HEADQUARTERS
120 Shelton McMurphey Blvd.
Suite 340
Eugene, OR 97401
(541) 485-2471
info@westernlaw.org

OFFICES
Oregon
Washington
New Mexico
Montana
Colorado

Defending the West

westernlaw.org

WESTERN ENVIRONMENTAL LAW CENTER

August 17, 2022

Via Electronic Submission

Chelsea Morris
Permit Writer
Washington State Department of Ecology
PO Box 47696
Olympia, WA 98504-7696

Re: Comments on SEPA Implications of Ecology's Proposed General Permit for CAFOs and DNS

Friends of Toppenish Creek, Puget Soundkeeper Alliance, Sierra Club, Center for Food Safety, and Western Environmental Law Center, and their tens of thousands of members, supporters, and volunteers throughout the State of Washington, submit this letter during the Department of Ecology's (Ecology) comment period on the draft Concentrated Animal Feeding Operations (CAFO) General Permit (General Permit) and its related SEPA Determination of Nonsignificance (DNS).

On June 22, 2022, the Washington Department of Ecology (Ecology) issued its draft Concentrated Animal Feeding Operation NPDES and State Waste Discharge General Permits (General Permit) authorizing discharges of wastewater to Washington State's surface and ground waters. On the same day, the Department issued a Determination of Nonsignificance (DNS) under SEPA and published its environmental checklist.[1] The DNS provides for a comment period that corresponds to the draft CAFO Permit comment period. Ecology extended the close of the comment period to August 17, 2022. This extension applied to comments on the draft permit and the SEPA DNS.[2]

We submit this comment to address Ecology's failure to comply with SEPA. In particular, while Ecology considered some aspects of climate change in the draft General Permit, it failed to consider the impact of climate change on the environment and to create a permit that is adaptive in the face of disrupted weather and water cycles. Further, in

[1] Ecology, SEPA Checklist for CAFO General Permits (June 22, 2022) (SEPA Checklist)

[2] C. Morris email to J. Calkins.

issuing a DNS that does not rely on reasonably sufficient information, in the face of the General Permit's known significant adverse impacts on the environment, Ecology violated SEPA.

Ecology must revise the General Permit to embed adaptation to the climate crisis, as well more completely address mitigation in the permit. Further, Ecology must withdraw the DNS, issue a Determination of Significance, and initiate the process of scoping in anticipation of preparing an Environmental Impact Statement on the General Permit.

The State Environmental Policy

SEPA imposes broad duties across agency actions and more specific duties when agencies contemplate major actions. Ecology's issuance of the General Permit implicates both of these duties.

I. SEPA's Broad Duties Require Ecology to Consider Climate Change When Regulating CAFOs

The Washington State Legislature, when it enacted the State Environmental Policy Act (SEPA), recognized that "each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment."[3] Consistent with this, SEPA states that agencies, including Ecology, have the responsibility "to use all practicable means" so that the state and its people may:

> (a) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
>
> (b) Assure for all people of Washington safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
>
> (c) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
>
> (d) Preserve important historic, cultural, and natural aspects of our national heritage;
>
> (e) Maintain, wherever possible, an environment which supports diversity and variety of individual choice;
>
> (f) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
>
> (g) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.[4]

[3] RCW 43.21C.020(3).

[4] RCW 43.21C.020(2).

To realize these responsibilities, under SEPA,

> (1) The policies, regulations, and laws of the state of Washington shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all branches of government of this state, including state agencies, municipal and public corporations, and counties shall: (a) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on the environment . . . (d) Preserve important historic, cultural, and natural aspects of our national heritage; [and] (h) Initiate and utilize ecological information in the planning and development of natural resource-oriented projects.[5]

This means that SEPA's substantive and procedural mandates overlay all regulatory and nonregulatory activities of Washington's governmental entities, including its agencies.[6]

These mandates touch on all aspects of the environment. To comply with SEPA broadly, Ecology must regulate CAFOs recognizing that right to a healthful environment embedded in the statute. This right attaches to all aspects of the environment, but in this case it attaches most particularly to those elements, the air and water, entrusted to Ecology's care. [7]

II. SEPA Provides the Connective Tissue Across Ecology's Duties to Address the Climate Crisis

SEPA's broad duties, when viewed in concert with Ecology's implementing statute and interlocking duties over the air and waters of the state, mandate that the agency attend to climate change across all of its actions as articulated by the Washington Court of Appeals in its June 2021 opinion.[8]

To provide capacity to regulate, conserve and restore air, water and the state's natural beauty, the legislature created Ecology and gave it the "authority to manage and develop our air and water resources in an orderly, efficient, and effective manner and to carry out a coordinated program of pollution control involving these and related land resources."[9]

Ecology's broad duties under its organic statute and SEPA, as well as the delegation of specific regulatory duties under the Clean Water Act, the State Water Pollution Control Act, the Clean Air Act and the Climate Commitment Act, require that it "consider climate

---

[5] RCW 43.21C.030.

[6] Richard L. Settle, Preface, Washington State Environmental Policy Act (2020).

[7]. RCW 43.21A.020;

[8] *Washington State Dairy Fed'n v. State*, 18 Wn. App. 2d 259, 309, 490 P.3d. 290(2021).

[9]RCW 43.21A.020;

change"[10] both in terms of mitigation and in terms of adaptation, in the context of its duty to "protect and conserve our clean air, our pure and abundant waters, and the natural beauty of the state."[11] Because of the central role CAFOs play in the state's contribution to the climate crisis, these intertwining duties mandate action toward mitigation in Ecology's regulation of CAFOs. And because climate change has profound effects on hydrological and weather cycles, and therefore on how CAFOs function and how their pollutants impact the environment, Ecology must embed adaptation to climate change in its regulation of these entities.

A. *CAFOs Contribute to the Climate Crisis*

Three of the most abundant greenhouse gases, (GHGs) arising from human activities, including CAFOs, are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Each of these GHGs has a different impact on global climate change.[12] They differ in how long they remain in the atmosphere, in their "lifetimes."[13] And they differ in their "radiative efficiency," or their ability to absorb energy.[14] A standardized measure for GHGs that allows for comparison across these difference molecules is the Global Warming Potential (GWP) defined as the amount of energy the emission of one ton of a particular GHG will absorb over a particular period of time relative to the emission of one ton of CO_2.[15] The GWP approach relies on CO_2 as the standard by which other GHGs are measured, so its GWP is one.[16] It has a fairly long lifetime as it remains in the atmosphere on average from 300 to 1000 years.[17] Nitrous oxide is significantly more potent than CO_2 with a GWP over 100 years of 265-298 times that of CO_2.[18] Its lifetime is up to 121 years.[19] Finally, CH_4 has a much higher potency of CO_2 with a GWP over 100 years of 28-36.[20] It

[10] Washington State Dairy Fed'n, 18 Wn. App at 308-310.

[11] RCW 43.21A.010.020.

[12] EPA, *Understanding Global Warming Potentials*, (May 5, 2022), https://www.epa.gov/ghgemissions/understanding-global-warming-potentials.

[13] *Id.*

[14] *Id.*

[15] *Id.*

[16] *See* Alan Buis, *The Atmosphere: Getting a Handle on Carbon Dioxide*, NASA (Oct. 9, 2019), https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/; *see also* Susan Solomon, et al., *Irreversible climate change due to carbon dioxide emissions*, PNAS 106 (6) 1704-09 (Feb. 10, 2009), https://www.pnas.org/doi/10.1073/pnas.0812721106.

[17] *Id.*

[18] D.R. Chadwick, et al., *The contribution of cattle urine and dung to nitrous oxide emissions: Quantification of country specific emission factors and implications for national inventories*, 635 Sci Total Environ. 607-17 (Sept. 1, 2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6024564/.

[19] *Id.*

[20] Josie Garthwaite, *Methane and climate change*, Stanford Earth Matters (Nov. 2, 2021), https://earth.stanford.edu/news/methane-and-climate-change#gs.v8sglf.

lasts up to 12.4 years in the atmosphere,[21] and in the first two decades it is emitted, it is more than 80 times more potent than CO_2 during that same amount of time.[22]

Many mitigation strategies focus on CO_2 because it is the most prevalent GHG. But stopping the crisis necessitates curtailing the more potent GHGs as well. Reducing CH_4 emissions is particularly important because its shorter lifetime allows for the impact of reductions to occur sooner and its relatively high potency means those effects will be more pronounced.[23] As a result, reducing CH_4 is key to shifting our current warming trajectory and protecting the climate from triggering additional positive feedback loops.[24]

1. Emissions of these GHGs Continue to Rise as a Result of Human Activities Including CAFOs

Scientists have warned governments for decades that the world must transition away from activities that emit GHGs, and shore up sequestration capacity, to avoid catastrophe.[25] Yet, the latest World Meteorological Organization's (WMO) report on atmospheric GHG concentration indicated that in 2020 they reached a new high above pre-industrial levels in 1750.[26] Nitrous oxide emissions "have ballooned" over the past several decades.[27] And CH_4 concentrations reached an all-time high in 2021.[28]

---

[21] *Id.*

[22] *Id.*

[23] *See* Raymond Zhong, *Methane Emissions Soared to a Record in 2021, Scientists Say*, New York Times (Apr. 7, 2022), https://www.nytimes.com/2022/04/07/climate/methane-emissions-record.html?action=click&pgtype=Article&state=default&module=styln-climate&variant=show&region=MAIN_CONTENT_3&block=storyline_levelup_swipe_recirc; *see also* Kristoffer Tigue, *Methane Emissions Hit Another Record High. That's a Big Deal,* Inside Climate News (Apr. 8, 2022), https://insideclimatenews.org/todaysclimate/methane-emissions-hit-another-record-high-thats-a-big-deal/?utm_source=InsideClimate+News&utm_campaign=4ccaa96ab8-&utm_medium=email&utm_term=0_29c928ffb5-4ccaa96ab8-328380420.

[24]*See* Raymond Zhong, *Methane Emissions Soared to a Record in 2021, Scientists Say*, New York Times (Apr. 7, 2022), https://www.nytimes.com/2022/04/07/climate/methane-emissions-record.html?action=click&pgtype=Article&state=default&module=styln-climate&variant=show&region=MAIN_CONTENT_3&block=storyline_levelup_swipe_recirc .Currently, positive feedback loops involving water vapor and albedo reduction are already underway, *see e.g.,*Qinlong You, et al., *Warming amplification over the Arctic Pole and Third Pole: Trends, mechanisms and consequences.,* Earth-Science Reviews 217 (2021);.

[25] Alice Bell, *Sixty years of climate change warnings: the signs that were missed (and ignored)*, The Guardian (July 5, 2021), https://www.theguardian.com/science/2021/jul/05/sixty-years-of-climate-change-warnings-the-signs-that-were-missed-and-ignored.

[26] World Meteorological Org., *Greenhouse Gas Bulletin: Another Year Another Record*, Press Release No. 25102021 (Oct. 25, 2021), https://public.wmo.int/en/media/press-release/greenhouse-gas-bulletin-another-year-another-record (reporting that the concentration of carbon dioxide (CO_2) was at 413.2 parts per million in 2020, 149% that of the levels in 1750. Methane (CH_4) was 262% higher and nitrous oxide (N_2O) was 123% higher than 1750 levels).

[27] Josie Garthwaite, *Stanford expert explains why laughing gas is a growing climate problem*, Stanford News (Oct. 7, 2020), https://news.stanford.edu/2020/10/07/laughing-gas-growing-climate-problem/.

[28] Kristoffer Tigue, *Methane Emissions Hit Another Record High. That's a Big Deal,* Inside Climate News (Apr. 8, 2022), https://insideclimatenews.org/todaysclimate/methane-emissions-hit-another-record-high-thats-a-big-deal/?utm_source=InsideClimate+News&utm_campaign=4ccaa96ab8-

The U.S. bears an outsize responsibility for the climate crisis as most of the molecules of GHG currently in the atmosphere are the legacy of U.S. activities over the past two centuries.[29] Currently, the U.S. emits more than 10% of the world's total carbon emissions annually and is second only to China in proportional global contribution of GHG emissions.[30] While the country recently committed to reducing net GHG emissions to 50-52% below 2005 levels by 2040, that target is not ambitious enough to support the global reduction necessary to keep the temperature increase to 1.5°C by the end of the century agreed to in the Paris Agreement.[31] Further, although Congress finally passed legislation to address the crisis, this action alone will be insufficient to prevent warming from surpassing 2.0°C by the end of the century.[32] To keep the temperature increase to 1.5°C, the global community needs state and local governments to step up as well.

Transportation and industrial practices drive most of the nation's emissions of CO_2.[33] However, agricultural practices, including dairy CAFOs, also emit CO_2, and are responsible for a substantial proportion of the global share of the more potential GHGs, such as CH_4 and N_2O.[34] Eighty percent of the global N_2O emissions in 2019 were from

---

&utm_medium=email&utm_term=0_29c928ffb5-4ccaa96ab8-328380420; *see also* Josie Garthwaite, *Stanford expert explains why laughing gas is a growing climate problem*, Stanford News (Oct. 7, 2020), https://news.stanford.edu/2020/10/07/laughing-gas-growing-climate-problem/ (noting that methane emissions soared between 2000 and 2017 from "fossil fuel sources and cows.").

[29] Simon Evans, *Analysis: Which countries are historically responsible for climate change?*, CarbonBrief (Oct. 5, 2021), https://www.carbonbrief.org/analysis-which-countries-are-historically-responsible-for-climate-change/.

[30] *See* Hannah Ritchie & Max Roser, *United States: CO2 Country Profile*, Our World in Data (2020), https://ourworldindata.org/co2/country/united-states?country=~USA#what-share-of-global-co2-emissions-are-emitted-by-the-country; *see also* Global Carbon Atlas, Fondation BNP Paribas (2020), http://www.globalcarbonatlas.org/en/CO2-emissions.

[31] John Kerry & Gina McCarthy, *The Long-Term Strategy of the United States: Pathways to Net-Zero Emissions by 2050*, United States Department of State and the United States Executive Office of the President 4 (Nov. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf; Climate Action Tracker, *USA*, (July 6, 2022), https://climateactiontracker.org/countries/usa/.

[32] The passage of the Inflation Reduction Act means that federal action no longer impedes the potential for the U.S. to meet its nationally determined contribution (NDC) under the Paris Agreement(*see e.g.,* Erik Stokstad, *Surprise climate bill will meet ambitious goal of 40% cut in U.S. emissions, energy model predicts,* Science (Aug. 1, 2022), https://www.science.org/content/article/surprise-climate-bill-will-meet-ambitious-goal-40-cut-us-emissions-energy-models). State action in concert with the federal mandate and incentives in the bill is essential, however, to securing this progress. Further, even if all of the nations on earth meet their NDCs, the global population can still expect severe and accelerating climate impacts (*see e.g.,* Luke Kemp, et al., *Climate Endgame: Exploring catastrophic climate scenarios*, PNAS 119 (34) e2108146119 (Aug. 1, 2022), https://www.pnas.org/doi/10.1073/pnas.2108146119). For this reason, federal action does not excuse state action. Instead action by the federal government provides a bit more of a window of opportunity for early and aggressive state action to make a difference in the climate outlook for current and future generations.

[33] EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020*, U.S. Environmental Protection Agency ES-8 (Apr. 14, 2022), https://www.epa.gov/system/files/documents/2022-04/us-ghg-inventory-2022-main-text.pdf.

