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May 6, 2024

Mr. Brock Tabor, DEC Division of Water
410 Willoughby Ave, Suite 303. P.O. Box 11800
Juneau, Alaska 99811

Re: Triennial review
Transmitted by electronic mail to brock.tabor@alaska.gov and via web portal

Dear Mr. Tabor:

Thank you for the opportunity to provide comments on the triennial review of state water quality standards (WQS) regulations at 18 AAC 70. I am submitting these comments on behalf of Alaska Community Action on Toxics (ACAT), a statewide public interest environmental health and justice research and advocacy organization, and Citizens for Clean Air (CCA), an all-volunteer community-based organization that advocates for a healthy environment in the Fairbanks and North Pole communities. We kindly request that you acknowledge receipt of these comments and enter them into the official public record.

ACAT and CCA have an abiding interest in ensuring that the Alaska Department of Environmental Conservation's (ADEC) water quality standards protect Alaska's waters, aquatic life, and human health. The Clean Water Act requires that delegated states conduct a review of its water quality standards at least every three years and to involve the public in that process (33 U.S.C. § 1313(c)(1); 40 C.F.R. §131.20). ACAT and CCA strongly support the adoption of amended human health criteria as a high priority for the 2024-2026 triennial review period. We urge the ADEC to engage the public in a fully transparent manner and notification process concerning steps toward adoption of new water quality standards.

Per- and Polyfluoroalkyl Substances (PFAS)
ACAT and CCA recommend that PFAS should be classified as a High Priority Issue for Rulemaking for the 2024-2026 triennial review cycle. In Alaska, the dispersive use of PFAS-based firefighting foams known as aqueous film forming foams (AFFF) on military bases and airports has contaminated surface and groundwater throughout Alaska. Wastewater is also an important source of PFAS. There is no systematic monitoring of waters or aquatic life (including

invertebrates, fish, birds, terrestrial, and marine mammals) that might be affected by contamination from AFFF sources or PFAS-contaminated wastewater.

PFAS are a complex class of more than 12,000 chemicals used in consumer products and industrial applications. PFAS are known as "forever chemicals" because they are extremely persistent in the environment. PFAS are also highly mobile, and some are bioaccumulative. Exposures to PFAS are associated with adverse health effects such as kidney and testicular cancer, ulcerative colitis, adverse reproductive health outcomes, low birth weight, liver disease, thyroid disease, elevated cholesterol levels, and immune system impairment.[1] Studies of aquatic organisms show that PFAS exposures are associated with adverse effects including impaired immune response, developmental and reproductive harm, compromised lipid metabolism, and behavioral effects.[2,3] Furthermore, aquatic organisms are continually exposed to mixtures of PFAS and other contaminants.

Currently, there are at least 469 sites in Alaska where PFAS contamination has been identified in soil and/or water according to the Alaska Department of Environmental Conservation.[4] As a result of PFAS contamination, several bodies of water in the Tanana River Management Area in the Fairbanks North Star Borough are only open to catch-and-release fishing. Kimberly Lake near the former North Pole Refinery is closed to fishing altogether. According to Alaska Department of Fish and Game (ADFG), rainbow trout caught in Kimberly Lake had nearly 2,000 times the concentrations of PFAS than levels measured in the lake water because PFAS are strongly bioaccumulative[5]. According to an ADFG advisory released in February 2022: "from 2019-2021, testing of water quality and fish from Polaris, Bear, and Moose Lakes, Bathing Beauty Pond, Moose Creek, and Piledriver Slough indicated that fish may be unsafe for human consumption due to PFAS contamination. These water bodies are connected to a plume of groundwater contaminated with PFAS associated with Eielson Air Force Base. Therefore, out of an abundance of caution, Bear, Moose, and Polaris Lakes, Bathing Beauty Pond, Piledriver Slough, and Moose Creek are being restricted to catch-and-release only fishing for all fish species."[6] Results from water quality testing at Bathing Beauty Pond in the summer of 2020 indicated that "PFAS levels were below EPA and DEC action levels (at 21–26 ppt) [Note: the EPA action levels are now outdated]. These concentrations can result in the bioaccumulation of PFAS in fish tissues to levels

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[1] Fenton SE et al. 2021. PFAS Toxicity and Human Health Review. Environmental Toxicology and Chemistry 40(3):606-630.

[2] Banyoi et al. 2022. The effects of exposure to environmentally relevant PFAS concentrations for aquatic organisms at different consumer trophic levels. Env. Poll. 315: 120422.

[3] Ma, T et al. 2022. Toxicity of Per- and Polyfluoroalkyl Substances to Aquatic Invertebrates, Plankton, and Microorganisms. Int J Environ Res Public Health 19(24):16729. doi: 10.3390/ijerph192416729. PMID: 36554610; PMCID: PMC9779086.

[4] Alaska Department of Environmental Conservation Inventory of PFAS Sites in Alaska: https://dec.alaska.gov/spar/csp/pfas/responses/.

