Teresa Peterson

Please see the attached for the City of Tacoma's comments on the Draft 2025 Puget Sound Nutrient General Permit.

Submitted via Public Comment Portal
Jon Kenning
Water Quality Program
State of Washington Department of Ecology
P.O. Box 47696
Olympia, WA 98504-7696

August 27, 2025

Re: City of Tacoma Comments on Draft 2025 Puget Sound Nutrient General Permit

Dear Mr. Kenning:

The City of Tacoma (Tacoma, City) appreciates the opportunity to comment on the Washington State Department of Ecology (Ecology) draft 2025 Puget Sound Nutrient General Permit (2025 General Permit) and June 2025 Puget Sound Nutrient Source Reduction Project Vol 2: Model Updates and Optimization Scenarios, Phase 2 ("Bounding Scenarios Phase 2").[1] The City operates two wastewater treatment plants discharging to Commencement Bay in Puget Sound and therefore has both a significant stake in, and serious concerns about, Ecology's proposed nutrient regulation pathway.

Protecting environmental health is a longstanding priority for Tacoma. For more than a decade, the City has been a leader and steadfast partner in regional efforts to find the right balance between nutrient management, protecting the health of Puget Sound, ensuring prudent public-utility management, affordability, managing for growth, and evolving science. The City continues to advocate for sustainable, long-term solutions grounded in reliable science and the best available data – solutions that deliver measurable environmental gains while maintaining cost sustainability for ratepayers, particularly when proposed actions could have a negative effect on housing supply and affordability and potentially limit the resources the utilities have to respond to other environmental concerns, including contaminants of emerging concern (CECs).

For decades, Puget Sound clean water utilities, including the City, have met or bettered regulatory requirements for secondary treatment, wet weather controls, stormwater management (including toxics reduction), and beneficial use of biosolids. These responsibilities demand complex and coordinated planning, funding, construction, operation, and maintenance –

[1] Puget Sound Nutrient Source Reduction Project. Volume 2: Model Updates and Optimization Scenarios, Phase 2

representing billions in infrastructure investment. Any new regulatory mandates with substantial technical, operational, and economic impacts must be rigorously evaluated for achievability and costs versus benefits. Addressing uncertainty through permit structures that enable adaptive management is essential to ensure investments remain targeted, effective, and yield tangible results.

The City supports water quality standards, including natural conditions provisions, for dissolved oxygen and temperature that are protective of aquatic life and grounded in sound science. Updated biologically based dissolved oxygen standards should be developed in tandem with natural conditions provisions, recognizing that the latter apply only when numeric criteria cannot be met. In some cases, this integrated approach could eliminate the need for separate application of natural conditions criteria because dissolved oxygen conditions could be assessed by monitoring in the field rather than requiring hypothetical computer simulations.

After reviewing Ecology's recent nutrient draft documents[2], the City provides the executive summary below outlining its principal concerns, with detailed comments attached.

1. **Significant Cost Implications – Massive Investment Required**

The June 2025 Draft Puget Sound Nutrient Reduction Plan (2025 Reduction Plan) introduces stricter limits than those found in both iterations of the Puget Sound Nutrient General permits (2022 and 2025). Attempting to comply with these limits would require unprecedented upgrades to Tacoma's wastewater treatment plants – a major investment borne by ratepayers. As part of its compliance with the requirements of the 2022 General Permit, the City began a Nutrient Reduction Evaluation (Nutrient Evaluation, or "NRE") to explore treatment alternatives. When the 2022 PSNGP was later invalidated, the City continued working on the NRE, including developing preliminary cost projections and estimating the potential impact on wastewater utility rates.

Under the invalidated 2022 General Permit, the City was required to evaluate treatment technologies to achieve All Known, Available, and Reasonable Treatment (AKART) for its two specific wastewater treatment plants as well as a specified Total Inorganic Nitrogen (TIN) seasonal (April through October) effluent limit of 3 mg/L. The City also evaluated treatment technologies to achieve the changed effluent limits presented at the Nutrient Forum in March

[2] 2025 Draft Puget Sound Nutrient General Permit and draft Fact Sheet (June 18); Draft Puget Sound Nutrient Reduction Plan (June 12); Puget Sound Nutrient Source Reduction Project Volume 2: Model Updates and Optimization Scenarios, Phase 2 (June 12)

2025. The estimated capital cost to upgrade both of Tacoma's wastewater treatment plants to meet the 3/5/8 mg/L limits for TIN and 8 mg/L for carbonaceous biological oxygen demand (CBOD) is **$625 million to $1.25 billion**. The average monthly wastewater utility bill would rise from the current rate of **$68 to $419 by 2050 –** exclusive of additional costs required to replace aging infrastructure or ongoing costs to operate/maintain these systems once they are installed. The new proposed limits in the 2025 Reduction Plan, based on Total Nitrogen (TN) versus TIN and the addition of CBOD, go beyond those studied in the NRE, meaning costs would likely rise even higher, with upgrades that may not be financially or technically feasible.