[34] John Kerry & Gina McCarthy, *The Long-Term Strategy of the United States: Pathways to Net-Zero Emissions by 2050*, United States Department of State and the United States Executive Office of the

agricultural sources.[35] As Ecology itself notes, "[a]griculture, in general, has an opportunity to play a significant role in reducing climate warming gas nitrous oxide."[36] Further, at least a third of the CH_4 released globally now comes from agricultural sources.[37] According to the Food and Agricultural Organization, future increase in human-caused CH_4 emissions is likely to come from the agricultural sector.[38]

The routes by which dairy CAFOs emit GHGs include manure decomposition, enteric fermentation, transportation and mechanization. Decomposing urine and manure release N_2O.[39] Further, the re-deposition of ammonia gas emitted from urine and manure adds to the total N_2O released.[40] Both anaerobic decomposition of ruminant manure and enteric fermentation emit CH_4 emissions.[41] Finally, CAFOs emit CO_2 through fossil fuel combustion in processes such as milking, grain drying, field operations, feed production, and transport as well as the transport and processing of dairy products.[42]

2. Washington State's CAFOs Contribute CH_4, N_2O and CO_2 to the Atmosphere

The current inventory and reporting data make clear that agriculture, including dairy CAFOs, contributes a substantial proportion of Washington State's emissions. These data are estimates and are incomplete, so the impacts of agriculture are undoubtably greater than represented by the reporting data, and may be larger than represented by the inventory data as well. However, even this patchwork of data establishes the fact that Ecology's failure to effectively regulate and account for CAFO emissions leaves a hole both in climate mitigation and in the agency's approach to regulating discharges in a warming climate.

President 4 (Nov. 2021), https://www.whitehouse.gov/wp-content/uploads/2021/10/US-Long-Term-Strategy.pdf

[35] FAO, *The share of food systems in total greenhouse gas emissions. Global, regional and country trends, 1990–2019*, FAOSTAT Analytical Brief Series No. 31. (2021), https://www.fao.org/3/cb7514en/cb7514en.pdf.

[36] Fact Sheet at 25.

[37] *See* X. Lan, et al., *Improved Constraints on Global Methane Emissions and Sinks Using* $\delta^{13}C$-CH_4, 35 Global Biogeochemical Cycles (May 8, 2021), https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GB007000 (concluding fossil fuels are not driving the post 2006 increase in methane); *see also* Tiy Chung, *Methane emissions are driving climate change. Here's how to reduce them.,* U Env Pro (Aug. 20, 2021), https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them.

[38] FAO, *Climate Change and the Global Dairy Cattle Sector*, FAO & Global Dairy Platform Inc. 22 (2019), https://www.fao.org/3/CA2929EN/ca2929en.pdf.

[39] FAO, *Climate Change and the Global Dairy Cattle Sector*, FAO & Global Dairy Platform Inc. 22 (2019), https://www.fao.org/3/CA2929EN/ca2929en.pdf.

[40] A.N. Hristov, et al., *Ammonia emissions from dairy farms and beef feedlots*, Canadian Journal of Animal Science (Jan. 1, 2011).

[41] FAO, *Climate Change and the Global Dairy Cattle Sector*, FAO & Global Dairy Platform Inc. 22 (2019), https://www.fao.org/3/CA2929EN/ca2929en.pdf.

[42] *Id.*

As we made clear above, we are in this crisis because of the failure of our governmental entities to adequately respond over the past several decades. Had the people tasked with caretaking our air and water engaged climate change mitigation with the seriousness it required in the 1970s, 1980s, 1990s or even early 2000s, we would have flexibility now. But we do not. It may already be too late to keep warming to 1.5; **but the small chance that we can still slow warming sufficiently to prevent the worst from happening requires regulating entities to account for every possible source of GHGs, as well as current and future near-certain environmental impacts from the climate crisis in permitting and all other actions**.[43]

The federal government and the state gather data on Washington State's GHG contribution to global emissions. These data generally fall into two incomplete categories—emissions inventory data and reporting data mandated by statute.

a. Emissions Inventory Data for Washington State

First, EPA's federal emissions inventory, created using internationally recognized methodologies,[44] provides some information about emissions contributions from different sectors.[45] These data indicate that in Washington State in 2019, agriculture made up 8.3% of the state's total GHG emissions.[46] According to these data, of the total agricultural emissions for that year, enteric fermentation contributed 30.5% and manure management 17.5%.[47] Agriculture contributed the highest proportion of methane, 48.5% of the state's methane emissions in 2019.[48] Waste contributed the second highest proportion at 29.3%.[49] That same year, Washington's agriculture industry contributed 66.5% of the state's N_20.[50] The next highest was the energy sector at 12.1%.[51] Ecology's estimates mirrors this inventory because it uses EPA's data to publish emissions data for Washington State.[52]

---

[43] IPCC, *Global Warming of 1.5ºC*, https://www.ipcc.ch/sr15/.

[44] *See* EPA, EPA, *Greenhouse Gas Inventory Data Explorer*, https://cfpub.epa.gov/ghgdata/inventoryexplorer/. (Specifically, EPA uses the 2006 Intergovernmental Panel on Climate Change's methodologies, as recommended by the United Nations Framework Convention on Climate Change, available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/reporting-requirements); *see, also* Homgmin Dong, et al., *Emissions From Livestock and Manure Management*, 4 Agriculture, Forestry and Other Land Use (2006), https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_10_Ch10_Livestock.pdf (IPCC guidance on livestock emissions inventory).

[45] EPA, *Greenhouse Gas Inventory Data Explorer*, https://cfpub.epa.gov/ghgdata/inventoryexplorer/.

[46] *Id.*

[47] *Id.*

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] *Id.*

[52] Ecology, *Washington State Greenhouse Gas Emissions Inventory: 1990-2018*, WA State Dept. of Ecology Pub. 20-02-020 (Jan. 2021), https://apps.ecology.wa.gov/publications/documents/2002020.pdf (see p.10 for an explanation of Ecology's methodological approach).

b. Emissions Reporting Data for Washington State

Ecology also collects data via mandated reporting from entities meeting certain emissions thresholds at the state level.[53] These data provide some information about the contribution of unusually large emitters in the state but fail to capture emissions data for the vast majority of CAFOs in the state. They therefore underestimate total and likely proportional contributions by CAFOs to total Washington State emissions.

Ecology imposes a reporting requirement for entities within the state emitting 10,000 metric tons of CO_2e or more per year.[54] This threshold is plainly inadequate, however. Recent reporting data for CAFOs are submitted by five CAFOs subject to the requirement.[55] Therefore, these data fail to capture most of the CH_4 and NO_2 emissions from CAFOs that reach the atmosphere and exacerbate global climate change.[56]

Even without most CAFOs reporting, however, the data indicate that in 2019 livestock make up over 25% of the state's N_2O emissions, releasing 93,634 metric tons CO_2e of the molecule that year alone.[57] The data also indicate these five facilities combined released 106,448 metric tons CO_2e in 2019. They released 5,032 metric tons CO2 and 0.01% of the state's carbon dioxide emissions. Finally, these five CAFOs alone released a sizeable amount of CH_4 at 7,781 metric tons CO_2e.

Because only five entities are represented, these data provide information covering a fraction of the total actual agricultural emissions across the state. This is a symptom of the general problem with NPDES coverage. Despite the requirement that all discharging CAFOs be covered under permit,[58] Ecology's permitting program only

---

[53] *See* 40 C.F.R. §§ 98.2(a)(1), Table A-3, 98.360, Subpart JJ (EPA's regulations require "manure management systems with combined CH_4 and N_2O emissions in amounts equivalent to 25,000 metric tons CO_2e or more per year" to report such emissions to the agency.. However, almost immediately after EPA imposed this requirement, Congress nullified it by exempting these operations from reporting requirements.), https://www.epa.gov/ghgreporting/subpart-jj-manure-management; *see also* McAfee & Taft, *Tracking EPA's enforcement of the CAFO Mandatory Greenhouse Gas Reporting Rule*, McAfee & Taft AgLINC (Dec. 1, 2010), https://www.mcafeetaft.com/tracking-epas-enforcement-of-the-cafo-mandatorygreenhousegasreportingrule/.

[54] WAC173-441-030(1)(a).

[55] Ecology, *GHG Reporting Program Pie by Sector*, WA State Greenhouse Gas Emissions Inventory (Feb. 7, 2022), https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Pie-by-Sector/9zij-tfi5 (Of these five, only a handful are covered by NPDES or other water quality permits. These operations are DH Feeders, El Oro Cattle Feeders, Horse Heaven Cattle Feeders, Riverside Feeders, and Simplot Feeders. Notably, three of these five facilities do not have any NPDES permits on record.).

[56] Ecology's estimate of the contribution of CAFOs to emissions in its fact sheetrelies on these data and so *underestimates* CAFO contribution to the crisis. Ecology, Fact Sheet for the Draft Concentrated Animal Feeding Operation General Permits at 25 (June 2022) (Fact Sheet).

[57] *See* Ecology, *GHG Reporting Program Pie by Sector*, WA State Greenhouse Gas Emissions Inventory (Feb. 7, 2022), https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Pie-by-Sector/9zij-tfi5 The data are "in units of metric tons of carbon dioxide equivalents using AR4 global warming potentials as specified in WAC 173-441."); *see also* Ecology, *GHG Reporting Program Publication*, (Jan. 12, 2022), https://data.wa.gov/Natural-Resources-Environment/GHG-Reporting-Program-Publication/idhm-59de.

[58] RCW 90.48.160.

reached 13% of all CAFOs in Washington in 2021.[59] Without analysis showing otherwise, we do not believe that the highest emitting operations in the state do not discharge. Yet, implausibly, this is what the public is asked to accept under the current reporting and permitting regimes. While permits map imperfectly against emissions data, it is clear that both streams of data fail to capture the profound environmental impacts of CAFOs. On top of the fact that NPDES permits were created to allow different industries to pollute our waters, Ecology fails to adequately regulate CAFOs using these very permits.

This failure to mandate reporting by most of the state's CAFOs results from underreporting and a poorly calibrated threshold. As such, the reporting data are – as with the inventory data – a limited tool for understanding the complete contribution of agricultural emissions within the state. Because of the incomplete nature of these data, they *underestimate* total and likely also proportional contributions of Washington State CAFOs to total GHG emissions reaching the atmosphere and driving up global mean temperature. Even with this spotty and incomplete data, however, it is clear that CAFOs are some of the state's highest contributors of potent GHGs to the global atmosphere. Therefore, it is impossible to fully account for Washington's emissions and impossible to fully mitigate the crisis without accounting for and regulating CAFOs. This accounting must be undertaken without incorporating magical thinking around offsets such as manure digesters.[60] The urgency of the climate crisis means that Ecology must consider CAFO's role in driving the climate crisis across all policies and practices touching on these operations.

B. *The Climate Crisis Exacerbates CAFO Impacts on the Environment*

The increase in temperature has already disrupted weather and water cycles across the globe. Because GHGs remain in the atmosphere for a decade to a thousand years, halting emissions today would still not be sufficient to protect against further harms.[61] Therefore, the longer the world waits to address the issue, the harder it will be to solve.[62]

Climate change causes extremes of temperature on both ends of the spectrum, including heatwaves such as the high temperature event of June 2021, and increasing scope

---

[59] *See* WSDA, *Public Disclosure*, (June 2022), https://agr.wa.gov/contact-us/public-disclosure; *see also* WSDA, *Licensed Certified Feedlots – Public Markets*, (June 2022), https://agr.wa.gov/departments/animals-livestock-and-pets/livestock/licensed-certified-feedlots-public-markets; *see* Ecology, *Water Quality Permitting and Reporting Information*, (June 2022), https://apps.ecology.wa.gov/paris/PermitLookup.aspx (enter "CAFO" into the "Look up a permit" search bar); *but see* EPA, *National Summary, Endyear 2020, completed 05/11/21*, (June 2022), https://www.epa.gov/sites/default/files/2021-05/documents/cafo_status_report_2020.pdf. Specifically, 26 out of 196 CAFOs in Washington State are covered by NPDES permits.

[60] Currently there are too few anaerobic digesters in Washington State, and their current and near-future impact on emissions is too speculative for Ecology to rely upon this technology in its analysis of the climate impacts of CAFOs.

[61] Jake Ellison, *UW authors in IPCC report emphasize threats to human health and well-being*, UW News (Feb. 28, 2022), https://www.washington.edu/news/2022/02/28/uw-authors-in-ipcc-report-emphasize-threats-to-human-health-and-well-being/.

[62] *Id.*

of extremely low temperatures through impacting of the polar vortex.[63] It also disrupts hydrogeological systems, impacting surface water flow, temperature and quality, and quantity and quality of groundwater, and contributes to more frequent and intense weather events (hurricane, drought, and flooding) and other disasters, such as massive forest fires.[64] The risk to the world's population from these global shifts in weather range from temperature-related mortality, extraordinary disruption from massive storms, and the loss of homeland.[65]

The physical impacts of climate change touch every species on the planet, exacerbating what is already a sixth mass extinction event by driving changes in distribution, abundance and behavior as organisms react to more extreme weather events, and shifts in the timing of seasons.[66] It drives ocean acidification, which prevents marine species, such as corals, from calcifying exoskeletons and support structures and, in turn, increases the likelihood of ecosystem collapse.[67] Warming water, changing wind conditions, and alteration in solar radiation increases the risk of eutrophication which threatens a variety of aquatic animals by limiting dissolved oxygen, creating apoxic dead zones, and increasing the risk of harmful algae blooms.[68] At some point, repeated, and ongoing eutrophication may drive new stable states where the system is "permanently" eutrophic.[69] Finally, climate change's physical and biological impacts intersect with

---

[63] UC Davis, *Polar Vortex*, (2019), https://climatechange.ucdavis.edu/climate/definitions/what-is-the-polar-vortex.

[64] *See, e.g.*, Wu Wen-Ying, et al., *Divergent effects of climate change on future groundwater availability in key mid-latitude aquifers*, Nature Communications (2020), https://www.nature.com/articles/s41467-020-17581-y.pdf;

[65]Satchit Balsari, et al., *Climate Change, Migration, and Civil Strife*, 7 Curr. Envir. Health Rpt. 404 (2020), https://link.springer.com/article/10.1007/s40572-020-00291-4. *See also* Abrahm Lustgarten, *The Great Climate Migration*, New York Times (July 23, 2020) available at https://www.nytimes.com/interactive/2020/07/23/magazine/climate-migration.html,

[66] Guilherme Jeremias, et al., *Synthesizing the role of epigenetics in the response and adaptation of species to climate change in freshwater ecosystems*, 26 Molecular Ecology 2790-2806 (May 26, 2018), https://onlinelibrary.wiley.com/doi/full/10.1111/mec.14727; Jonas A. Aguirre-Liguori, et al., *The evolutionary genomics of species' responses to climate change*, 5 Nature Ecology & Evolution 1350 (2021); Erica L. Larson, et al., *Insect hybridization and climate change*, Frontiers in Ecology and Evolution 7 (2019), https://www.frontiersin.org/articles/10.3389/fevo.2019.00348/full.

[67] Lucie M. Bland, et al., *Using multiple lines of evidence to assess the risk of ecosystem collapse*," Proceedings of the Royal Society B: Biological Sciences 284.1863 (2017), https://royalsocietypublishing.org/doi/full/10.1098/rspb.2017.0660.

