmon in Watershed."
[9] *Id.*
[10] Hannah Buga, "Salmon: A Keyston Species," PacificWild, November 13, 2020. Available from: https://pacificwild.org/salmon-a-keystone-species/.
[11] *Id.*

Congress, responding to the nation's need for clean water supplies, passed the CWA to create a means by which to reduce the amount of water pollution nationwide.[12] In order to correct the water pollution problem[13], the CWA defines the term "discharge, of pollutants" to mean "any addition of any pollutant to navigable waters from any point source.[14]

In 1976, the Environmental Protection Agency (EPA) created regulations to prevent surface water pollution from CAFOs; facilities that confine a large number of animals to a small portion of land for the purpose of producing meat, dairy, and poultry.[15] Since then, the authority to issue CAFO General Permits in Washington has been delegated to Washington State Department of Ecology (Ecology), which expanded the permits to regulate pollution to groundwater. Under Washington law, Ecology has the authority, and duty, to prevent discharges to both surface and ground water (RCW 90.48.020).[16] Because of the large amounts of manure that CAFOs store on site in unlined lagoons and apply to an insufficient amount of acreage, all CAFOs are discharging or have the potential to discharge into waters of the state.[17]

Having said that, CAFOs are a major contributor to harmful algal blooms (HABs) nationwide[18]. HABs occur when an overgrowth of algae takes over a body of water and produce toxins that can threaten environmental and public health. So-called "nutrients" (phosphorous and nitrogen), major constituents of CAFO waste, fuel these algae outbreaks. CAFOs hold massive amounts of manure at their facilities, and they spread it onto land. When it rains a lot, the holding facilities can overflow, or manure applied to fields can runoff. On top of that, many times people apply too much CAFO waste to fields and it builds up over time and the excess leaches into groundwater. CAFO waste that leaks, seeps, and runs off into waterways is a major contributor to nutrient pollution, which feeds HABs.

Nutrient pollution also causes local acidification through feedback loops involving biological growth, metabolism, and decay, over and above that which would occur in the absence of nutrient input from humans. These processes use more oxygen than they produce, causing oxygen minimum zones ('dead zones'), and resulting in locally acidified waters. More acidic, lower-oxygen waters are likely to undergo both chronic and acute environmental changes, including a decline in biomass productivity, a factor important to fisheries.[19]

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[12] Jeff L. Todd. 1996. "Environmental Law: The Clean Water Act – Understanding When a Concentrated Animal Feeding Operation Should Obtain an NPDES Permit", 49 Okla. L. Rev. 481, 482-83.
[13] 33 U.S.C. 1311(a).
[14] *Id.* 1362(12)
[15] US Environmental Protection Agency, "NPDES Permit Writers' Manual for CAFOs," Section 2.1.
[16] Washington State Department of Ecology, "CAFO Permit Fact Sheet." August 2022, p. 28-29.
[17] Every study done on CAFOs by Ecology and others over the decades has shown that lagoons and over-application of manure cause or contribute to groundwater contamination. *See, e.g.,* EPA, *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington*, EPA 910-R-12-003 (2012); Heritage College, *Sunnyside Groundwater Study Final Report* (2003); Melanie Kimsey, Ecology Hydrogeologist, *Construction of Dairy Lagoons Below the Seasonal High Ground Water Table* (January 18, 2002); Valley Institute for Research & Education, *Quality of Ground Water in Private Wells in the Lower Yakima Valley* (2001-02); Ecology, *Effects of Leakage from Four Dairy Waste Storage Ponds on Ground Water Quality, Final Report*, Pub. No. 94-109 (June 1994).
[18] NRDC, "Harmful Algal Blooms". (August 2022). Available at: https://www.nrdc.org/harmful-algal-blooms
[19] Ryan P. Kelly & Margaret R. Caldwell, *Ten Ways States Can Combat Ocean Acidification (And Why They Should)*, 37 Harvard Envtl. L. Rev. 57, 62 (2013) (collecting scientific studies and stating that "[n]utrient runoff may have an even greater effect on marine carbonate chemistry than increased CO_2

Climate change is placing coastal and marine ecosystems under tremendous stress. Ocean acidification, paired up with other climate impacts like warming waters, deoxygenation, melting ice, and coastal erosion, pose real threats to the survival of many marine species.

The tiny-shelled marine snail (Pteropods) are among the marine creatures most vulnerable to ocean acidification. Sometimes referred to as the 'potato chips of the sea' because of their importance as a food source for so many species - zooplankton, salmon, herring, birds, and baleen whales. Pteropods build calcium carbonate shells, a process that is particularly vulnerable to increasing ocean acidity. And pteropods are an important food source for Pacific salmon, therefore the loss of pteropods means fewer Chinook salmon – again, the main food source of Endangered SRKWs.

