

Department of Environmental Conservation  
Division of Water  
2024-2026 Triennial Review Issue Summary  
January 2024



## Summary

This document summarizes the *Triennial Review* process (TR) and those state water quality standards (WQS) issues and projects that may result in the development of new state regulations.

## Background

The Department of Environmental Conservation (DEC) is required by the Clean Water Act to conduct a comprehensive evaluation of state regulations pertaining to WQS every three years (i.e., *triennial review* (TR)). The purpose of the TR is to ensure pollution limits for Alaska's surface waters integrate new science, policy, technology, and federal requirements.

The TR process occurs in three phases. Phase I consists of outreach to the general and regulated public for information on those issues and projects DEC has identified as being of particular interest to the department. Additional issues and projects may be proposed by the public during Phase I and acted on at the department's discretion. In Phase II, DEC prioritizes different issues and projects, conducts research, and may draft WQS regulations and/or guidance. Phase III entails the public outreach and WQS regulation adoption process set in federal and state regulations.

The following are those issues and projects DEC has prioritized during 2024-2026 TR cycle.

## 2024-2026 Triennial Review Summary

- I. **High Priority Issues for Rulemaking:** The following issues and projects reflect prior commitments or current rulemaking efforts already underway.
  1. Adoption of Amended Criteria for the Protection of Human Health (multiple pollutants)
  2. Bacteria Criteria Update
  3. Copper, alternative method – Aquatic Life Criteria
  4. General Water Quality Standards Update -
  5. Intake Credits
  6. Natural Conditions
- II. **Issues for Information Gathering and Analysis.** The following issues and projects will be explored during the 2024-2026 Triennial Review for future rulemaking.
  1. Aluminum – Aquatic Life Criteria
  2. Ammonia – Aquatic Life Criteria
  3. Groundwater Standards
  4. PFAS – Aquatic Life Criteria

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**Department of Environmental Conservation**  
**Division of Water**  
**2024-2026 Triennial Review Issue Summary**  
**January 2024**



5. Recreational Water Quality Criteria for Microcystins and Cylindrospermopsin
6. Selenium – Aquatic Life Criteria
7. Temperature – Aquatic Life Criteria

**III. Issues for Tracking and Monitoring:** The following issues and projects are suggested for tracking and monitoring for emerging science and science-based policy.

1. Acrolein – Aquatic Life Criteria
2. Biocriteria
3. Carbaryl – Aquatic Life Criteria
4. Dissolved Inorganic Substances for Total Dissolved Solids
5. Emerging Contaminates
6. Nutrient Criteria
7. Petroleum Hydrocarbons
8. Pharmaceuticals and Personal Care Products
9. Wetland Standards

## **Issues Descriptions**

### **I. High Priority Issues for Rulemaking**

**1. Adoption of Amended Criteria for the Protection of Human Health (multiple pollutants).**

Human health criteria (HHC) are established to minimize health risks to humans through the consumption of aquatic organisms (e.g., fish, shellfish) and untreated water over the course of a lifetime. In 2015 EPA published updated national HHC recommendations which states are required to consider per Clean Water Act section 304(a). DEC has been actively pursuing rulemaking during the existing TR cycle and will continue this effort during the 2024-2026 TR cycle.

**2. Bacteria Criteria.** DEC has adopted fresh and marine water quality criteria for bacteria in state water quality standards at 18 AAC 70.020(b)(2) and 18 AAC 70.020(b)(14). The WQS reference three different kinds of indicator bacteria that may be used to for laboratory analysis and determining compliance with the WQS: fecal coliform, E. coli, and enterococcus. Each indicator bacteria criterion references a numeric value per 100 milliliters (mL). DEC is considering adding clarifying language in regulation that freshwater or marine bacteria results may be reported to the department in fecal coliform (FC) or colony forming units (CFU) or most probable number (MPN) provided that the volume analyzed is equivalent to that referenced in state WQS.

**3. Copper – Aquatic life criteria.** Copper - Aquatic Life Criteria. In 2007 EPA updated recommended freshwater aquatic life criteria for copper (Cu) in accordance with section 304(a) of the Clean Water Act. The 2007 Cu criteria apply a modeling approach known as the biotic ligand model (BLM) in the calculation of criteria considered to be protective of aquatic life. The BLM is considered more predictive of lethal and nonlethal effects to aquatic life due to its ability

**Department of Environmental Conservation**  
**Division of Water**  
**2024-2026 Triennial Review Issue Summary**  
**January 2024**



to assess multiple parameters (e.g., hardness, multiple chemicals) against bioavailability. DEC is considering amendments that would authorize the application of the BLM in certain wastewater discharge permits on a site-specific basis.

