



May 22, 2025

Ms. Marla Koberstein
WA Department of Ecology
PO Box 47696
Olympia, WA 98504-7696

Subject: Ecology's March 2025 A Performance-Based Approach for
Developing Site-Specific Natural Conditions Criteria for Aquatic Life in
Washington (Second Draft)

Dear Ms. Koberstein,

The City of Everett supports Ecology's efforts to establish natural conditions provision of the State's water quality criteria. The City requests that Ecology consider the City's comments on the proposed performance based approach to natural conditions and simplify the approach for marine waters to something less complex, less uncertain, and less ambiguous by providing specifics for when and where the criteria apply and the allowable exceedances of the criteria.

The City has reviewed the following Ecology documents regarding the proposed performance-based approach to the marine waters dissolved oxygen natural conditions criteria:

- A Performance-Based Approach for Developing Site-Specific Natural Conditions Criteria for Aquatic Life in Washington (Second Draft). March 2025, Publication 25-10-022.
- Performance-based approach methods document: marine dissolved oxygen. Public workshop and hearing. May 15, 2025.
fortress.wa.gov/ecy/ezshare/wq/standards/2025_05_NCC_PBA_Public_Webinar.pdf

Our review was focused on the performance-based approach to the natural conditions for marine dissolved oxygen (DO), and our comments address the complexity of the performance-based approach and how the natural conditions DO criteria will be expressed.

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1. Ecology's performance-based approach is overly complex and based on an entirely hypothetical natural condition that depends upon the assumptions made about pre-anthropogenic conditions, which cannot be known, measured, or verified.

Developing pre-anthropogenic conditions as part of setting natural conditions criteria is unlikely to meet Ecology's objectives that the process should result in predictable and repeatable criteria. This is because developing pre-anthropogenic conditions will require many assumptions in estimating load reductions from land-based sources (including groundwater and river/tributary inputs), atmospheric deposition, and ocean boundary conditions. In addition, human-induced structural changes will need to be estimated to remove impacts associated with shoreline hardening, dredging activities, and river control structures such as dams and diversions.

It appears that the Salish Sea Model will need to be revised to estimate the natural conditions criteria associated with the pre-anthropogenic conditions, according to Ecology's performance-based approach. In Step 8 Estimating Natural Conditions of the March 2025 Second Draft, Ecology states that "All human-caused impacts must be accounted for and removed using all existing, readily available, and credible information to develop the natural conditions scenarios." The approach taken to the use of the Salish Sea Model for natural conditions does not appear to conform with this performance-based approach because the SSM Reference Condition Scenario still includes Canadian nutrient sources, Canadian rivers, and industrial treatment plant discharges.

It appears that Ecology has introduced an additional level of complexity in the March 2025 Second Draft of the performance-based approach that would require the development of individual natural conditions criteria for each layer of the 10 layers in the marine water column from top to bottom of Puget Sound. This appears complex and Ecology has not provided an explanation for how this will be applied in practice to Puget Sound. The March 2025 Second Draft does reference volume weighting horizontally, but notes that no vertical aggregation is allowed. No explanation is provided in the March 2025 Second Draft for how volume weighted horizontal aggregation of the various layers would be accomplished across the entire geography of Puget Sound, or by subbasin, or by embayment. Further, the Salish Sea Model includes 10 layers from top to bottom, but water depths vary throughout Puget Sound. So, while the surface layer may be common across Puget Sound, lower water depth layers at various locations would not align with each other.

EPA acknowledges that the performance-based approach that Ecology is proposing has limited application in other States¹, so an established precedent that the process is

¹ EPA, 2015. A Framework for Defining and Documenting Natural Conditions for Development of Site-Specific Natural Background Aquatic Life Criteria for Temperature, Dissolved Oxygen, and pH: Interim Document. Office of Water, EPA 820-R-15-001. February 2015.

predictable and repeatable is also limited and may not exist. This suggests that Ecology's novel application of the performance-based approach may result in unpredictable outcomes when applied to Washington waters. It is unlikely that Ecology's performance-based approach meets Ecology's own stated goal in the proposed rulemaking to "Increase clarity and transparency on the process we use to determine natural conditions in surface waters" given the complexity of the process and challenges in characterizing and accounting for pre-anthropogenic conditions predating European settlement, agricultural development, climate change, etc. The assumptions made to conduct the natural conditions analysis are likely to vary depending upon the individuals or institutions conducting the analysis and their opinions.

2. Ecology has not addressed the spatial and temporal applicability, nor the frequency of exceedance of the natural conditions criteria, in order to establish a transparent process for interpretation of where, when, and how often the natural conditions criteria apply.