[68] M. Nazari Sharabian, et al., *Climate Change and Eutrophication: A Short Review*, 8 Eng. Technol. Appl. Sci. Res., no. 6, 3668-72 (Dec. 2018) https://www.nature.com/articles/s41598-021-02725-x.pdf; https://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1561&context=fac_articles; Essie M. Rodgers, *Adding climate change to the mix: responses of aquatic ectotherms to the combined effects of eutrophication and warming*" Biology letters 20210442 17.10 (2021) (Eutrophic water bodies also are less able to absorb carbon and therefore contribute to climate change.); Yi Li et al., *The role of freshwater eutrophication in greenhouse gas emissions: A review*, Science of the Total Environment 768 (2021): 144582.

[69] Stephen R. Carpenter, *Eutrophication of Aquatic Ecosystems: Bistability and Soil Phosphorus,* PNAS (June 22, 2005), https://www.pnas.org/doi/10.1073/pnas.0503959102.

pollutants, often exacerbating their impact and range of harm to human and nonhuman species alike.[70]

While climate change is likely to drive many species extinct, disease-causing organisms and their vectors are likely to thrive, leading to an increased risk of epidemics and pandemics in human and non-human organisms alike.[71] The world's food supply is vulnerable to climate change as a result of the mass extinction crisis, the increased range of disease vectors and the impact of drought, fire and extreme weather on crops.[72] The world's water supply is vulnerable to climate change as a result of shifts in precipitation levels and frequency, changes in snowpack, increased risk of salination of water supplies.[73]

Climate change is a threat multiplier driving the migration of climate refugees and the increasing global conflict.[74] This disruption, and conflict, as well as the loss of biodiversity, and the associated anxiety, negatively affect the world's population both spiritually and emotionally.[75]

1. Impacts of Climate Change in Washington State

Climate change is no longer a theoretical possibility for the residents of Washington State. We have lost lives, lands, and have suffered health setbacks from the effects of the crisis. We have been displaced, lost natural and economic resources, and have experienced a wholesale shift in how we experience the weather, other species, and our waters and our

---

[70] *See* Hayley Hung, et al., *Climate change influence on the levels and trends of persistent organic pollutants (POPs) and chemicals of emerging Arctic concern (CEACs) in the Arctic physical environment – a review*, Environ. Sci.: Process Impacts (2022), https://pubs.rsc.org/en/content/articlehtml/2022/em/d1em00485a; *see also* Sara I. Zandalinas, et al., *Global Warming, Climate Change, and Environmental Pollution: Recipe for a Multifactorial Stress Combination Disaster*, 26 Science Direct 588-99 (June 2021), https://www.sciencedirect.com/science/article/pii/S1360138521000583; *see also* Henrique Cabral, et al., *Synergistic Effects of Climate Change and Marine Pollution: An Overlooked Interaction in Coastal and Estuarine Areas*, Int. J. Environ. Res. Public Health 16 (15) 2737 (2019), https://www.mdpi.com/1660-4601/16/15/2737; *see also* BBC News, *Bramble Cay melomys: Climate change-ravaged rodent listed as extinct*, BBC (Feb. 20, 2019) (Climate change has already driven an unknown number of species extinct, including the Bramble Cay melomys.).

[71] Joacim Rocklöv & Robert Dubrow, *Climate change: an enduring challenge for vector-borne disease prevention and control*, Nature Immunology 21.5 479-83 (Apr. 29, 2020), https://www.nature.com/articles/s41590-020-0648-y.

[72] UN, *The World's Food Supply is Made Insecure by Climate Change*, UNAI Food Security and Climate Change, https://www.un.org/en/academic-impact/worlds-food-supply-made-insecure-climate-change.

[73] *See* Tara Dooley, et al., *Thirsting for a Future: Water and children in a changing climate*, UNICEF Programme Division, Division of Data, Research and Policy, and Division of Communication (Mar. 2017), https://www.unicef.org/media/49621/file/UNICEF_Thirsting_for_a_Future_ENG.pdf; *see also* Bryson Bates, et al., *Climate Change and Water*, IPCC Technical Paper VI (June 2008), https://www.ipcc.ch/site/assets/uploads/2018/03/climate-change-water-en.pdf.

[74] Satchit Balsari, et al., *Climate Change, Migration, and Civil Strife*, 7 Curr. Envir. Health Rpt. 404 (2020), https://link.springer.com/article/10.1007/s40572-020-00291-4.

[75] *See* Ashlee Cunsolo,& Neville R. Ellis, *Ecological grief as a mental health response to climate change-related loss*, Nature Climate Change 8.4 275-81 (2018); *see also* Gary W. Evans, *Projected behavioral impacts of global climate change*, Annual Review of Psychology 70.1 449-74(2019), http://eo-jo.com/wp-content/uploads/2019/06/evans2018.pdf.

air as a result of these impacts. Washington State, including the Department of Ecology failed to take the looming crisis seriously decades ago, and now it insists on regulating CAFOs as though we live those many decades ago, in a pre-climate change world.

The speed and intensity of the impacts of the climate crisis have even taken seasoned climatologists by surprise.[76] These irreversible changes usher in the decades of environmental disruption nearly assured by a history of governmental failures.[77] Ecology must aggressively mitigate every possible source, through every opportunity, including the CAFO NPDES permit. And it must embed coherent adaptation into its permitting of CAFOs. To do otherwise violates the law and betrays the agency's mandate to care for air and water of all current residents, their children, and the future generations of the state.

Washington State is already experiencing more extreme weather events more frequently with increasingly dire results. For example, last year's remarkable heat wave killed hundreds of people, cooked shellfish on beaches, decimated crops, and further stressed our forests.[78]

Climate change has shifted Washington's hydrological cycle. Snowpack has declined and glaciers have melted.[79] Peak stream flow shifted more than have a month

---

[76] H.-O. Pörtner, et al., *Climate Change 2022: Impacts, Adaptation and Vulnerability*, IPCC (2022), https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf (stating with high confidence that the "extent and magnitude of climate change impacts are larger than estimated in previous assessments" resulting in "[w]idespread deterioration of ecosystem structure and function, resilience and natural adaptive capacity, as well as shifts in seasonal timing have occurred due to climate change" resulting in "adverse socioeconomic consequences")

[77] Bryson Bates, et al., *Climate Change and Water*, IPCC Technical Paper VI (June 2008), https://www.ipcc.ch/site/assets/uploads/2018/03/climate-change-water-en.pdf.

[78] *See* Julie Ingwersen, *'Wither away and die:' Pacific Northwest heat wave bakes wheat, fruit crops*, Reuters (July 12, 2021), https://www.reuters.com/world/us/wither-away-die-us-pacific-northwest-heat-wave-bakes-wheat-fruit-crops-2021-07-12/; *see also* Evan Bush, *Birds jumped from their nests to escape Seattle's June heat wave. Some Died. Others needed help.*, The Seattle Times (July 28, 2021), https://www.seattletimes.com/seattle-news/environment/birds-jumped-from-their-nests-to-escape-seattles-june-heat-wave-some-died-others-needed-help/; *see also* Nadja Popvich & Winston Choi-Schagrin, *Hidden Toll of the Northwest Heat Wave: Hundreds of Exta Deaths,* New York Times (Aug. 11, 2022), https://www.nytimes.com/interactive/2021/08/11/climate/deaths-pacific-northwest-heat-wave.html; *see also* Catrin Einhorn, *Like in 'Postapocalyptic Movies': Heat Wave Killed Marine Wildlife en Masse*, New York Times (July 9, 2021), https://www.nytimes.com/2021/07/09/climate/marine-heat-wave.html; *see also* Brian Hagenbach, *Pacific Northwest heat wave causes vibrio bacteria outbreak in oysters*, SeafoodSource (Aug. 2, 2021), https://www.seafoodsource.com/news/food-safety-health/pacific-northwest-heatwave-causes-vibrio-bacteria-outbreak-in-oysters; *see also* Julia Rosen, *PNW scientists find ruin and resilience after summer heat wave*, High Country News (Dec. 9, 2021), https://crosscut.com/environment/2021/12/pnw-scientists-find-ruin-and-resilience-after-summer-heat-wave; *see also* Sergio Olmos & Jordan Gale, *When Hard Jobs Turn Hazardous*, New York Times (Sept. 4, 2021), https://www.nytimes.com/2021/09/04/business/economy/heat-wildfires-drought-farmworkers.html; *see also* Kyle Almekinder, *Using Spectral Indices to Determine the Effects of the Summer 2021 North American Heat Wave at Mount Rainier, Washington,* The University of Arizona (Oct. 8, 2022), https://repository.arizona.edu/bitstream/handle/10150/664141/MS-GIST_2022_Almekinder.pdf?sequence=3&isAllowed=y.

[79] H.A. Roop, et al., *Shifting Snowlines and Shorelines: The Intergovernmental Panel on Climate Change's Special Report on the Ocean and Cryosphere and Implications for Washington State*, Briefing paper

earlier in Puget Sound watersheds most dominated by snow melt.[80] The shift in snow melt regimes, as well as increasing surface temperatures, drives increased water temperatures, increased risk of eutrophication, and elevated harms from already dangerous levels of pollutants.[81] In addition to the impact of changes in snow pack and snow melt timing, climate change drives increased intensity in precipitation events. The combined impact of decreased snowpack and increased precipitation intensity drives increased intensity of flooding events in regions such Snohomish County.[82]

Washington forests struggle under climate change impacts including drought, and insect outbreaks.[83] And forest health is further impacted by their increasing vulnerability to forest fires as a result of historic management approaches combined with accelerating climate change.[84] Forest fires which also threaten species, destroy property, increase the air pollution burden, and can result in loss of human life.[85]

The state's shellfish, crabs and plankton have, for years, been suffering the impact of ocean acidification as well as warming ocean temperatures.[86] Cascading impacts of

---

prepared by the Climate Impacts Group, University of Washington, https://cig.uw.edu/projects/shifting-snowlines-and-shorelines/ (between 1955 and 2916, spring snowpack declined by approximately 30 percent and melt reduced the total area of the North Cascades occupied by glacier by more than 56 percent since 1900).

[80] *Id.*

[81] Northwest Fisheries Science Center, *Extinction Risk of Chinook Salmon Due to Climate Change*, NOAA Fisheries (Mar. 23, 2022), https://www.fisheries.noaa.gov/west-coast/climate/extinction-risk-chinook-salmon-due-climate-change.

[82] Guillame Mauger, et al., *Climate Change & Flooding in Snohomish County: New Dynamically Downscaled Hydrologic Model Projections*, Climate Impacts Group, University of Washington (2021), https://cig.uw.edu/wp-content/uploads/sites/2/2022/07/Snohomish-WRF-DHSVM-Final-Report-DOI.pdf.

[83] Michelle C. Agne, et al., *Interactions of predominant insects and diseases with climate change in Douglas-fir forests of western Oregon and Washington, U.S.A.*, 409 Forest Ecology and Management 317-22 (2018), https://sncc.forestry.oregonstate.edu/sites/default/files/Agne2018_FEM.pdf.

[84] William L. Gaines, et al., *Climate change and forest management on federal lands in the Pacific Northwest, USA: Managing for dynamic landscapes*, 505 Forest Ecology and Management 119794 (Jan. 15, 2022), https://www.sciencedirect.com/science/article/pii/S0378112721008859.

[85] *See* Annie Doubleday, et al., *Mortality associated with wildfire smoke exposure in Washington state, 2006-2017: a case-crossover study*, 19 Environmental Health Art. 4 (Jan. 13, 2020), https://ehjournal.biomedcentral.com/articles/10.1186/s12940-020-0559-2; *see also* Bobby Stevenson, et al., *How will climate change affect Northwest forests?*, Climate Impacts in the Northwest, https://express.adobe.com/page/udaAw5GCBxYBe/; *see also* Timothy Bella, *At least 7 dead, including 1-year-old boy, in West Coast wildfires*, Washington Post (Sept. 10, 2020), https://www.washingtonpost.com/nation/2020/09/10/west-coast-wildfires-deaths/#:~:text=At%20least%20seven%20people%2C%20including%20a%201-year-old%20boy%2C,burning%20throughout%20the%20American%20West%2C%20officials%20announced%20Wednesday.

[86] Nina Bednaršek, et al., *Chemical Exposure Due to Anthropogenic Ocean Acidification Increases Risks for Estuarine Calcifiers in the Saltish Sea: Biogeochemical Model Scenarios*, Front. Mar. Sci (July 10, 2020), https://www.frontiersin.org/articles/10.3389/fmars.2020.00580/full; *see also* Hedia Adelsman, et al., *Ocean Acidification: From Knowledge to Action*, Ecology (Nov. 2012), https://apps.ecology.wa.gov/publications/documents/1201015.pdf; *see also* Jan Newton & Terrie Klinger, *OA in the Pacific Northwest*, University of Washington (2012), https://environment.uw.edu/ocean-

temperature changes from shifts in hydrological cycles, changes in stream flow regimes, increasing rates of eutrophication, cumulative harms from pollutants and toxics are driving precipitous declines in species such as Chinook salmon.[87] The loss of prey species from cumulative harms drive declines in marine species such as yellowtail rockfish and Southern Resident killer whale.[88] Terrestrial species such as the Cascades frog and the greater sage-grouse are at risk from the impact of climate change including through the loss of habitat such as shrub-steppe.[89]

The sea level along the coastline of Washington State is rising as glaciers melt.[90] The resultant flooding threatens infrastructure, including railway lines, and increases risk of toxic runoff.[91] This rising sea level is also driving the loss of entire villages. Multiple

---

acidification-in-the-pacific-northwest/; *see also* Nina Bednaršek, et al., *Exoskeleton dissolution with mechanoreceptor damage in larval Dungeness crab related to severity of present-day ocean acidification vertical gradients*, 716 Science of the Total Environment 136610 (May 10, 2020,) https://www.sciencedirect.com/science/article/abs/pii/S0048969720301200; *see also* Ecology, *Acidification in Puget Sound*, https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Issues-problems/Acidification.

[87] Lisa G. Crozier, et al., *Climate change threatens Chinook salmon throughout their life cycle*, Communications Biology 4.1 1-14 (2021), https://www.nature.com/articles/s42003-021-01734-w.

[88] *See* A.K. Snover, et al., *Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision Makers,* Climate Impacts Group, University of Washington 6-1 (2013); *see also* Marine Mammal Commission, *Southern Resident Killer Whale*, Marine Mammal Commission (2020), https://www.mmc.gov/priority-topics/species-of-concern/southern-resident-killer-whale/.

[89] *See* Dan Siemann, et al., *Climate Change Effects on Shrub-Steppe and Grassland Habitats in Washington State*, WDFW and the National Wildlife Federation (July 2011), https://wdfw.wa.gov/sites/default/files/publications/01203/wdfw01203.pdf; *see also* Pete Bisson, *Salmon and Trout in the Pacific Northwest and Climate Change*, USDA Climate Change Resource Center (June 2008), https://www.fs.usda.gov/ccrc/topics/salmon-and-trout; *see also* Amanda M. Kissel, et al., *Compounding effects of climate change reduce population viability of a montane amphibian*, Ecological Applications 29.2 e0183 (2019), https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/eap.1832.

[90] H.A. Roop, et al., *Shifting Snowlines and Shorelines: The Intergovernmental Panel on Climate Change's Special Report on the Ocean and Cryosphere and Implications for Washington State*, Briefing paper prepared by the Climate Impacts Group, University of Washington, https://cig.uw.edu/projects/shifting-snowlines-and-shorelines/ (between 1955 and 2916, spring snowpack declined by approximately 30 percent and melt reduced the total area of the North Cascades occupied by glacier by more than 56 percent since 1900). (The total rise varies but in Friday Harbor on San Juan Island in northern Puget sound, the sea level has risen more than four inches since 1934).