4. **General Water Quality Standards Update.** DEC is considering amendments that clarify applicable units for certain toxic pollutants, convert all latitude and longitude references to decimal degrees, and include waterbody assessment units in all references to waterbodies that have modified uses and/or criteria.
5. **Intake Credits.** DEC is considering amendments to 18 AAC 70 and 18 AAC 83 to allow for the application of “intake credits” when calculating water quality-based effluent limits in wastewater discharge permits. Permits would be “credited” for concentrations of pollutants that are naturally occurring in a permittee’s intake water and discharged into the same body of water from which intake water is drawn from.
6. **Natural Conditions.** DEC references natural conditions in regulation at 18 AAC 70 and relevant policy documents. There are discrepancies between state and federal policy on how best to account for the presence of naturally occurring pollutants (i.e., generated by non-human sources) in ambient waters and in the Alaska Pollutant Discharge Elimination System (APDES) wastewater permitting process. DEC is considering reviewing policy options and potential rulemaking opportunities during the 2024-2026 TR cycle.

## **II. Information Gathering and Analysis.**

1. **Aluminum** – Aquatic Life Criteria. In 2018 EPA updated recommended freshwater aluminum aquatic criteria and published draft implementation guidance for the recommended criteria in 2021. The aluminum criteria are derived using a modeling approach that incorporates pH, hardness, and dissolved organic carbon data. DEC is considering how the recommended criteria could be adopted in a manner that would only consider the bioavailable concentration of aluminum when determining compliance with water quality standards. Aluminum is not considered to be a pollutant of general concern in Alaska; however, DEC is required to consider adoption of all published 304(a) criteria during TR cycles.
2. **Ammonia** – Aquatic Life Criteria. In 2013 EPA published updated freshwater criteria protective of aquatic life in accord with section 304(a) of the CWA. Ammonia is found in a variety of wastewater discharges. EPA recommends states adopt an acute criterion of 17 mg/L of total ammonia nitrogen (TAN) and a chronic criterion for the compound be 1.9 mg/L TAN at a pH of 7 and a temperature of 20 degrees Celsius (°C). This change amounts to a 2.4-fold decrease from DEC’s adopted criteria. DEC is considering whether the EPA published criteria are protective of aquatic life in Alaska and potential alternatives when highly sensitive species are not present in state freshwaters systems. Ammonia is not considered to be a pollutant of general

**Department of Environmental Conservation**  
**Division of Water**  
**2024-2026 Triennial Review Issue Summary**  
**January 2024**



concern in Alaska; however, DEC is required to consider adoption of all published 304(a) criteria during TR cycles.

3. **Groundwater Standards.** State water quality standards (inc. protected uses) at 18 AAC 70 apply to surface (freshwater and marine) waters and groundwater. Many states have developed groundwater specific WQS that better characterize protected uses and desired level of protection. DEC will consider state and federal policies pertaining to groundwater and relevance to the protection of Alaska's aquatic resources.
4. **Per- and polyfluoroalkyl (PFAS) – Aquatic Life Criteria.** In 2022 EPA issued draft recommended aquatic life criteria (freshwater and marine) for two PFAS compounds; perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). DEC is considering the impact of adoption of these criteria on the environment and the regulated community.
5. **Recreational Ambient Water Quality Criteria.** In 2016 EPA published updated recommended criteria and/or swimming advisories for Microcystins and Cylindrospermopsin. The federal Beach Act requires states to adopt criteria protective of recreational uses in a timely manner. DEC will explore the implementation issues associated with adoption of these criteria as part of the 2024-2026 TR cycle.
6. **Selenium – Aquatic Life Criteria.** In 2016 EPA updated recommended freshwater aquatic life criteria for selenium. The updated criteria are primarily based on organisms consuming selenium-contaminated food rather than only being exposed to selenium dissolved in water. The criteria is expressed as both fish tissue and water column values. DEC is considering the impact of adoption on water pollution control programs and the regulated community. Selenium is not considered to be a pollutant of public concern in Alaska; however, DEC is required to consider adoption of all published 304(a) criteria during TR cycles.
7. **Temperature – Aquatic Life Criteria.** Studies have indicated that increases in stream temperatures, shifts in annual temperatures, and loss of cold-water refuges can negatively affect salmon mortality, increase competition with non-native species, and increase the risk and severity of disease. In 2015 EPA published a “framework” to be used by states when developing site-specific criteria for temperature, dissolved oxygen, and pH. DEC is considering how this policy can apply in Alaska's climate and regulatory framework.