Given these projected impacts, the City respectfully requests that Ecology carefully reconsider the financial and technical challenges detailed here in order to strike the right balance between achieving environmental goals and implementing practical, affordable solutions in partnership with stakeholders.

2. Regulatory Strain on Households and Utilities

Without substantial external funding or a reassessment of requirements, the proposed regulations would impose a severe financial strain on ratepayers in Tacoma and across the Puget Sound region – while jeopardizing the City's ability to comply. Existing federal and state funding falls far short of what's needed to upgrade more than 50 wastewater treatment plants in Puget Sound by 2050. The United States Environmental Protection Agency (EPA) considers wastewater bills unaffordable when they exceed two percent of household income. Under the updated NRE limits alone, the share of "burdened" Tacoma households – those paying above that threshold – is projected to skyrocket from **14 percent (12,000 households)** to **67 percent (60,000 households) by 2050**.

This sharp increase in in burdened households underscores the urgent need for additional funding sources or more achievable regulatory targets to avoid placing an untenable burden on our community.

3. Balancing Nutrient Limits with Growth Obligations

If Ecology's 2025 Reduction Plan moves forward without changes to the draft, it would cap effluent flows at 2014 flow conditions as well as currently perceived "limit of technology" treatment levels. In turn, this would force Tacoma to undertake upgrades far beyond those in its existing Engineering and Facility planning documents or even its current draft NRE while still meeting its legal obligations under the Growth Management Act and National Pollutant Discharge Elimination System (NPDES) permits to provide capacity for future growth. These caps ignore permitted design flows, risk locking in constraints under anti-backsliding rules, and could leave the City unable to serve growth or result it being in violation of its permits until

2050, if nutrient reduction is successfully implemented by then. This is a pivotal concern that should prompt Ecology to reconsider its regulatory approach – seeking a fact-based understanding of what is both technically and financially achievable, how long it realistically takes, and collaborating with utilities to develop feasible solutions.

4. **Power Demand Impacts of Nutrient Treatment Upgrades**

As part of its NRE, the City assessed the energy impacts of proposed nutrient treatment upgrades to meet the proposed nutrient regulations for the 3/5/8 mg/L limits for TIN and 8 mg/L for CBOD. The preliminary evaluation indicated that power consumption will increase by approximately **2.8 times at the Central Treatment Plant (CTP)** and **3.6 times at the North End Treatment Plant (NETP)**—a significant demand increase on the local power grid.

Preliminary discussions with Tacoma Power revealed a lack of awareness about the scale of these projected increases, underscoring a critical coordination gap between regulatory planning and utility infrastructure readiness. With over 50 regional wastewater treatment plants expected to implement similar upgrades by 2050 under the 2025 Puget Sound Nutrient Reduction Plan (PSNRP), the cumulative energy demand could be substantial.

This challenge is compounded by broader regional electrification trends, including transportation, heating, and data center growth, which are already straining power utilities. Uncoordinated wastewater-related energy demands risk exacerbating grid reliability, cost, and capacity issues.

The City urges the Washington State Department of Ecology to proactively collaborate with regional power providers to assess and plan for the cumulative energy impacts of nutrient reduction regulations. A coordinated, forward-looking approach is essential to ensure infrastructure readiness and avoid unintended consequences.