Additionally, a class of small, sometimes parasitic, crustaceans living in either salt or fresh water, called copepods, have shown populations decline due to poor food quality associated with ocean acidification. The outwardly migrating juvenile salmon, once reaching estuaries and salt water, may be food limited due to a lack of copepods and small fishes such as juvenile herring, which depend on copepods for their own food. In turn, this could reduce juvenile salmon survival further suggesting the reduction in salmon would have severe economic and biological consequences. This integral relationship between members of the food web -- how tiny creatures are the building blocks of an interconnected system of consumers that ends with apex predators like killer whales -- is critical to the health of the marine ecosystem.[20]

Acidification may also change the way sounds are absorbed in the ocean – making it harder for whales and dolphins to navigate and find prey.[21] Sound travels further as acidity increases. Noise from drilling, naval sonar and boat engines is already travelling up to 10% further under water and could travel up to 70% further by 2050.[22]

Ocean acidification scientists and policy advocates alike have identified CAFOs as one type of point source that is "the most likely to contribute to coastal acidification through their discharges."[23] While the emission of greenhouse gas emissions, most notably CO_2, is certainly the primary driver of global ocean acidification, "non-CO_2 inputs [such as agricultural pollution from CAFOs] may be more influential in specific coastal

in some cases."); Borges AV, Gypens N., Limnology and Oceanography 55: 346-353 (2010) (Carbonate chemistry in the coastal zone responds more strongly to eutrophication than to ocean acidification); Cai W-J, et al., Nature Geoscience 4: 766-770 (2011) (Acidification of subsurface coastal waters enhanced by eutrophication); Feely RA, Alin SR, Newton J, Sabine CL, Warner M, Devol A, Krembs C, Maloy C., Estuarine, Coastal and Shelf Science 88: 442-449 (2010) (The combined effects of ocean acidification, mixing, and respiration on pH and carbonate saturation in an urbanized estuary); Howarth R, Swaney D, Billen G, Garnier J, Hong B, Humborg C, Johnes P, Murth C-M, Marino R., Frontiers in Ecology and the Environment 10: 37-43 (2011) (Nitrogen fluxes from the landscape are controlled by net anthropogenic nitrogen inputs and by climate).

[20] Steve Sulkin, Western Washington University's Shannon Point Marine Center on *Impacts of Ocean Acidification* (August 2022). Available at: https://westerntoday.wwu.edu/news/shannon-point-gets-grant-to-study-impacts-of-ocean-acidification.

[21] Georgia Strait Alliance, *Ocean Acidification* (August 2022). Available at: https://georgiastrait.org/issues/climate-change/ocean-acidification/.

[22] Dr. Helen Phillips, Chief Executive of National England. *Ocean acidification rates pose disaster for marine life, major study shows* (December 2009). Available at http://www.theguardian.com/environment/2009/dec/10/ocean-acidification-epoca

[23] Kelly & Caldwell, *supra note 2* at 73-74; Washington State Blue Ribbon Panel on Ocean Acidification, *Ocean Acidification: From Knowledge to Action* (November 2012), Appendix 8 (Washington State's Legal and Policy Options for Combating Ocean Acidification in State Waters) at 23 *available at*: http://www.goa-on.org/documents/resources/wa-state-blue-ribbon-oa.pdf (August 2022).

regions" such as Washington State.[24] Ecology has been presented with the rare opportunity of being able to take meaningful action to address climate change impacts here in Washington by reducing the amount of nutrient pollution that reaches, and acidifies, our marine waters. The CAFO General Permit Reissuance is one tool that can accomplish that goal.

By implementing science-based riparian buffer requirements to the CAFO General Permit Reissuance would greatly assist struggling wild salmon populations and could significantly reduce nitrate concentration by an average of 91% for water passing through the buffer root zone.[25] And, in doing so will not only require site specific impact monitoring by those responsible for the pollution but will also drive changes in manure storage and application practices to significantly reduce nitrate and related nutrient pollution.[26]

On June 29, 2021, the Washington State Court of Appeals held in Washington State Dairy Federation, et al. v The Department of Ecology that the Washington State Department of Ecology CAFO General permits failed to maintain water quality standards and remanded the permits for rewriting.[27] As stated earlier, the issuance of an effective CAFO General Permit is a policy measure legally required under the federal CWA, and the Washington Water Pollution Control Act (WPCA) and should be viewed as a necessary and important local ecosystem and climate change mitigation measure. Additionally, the June 2021 court opinion also stated that Ecology failed to fulfill its legal obligation to consider the effects of climate change while drafting the permits, as is required by the State Environmental Policy Act (SEPA).[28] Although the new draft CAFO General Permits add climate-specific nutrient management requirements for wetter and drier areas, they include no mention of "climate change," which has repercussions beyond variations in annual precipitation. According to the EPA, climate change can lead to a higher frequency of agricultural stormwater runoff[29] and excess algal growth,[30] both of which damage water quality. The draft permits do not acknowledge that both these phenomena are expected to become more prevalent as climate change progresses, making CAFO water pollution all the more dangerous. Ecology can fulfill its legal obligation by producing a supplemental report that outlines how the new draft permits consider the effects of climate change and implement measures to mitigate these effects. The report should also describe the impacts of climate change on water quality and aquatic/marine ecosystems in Washington State to date, as well as how past and current CAFO operations affect the public and the environment's ability to cope with the effects of climate change.