[91] *See* John Ryan, *Sea level on steroids: Record tides flood Washington coastlines*, KUOW News (Jan. 9, 2022), https://www.kuow.org/stories/record-setting-tides-flood-washington-coastlines; *see also* Phil Ferolito, *Snipes Mountain Dairy cited in Outlook flood incident; no penalty issue*, Yakima Herald (July 10, 2017), https://www.yakimaherald.com/news/local/snipes-mountain-dairy-cited-in-outlook-flood-incident-no-penalty-issued/article_e5610056-659b-11e7-8331-1f15d64e5251.html#:~:text=OUTLOOK%2C%20Wash.%20--%20An%20Outlook%20dairy%20has%20been,flooding%20incident%20that%20inundated%20part%20of%20nearby%20community..

Tribal nations are now relocating in the face of the threat to their communities.[92] Finally, the climate crisis is already having an impact on the mental health of Washingtonians.[93]

Climate destabilization is locked in for the next decades, so any action Ecology takes as a regulatory agency, such as NPDES permitting, must also take climate impacts into account. Further, while we are most certainly going to experience impacts of the climate crisis into the future, the full extent of the harm depends on how rapidly we curtail emissions. There is still a window to protect current and future generations from the worst, but it is a narrow one, and it requires every single agency, and person with capacity and power to consider every source of GHG when they are making decisions about how to regulate the entities driving the climate crisis, including CAFOs.

2. Impacts of Climate Change on the Harm from CAFO Pollution

Ecology's dairy CAFO NPDES permitting is necessary, and mandated under the CWA and the Washington State Water Pollution Control Act (WPCA) because the concentration of dairy cows and calves on these sites results in urine and manure that, without proper management, discharge into groundwater and surface waters and harm the health of humans, other species, and aquatic ecosystems.[94] Climate change magnifies these impacts. [95] . =Any permit that is not embedded in the context of climate change cannot fulfill the minimum goals of the CWA's NPDES permitting program and the WPCA's legal mandate. As described in our technical comment,[96] the draft General Permit fails to comply with either state or federal water quality law. This would be true even if the hydrological cycle and weather patterns were not being impacted by the climate crisis. But given that these systems that will be, over the life of the permit, deeply dynamic, the General Permit, if released in its current draft form, will be obsolete at the moment of issuance..

a. CAFO Discharges and Water Quality

Because they concentrate animals into relatively small areas, dairy CAFOs produce excessive amounts of manure, and process wastewater. These waste products contain nitrogen and phosphorous, ammonia, viruses and microbial pathogens, growth hormones,

---

[92] EPA, *Quinault Indian Nation Plans for Relocation*, U.S. Environmental Protection Agency (last updated Mar. 15, 2022), https://www.epa.gov/arc-x/quinault-indian-nation-plans-relocation.

[93] Ashli Blow, *Climate Change Takes a Toll on Seattleites' Mental Health*, Crosscut (June 6, 2022), https://crosscut.com/environment/2022/06/climate-change-takes-toll-seattleites-mental-health.

[94] *See* Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf; *see also* Paul Ebner, *CAFOs and Public Health: Pathogens and Manure*, Purdue University (Aug. 2007), https://www.extension.purdue.edu/extmedia/id/cafo/id-356.pdf.

[95] *See id.*

[96] Draft Concentrated Animal Feeding Operation General Permit, National Pollutant Discharge Elimination System and State Waste Discharge General Permit and Draft Concentrated Animal Feeding Operation General Permit, A State Waste Discharge General Permit, (August 17, 2022) (technical comment).

antibiotics, chemicals used as additives to the manure or to clean equipment, animal blood, silage leachate, and copper sulfate.[97]

CAFOs attempt to manage this waste by using it as fertilizer for crop lands during part of the year. During the rest of the year, CAFOs store it in lagoons, tanks, or composting areas in preparation to add to crops or sell. Lagoons and composting areas can discharge pollutants into groundwater. Accumulated waste in pens and corrals have the potential to discharge as well. Finally, because of the imbalance between crop needs and CAFO byproducts, application to crops also results in leaching nitrogen into groundwater and, ultimately surface water, and run-off of phosphorous into surface water. The release of these contaminants into waters impairs drinking water, impedes other water-related activities, harms other species and impacts ecosystem balance.[98]

Nitrates in water are hazardous when consumed by vulnerable populations because they impact the capacity of the blood to carry oxygen. Infants are particularly vulnerable and suffer blue baby syndrome or death from exposure.[99] Adults exposed to high concentrations of nitrates risk poor health and potentially higher rates of stomach and esophageal cancer.[100] For those living in communities with multiple overlapping environmental risks, such as Yakima County, exposure to nitrates in water compounds the already harmful impacts of hazardous air, heat exposure and other challenges. Pregnant women exposed to nitrates risk giving birth to babies with birth defects or losing them through miscarriage.[101]

Phosphorous and nitrates interrupt aquatic ecosystems. Phosphorous supports nitrogen fixation by cyanobacteria and so its presence allows this micro-organism to outcompete other algae resulting in hazardous blooms that produce toxins that affect the liver, nerves or skin in humans and other animals.[102] Both nitrates and phosphorous drive surface water eutrophication.[103] Nitrogen in the form of ammonia contributes to these harms by depleting oxygen and killing aquatic life. It also converts to nitrates, adding to the nitrate load of surface waters and further driving eutrophication.[104]

---

[97] *See* Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf; *see also* Paul Ebner, *CAFOs and Public Health: Pathogens and Manure*, Purdue University (Aug. 2007), https://www.extension.purdue.edu/extmedia/id/cafo/id-356.pdf.

[98] Yagiong Guo, et al., *Association of Common Zoonotic Pathogens with Concentrated Animal Feeding Operations,* Frontiers in Microbiology (Jan. 10, 2022), https://www.frontiersin.org/articles/10.3389/fmicb.2021.810142/full.

[99] Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf;

[100] *Id.*

[101] *Id.*

[102] *Id.*

[103] *Id.*

[104] *Id.*

CAFOs are also responsible for the discharge of pathogens that are harmful to humans and other animals such as viruses, pathogenic bacteria such as *E. coli, Salmonella,* and *Campylobactor*, protozoan pathogens *Giardia* and other parasites such as *Cryptosporidium parvum*.[105] Present alongside these disease vectors is fecal coliform, which, when detected at high levels, serves as an indicator of potential pathogens in water and drives public health responses including shutting down shellfish harvests and closing beaches.[106] Finally, hormones released from CAFOs into surface waters impact aquatic animal reproduction, reducing fertility in some species of fish.[107]

b. Compounding Impacts of Climate Change and CAFO Discharge

As described above, climate change profoundly impacts the waters of the state. When CAFOs discharge to these impacted waters, of the effect of the multitude of harmful components of that discharge on the water add to the already harmful impacts of climate change. Further, the impact of these components, particularly nitrogen and phosphorous, ammonia, and microbial pathogens is likely amplified by increased concentrations, increased temperatures, and systems already made vulnerable by multiple and cumulative environmental stressors.[108] Increasingly extreme weather events such as heat domes, unusual polar vortex behavior increases the likelihood of large animal die-offs and

---

[105] Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf;Yagiong Guo, et al., *Association of Common Zoonotic Pathogens with Concentrated Animal Feeding Operations,* Frontiers in Microbiology (Jan. 10, 2022), https://www.frontiersin.org/articles/10.3389/fmicb.2021.810142/full.; *see also* Paul Ebner, *CAFOs and Public Health: Pathogens and Manure*, Purdue University (August, 2007) https://www.extension.purdue.edu/extmedia/id/cafo/id-356.pdf; *see also* Malcolm J. Brandt, et al., *Coliform Bacterium*, Environmental Microbiology (Third Edition) (2015), https://www.sciencedirect.com/topics/earth-and-planetary-sciences/coliform-bacterium; Miguella P. Mark-Carew, et al., *Incidence of and Risks Associated with Giardia Infections in Herds on Dairy Farms in the New York City Watershed*, Acta Vet Scand (June 21, 2010), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2904781/.

[106] *Id.*

[107] Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf;

[108] Carrie Hribar, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, Nat'l. Assoc. of Local Boards of Health (2010), https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf;Yagiong Guo, et al., *Association of Common Zoonotic Pathogens with Concentrated Animal Feeding Operations,* Frontiers in Microbiology (Jan. 10, 2022), https://www.frontiersin.org/articles/10.3389/fmicb.2021.810142/full.; *see also* Paul Ebner, *CAFOs and Public Health: Pathogens and Manure*, Purdue University (August, 2007) https://www.extension.purdue.edu/extmedia/id/cafo/id-356.pdf; *see also* Malcolm J. Brandt, et al., *Coliform Bacterium*, Environmental Microbiology (Third Edition) (2015), https://www.sciencedirect.com/topics/earth-and-planetary-sciences/coliform-bacterium; Miguella P. Mark-Carew, et al., *Incidence of and Risks Associated with Giardia Infections in Herds on Dairy Farms in the New York City Watershed*, Acta Vet Scand (June 21, 2010), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2904781/.

contamination from decaying bodies leaching into soils.[109] Similarly, increasing rates and intensity of atmospheric river events increase the likelihood of flooding in regions with floodplains such as Skagit, Snohomish, and Whatcom Counties where CAFOs are concentrated.[110] We attach a set of maps documenting this clustering to this comment.

These clustered CAFOs in a region where extreme weather and changing water cycles will lead to more severe flooding events results in an increasing risk that storm runoff carrying CAFO discharges will reach waters. The dangers of regulating without adaptation includes the likelihood that CAFO infrastructure intended to protect against such discharge (e.g. manure ponds), will fail regularly into the future.[111] Flooding also kills cattle and potentially pollutes waterways from decaying bodies.[112]

At the same time, as snowpack declines and cycles of reduced rainfall occur, along with the periodic intense flooding, CAFO discharges meet ground and surface water bodies already depleted, so the harmful components of these discharges remain more concentrated. For humans and other species, this means an increased risk of illness from pathogens and nitrates.

Further, for surface waters, climate change by increasing the temperature, changing wind and solar radiation patterns, and decreasing the total amount of water in surface and groundwater systems, increases the likelihood of eutrophication, dead zones, and harmful cyanobacteria blooms. The addition of nitrates, ammonia and phosphorous can tip

---

[109] Donald W. Meyers, *Blizzard kills more than 1,600 dairy cows in Lower Yakima Valley*, Yakima Herald-Republic (Feb. 12, 2019), https://www.yakimaherald.com/news/local/blizzard-kills-more-than-1-600-dairy-cows-in-lower-yakima-valley/article_3d8bd5c0-2f2c-11e9-98e6-d7f06ec067c6.html.

[110] *See* Se-Yeun Lee & Alan F. Hamlet, *Skagit River Basin Climate Science Report*, Skagit County and the Envision Skagit Project (Sept. 2011), https://www.skagitcounty.net/EnvisionSkagit/Documents/ClimateChange/Complete.pdf

Guillame Mauger, et al., *Climate Change & Flooding in Snohomish County: New Dynamically Downscaled Hydrologic Model Projections*, Climate Impacts Group, University of Washington (2021), https://cig.uw.edu/wp-content/uploads/sites/2/2022/07/Snohomish-WRF-DHSVM-Final-Report-DOI.pdf; John Prizzi, *Preliminary Assessment of Flooding Hazards in the Nooksack River Watershed, Washington State, and its Effect on Water Quality and the Local Shellfish Industry*, Univ. of British Columbia (2017), https://mlws.landfood.ubc.ca/all-projects/prizzi-2017-prem-assessment-of-flooding-hazards-in-the-nooksack-river-watershed/.

[111] *See* Se-Yeun Lee & Alan F. Hamlet, *Skagit River Basin Climate Science Report*, Skagit County and the Envision Skagit Project (Sept. 2011), https://www.skagitcounty.net/EnvisionSkagit/Documents/ClimateChange/Complete.pdf; *see also*

Guillame Mauger, et al., *Climate Change & Flooding in Snohomish County: New Dynamically Downscaled Hydrologic Model Projections*, Climate Impacts Group, University of Washington (2021), https://cig.uw.edu/wp-content/uploads/sites/2/2022/07/Snohomish-WRF-DHSVM-Final-Report-DOI.pdf; John Prizzi, *Preliminary Assessment of Flooding Hazards in the Nooksack River Watershed, Washington State, and its Effect on Water Quality and the Local Shellfish Industry*, Univ. of British Columbia (2017), https://mlws.landfood.ubc.ca/all-projects/prizzi-2017-prem-assessment-of-flooding-hazards-in-the-nooksack-river-watershed/.

[112] Kirk Johnson, *'Just Total Chaos'; Floods Bring Death and Devastation to Dairies*, New York Times (Dec. 7, 2021), https://www.nytimes.com/2021/12/06/us/washington-floods-dairy-farmers.html (describing destruction of dairy CAFO infrastructure during the 2021 Nooksack River floods, the death of "[d]ozens of cattle.").

vulnerable systems into these states, and can lead to permanently eutrophic water systems.[113] These multiplying risk factors hurt species already challenged by changing flow regimes, increased temperatures and pathogens and toxins in the waters, such as Chinook salmon, driving them closer to extinction in the state's waters and bringing their predators, such as the Southern Resident killer whale that much closer to extinction.

C. *Ecology Started To Incorporate Mitigation Into Regulation of CAFOs But Failed To Embed Adaptation Into Permitting*

Under SEPA's broad duties, Ecology must consider climate change in its actions regulating CAFOs. This includes requiring mitigation of impacts as well as incorporating adaptation into permitting. Ecology began the process of requiring mitigation efforts in this draft permit. Unfortunately, it failed to provide for any adaptation, or even recognize that climate change has, and will continue to, impact the environment into which CAFOs discharge.

1. Ecology identified the impact of CAFOs on the climate crisis, and incorporated some management elements aimed at reducing N_2O emissions.

Ecology incorporated steps towards adequate action on mitigation of CAFO emissions in its draft General Permit. To fully realize the multiple mandates over the agency to address the climate crisis, Ecology should continue to expand, and strengthen these efforts.

As Ecology recognized in the Fact Sheet "[a]griculture, in general, has an opportunity to play a significant role in reducing the climate warming gas nitrous oxide."[114] Additionally, a "key goal" of the permit, according to Ecology, is to prohibit "nutrient applications when the field is saturated".[115] To that end, the General Permit directs the permittee to make sure nitrate is not applied to crops in excess of what is required to reach estimated yield.[116] The permit also directs the permittee to estimate nitrogen mineralization and nitrogen loss through volatilization during application to the land. These are steps in the right direction, although it is not entirely clear from the permit how Ecology anticipates ensuring compliance.

Unfortunately, the permit does not directly address CH_4 emissions, even though the Fact Sheet identifies composting manure as opposed to stockpiling solid manures as one way to reduce CH_4 emissions. More generally, Ecology fails to take a full account of the impact of the permitting program on the emissions across the state. This is essential to the consideration of climate change in the context of the permit. Furthermore, it is mandated by SEPA.

2. Ecology failed to consider how climate change exacerbates CAFO impacts on the environment

---

[113] Stephen R. Carpenter, *Eutrophication of Aquatic Ecosystems: Bistability and Soil Phosphorus,* PNAS (June 22, 2005), https://www.pnas.org/doi/10.1073/pnas.0503959102.

[114] Fact Sheet at 25.

[115] *Id.*

[116] General Permit at 29, 30, 32.

Despite the clear mandate to consider climate change, the General Permit includes no analysis of the impact of climate change on streamflow timing, snowmelt, water table levels, temperature of waterbodies, extreme weather events such as heat waves, and flooding or any of the many other impacts of climate change we describe above that will directly affect the impact of CAFO discharges.