[5] Alaska Department of Fish and Game Advisory Announcement (January 25, 2021). https://www.adfg.alaska.gov/sf/EONR/index.cfm?ADFG=region.NR&Year=2021&NRID=3079

[6] Alaska Department of Fish and Game. Sport Fishing Emergency Order (February 9, 2022).

that may be unsafe for consumption."[7] The full extent of contamination in water bodies and fish throughout Alaska is unknown and new contaminated sites are likely to be identified in the future. Our own investigation of surface waters in the Anchorage area and Fairbanks North Star Borough found levels of concern in every water body tested,[8] all waters used for fishing and recreation. We found levels in Anchorage waters that have triggered fish consumption advisories in Interior lakes. PFAS are strongly bioaccumulative and levels in fish can exceed levels in water by two thousand times. Given the concentrations of PFAS found in water of lakes in the Fairbanks North Star Borough and Anchorage found in this study, additional fish advisories may be warranted to protect public health. All of the water bodies in this study should be designated as impaired waters.

ADEC should use the 2024-2026 Triennial Review process to adopt numeric water quality standards / aquatic life criteria for at least the following PFAS: perfluorooctanoic acid ("PFOA"), perfluorooctane sulfonic acid ("PFOS"), perfluorohexane sulfonic acid ("PFHxS"), hexafluoropropylene oxide dimer acid and its ammonium salt ("GenX"), perfluorononanoic acid ("PFNA"), and perfluorobutane sulfonic acid ("PFBS"). We also recommend that ADEC establish fish consumption standards for PFAS. All of these measures are needed to protect human health and aquatic life throughout Alaska. These standards are also necessary to inform development of NPDES limits for wastewater discharges, including oil and gas operations, mining, and wastewater treatment plants. A significant number of community water systems (CWS) will need to add treatment processes to meet the proposed MCLs for these PFAS substances, and the majority of CWS will likely need to add treatment if ADEC adopts human health criteria for PFAS. It is critical to reduce discharges of PFAS using all available approaches, including water quality standards, as the only permanent solution to the PFAS crisis is to keep these substances out of waterbodies from the outset; treatment processes commonly considered for PFAS removal provide only an incomplete solution as they will generate PFAS-containing waste streams (such as reverse osmosis reject water, spent media disposal, and/or compost).

Other priorities for the 2024-26 Triennial Review:

- We also request prioritization of investigation and establishment of aquatic life criteria for biocides and pesticides/herbicides, including, 2,4-D, dicamba, glyphosate, glufosinate, and fluoridone as well as carbaryl.
- The aquatic life criteria for petroleum hydrocarbons are extremely outdated and must be revised to reflect current science on their toxicity.
- Pharmaceutical and personal care products are discharged through wastewater systems and landfill leachate into surface waters. "Pharmaceuticals constitute a significant class of aquatic contaminants and can seriously threaten the health of non-target organisms… The most common chronic toxic effects of pharmaceuticals in non-target animal species are related to (i) locomotive disorders, (ii) endocrine disruption, (iii) genotoxicity, (iv) reproduction disorders, (v) oxidative stress, (vi) body deformations, (vii) teratogenic

[7] Ibid.

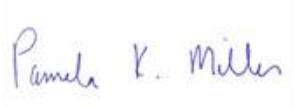
[8] https://www.akaction.org/publications/pfas/alaska-community-water-quality-report-pfas-contamination-of-municipality-of-anchorage-and-fairbanks-north-star-borough-waters/)

effects and (viii) reductions in overall organism condition (vitality)."[9] Conventional wastewater treatments are not well-designed to remove emerging contaminants from wastewater.

- Microplastics and nanoplastics are now ubiquitous in the aquatic environment and pose a threat to aquatic life and human health. Wildlife and humans are exposed not only to the chemicals added to plastics but directly to plastic materials in the form of microplastics and nano-plastics. Microplastics are found in fish, seabirds, walrus, seals, and whales in Alaska.[10] In humans, microplastics are found embedded in the placenta, in blood, in the heart and in the liver and digestive system. They can cross the blood-brain barrier.[11] Micro- and nanoplastics are also found in breast milk and infant formula. Plastic particles and chemical additives can be ingested through water.
- The effects of airborne contaminants and their deposition in waterbodies, including heavy metals and particulates from mining operations and ore transport on aquatic life.

Thank you for your consideration.

Respectfully,



Pamela Miller
Executive Director and Senior Scientist

[9] Hejna, M. et al. 2022. Pharmaceuticals in the Aquatic Environment: A Review on Eco-Toxicology. Int J Environ Res Public Health. 19(13): 7717.

[10] https://www.akaction.org/publications/the-arctics-plastic-crisis/

[11] https://projecttendr.thearc.org/project-tendr-briefing-paper-protecting-the-developing-brains-of-children-from-plastics-and-toxic-chemicals-in-plastics/