### **III. Tracking and Monitoring.**

1. **Acrolein – Aquatic Life Criteria.** In 2009 EPA updated recommended freshwater aquatic life criteria. Acrolein is a pollutant (biocide) primarily used for irrigation ditch weed control and algal management. Acrolein is not considered to be a pollutant of general concern in Alaska; however, DEC is required to consider adoption of all published 304(a) criteria during TR cycles.

**Department of Environmental Conservation**  
**Division of Water**  
**2024-2026 Triennial Review Issue Summary**  
**January 2024**



2. **Biocriteria.** Alaska's WQS reference physical and chemical thresholds (i.e., narrative and numeric criteria). Biologic criteria incorporate the use of macroinvertebrates and similar biota as indicators of water quality and desired condition(s) determined to protect designated uses. This is an area of emerging science in Alaska and being considered by DEC as an alternative means of determining whether a designated/existing use is attained.
3. **Carbaryl – Aquatic Life Criteria.** Carbaryl is a pesticide used for pest control and fruit thinning. In 2012 EPA updated recommended freshwater aquatic life criteria for carbaryl in accord with section 304(a) of the CWA. Alaska has not previously adopted criteria for this pollutant. Carbaryl is not considered to be a pollutant of general concern in Alaska; however, DEC is required to consider adoption of all published 304(a) criteria during TR cycles.
4. **Dissolved Inorganic Substances, Total Dissolved Solids (TDS).** TDS is a measure of inorganic salts, organic matter, and other dissolved materials in water. The current TDS criterion for drinking water supply and aquatic life is 500 mg/L. More recent science indicates that this criterion may be overly stringent and further consideration as part of the TR cycle may be warranted.
5. **Emerging Contaminates.** DEC is tracking emerging science associated with such pollutants as 6 PPD-quinone and how those pollutants may affect protected uses in state waters. DEC is monitoring national efforts to address these issues in state WQS.
6. **Nutrient Criteria.** The regulation of nutrients (i.e., total nitrogen and total phosphorus) is a major concern for EPA and many states. In 2021 EPA published national freshwater criteria to address nutrient pollution in lakes and reservoirs. More study will be necessary before there is sufficient data to characterize Alaska's lakes and adopt numeric nutrient criteria considered to be protective of designated uses.
7. **Petroleum Hydrocarbons – Aquatic Life Criteria.** Alaska's numeric aquatic life criteria for petroleum hydrocarbons were adopted in 1979. The characteristics of petroleum hydrocarbons have led to unique implementation challenges. DEC will monitor new scientific literature on the toxicity and regulation of petroleum hydrocarbons.
8. **Pharmaceutical and Personal Care Products (PPCPs).** National water quality monitoring efforts have demonstrated that pharmaceutical and personal care products regularly enter wastewater systems through our homes and businesses and may be found in low concentrations in certain surface waters. Some examples of PPCPs include prescription and over-the-counter therapeutic drugs, veterinary drugs, Nutraceuticals (e.g., vitamins) and cosmetics. To date, scientists have found no evidence of adverse human health effects from PPCPs in the environment. However, PPCPs contain a diverse set of chemical compounds that may be under-

Department of Environmental Conservation  
Division of Water  
2024-2026 Triennial Review Issue Summary  
January 2024



regulated that have the potential to cause harm to aquatic life. DEC will continue monitoring national efforts to address this issue.

9. **Wetland Standards.** State water quality standards (inc. protected uses) at 18 AAC 70 apply to surface waters (freshwater and marine) and groundwater. Wetlands are regulated like other surface waters (e.g., streams, lakes) but often have distinctly different physical and chemical characteristics. Many states have developed wetland specific WQS that better characterize protected uses and desired level of protection. This potential TR issue will consider state and federal policies pertaining to wetlands and relevance to the protection of Alaska's aquatic resources.