First, Ecology fails to anticipate, analyze, or incorporate an analysis of the impact of discharge on the changes in conditions. As discussed in our technical comment the draft General Permit will allow harmful discharge including nitrate, phosphorous and disease-causing micro-organisms from production areas, composting areas, lagoons, and field applications. This failure ranges from an exemption for areas' agricultural stormwater, no limits for field application of phosphorous, the failure to require lagoons built using effective technology, and the failure to mandate effective management of animal carcasses. Discharge entering surface and groundwater under this permit will be magnified over time by the impacts of the climate crisis.

Second, Ecology fails to address the fact that climate change brings increasing rates and intensity of atmospheric river events which increase the likelihood of flooding in regions such as Skagit, Snohomish, and Whatcom Counties. CAFOs across these counties are located within floodplains. (See Appendix 1). When these regions see floods, which they do, and will continue to, in increasing rates into the future, the storm runoff carries CAFO discharges into waters, including from CAFO infrastructure intended to protect against such discharge (e.g. manure ponds). These flood events also kill cattle. Because the draft General Permit fails to address impacts from decaying carcasses result in pollutants reaching surface and ground water from those bodies.

Third, Ecology fails to recognize or analyze the increasing likelihood of extreme heat from heat domes, and unusual polar vortex behavior resulting in extreme cold snaps, both of which risk large animal die-offs. The failure to consider these impacts of the climate crisis, impacts we are well familiar with already is exacerbated by the agency's failure to embed a plan for effectively addressing animal carcasses to prevent discharge and contamination from decaying animal bodies.

Finally, the permit fails to incorporate effective water monitoring, as described in our technical comment. Because the climate crisis has thrown the hydrological and weather systems into more dynamic states, effective monitoring is perhaps even more important than it was in a reasonably predictable climate regime. Without adequate monitoring in a climate crises means that the state and the public will likely not have a sense of the true impacts of these facilities on the environments entrusted to Ecology for current and future generations.

Even if the General Permit complied with the CWA, this failure to incorporate consideration of the intersection between climate impacts and discharge would be counter to Ecology's duty under SEPA. But given the permit's failure to comply with state and federal law the failure to consider climate impacts magnifies this failure across the laws governing this permit's issuance.

III. Environmental Impact Statements Under SEPA and the Threshold Determination

Because SEPA functions as an "environmental full disclosure law,"[117] when agencies propose "major actions significantly affecting the quality of the environment" they must complete an Environmental Impact Statement (EIS).[118] This requirement to gather, analyze and share information is essential to realizing SEPA's broad goals and policies and necessary to ensure that the people of the state are able to "to shape their future environment by deliberation, not default."[119] This information gathering and analysis must be completed by the applicant and/or the lead agency and should include consultation with Tribes and with other expert agencies.[120]

A. ***Threshold Determination***

Along with the draft General Permit, Ecology issued a determination of nonsignificance (DNS) under SEPA excusing it from undertaking an EIS.

This threshold determination is the first step in the EIS process.[121] The lead agency,[122] here Ecology, issues the threshold determination after it reviews the information provided by the applicant, here also Ecology, in its SEPA Checklist. It then determines whether an EIS is required.[123] The information the agency must consider under SEPA is broad and includes the following elements of the environment:

- Natural elements including earth, air and climate, water, plants and animals, energy and natural resources.
- The built environment including environmental health, land and shoreline use, transportation, public services and utilities.[124]

Only if, after reviewing information and analyses of the proposed action's impact on this broad range of environmental elements, the lead agency determines that there "will be no probable significant adverse environmental impacts from a proposal" may it issue a DNS, ending the EIS requirement.[125] "If . . . the lead agency reasonably believes that a proposal may have a significant adverse impact, an EIS is required."[126]

---

[117] *Norway Hill Pres. & Prot. Ass'n v. King County Council*, 87 Wn.2d 267, 272, 552 P.2d 674 (1976). *See* 43.21C.030(2)(c); WAC 197-11-400 to -440. See also *King County v. Wash. State Boundary Review Bd. for King County*, 122 Wn.2d 648, 664, 860 P.2d 1024 (1993).

[118] RCW 43.21C.030(c). *See also* RCW 43.21C.031 (describing "significant" and the required contents of an EIS); WAC 197-11-782, 197-11-794(1) (defining "significant").

[119] *Stempel v. Dep't of Water Res.,* 82 Wash. 2d 109, 118, 508 P.2d 166, 172 (1973).

[120] Ecology, SEPA Handbook at 20-21.

[121] WAC 197-11-310(1) (stating that "[a] threshold determination is required for any proposal which meets the definition of action and is not . . . statutorily exempt as provided in chapter 43.21C RCW.")

[122] The lead agency is "designated when an agency is developing. . . a proposal." WAC 197-11-050. *See* WAC 197-11-911 for lead agency designation. Ecology is the lead agency here.

[123] WAC 197-11-310

[124] WAC 197-11-444(1)-(2).

[125] WAC 197-11-340(1) (emphasis added).

[126] WAC 197-11-330(4).

Under SEPA, "significant" means "more than a moderate adverse impact on environmental quality."[127] "Moderate" means "tending toward the mean or average amount or dimension" and "having average or less than average quality; Mediocre."[128] The synonyms of "moderate" include "modest, average, medium, ordinary and mediocre."[129] Therefore, an impact is significant under SEPA if it is above a modest amount, or more than average.[130] Of the three possible threshold determinations, only the DNS concludes there will be no likely significant impacts, and forecloses further SEPA analyses on the proposed action without identifying conditions that will serve to reduce potential impacts.[131] It is therefore not a decision to take lightly and **must be based on "information reasonably sufficient to evaluate the environmental impact of a proposal**."[132]

During the threshold process, the agency must evaluate significance of possible impacts to the environment by analyzing context and intensity of the impact.[133] This means that the agency must evaluate:

> (1) the extent to which the action will cause adverse environmental effects in excess of those created by existing uses in the area, and (2) the absolute quantitative adverse environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area.[134]

As stated in the SEPA regulations, "[s]everal marginal impacts," although not significant in isolation, "when considered together may result in a significant adverse impact."[135]

SEPA's implementing regulations anticipate situations where information is necessarily incomplete or unavailable.[136] The regulations direct the lead agency to obtain the information, if possible, provided the "costs are not exorbitant." However, if the costs to obtain it are unknown or exorbitant and the agency plans to proceed with the action, "it

---

[127] WAC 197-11-794

[128] Merriam-Webster Dictionary (2020).

[129] Merriam-Webster Thesaurus (2020).

[130] WAC 197-11-794.

[131] An agency issuing a Mitigated Determination of Nonsignificance incorporates conditions to reduce the likelihood that the action will result in significant adverse impacts. WAC 197-11-350. A Determination of Significance leads to a more comprehensive evaluation, and arguably to the action that realizes the purpose of SEPA. WAC 197-11-360(1).

[132] WAC 197-11-335. See also *Boehm v. City of Vancouver,* 111 Wn. App. 711, 718, 47 P.3d 137 (2002) (internal citations and footnotes omitted).

[133] WAC 197-11-794 (stating "Significance involves context and intensity . . . and does not lend itself to a formula or quantifiable test.").

[134] *Norway Hill,* 87 Wn.2d at 277 (quoting *Narrows view Pres. Ass'n v. Tacoma,* 84 Wn.2d 416, 423, 526 P.2d 897 (1974)).

[135] WAC 197-11-330(3)(c).

[136] WAC 197-11-080(1),

shall generally indicate in the appropriate environmental documents its worst case analysis and the likelihood of occurrence."[137]

Even if the project is "designed to improve the environment," it may have significant adverse environmental impacts.[138] Therefore, the "threshold determination shall not balance whether the beneficial aspects of a proposal outweigh its adverse impacts" but instead must consider only whether the "proposal has any probable significant adverse environmental impacts."[139]

After it issues the DNS, the lead agency may reconsider the decision, particularly if it provides a comment period, as Ecology did here. An agency reviewing timely comments on a DNS "shall reconsider the DNS . . . and may retain or modify the DNS or, if [it] determines that significant adverse impacts are likely, withdraw the DNS or supporting documents."[140] Upon withdrawal, an agency may reissue the DNS, or it may issue a Mitigated Determination of Nonsignificance, which allows an applicant to avoid the EIS requirement provided it undertake mitigations to reduce environmental impacts.[141] Finally, the agency may issue a Determination of Significance and require the applicant to complete an EIS.[142]

Ecology identified the General Permit as a nonproject (or programmatic) action under SEPA. In submitting this comment, we want to make clear that we are not convinced this is appropriate. We also are concerned because Ecology does not expressly articulate the duties of future CAFOs and CAFOs that change operations under SEPA.

Because SEPA's implementing regulations only provide for slight moderations in an EIS that is a nonproject as opposed to project action[143] and there is no language in either the statute or the regulations indicating that a nonproject threshold determination differs from a project threshold determination, it ultimately does not matter at the threshold step whether or not this is a project or nonproject action.[144] As the process and requirements for threshold determinations are the same for either type of action, we focus here on Ecology's failure to comply with SEPA in issuing the DNS and reserve discussion for the propriety of characterizing this as a nonproject action for another time.

---

[137] WAC 197-11-080(3).

[138] WAC 197-11-330(5). See also Ecology, State Environmental Policy Act Handbook 2018 Updates at 22 (2018) (noting that "SEPA Rules state that the beneficial aspects of a proposal shall not be used to balance adverse impacts in determining significance.") (emphasis in original) available at https://ecology.wa.gov/DOE/files/4c/4c9fec2b-5e6f-44b5-bf13-b253e72a4ea1.pdf.

[139] WAC 197-11-330(5). *See also* Ecology, SEPA Handbook at 22 (noting that "SEPA Rules state that the beneficial aspects of a proposal shall not be used to balance adverse impacts in determining significance.") (emphasis in original).

[140] WAC 197-11-340(2)(f).

[141] WAC 197-11-350

[142] WAC 197-11-360

[143] WAC 197-11-442.

[144] See also Ecology, SEPA Handbook at 43 (stating that the "procedural requirements for SEPA review of a nonproject proposal are basically the same as a project proposal.").

B. *Ecology's DNS Violates SEPA*

Ecology, in issuing the DNS, failed to comply with SEPA's prima facie procedural requirements.[145]

First, Ecology issued the DNS in the absence of reasonably sufficient information to determine that the General Permit as drafted is not likely to adversely impact the environment. Indeed, nearly uniformly across all elements of the environment identified in the SEPA checklist, a resource created *by Ecology itself,*[146] the agency answered "unknown." The checklist has almost no substantially useful and analysis and is about as far as can be from "reasonably sufficient information" as required to issue a DNS under SEPA. [147]

Further, Ecology issued the DNS in the face of extensive evidence of the adverse impact the Draft Permit is likely to cause as a result of allowing CAFOs to discharge pollutants into the waters, failure to comply with federal and state clean water law, and additional cumulative, direct, indirect, short- and long-term impacts on the environment. This information is not difficult for the agency to obtain. Indeed, *the agency itself* has much of the information about probability of adverse environmental impacts as a result of its regulation (limited as it is) of existing CAFOs, the data members of the public have provided the agency,[148] and from information gathered and made public in legal actions against many of these entities as their discharges have continuously the environment, courts have issued rulings against them under a variety of legal actions.[149]

Finally, we can find no evidence that Ecology consulted with Tribes or other expert agencies when it prepared the DNS. This failure is counter to Ecology's own guidance[150] and contributes to checklist's lack of information.

Ecology's failure to base the DNS on reasonably sufficient information *and* its issuance of the DNS in the face of known probable significant adverse impacts, violates SEPA.

1. The DNS is Unlawful Because it Does not Rely on Reasonably Sufficient Information

---

[145] *Boehm*, 111 Wn. App. at 718 (stating that the agency must be able to demonstrate that it "adequately considered the environmental factors in a manner sufficient to be a prima facie compliance with the procedural dictates of SEPA" in order for a threshold determination to survive a judicial appeal).

[146] RCW 43.21C.110 (conferring statutory authority to Ecology to implement SEPA); WAC 197-11-960 (describing the checklist); Ecology, SEPA Checklist Guidance (last visited August 13, 2022) https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance.

[147] WAC 197-11-335.

[148] See for example xx submitted by Friends of Toppenish Creek. Attached.

[149] See e.g. The Law Offices of Charlie Tebbutt, CAFOs - Concentrated Animal Feeding Operations http://charlietebbutt.com/cafos.html (last visited August 13, 2022) (listing several successful and ongoing actions against CAFO operations in Washington State for violations of the CWA and the Resource Conservation and Recovery Act (RCRA 42 U.S.C §6901 et. seq.)).

[150] Ref.

The DNS relies on the SEPA checklist prepared by Chelsea Morris on June 22, 2022. The DNS does not incorporate an analysis or identify anything other than the checklist to support its issuance. Because the DNS relies on a checklist that does not provide reasonably sufficient information and analyses of possible environmental impacts from a permit allowing operations to discharge into waters of the state, it violates SEPA.

We discuss this failure in more detail below. However, there are two patterns we believe are emblematic of Ecology's failure here. A DNS that relied on any single instance of either of these two approaches to evaluating the potential impact of an element of the environment would be illegal on its face. The checklist is rife with them.

First, the checklist relies heavily on the term "unknown" to describe adverse impacts. This, on its face violates SEPA. But Ecology also removes "unknown" when it describes what it views are the "benefits" of the General Permit. Under SEPA, a DNS issued based on balancing adverse with beneficial impacts is unlawful. Placing a thumb on the scale of the "beneficial" impacts and then trying to balance them against unnamed, unanalyzed adverse impacts is even more egregious.

Further, the Checklist repeatedly **states that the Draft Permit will "not cause or contribute to" particular environmental impacts yet in subsequent sentences it provides a list of possible adverse impacts.**[151] Ecology conducts no further analysis. How did Ecology conclude based on the lists of actual impacts that the Permit will not cause or contribute to environmental impacts? How does it justify issuing a DNS in the face of actual articulated impacts? We cannot answer that question because Ecology failed to show its work.

Finally, nowhere does Ecology provide evidence that it consulted with other agencies or with Tribes. This failure is evident across all elements of the environment and renders the DNS unlawful. As illustrated, we provide more specific examples of Ecology's failure to rely on reasonably sufficient information in its issuance of the DNS below.

a. The Checklist Does Not Include the Basic Information about the Proposed Action Essential to Determining if it is Likely to Have a Significant Impact on the Environment

Information about types of facilities, locations of facilities, and potential future facility siting is essential for determining the likelihood that a proposed action will have a significant impact. The agency has much of this information. (See Appendix 2). It has the capacity to develop the rest of it. And for that information that is either too costly or is impossible to obtain, SEPA directs the agency to provide an analysis of the worst case scenario.[152]

i. The Checklist Provides No Information About the Number of CAFOs, Number of Animals, Distribution of CAFOs or

[151] See, e.g., SEPA Checklist B. 2.a.

[152] WAC 197-11-080(3).

Estimation of How This Will Change Over the Life of the Permit.

First, the DNS relies on the checklist's inadequate description of the types of facilities covered by the permit. The checklist states that "draft permits apply to existing animal feeding operations that confine animals for 45 days or more in a 12-month period and discharge to waters of the state."[153] This is the federal definition of animal feeding operations (AFOs), provided the facility is not also used to grow crops.[154] It does not fully describe the characteristics of operations considered CAFOs.