5. **Modeling Concerns and the Need for a Stronger Scientific Foundation**

Ecology's evaluation of compliance with the State's Dissolved Oxygen Standard relies heavily on its application and interpretation of the Salish Sea Model. However, the transparency and rigor of this application are insufficient to support defensible regulatory decisions. Greater clarity is needed on the model's input data assumptions and the scientific basis for Ecology's conclusions about dissolved oxygen impairment in Puget Sound, including but not limited to:

- The use of non-representative wastewater treatment plant effluent data (limited to monthly, quarterly, or annual samples)
- The treatment of scientific uncertainties within the model

- The process for identifying the dominant species or beneficial use relevant to impairment determinations
- The geographic and ecological basis for where the standard should apply to protect that species or use

While the underlying Salish Sea Model has undergone peer review, it is the City's understanding that Ecology's specific application – such as input assumptions, calibration choices, and postprocessing steps – has not been subjected to a robust independent review. For the modeling effort to be credible, its methods, datasets, and analytical choices should be fully documented, publicly accessible, and reproducible so other experts can replicate the results and further examine the issues. Many of the documents only recently became accessible after the publication of the draft documents in June 2025 and realistically, cannot be accessed without sophisticated computer software and equipment. Ecology has not allowed Tacoma sufficient time to fully understand the model updates and implications for the 2025 Reduction Plan.

6. Concerns Regarding the Dissolved Oxygen Standard

The City joins other concerned entities in objecting to the continued use of the current dissolved oxygen water quality criteria adopted in 1967 without any demonstrated scientific foundation. In the more than five decades since its adoption, substantial statutory and regulatory frameworks have been enacted, yet no updated standard has been developed to meet these binding requirements. Maintaining outdated and/or unsubstantiated standards is inconsistent with both sound science and the legal requirement that there be a scientific basis for state water quality standards. At a practical level, applying the current dissolved oxygen standard will result in wastewater treatment plants investing billions of dollars to meet scientifically unsupported criteria. This is particularly concerning given that wastewater treatment plants contribute only 7 percent of the total nitrogen load to Puget Sound, raising serious questions about whether such costly upgrades and investment would yield any measurable improvement in dissolved oxygen levels or any tangible benefit to aquatic species, which remains unknown.

7. Need for a Targeted Reasonable Potential Analysis

The Bounding Scenarios Reports (Phase 1 and 2) suggest that Ecology did not conduct a facility specific or watershed level assessment to determine whether each wastewater treatment plant has a reasonable potential to cause or contribute to DO impairment – whether through nearfield or farfield impacts. Federal regulation (40 CFR 122.44(d)(1)(iii)) requires that a Reasonable Potential Analysis account for "the variability of the pollutant or pollutant parameter in the effluent."

For TIN, variability cannot be accurately determined from the limited 2014 monthly, quarterly, or annual nutrient data available from wastewater treatment plants. Despite requiring Puget Sound wastewater treatment plants to collect expanded monitoring data since 2022, Ecology has not incorporated this more robust dataset into its current regulatory approach. This omission undermines both the precision and defensibility of the proposed limits, and underscores the need for a targeted, data driven Reasonable Potential Analysis before advancing new requirements.

8. Basing Regulatory Decisions on Approved Policy and the Latest Science

Ecology's decision to advance nutrient reduction modeling (e.g. Salish Sea Model) using the unapproved Natural Conditions Provision, while significant new research on nutrient dynamics in Puget Sound remains unincorporated, poses both scientific and procedural risks. Proceeding under a provision that has not yet received EPA approval jeopardizes the credibility and durability of the resulting limits, especially if subsequent federal review requires changes. At the same time, bypassing newly available, peer reviewed science risks adopting measures that are less effective, misaligned with true environmental drivers, or unnecessarily costly. Ecology should reconsider its reliance on the unapproved provision, integrate the latest findings into its modeling, and meaningfully collaborate with leading research institutions, including the University of Washington's Puget Sound Institute and the Washington State Academy of Sciences, to ensure regulatory actions are both scientifically defensible and consistent with EPA's requirements for the State's natural condition provision.

9. Evaluating Nutrient Reduction Plans as an Alternative to TMDLs

The City recognizes that the State has discretion under the Clean Water Act to address nutrient impairments through mechanisms other than a formal Total Maximum Daily Load (TMDL), such as an Advanced Restoration Plan, provided the chosen approach is transparent, science based, and capable of achieving water quality objectives. While an Advanced Restoration Plan can offer flexibility in implementation and allow for adaptive management as new data emerges, its success depends on clear technical justification, equitable allocation of responsibilities, and strong stakeholder engagement. A well-designed plan should incorporate the best available science, reflect real world feasibility, and establish measurable milestones to ensure progress toward dissolved oxygen and other water quality goals. However, concerns have been raised that the approach proposed by Ecology effectively skips incremental, achievable steps without assessing effectiveness for feedback and adjustment and moves directly to requirements that exceed current technological limits, creating questions about feasibility and cost effectiveness.