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[24] Kelly & Caldwell, *supra note 2* at 63; at 68 ("Furthermore, newly available information shows that auxiliary (non CO2) drivers can contribute substantially to an acidified condition in some localities, and that these drivers have the most impact in coastal regions. This is (relatively speaking) good news: It means that important problems near shore are the easier ones to fix, because these auxiliary stressors derive from local and identifiable sources, rather than global and diffuse CO2. Reducing such stressors also contribute to the resilience of coastal ecosystems, bolstering their ability to endure the increasingly acidic ocean environment.").

[25] Iowa Environmental Council. Riparian Buffers: An Important Practice For Limiting Nutrient Pollutions. Available at: https://www.iaenvironment.org/newsroom/water-and-land-news/riparian-buffers. (August 2022).

[26] Reducing these pollutants will concomitantly reduce off site discharge of manure related pathogens such as E. coli, cryptosporidium parvum, salmonella, giardia lamblia, and others that are a direct threat to human health.

[27] Wash. State Dairy Fed'n v. Dep't of Ecology, 490 P.3d 290 (Wash. Ct. App. 2021).

[28] *Id.*

[29] US Environmental Protection Agency, "Climate Adaptation and Stormwater Runoff," Climate Change Adaptation Resource Center. June 2022. Available at: https://www.epa.gov/arc-x/climate-adaptation-and-stormwater-runoff.

[30] *Id*.

We are well aware of the political challenges associated with issuing a CAFO General Permit that actually protects the waters of the State. We are also cognizant of the efforts underway to address nonpoint source agricultural pollution. We certainly support the collaborative efforts that are underway, but these efforts should not replace the Congressional directive and state mandate that CAFOs be covered by discharge permits.[31] Agriculture is an important sector of Washington's economy and way of life, but it is important to remember that a healthy and productive agricultural industry is not dependent upon the sacrifice of the State's surface and groundwater quality and marine water resources. It is a false choice. As illustrated by the existing CAFOs currently operating under the CAFO General Permit and the countless other point sources that operate under an NPDES permit, it is possible to have a thriving agricultural industry and clean water for present and future generations of Washington. While climate change is viewed by many as a seemingly insurmountable planetary crisis, the issuance of a strong CAFO General Permit is one thing Ecology can and should do locally to make a difference.

To comply with the recent court order and to fulfill its legal obligations, we request Ecology make the following changes to the CAFO General Permit Reissuance: (1) implantation of best management practices based on science which include mandatory riparian buffers; (2) implementation of "all known, available, and reasonable methods of prevention, control, and treatment" (AKART) for existing manure lagoons and compost areas; (3) completely prevent violations of surface water quality standards and groundwater quality standards as outlined in Ch. 173- 201A WAC and Ch. 173-200 WAC, respectively; (4) implement monitoring practices (visual inspections and soil sampling) sufficient to ensure compliance; (5) provide public participation in the development of site-specific nutrient management plans, as required by the CWA; (6) consider the effects of climate change, as required by Washington State Environmental Policy Act (SEPA), Ch. 43.21C RCW.11.[32]

In closing, effective CAFO waste regulation would promote the well-being of Washington residents who depend on groundwater for drinking, as well as all those who depend on Washington's waterways and natural resources for recreation, economic prosperity, education, and quality of life.

And finally, more needs to be done towards recovery and resilience of salmon and shellfish populations which in turn will help alleviate some of the environmental stressors currently impacting SRKWs. When an apex predator at the top of the food chain is failing, the entire ecosystem beneath is also failing. We can and must do better. Government agencies have a moral obligation to protect the earth's fragile ecosystems, even if doing so requires some economic growth to be sacrificed. Historically, humanity has been aware of its environmental issues much longer than there have been laws to protect environments. A comprehensive

[31] Government Accountability Office, *Clean Water Act: Changes Needed if Key EPA Program is to Help Fulfill the Nation's Water Quality Goals*, GAO-14-80 at 2 (Dec. 2013) ("EPA has estimated that at historical funding levels and water body restoration rates, it would take longer than 1,000 years to restore all the water bodies that are now impaired by nonpoint source pollution.").
[32] Wash. State Dairy Fed'n v. Dep't of Ecology, 490 P.3d 290 (Wash. Ct. App. 2021).

dynamic regulatory framework for CAFO waste management is a necessary investment for Washington State's future.

Thank you,

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