Under federal law, AFOs with certain concentrations of animals are considered "Medium" or "Large" CAFOs and are covered by the Clean Water Act NPDES permitting program.[155] Medium CAFOs house from 200 to 699 mature dairy cows, and Large CAFOs house 700 or more mature dairy cows.[156] Small AFOs are also considered CAFOs if they meet one of two methods for discharge of pollutants.[157]

Beyond this initial failure to adequately define the covered operations, the Checklist fails to provide any information estimating the current number of covered CAFOs, as well as those likely to come under the permit in the future, or the number of cows and calves in these facilities. The failure to include this information is particularly egregious because, Ecology presumably has this information. State regulations mandate that Ecology provide this information to the public in its NPDES permit Fact Sheet and more generally during this public comment period.[158] The issuance of the DNS without incorporation of this information into the threshold determination process violates SEPA.

ii. The Checklist Does Not Provide Information or Analysis About the Current and Possible Future Distribution of CAFOs in Washington State

The Checklist provides no information or analysis of the distribution of CAFOs across the state, nor does it demonstrate any effort to anticipate future CAFO distribution. Without this information, the DNS does not rely on reasonably sufficient information about the impact of the proposed action on the environment, as SEPA mandates.

Ecology knows where CAFOs are in the state, as a result of its own regulatory activities, through its collaboration with the Washington State Department of Agriculture

---

[153] SEPA Checklist A.11.

[154] 40 C.F.R. §122.23(b)(1).

[155] 40 C.F.R.Sec.§ 122.23(a), (b)(2).

[156] *Id.*

[157] *Id.*

[158] WAC 173-226-120(1)(e) (stating that the Fact Sheet "shall summarize the following" "[a] listing or some other means of identifying the facilities proposed to be covered under the general permit."); *see also* WAC 173-220-060 (mandating that the NPDES permit Fact Sheet summarize "the location of the discharge in the form of a sketch or detailed description."); WAC 173-226-130(e) ("The department shall make available during the public comment period . . . (v) A listing or some other means of generally identifying the facilities proposed to be covered under the general permit.").

(WSDA), and through federal sources of information. We attach a series of maps created from Ecology and WSDA's own data showing the distribution of CAFOs across the state.

Further, locations across the state that can support potential future CAFOs are not unlimited. The current distribution of CAFOs along with the local government's land use and zoning ordinances provide a roadmap of regions that can legally house future CAFOs. Ecology should be aware of the lands that allow CAFOs as identified by counties and municipalities across the state that have issued comprehensive plans under the Growth Management Act.[159] Further, local ordinances provide additional constraints on housing agricultural animals that may rule out (or rule in) locating CAFOs in that region.[160]

b. The SEPA Checklist Does Not Provide Reasonably Sufficient Information About Possible Impacts to Any Listed Elements of the Environment to Support the DNS

SEPA requires the lead agency to collect information and analysis of the potential for significant impacts on essentially every element of the natural and built environments, from air and water to historical and cultural resources, aesthetics, recreation, land use, and human health.[161] Included in this analysis is the potential for the action to violate local, state and federal law. [162]

Ecology submitted a SEPA checklist with virtually no information or analysis, instead generally filling in "unknown" in answer to the checklist's questions about the environment and then stating "The draft CAFO general permits apply to existing and new CAFOs located in Washington. Therefore the [environmental element] will depend on the location of the facility."[163] The issuance of the DNS in the face of this information vacuum violates SEPA. If Ecology does not know the answer to these questions, it must conduct an EIS. To do otherwise is counter to the fundamental goal of the statute.

Because Ecology failed to rely on reasonably sufficient information on any aspect of the environment, the DNS fails across the elements of the environment implicated by the permit. To illustrate this failure, we discuss Ecology's failure to consider information about climate change in the checklist.

i. The DNS Does Not Rely On Reasonably Sufficient Information About Impacts to the Air

Ecology's discussion of the impacts of the General Permit on the air in its checklist does not include an actual analysis of how the permit intersects with climate emissions.

The entry includes the statement that the "The draft permits do not propose to cause or contribute to air emissions from CAFOs."[164] But it goes on to state that the "types and

---

[159] RCW 36.70A.040(1), (3), .050. *See also* RCW 36.70A.060. Yakima County Code 19.14.010 (Identifying types of zones where CAFOs are allowed (and the permitting necessary)).

[160] S*ee e.g.* Seattle Municipal Code 23.42.052(D).

[161] *See* WAC 197-11-444, -960 (listing elements of the environment under SEPA).

[162] *Id.*

[163] See SEPA Checklist B.1.a. (describing impacts to earth).

[164] SEPA Checklist B.2.a.

quantities of air emissions from CAFOs vary depending on the animal housing type, feed, and manure management at each facility."[165] And it lists the "types of emissions that may occur at a facility."[166]

The statement that the permit will not cause impacts to the air is not, in itself, sufficient information to support the DNS, even without the internally inconsistent information. Reasonably sufficient information requires an actual analysis of the predicted emissions from the CAFOs that the General Permit allows to operate, in the way that they operate. And it requires an evaluation of the cumulative impact of permitting all of these CAFOs, CAFOs, as NPDES permits allow the continuation of the pollution of our waters.

ii. The DNS Did Not Consider the Impact of Climate Change on CAFO Facilities and Their Discharges

Ecology did not rely on reasonably sufficient information about the effect of the climate crisis on CAFO discharges to support the DNS. Because the climate crisis impacts all aspects of the natural and the built environment, the DNS, issued in the face of the failure to consider climate impacts, violates the law because it is not based on reasonably sufficient information about any elements of the environment implicated by the climate crisis.

The checklist does not discuss the climate crisis in relation to the discharge allowed by the draft General Permit anywhere other than in the air section. Among other things, it does not discuss how climate impacts to hydrological cycles will exacerbate the effect of discharges allowed under the permit. It does not describe how the climate crisis will increase severe weather events, impact CAFO facilities and kill livestock, or how these effects then result in increased discharge under the permit. It does not describe how increased concentrations of pollutants and increased risk of algal blooms resulting from climate change exacerbating discharges allowed by the permit in turn cause adverse impacts on listed species such as bull trout and Chinook salmon, as well as Southern Resident killer whales who rely on Chinook as their primary food source. It does not describe how the harms to these species from the permit in turn harms the humans who rely on these species, including members of Tribes and Indigenous people for whom these species are culturally essential.

The DNS is unlawful because it relies on a checklist that provides no analysis of how the climate crisis impacts the injury from CAFO discharge on the waters, the species dependent on these waters, including humans, and more broadly all aspects of the environment, natural or built.

2. The DNS is Unlawful Because There Are Likely to be Significant Adverse Impacts from the General Permit as Drafted on Elements of the Environment

The General Permit, as drafted, is likely to result in significant adverse impacts, including to the water, air, communities, nonhuman species, and important cultural and

[165] *Id.*

[166] *Id.*

historical elements in the environment. While Ecology's failure to comply with SEPA is manifest in its reliance on insufficient information to support the DNS, we provide examples below of the variety of adverse impacts that this draft General Permit will cause on the environment. Because the draft General Permit will cause known significant impacts on the environment, issuance of a DNS was unlawful. To comply with SEPA, Ecology must withdraw the DNS, issue a DS and immediately begin the scoping process.

a. The General Permit Is Likely To Significantly Impact Water, Humans and Other Species that Rely On Clean Water, And Cultural and Recreational Resources

The General Permit as drafted is likely to have significant impacts on the waters of the state. We discuss these impacts at length in our technical comment, incorporated into this comment by reference. We provide below additional evidence of significant impacts on the waters, other species, and the humans relying on the waters of the state. Because all of these impacts will be magnified by the growing climate crisis, climate change is likely to turn less than moderate impacts into significant impacts over the life of the permit. Issuance of a DNS in the face of the near certain significant impacts of a General Permit that allows discharges, in violation of state and federal law, violates SEPA.

According to Ecology's Water Quality Improvement Reports (Reports), prepared once the concentration of fecal coliform bacteria indicates sufficient fecal matter in waters to the point that the risk to human health is unacceptable,[167] livestock and animal agriculture are important contributors to impairment of watersheds and waterways. [168] In

[167] Section 303(d) of the Clean Water Act (CWA) requires that states assess surface waters and compile a 303(d) list of those that have become polluted to the point that they no longer support their use classification. These are "impaired" waters. 33 U.S.C. § 1313.

[168] Ecology, *Swamp Creek Fecal Coliform Bacteria Total Maximum Daily Load*, Ecology Pub. No. 06-10-021 (June 2006), https://apps.ecology.wa.gov/publications/documents/0610021.pdf; Ecology, *Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, pH, Mercury, and Arsenic Total Maximum Daily Load (Water Cleanup Plan)*, Ecology Pub. No. 05-10-044 (Apr. 2005), https://apps.ecology.wa.gov/publications/documents/0510044.pdf; Ecology, *Snoqualmie River Basin Fecal Coliform Bacteria, Dissolved Oxygen, Ammonia-Nitrogen, and pH Total Maximum Daily Load*, Ecology Pub. No 08-03-005 (Mar. 2008), https://apps.ecology.wa.gov/publications/documents/0803005.pdf; Ecology, *Snohomish River Tributaries Fecal Coliform Total Maximum Daily Load*, Ecology Pub. No. 00-10-087 (June 2001), https://apps.ecology.wa.gov/publications/documents/0010087.pdf; Ecology, *North Creek Fecal Coliform Bacteria Total Maximum Daily Load*, Ecology Pub. No. 03-10-047 (Sept. 2003), https://apps.ecology.wa.gov/publications/documents/0310047.pdf; Ecology, *Little Bear Creek Fecal Coliform Bacteria Total Maximum Daily Load (Water Cleanup Plan)*, Ecology Pub. No. 05-10-034 (May 2005), https://apps.ecology.wa.gov/publications/documents/0510034.pdf; Ecology, *Bear-Evans Watershed Fecal Coliform Bacteria Total Maximum Daily Load*, Ecology Pub. No. 08-10-026 (June 2008), https://apps.ecology.wa.gov/publications/documents/0810026.pdf; Ecology, *Padilla Bay Freshwater Tributaries Fecal Coliform Bacteria Total Maximum Daily Load Report*, Ecology Pub. No. 20-10-036 (Dec. 2020), https://apps.ecology.wa.gov/publications/documents/2010036.pdf; Ecology, *Soos Creek watershed TMDL*, https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects/Soos-Creek-bacteria-TMDL; Ecology, *Quincy NPDES Permit TMDL for Wasteway DW237 and W645*, Ecology Pub. No. 98-10-201 (Sept. 1998), https://apps.ecology.wa.gov/publications/summarypages/9810201.html; Ecology, *Johnson Creek Watershed Total Maximum Daily Load*, Ecology Pub. No. 00-10-033 (June 2000),

particular, the presence of CAFOs corresponds to high levels of fecal coliform bacteria in water samples, indicating the presence of fecal matter in the water as well as dangerous disease microbes.[169] The presence of fecal coliform indicates the presence of animal waste in water and the likelihood associated disease microbes are also present.[170] These impacts mean that these waters are no longer available to serve as "public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes".[171]

Although Ecology provides suggestions in these reports for mitigation, including regular site inspections, minimum setbacks, riparian buffers, soil sampling, groundwater sampling, properly constructed and lined lagoons, farm plans, storing manure away from waterways and potential drainage paths, and excluding livestock from flooded or flood-prone areas, as we discuss in our technical comments, the permit does not effectively mandate these protective actions and so the General Permit is likely to significantly impact the environment.[172]

Further, even this mitigation cannot eliminate the possibility of pollution by CAFOs. For instance, *E. coli* can contaminate groundwater under unlined manure lagoons, which are allowable under the current draft permit, even if the lagoons are lined, "[m]anure-contaminated water can also enter directly into subsurface drainage systems through air vents, manholes, and other surface inlets."[173] And, although "properly built lagoons may not lead to groundwater contamination," Ecology admits, "lagoons may still contribute to bacteria loading."[174]

In addition to bacteria loading, CAFOs, as allowed to discharge under this draft General Permit, also significantly impact waters by discharging ammonia, nitrate and phosphorous. Manure lagoons contribute ammonia and nitrate into subsurface soil and groundwater. For example, the initial soil testing done at Henry Bosma Dairy under consent order from EPA, detected available nitrogen in excess of the federal limit of 45 mg N/kg

---

https://apps.ecology.wa.gov/publications/documents/0010033.pdf; Ecology, *Nooksack River Watershed Bacteria Total Maximum Daily Load*, Ecology Pub. No. 00-10-036 (June 2000), https://apps.ecology.wa.gov/publications/documents/0010036.pdf; Ecology, *Whatcom Creek Fecal Coliform Total Maximum Daily Load Report*, Ecology Pub. No. 06-10-041 (Sept. 2006), https://apps.ecology.wa.gov/publications/documents/0610041.pdf; Ecology, *Mid-Yakima River Basin Bacteria Total Maximum Daily Load*, Ecology Pub. No. 20-10-030 (Dec. 2020), https://apps.ecology.wa.gov/publications/documents/2010030.pdf ("Ecology's TMDL Reports").

[169] *Id.*

[170] Water Science School, *Bacteria and E. coli in Water*, USGS (June 5, 2018), https://www.usgs.gov/special-topics/water-science-school/science/bacteria-and-e-coli-water#overview.

[171] 33 U.S.C. § 1313(c)(2)(A).

[172] *See* Ecology's TMDL Reports.

[173] *See Mid-Yakima River Basin Bacteria Report* at 13.

[174] *Id.* at 140 (Ecology, replying to a comment by Washington State Dairy Federation).

in 32 of the samples taken from the lagoon, at all depths sampled, with levels as high as 286.3 mg N/kg.[175] This is despite the fact that regular use of this lagoon was abandoned in 2021.[176] As we discuss in our technical comment, the draft General Permit allows CAFOs to operate lagoons that are unprotective and therefore likely discharge nitrates, and ammonia, among other things.

Similarly, field application results in discharge of phosphorous, nitrates, and other dangerous components of manure. In Ecology's draft Johnson Creek Watershed TMDL, it documents the impact to watersheds resultant from the riparian vegetation removal resulting from farming activities.[177] Ecology states that "the result [of riparian vegetation removal] has been a **significant amount of runoff** from field application of dairy nutrients into surface water . . . [which] brings not only nutrients but fecal coliform and changes in pH."[178] As we discuss in our technical comment, Ecology's draft General Permit allows CAFOs to continue contributing these components to waters.

The permit as drafted will cause significant impacts to state waters. In doing so it destroys the uses of these waters for protected species, as well as for those who rely on the waters for realizing Treaty Rights, culturally important practices, recreational opportunities, and commercial activities.[179] In light of these impacts across environmental elements, the issuance of the DNS violates SEPA.

b. The General Permit Is Likely to Significantly Impact Air

Ecology's DNS is unlawful because, as we describe above, and as Ecology itself admits, CAFOs have a significant adverse impact on the climate.

Ecology suggests that the permit will not result in emissions. Certainly, the permit does not direct CAFOs to emit GHGs, nor does it directly regulate GHG emissions. Yet, by Ecology's own admissions the permit's conditions impact how the CAFOs function and how much they emit. Further, because the permit actually allows facilities to exist that, because they discharge, would not otherwise be lawful, the permitting of facilities that discharge also results in facilities that emit. Because the general permit creates the conditions for CAFOs to exist and emit GHGs, and CAFOs are, as Ecology itself recognizes, an important source of the two most potent GHGs in the state, the general permit will significantly impact the environment.