10. Request for More Meaningful Collaboration and Partnership

We appreciate that Ecology has offered meetings and opportunities for public comment. The City's experience, however, is that those opportunities occur after decisions have already been made by Ecology and have less flexibility to be responsive to public comment. Although the public process box is checked, the opportunities for real collaboration and engagement have not been achieved. Consequently, we are losing opportunities to strike a balance for viable and cost-effective alternatives that may be equally effective. The City has and continues to request more meaningful collaboration to tackle the complicated issues surrounding nutrient reduction. By way of more recent examples, Ecology staff indicated during the March 2025 Nutrient Forum that Ecology intends to issue the finalized 2025 PSNGP and 2025 Reduction Plan by the end of the year (2025). However, we did not receive any further details until the draft documents were issued for public comment in June 2025. This proposed accelerated timeline undermines the opportunity for meaningful engagement and transparency to address the following significant concerns:

- **Conflicting effluent limits** between the draft General Permit and the draft nutrient reduction plan, which creates confusion and complicates planning and implementation of treatment plant upgrades.
- **An insufficient stakeholder process**, with only a brief Public Comment Period from mid- June through August, including a partial denial for a reasonable extension to the end of September, to evaluate and respond to more than 2,500 pages of technical and regulatory material.
- **Limited dialogue at the August 11 Nutrient Forum**, where Ecology did not facilitate substantive discussion. Instead, participants were directed to submit concerns via written comments.
- **Unresolved issues from prior processes**, including concerns raised by Utilities during the previous PSNGP development and appeal (which were not addressed by the Pollution Control Hearings Board (PCHB)) and continue to be concerns in the draft 2025 PSNGP.
- **Delayed Technical Advisory Committee engagement**, scheduled after regulatory commitments and implementation timelines – extending to 2050 – are already in place.

This lack of a comprehensive and inclusive process is a recurring concern throughout the City's comments below. Accordingly, the City respectfully requests that Ecology commit to a robust, transparent, and more collaborative stakeholder process to ensure the best, most achievable path forward is developed in partnership with affected communities and utilities prior to finalizing in December. The City requests that Ecology meet with all of the partners on a regular (at least monthly) basis prior to finalizing the 2025 General Permit and the 2025 Reduction Plan.

Thank you for your consideration. Please see the attached document for the City's more detailed comments. We trust our comments are useful. If you have any questions or would like additional information please contact Teresa Peterson, P.E. at 253-591-5766 or tpeterson@tacoma.gov.

Sincerely,

DocuSigned by:
Ramiro Chavez
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Initial
GMS

Ramiro A. Chavez, P.E., PgMP
Director/City Engineer City of Tacoma, Environmental Services

Attached: 2025 Puget Sound Nutrient General Permit – Draft City of Tacoma Comments

City of Tacoma Environmental Services
Detailed Comments
Table of Contents

1.0 Regulations Shift and Financial Considerations

1.1 Ecology Regulatory Shift from Total Inorganic Nitrogen to Total Nitrogen

Total nitrogen (TN) in municipal wastewater liquid streams is present in six basic forms, as shown on Figure 1. These are divided into particulate and soluble, organic and inorganic, and degradable and unbiodegradable forms.