EPA recommendations for the performance-based approach call for definition of the spatial (e.g., monitoring location, embayment, assessment unit) and temporal (e.g., summer, low flow, diurnal) boundaries of natural conditions criteria. For example, the DO standards in Chesapeake Bay established designated use areas (e.g., open-water fish and shellfish use, deep-water seasonal fish and shellfish use, deep channel seasonal refuge use) with associated temporal, concentration, and duration definitions. Further, Ecology has not addressed the allowable exceedance frequency of the natural conditions criteria that would allow a transparent interpretation of the *de minimis* impact to natural conditions criteria due to anthropogenic sources. For example, the EPA proposed DO rulemaking for the tidal Delaware River² and the Florida Department of Environmental Protection DO standards³ use an acceptable criteria exceedance frequency of 10% (i.e., the DO magnitude can be exceeded 10% of the time in a season). These missing considerations are needed to develop natural conditions criteria that include the required magnitude, duration, and frequency components of water quality standards.

These omissions may result in Ecology's additional DO decrease (i.e., 10% or 0.2 mg/L) below the natural conditions criteria due to anthropogenic sources being interpreted as a not to exceed value at any point and at any time, which constitutes an extremely high bar for water quality assessments. It would be inappropriate to consider a numerical value which has simply been selected as a representation of a *de minimis* impact (i.e., within monitoring measurement error) that is not linked to maintenance of a specific aquatic life beneficial use.

Further, it would be inconsistent with the level of accuracy of water quality model predictions with and without anthropogenic sources when model skill assessment

² Federal Register, 2023. Water Quality Standards To Protect Aquatic Life in the Delaware River. EPA-HQ-OW-2023-0222. Vol. 88, No. 244, December 21, 2023.

³ FDEP, Dissolved Oxygen Criteria for Class I, Class II, Class III, and Class III-Limited Waters. Chapter 62-302.533.

results exceed the selected *de minimis* DO decrease of 0.2 mg/L. Model skill assessment of the Salish Sea Model presented in the Journal of Geophysical Research⁴ and in Ecology's Model Updates and Bounding Scenarios report⁵ indicate overall Sound wide mean error (bias) ranging for DO from -0.7 to 1.0 mg/L and root mean square error (RMSE) ranging from 0.6 to 1.6 mg/L. These two statistics measure the difference between observed data and the model predictions with the model performance varying in the different regions of the Sound (i.e., Bellingham, Samish and Padilla Bays, Whidbey Basin, Admiralty Inlet, Main Basin, Hood Canal, South Sound). Although these model statistics results are similar to other complex marine DO modeling studies, the accuracy of the model needs to be accounted for when evaluating natural conditions DO criteria and the allowable DO decrease associated with anthropogenic sources.

3. Ecology should consider new biologically based marine dissolved oxygen standards as an alternative or significant component of this rulemaking.

The current dissolved oxygen standards were adopted by a predecessor agency to Ecology. They are not biologically based and there is no record as to the basis for the development of the standards. While Ecology may deem the standards "protective," they are not based on sound science and certainly do not reflect the need to have standards that are consistent with the highly variable temporal and spatial conditions in Puget Sound.

4. Ecology should fully document and assess the likely costs of this rulemaking.

It appears that Ecology is seeking through this rulemaking to reestablish a natural conditions provision in the state water quality standards that will allow Ecology to proceed with its Puget Sound Nutrient Program, including the Puget Sound Nutrient General Permit (PSNGP). Ecology has sufficient information as to its intent in the program to fully assess the costs of this rule, the impact on small businesses, and the impact on already overburdened communities.

Ecology has been clear that it intends to refine the Salish Sea Model to develop final water quality based effluent limits for Puget Sound wastewater treatment plants for total inorganic nitrogen in the range of 3 mg/L, 5 mg/L, or 8 mg/L. Everett was required under the PSNGP to submit a Nutrient Reduction Evaluation with these values. Ecology has sufficient information to evaluate the costs of treatment technology to achieve these limits and should do so as part of the rulemaking.

⁴ Khangaonkar, T., Nugraha, A., Xu, W., Long, W., Bianucci, L., Ahmed, A., Mohamedali, T., & Pelletier, G., 2018. Analysis of hypoxia and sensitivity to nutrient pollution in Salish Sea. Journal of Geophysical Research: Oceans, 123, 4735–4761. <https://doi.org/10.1029/2017JC013650>.

⁵ Washington State Department of Ecology, 2019. Puget Sound Nutrient Source Reduction Project, Volume 1: Model Updates and Bounding Scenarios. Publication No. 19-03-001, January 2019.

5. Ecology should conduct a thorough environmental justice assessment under RCW 70A.02.060.

Ecology requires this analysis under the PSNGP and has now published draft guidance on how to conduct the assessment for the general permit. Since Ecology intends to use the proposed natural condition rule as a basis for the PSNGP, Ecology is obligated to provide this analysis for the draft rule. Ecology has sufficient information regarding the cost of treatment to implement the rule and the potential impact on utility rates to conduct the assessment.

The City would welcome an opportunity to discuss these comments with Ecology staff. The City is interested in a clear definition of where and when the human contribution allowances are applied to the approximation of natural conditions in marine waters and specifically how they will apply to water quality assessments, water quality modeling using the Salish Sea Model, Alternative Restoration Plans for Puget Sound, and NPDES discharge permitting.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Marrs', with a stylized flourish at the end.

Jeff Marrs
Assistant Public Works Director
City of Everett Public Works