The issuance of the DNS in the face of these significant impacts is unlawful

c. The General Permit As Drafted Violates State and Federal Law

---

[175] Anchor QEA, H&S Bosma Dairy Lagoon No. 3 Abandonment Plan, Administrative Order on Consent Docket No. SDWA-10-2013-0080 5-6 (Jan.18, 2022).

[176] *Id.*

[177] *See Johnson Creek Watershed TMDL* at 13.

[178] *Id.*

[179] *See* Ecology's TMDL Reports.

An action can cause a significant impact under SEPA by violating local, state and federal law. Because the permit as drafted violates state and federal law, as we discuss in our technical comment, incorporated here by reference, the issuance of the DNS is unlawful.

Conclusion

In sum, Ecology, in drafting a permit that does not adequately consider climate, violated SEPA's broad mandate. While the effort towards incorporating mitigation of N2O is a good initial step, the permit needs more concrete requirements for mitigating the most potent GHG's. Further, Ecology needs to comprehensively evaluate how the CAFOs it allows to operate collectively contribute the climate change. But the wholescale failure to embed adaptation fails Ecology's implementing mandate and SEPA's broad mandate, and the people of the state, now and in the future, for whom it protects the water and the air.

Further, Ecology's DNS is unlawful. This General Permit will allow CAFOs to operate and contribute pollution to our waters and emissions to our air. Ecology failed to undertake the most essential part of the threshold process, collecting, analyzing and reviewing information about the impacts of the General Permit. Further, because there are a multitude of known significant impacts from issuance of this permit, Ecology can only comply with SEPA by issuing a DS and initiating the scoping process. We urge Ecology to withdraw the DNS and issue the mandating DS.

We hope to work with Ecology to make this process happen. Please let us know if you have questions by contacting Jennifer Calkins at calkins@westernlaw.org or (206) 607-9867.

Sincerely,

Jennifer D. Calkins, Ph.D., J.D.
Attorney and Diehl Fellow
Western Environmental Law Center
1402 3rd Avenue, Suite 1022
Seattle, WA 98101
(206) 487-7207, ext. 144
(206) 607-9867 direct
calkins@westernlaw.org

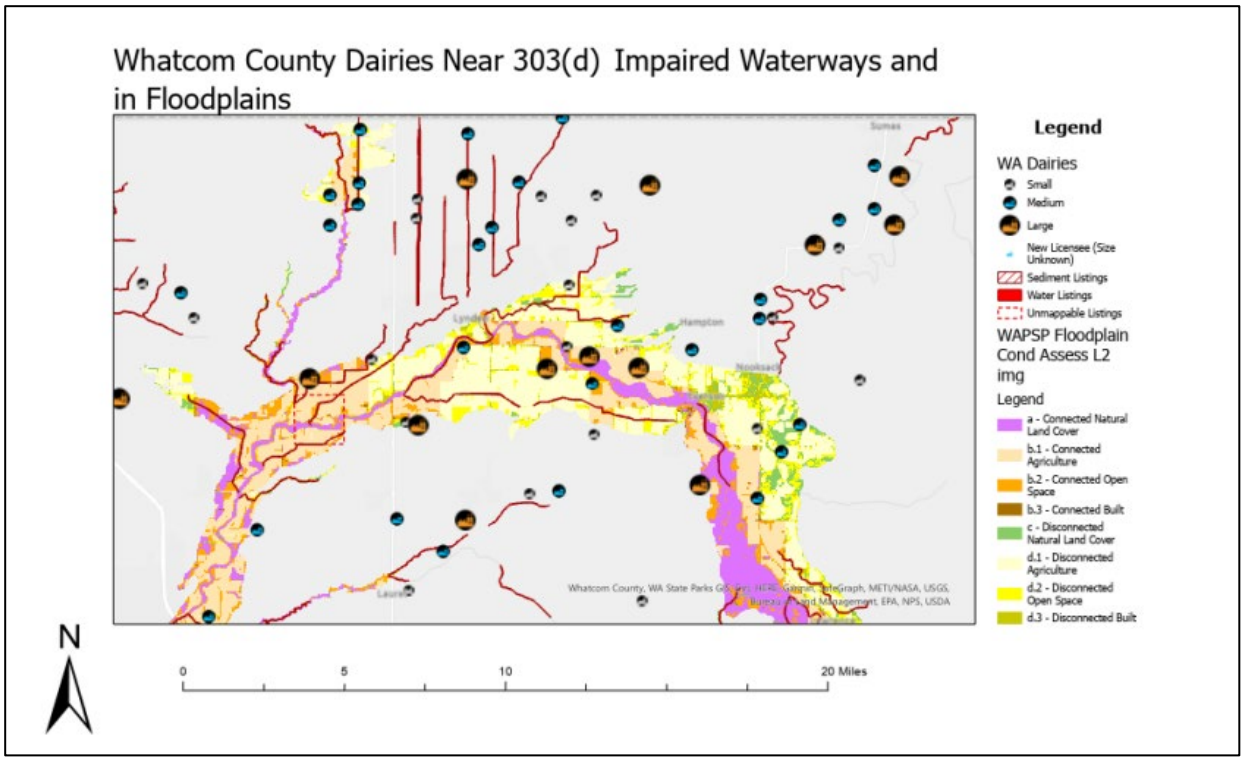
Jean Mendoza
Executive Director
Friends of Toppenish Creek

Amy van Saun
Senior Attorney
Center for Food Safety

Alyssa Barton
Policy Manager
Puget Soundkeeper Alliance

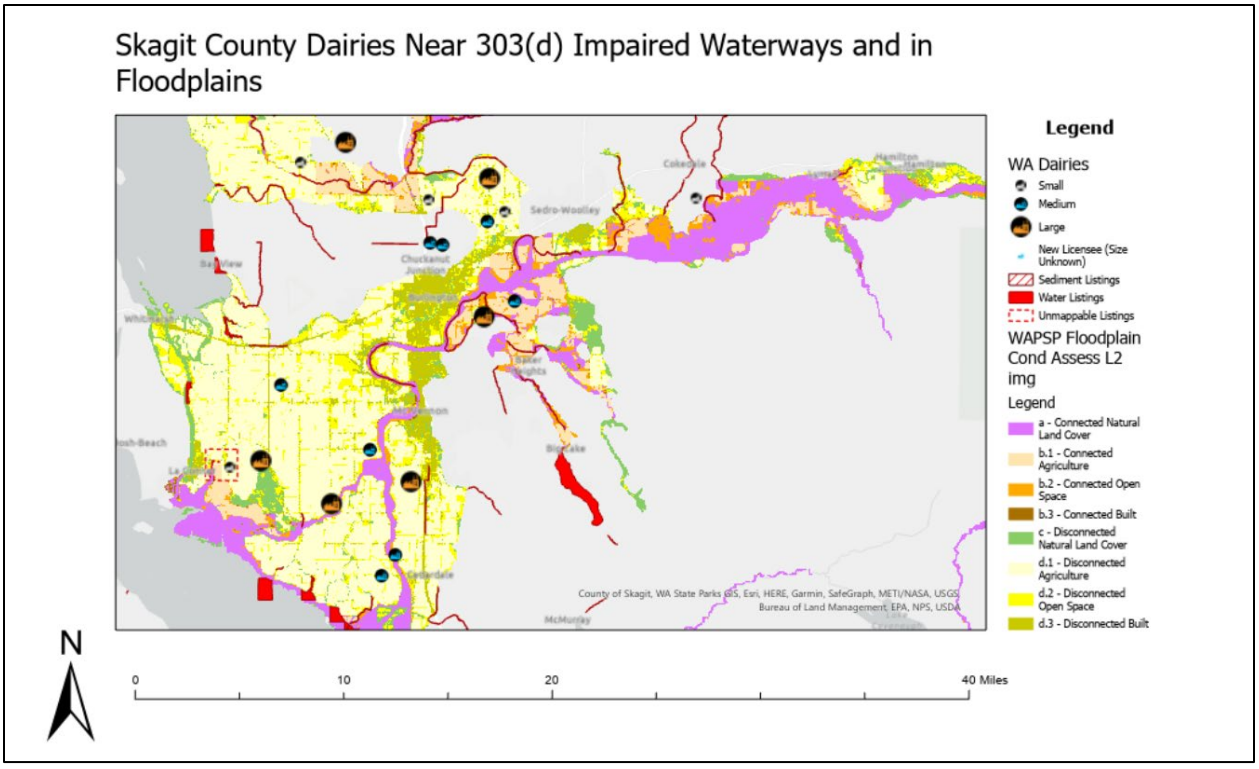
Margie Van Cleve
Conservation Chair
Washington State Sierra Club

Appendix 1: Floodplain Maps

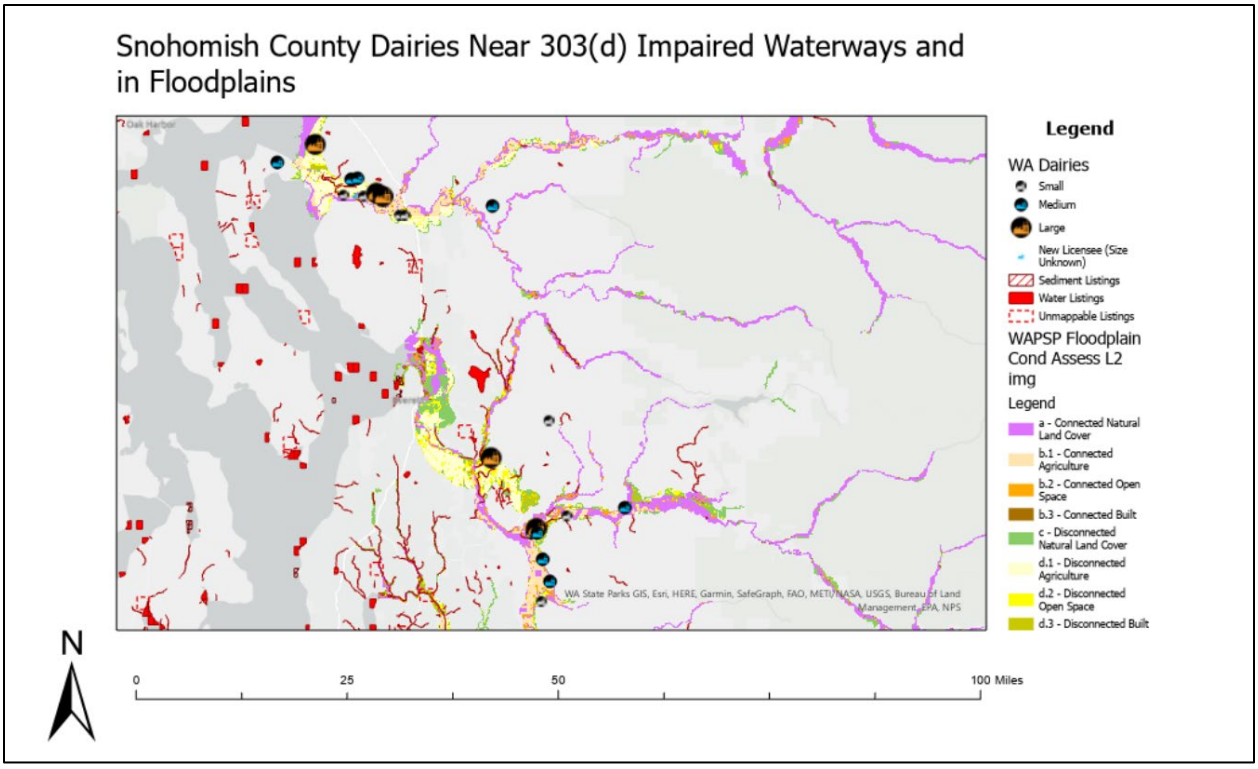


Floodplains

Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAECY – Water Quality Assessment – 303(d) List – Current*, (last updated Oct. 19, 2021), https://services.arcgis.com/6lCKYNJLvwTXqrmp/arcgis/rest/services/WQA_303d_current/FeatureServer; WA Puget Sound Partnership, *WAPSP Floodplain Cond Assess L2 img*, (last updated Feb. 3, 2022), https://gismanager.rco.wa.gov/arcgis/rest/services/PSP/WAPSP_FloodplainCondAssess_v2_L2_wm/ImageServer.

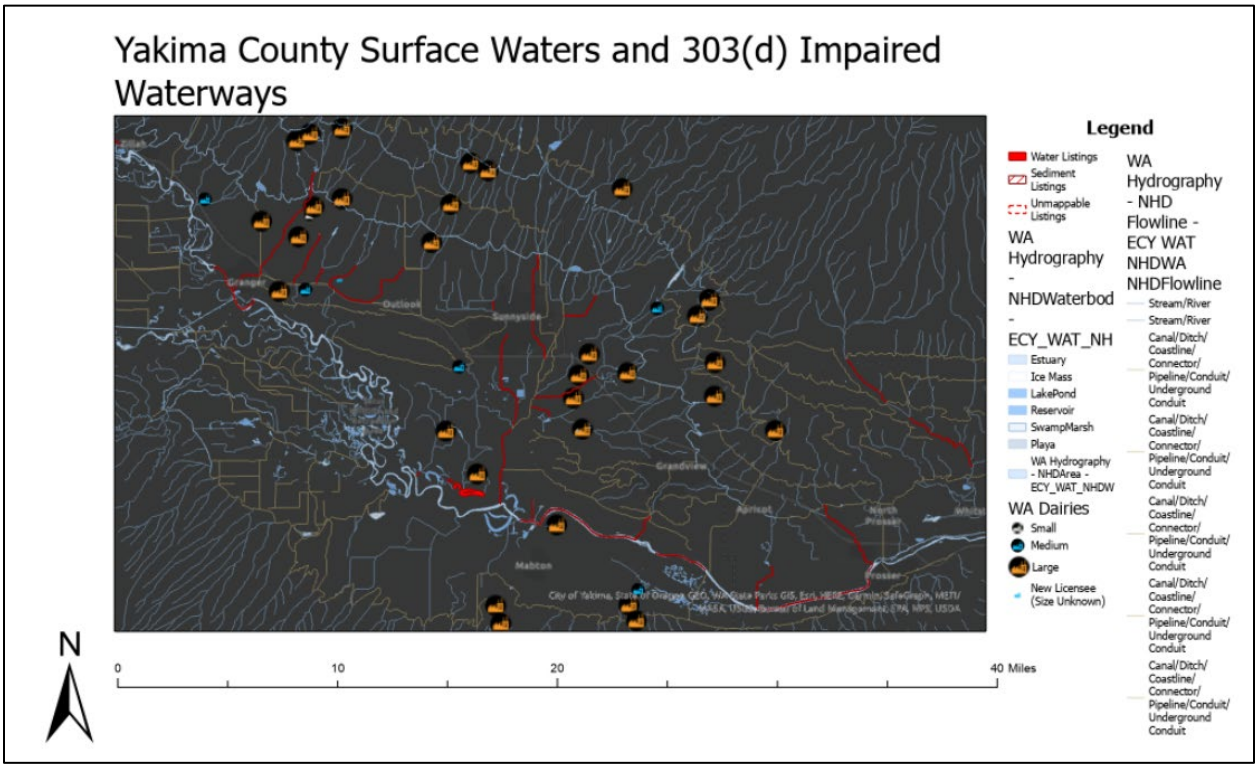


Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAECY – Water Quality Assessment – 303(d) List – Current*, (last updated Oct. 19, 2021), https://services.arcgis.com/6lCKYNJLvwTXqrmp/arcgis/rest/services/WQA_303d_current/FeatureServer; WA Puget Sound Partnership, *WAPSP Floodplain Cond Assess L2 img*, (last updated Feb. 3, 2022), https://gismanager.rco.wa.gov/arcgis/rest/services/PSP/WAPSP_FloodplainCondAssess_v2_L2_wm/ImageServer.