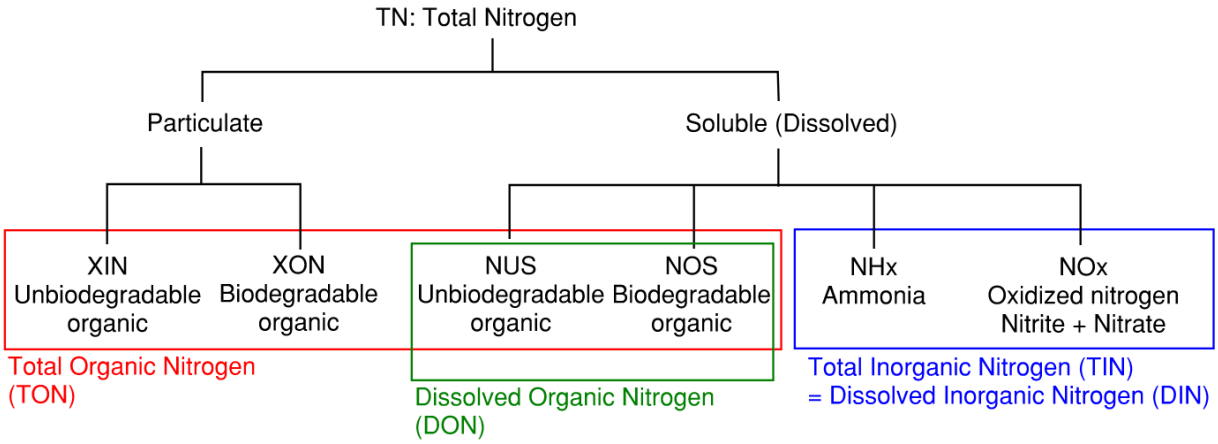

Figure 1. Nitrogen Species Present in Wastewater

Particulate inorganic nitrogen is not shown on Figure 1. Its presence in municipal wastewater influent is limited and generally removed in the primary clarifiers. Struvite crystals, such as those found in at the bottom of a digester, are an example of particulate inorganic nitrogen. This form of nitrogen speciation is considered negligible in effluent and is not considered further in this analysis. Therefore, total inorganic nitrogen (TIN) is typically equal to dissolved inorganic nitrogen (DIN) in wastewater effluent.

The difference between TN and TIN is the organic nitrogen, which comes in four forms including:

- particulate: particulate inert nitrogen (XIN) and particulate organic nitrogen (XON)
- dissolved: unbiodegradable soluble nitrogen (NUS) and organic soluble nitrogen (NOS)

Particulate organic material is mostly removed during solids/liquid separation such as clarifiers, and systems with membrane filtration or tertiary filtration will have very low levels of this material in the effluent. Of the soluble organic material, most of the NOS will be converted to

ammonia (NHx) within the treatment plant, while the unbiodegradable nitrogen (NUS) will pass through the treatment plant and discharge with the effluent. NUS is not available for eutrophication and should not have any impact on Puget Sound dissolved oxygen.

In June 2025, the Washington State Department of Ecology (Ecology) issued 3 documents that discuss potential permit limits or considerations based on 3 different measures of nitrogen:

- DIN – Salish Sea Model (SSM) and Puget Sound Nutrient Source Reduction Project Vol 2: Model Updates and Optimization Scenarios, Phase 2 ("Bounding Scenarios Phase 2")
- TIN – 2022 and 2025 Puget Sound Nutrient General Permits (2022 and 2025 PSNGP)
- TN – 2025 Puget Sound Nutrient Reduction Plan (2025 PSNRP, 2025 Reduction Plan)

Ecology stated in the July 1, 2025, meeting (draft 2025 PSNGP, online Information Presentation) that review of the 2025 PSNGP should be done without consideration to the content of the PSNRP. However, the lack of clear future regulatory requirements regarding nitrogen discharge is a significant obstacle to the City's planning efforts. For example, an effluent TN limit could require consideration of a completely different set of alternatives compared to an effluent TIN limit.

It appears that Ecology may not have accounted for the Soluble Organic Nitrogen (SON) present in all municipal wastewater in the range of 1 to 3 mg/L that cannot be removed with biological nutrient removal technology because it is not biodegradable. Furthermore, because SON may not be bioavailable in receiving waters, it may not be relevant to Ecology's intent to improve water quality. If Ecology does not account for the SON included in TN, the effluent nitrogen scenarios that have been modeled at 3/5/8 mg/L TIN may lead to effluent limits that are technically infeasible without molecular removal through reverse osmosis.

At present, the City has limited data to support their understanding of organic nitrogen fractions. The total organic nitrogen noted in the City's Central Treatment Plant (CTP) effluent has varied from 0.1 to 11.5 milligrams per liter (mg/L), averaging 5.1 mg/L over 17 samples taken between 2023 and 2024. Data on soluble organic nitrogen are more limited, with values ranging from zero to 6.5 mg/L, averaging 4.3 mg/L across 10 nonzero results taken between 2023 and 2024. This lack of data is likely similar for other wastewater treatment plants. **The City requests that Ecology require additional monitoring for all nitrogen species to understand the impacts of changing from TIN to TN in the 2025 Reduction Plan before finalizing the document.**

The amount of scatter in the available data makes it difficult to draw conclusions. However, given the available data, one may suggest that a conventional effluent TIN of 3 mg/L may equate to an effluent TN of 8.1 mg/L. In a filtered effluent, with non-detectable solids, an effluent TIN of 3 mg/L may equate to an effluent TN of 7.3 mg/L. **Flipping those numbers around, setting an effluent TN limit of 3 mg/L would result in an effective TIN limit of less than 1 mg/L. This may be impossible to meet with currently evaluated technologies (e.g Membrane Bioreactor (MBR)) and will likely require more advanced treatment systems (e.g. reverse osmosis), in addition to MBR, resulting in even more significant costs.**

Tacoma requests the following:

- **Align the 2025 PSNGP Nutrient Reduction Evaluation (NRE) effluent requirements with the 2025 Reduction Plan. This will be more efficient for utilities to plan for upgrades. Additional time will also be needed if the limits for the NRE are changed from the 2022 PSNGP.**
- **Reconsider the change from TIN to TN in the 2025 Reduction Plan. While the Plan indicated this change was to provide "more flexibility", the reality is that it is stricter than the proposed limits in the 2022 PSNGP NRE requirements. In addition, including all nitrogen species may not actually result in a water quality improvement or benefit to species in Puget Sound.**

1.2 Regulatory Shift to Add CBOD

In addition to changing the effluent removal target from TIN to TN, Ecology also added carbonaceous oxygen demand (CBOD) to the 2025 PSNRP. This shift is significant since it was not included in the 2022 PSNGP NRE requirements or discussed with the utilities.

Ecology justified the inclusion of CBOD by referencing the June 2011 "Technical and Economic Evaluation of Nitrogen and Phosphorus Removal at Municipal Wastewater Treatment Facilities", Ecology Publication 11-10-060, commonly known as the "2011 Tetra Tech Report". On page 32 of the draft 2025 PSNRP, it states:

"Dissolved inorganic nitrogen was used as the target nitrogen species for applying nitrogen reductions from marine point sources in the model based on previous technical and economic evaluations of biological nitrogen removal (BNR) at wastewater treatment plants (Tetra Tech, 2011). Our modeling approach assumed that all facilities reducing DIN loads would also achieve an annual average carbonaceous biochemical oxygen (CBOD) concentration of 8 mg/L year-round (Tetra Tech, 2011), which is translated to a facility specific reduction in dissolved organic carbon (DOC) load in the model (McCarthy et al., 2018)."

However, this justification is flawed. The City could not locate the reference that nutrient removal technologies can also achieve an average annual 8 mg/L CBOD conclusion within the cited 2011 Tetra Tech Report. Additionally, the 2011 Tetra Tech Report was questioned by many engineering consultants for being overly generalized and not accounting for the variability of wastewater treatment plants, site constraints, service areas, and treatment processes. This same reference was also noted as the basis for the modeling efforts for CBOD in the Bounding Scenarios Reports (Phases 1 and 2). Using the 2011 Tetra Tech Report as a continued reference is concerning. There are many more current and available resources that Ecology should have reviewed before setting CBOD effluent limits including:

- The United States Environmental Protection Agency (EPA) 2023 revision to its Publication EPA 832-R-21-006A, "Life Cycle and Cost assessments of Nutrient Removal Technologies in Wastewater Treatment Plants" (EPA Nutrient Lifecycle Guidance). A previous version was also available in August 2021.
- Ecology could have waited for the utilities to complete the PSNGP NRE's to understand what is financially and technically feasible instead of relying on reports that provide general information.

The 2011 Tetra Tech Report does not account for the site-specific constraints faced by existing Puget Sound wastewater treatment facilities. Further, Ecology's association of an annual effluent quality of 8 mg/L CBOD with the nitrogen limits of 3/5/8 do not appear to be supported by the 2011 Tetra Tech report. The City is currently underway in determining the site-specific details necessary to evaluate the actual potential for nutrient removal at existing facilities, which is the purpose of the NRE and All Known, Available and Reasonable Treatment (AKART) analysis originally called for in the 2022 PSNGP. The NRE and AKART evaluations that the City and other wastewater dischargers are invested in preparing should provide the basis that Ecology uses to determine the feasible level of nitrogen removal performance and the potential costs. The information provided by the NRE and AKART analyses should also supersede the 2011 Tetra Tech report and the effluent nitrogen limits assumed by Ecology for the Bounding Scenarios Phase 2 Salish Sea Modeling. Furthermore, the addition of CBOD will likely require addition tertiary filtration after the nutrient removal treatment to consistently meet the 8 mg/L CBOD on an annual basis.