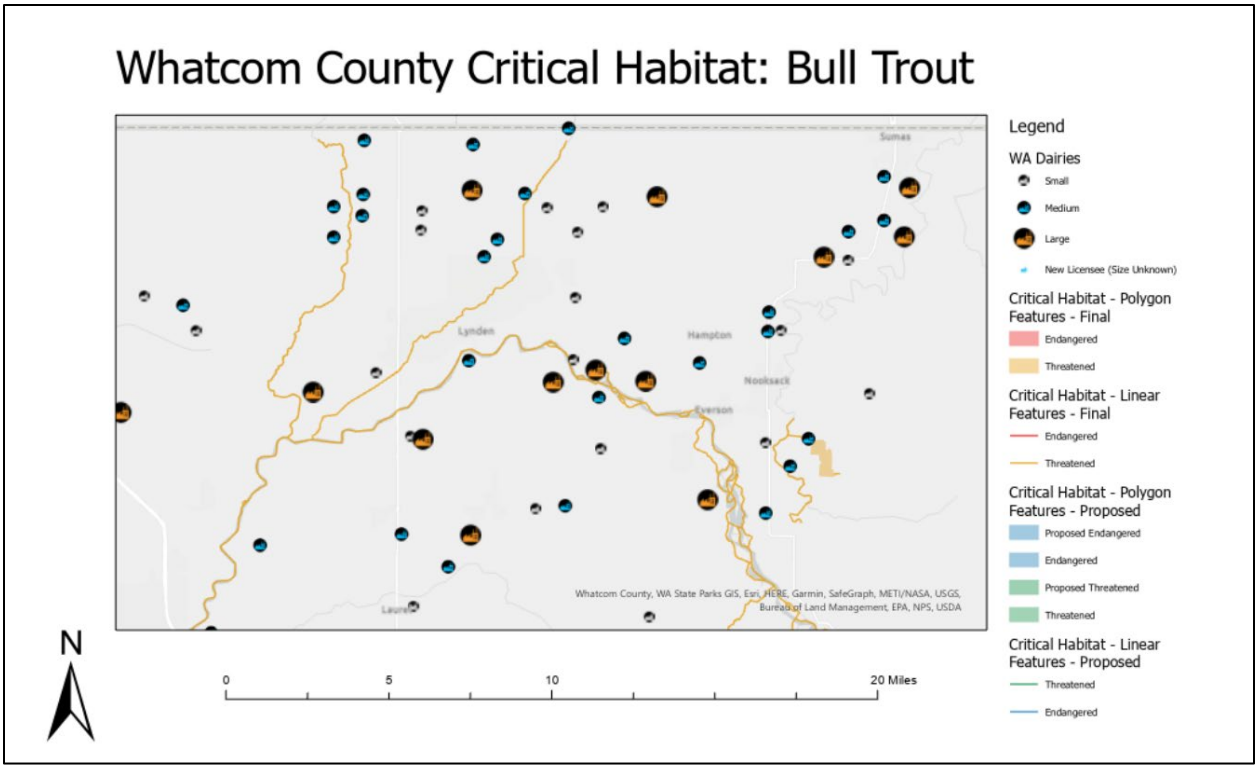


Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAECY – Water Quality Assessment – 303(d) List – Current*, (last updated Oct. 19, 2021), https://services.arcgis.com/6lCKYNJLvwTXqrmp/arcgis/rest/services/WQA_303d_current/FeatureServer; WA Puget Sound Partnership, *WAPSP Floodplain Cond Assess L2 img*, (last updated Feb. 3, 2022), https://gismanager.rco.wa.gov/arcgis/rest/services/PSP/WAPSP_FloodplainCondAssess_v2_L2_wm/ImageServer.

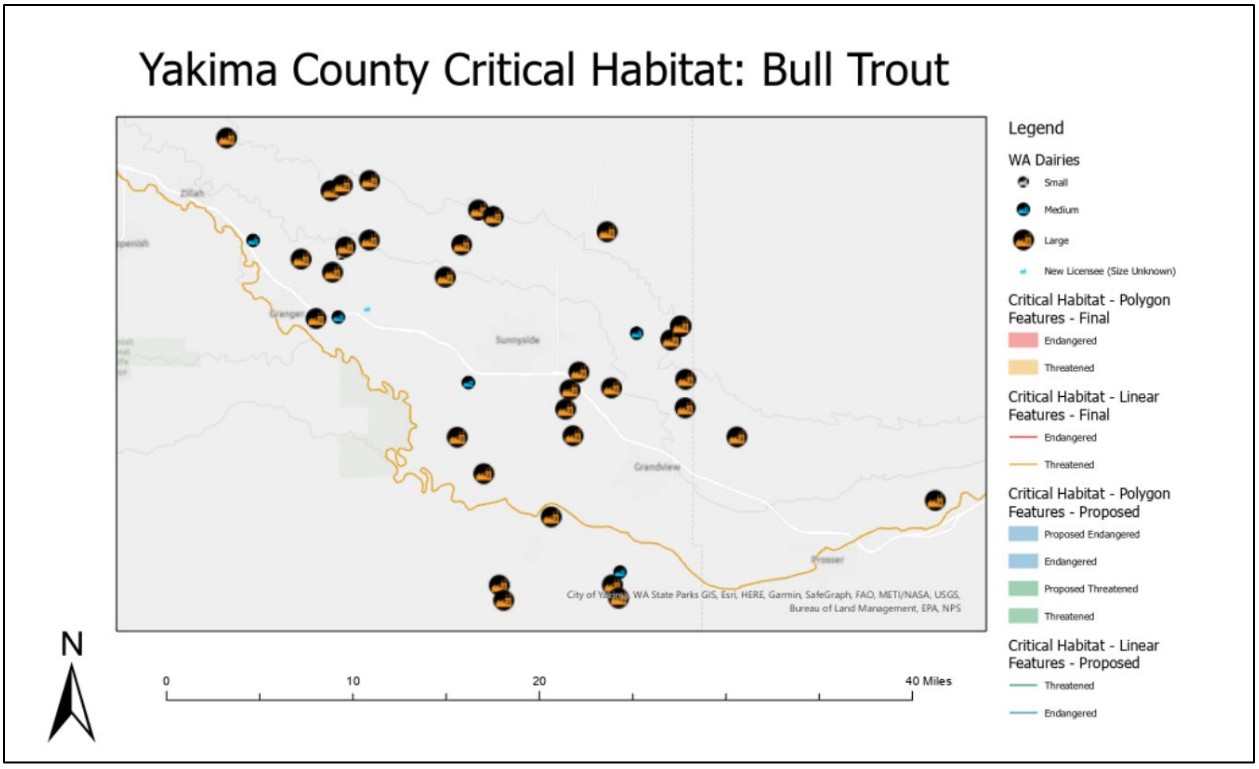
Appendix 2: Maps of CAFOs Relative Elements of the Environment



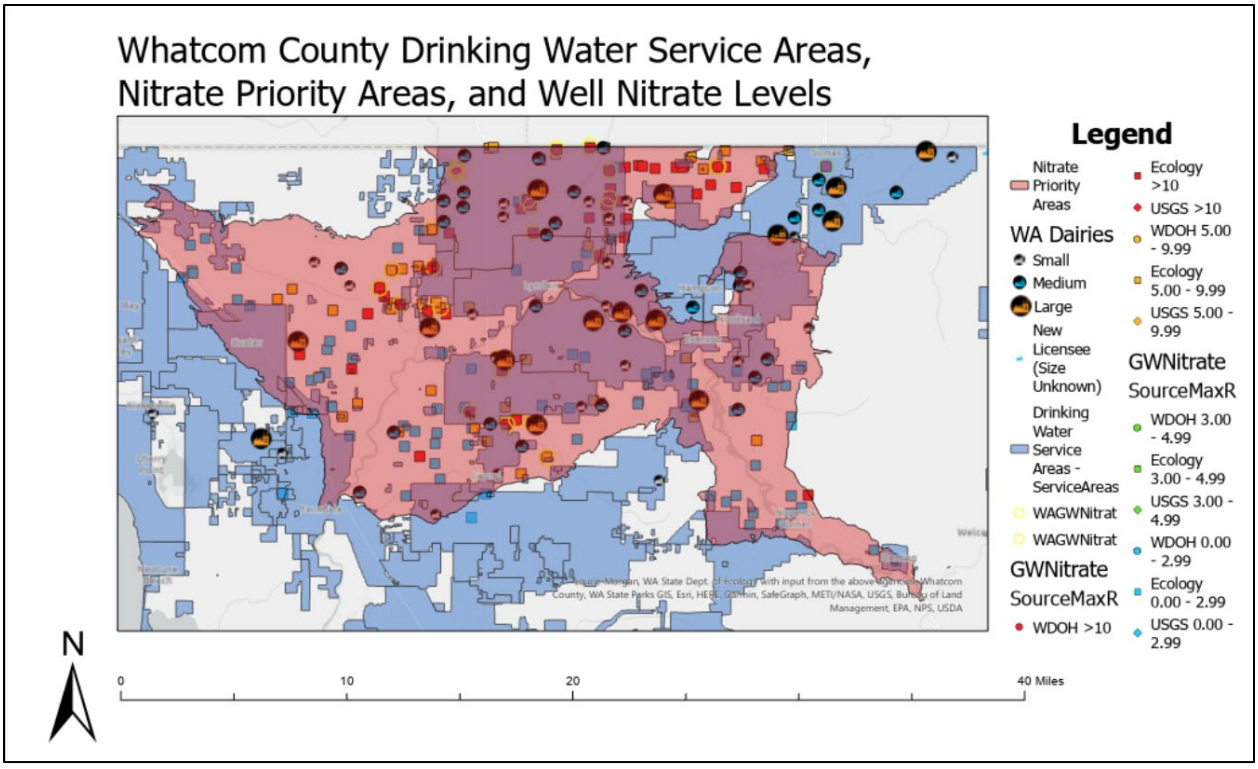
Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAECY – Water Quality Assessment – 303(d) List – Current*, (last updated Oct. 19, 2021), https://services.arcgis.com/6lCKYNJLvwTXqrmp/arcgis/rest/services/WQA_303d_current/FeatureServer; Ecology, *WA Hydrography – NHD Waterbody*, (last updated Jul. 1, 2021), https://fortress.wa.gov/ecy/gisprod/arcgis/rest/services/GIS/ECYAuthoritativeGISDatasets/MapServer/26.



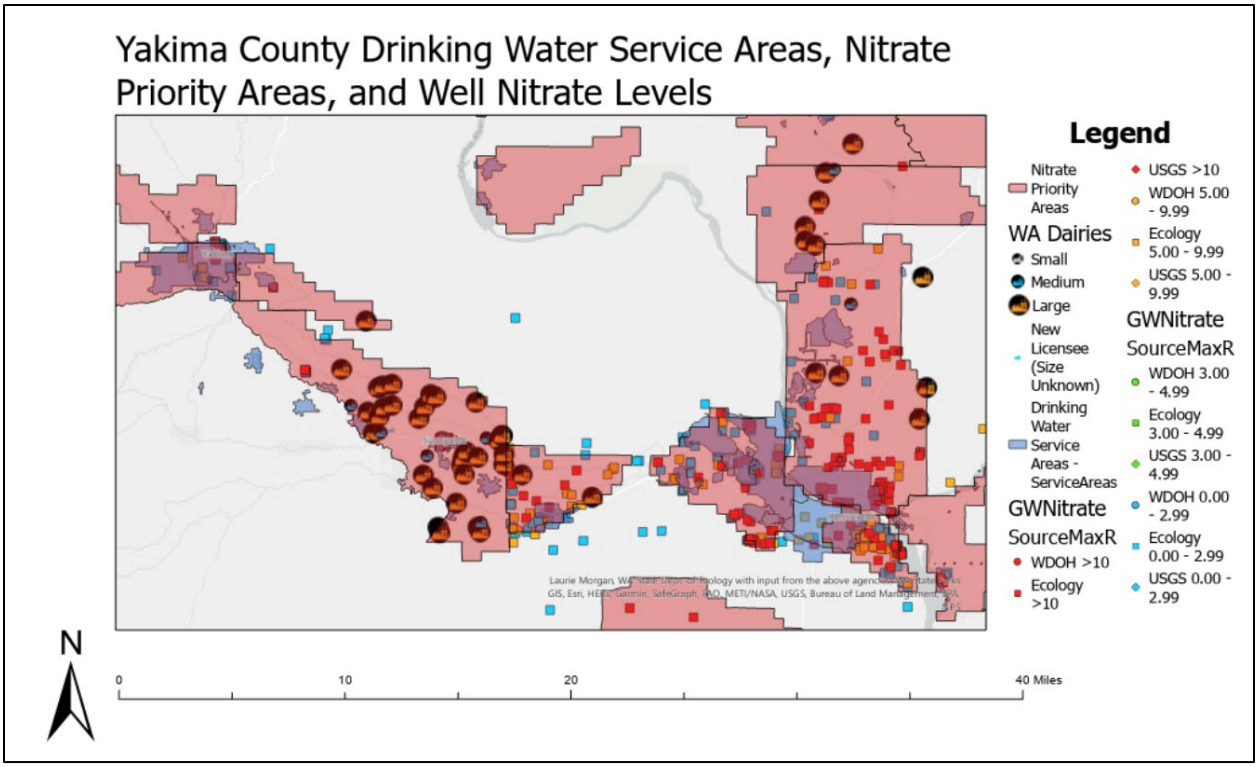
Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; National Geospatial Data Asset (NGDA), *Critical Habitat for Threatened and Endangered Species*, U.S. Fish and Wildlife Service feature layer (last updated Mar. 8, 2022), https://services.arcgis.com/QVENGdaPbd4LUkLV/arcgis/rest/services/USFWS_Critical_Habitat/FeatureServer.



Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; National Geospatial Data Asset (NGDA), *Critical Habitat for Threatened and Endangered Species*, U.S. Fish and Wildlife Service feature layer (last updated Mar. 8, 2022), https://services.arcgis.com/QVENGdaPbd4LUkLV/arcgis/rest/services/USFWS_Critical_Habitat/FeatureServer.



Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAGWNitrateWells_Dev*, Ecology and the U.S. Geological Survey (last updated May 11, 2022), https://gisdev.ecology.wa.gov/serverext/rest/services/WQ/WAGWNitrateWells/MapServer; Ecology, *Nitrate Priority Areas*, (last updated Dec. 3, 2020), https://services9.arcgis.com/3OOxQa3Fy6OOVdwb/arcgis/rest/services/Nitrate_Priority_Areas/FeatureServer.



Sources: WSDA, *Washington Geospatial Open Data Portal: WA Dairies*, (last updated Aug. 2022) https://geo.wa.gov/datasets/26add7da921d4aa68ccb50ce191c6182_0/explore?location=15.757463%2C0.000000%2C2.00; Ecology, *WAGWNitrateWells_Dev*, Ecology and the U.S. Geological Survey (last updated May 11, 2022), https://gisdev.ecology.wa.gov/serverext/rest/services/WQ/WAGWNitrateWells/MapServer; Ecology, *Nitrate Priority Areas*, (last updated Dec. 3, 2020), https://services9.arcgis.com/3OOxQa3Fy6OOVdwb/arcgis/rest/services/Nitrate_Priority_Areas/FeatureServer.