Questions:

- **Where did Ecology find the 8 mg/L annual CBOD reference in the 2011 Tetra Tech Report?**
- **Why was this regulatory shift not discussed with Utilities?**
- **Why was this not included in the 2022 and 2025 PSNGP NRE requirements?**

1.3 Significant Cost Implications

For the past two years, Tacoma has been preparing a NRE, or engineering evaluation, to investigate nitrogen reduction options at its Central (CTP) and North End (NETP) Treatment Plants in accordance with one of the requirements of the 2022 PSNGP. The 2022 PSNGP, issued in January 2022 by Ecology, required municipal wastewater treatment plants (WWTP) discharging to the Salish Sea to evaluate alternatives to reduce TIN concentrations to Puget Sound. The requirements of the 2022 PSNGP NRE include:

- An AKART analysis that presents a recommended alternative representing the greatest TIN reduction that is reasonably feasible on an annual basis, and
- an alternative that can achieve a final effluent concentration of 3 mg/L TIN seasonally (April-October).

Concurrently, Ecology has been using the Salish Sea Model (SSM), a 3-dimensional hydrodynamic and water-quality predictive tool to evaluate the impact of reduced DIN scenarios discharged from watersheds and WWTPs on dissolved oxygen (DO). In June 2025, Ecology issued their latest findings in the Bounding Scenarios Phase 2. The Bounding Scenarios Phase 2 Report concluded the refined Optimization Scenario "Opt2_8" reduced the level of DO noncompliance days while requiring slightly less nutrient reduction than other scenarios. This scenario modeled seasonal DIN limits based on hot (summer), warm (spring/fall), and cool (winter) temperatures. The scenario modeled DIN limits of 8/3/3 mg/L (cool/warm/hot) for CTP and limits of 3/5/8 mg/L for NETP.

Following the invalidation of the 2022 PSGNP, but prior to the June issuance of documents referenced above, the City directed its NRE consultant team to complete a planning level comparison identifying any key differences between meeting three potential regulatory scenarios. The scenarios described below are based on initial information presented in the Nutrient Forum Meeting hosted by Ecology on March 27, 2025, on the Bounding Scenarios Phase 2 results and 2025 PSNRP introduction.

- **Permit Scenario A:** Meeting a seasonal 3 mg/L TIN discharge limit between April through October as prescribed in the 2022 PSNGP's requirements for NRE analysis. Using the seasonal convention defined above, this would be a 3/3/NL mg/L requirement for hot/warm/cool seasons (where NL means no limit during the cool period).

- **Permit Scenario B:** A scenario limiting the City's WWTP effluent discharges to concentration limits of 3/5/8 mg/L for hot/warm/cool seasons, adding a year-round CBOD limit of 8 mg/L. Subsequently, Appendix H of the 2025 PSNRP indicated that this permit scenario may only apply to the NETP, while the CTP could be required to achieve hot/warm/cool TIN limits of 3/3/8 mg/L. The 3/3/8 mg/L scenario was not evaluated as part of this work, but it is not expected to be substantially different from the evaluated 3/5/8 mg/L scenario.
- **Permit Scenario C:** Applying Permit Scenario B concentration limits at the SSM's 2014 flow condition. The resulting mass limits were adjusted to accommodate the Year 2050 NRE projected flows to determine an equivalent effluent TIN concentration limit as shown below:

$$Effluent\ TIN\ Concentration_{2050} = \frac{WWTP\ Loading\ Limit_{2014}}{WWTP\ Flow_{2050}}$$

These permit scenarios were used as the performance criteria for the analysis and informed the development and refinement of alternatives. Notably, each of the permit scenarios aims to meet specific effluent regulations, without consideration of whether the approaches are reasonable, cost-effective, or environmentally constructive.

Resulting concentration limits for the three permit scenarios are summarized in Table 1.

Table* 1. *Permit Scenario Effluent TIN and CBOD Levels

Permit Scenario	**Effluent TIN Level (mg/L)**			**Effluent CBOD (mg/L)**
Season/ Months	Hot/ July, August, September	Warm/ April, May, June, October	Cool/ November, December, January, February, March	Year Round
Scenario A - NRE	3	3	N/A	N/A
Scenario B – Nutrient Forum	3	5	8	8
Scenario C – 2014 Flow Cap NETP	2.4	4.2	6.9	8[1]
Scenario C – 2014 Flow Cap CTP	2.0	3.6	6.2	8[1]

Note:
1. It is unclear if Ecology plans to cap CBOD at 2014 flows, similar to the cap for nitrogen in the 2025 PSNRP.

An effluent TIN concentration of 3.0 mg/L is generally considered to be the limit of technology for conventional biological nutrient removal as stated by Ecology in the 2022 PSNGP Fact Sheet. There are utilities which have implemented more advanced levels of treatment to reduce effluent TIN below 3.0 mg/L, but this comes with increased cost and risk. There are relatively few examples of installations reliably meeting effluent TIN limits of less than 3.0 mg/L on a long-term basis. Alternatives discussion to achieve the lower TIN limits associated with Scenario C below are intended for comparative purposes and further site-specific analysis is needed to determine the practicality of these limits.

As part of the NRE, a range of technology alternatives were developed to meet the 2022 PSGNP limits. The initial screening process used pass/fail criteria, a collaborative brainstorming session with the City, and the development of preliminary site layouts for each plant upgrade option. Included in the site layouts was the planned CTP solids improvements, which is a project Tacoma must implement first to keep up with growth, replace aging infrastructure, and to create the necessary space for any future nutrient removal upgrades at the space-constrained CTP site. This resulted in a refined list of 21 plant alternatives with representative technologies. Of the 21 alternatives, 10 represented AKART scenarios, designed to reduce effluent nitrogen loadings while not necessarily meeting a prescribed effluent TIN concentration. The other 11 alternatives were designed to meet the NRE's proposed 3/3/NL mg/L seasonal TIN limits.

These plant alternatives were then conceptually developed and qualitatively scored. Based on the preliminary scoring results and discussions with the City, the following two plant alternatives were selected to complete the planning level comparison of the two potential regulatory scenarios:

- NETP: MBR
- CTP C2: MBR with Sidestream Anammox

Capital costs were developed to estimate the upfront investment required to construct the new infrastructure for each systemwide alternative. The capital cost estimates follow the Association for Advancement of Cost Engineering International ("AACE") Recommended Practice 18R-97 classification system as a Class 5 estimate, with an expected accuracy range of -50% to 100%. The capital costs include allowances for contractor markups and professional services.

The capital costs are similar across all the alternatives and permit scenarios with up to $50 million in differences falling well within the expected range of uncertainty for a Class 5 cost estimating effort. The similarity in capital costs across permit scenarios and alternatives is driven by two primary factors:

- Alternatives at both CTP and NETP are constrained by flow. Flow to the secondary process is limited to 65 mgd at CTP and 8 mgd at NETP. Even though permit scenarios B and C include a winter nitrogen removal requirement, the maximum hydraulic flow for those scenarios is the same as that for Scenario A.
- Nitrogen removal is more difficult at cold temperatures, since nitrifying bacteria are temperature-sensitive, and are less efficient in the cold. To overcome this sensitivity, systems which nitrify in cold weather must operate at a longer solids retention time (SRT), which generally requires larger basins. Even though permit Scenarios B and C require nitrogen removal during the regulatory cool months, the permit conditions are both relaxed in the cool months, with targets of 8 mg/L (Scenario B) and 6 to 7 mg/L (Scenario C) and in the warm months, with targets of 5 mg/L (Scenario B) and 3.5 to 4.2 mg/L (Scenario C). These relaxed limits allow nitrification to be turned down during the cool months, which offsets the effect of colder temperatures.
- The 2014 load cap (Scenario C) doesn't significantly impact sizing compared to Scenario B because while Scenario C has lower effluent TIN limits year-round, the target concentration difference is 0.6 to 1.8 mg/L depending on the season and plant. This additional TIN reduction is driven by increased denitrification and carbon addition but does not impact sizing which was driven by nitrification performance across the alternatives.

The preliminary capital cost estimate for the nutrient upgrades was $625 million to $1.25 billion. The preliminary annual Operations and Maintenance (O&M) costs for the nutrient upgrades is $14.4 million. The average monthly wastewater utility bill would rise from $68 to $419 by 2050 (based on lower range estimate of $625 million), exclusive of additional rate increases needed to replace aging infrastructure, the CTP solids project and O&M cost increases referenced above. The new proposed limits in the Plan using TN go beyond those studied in the NRE, meaning costs would likely rise even higher, with upgrades that may not be financially or technically feasible.

Without substantial external funding or a reassessment of requirements, the proposed regulations would impose a severe financial strain on ratepayers in Tacoma and across the Puget Sound region – while jeopardizing the City's ability to comply. Existing federal and state funding falls far short of what's needed to upgrade more than 50 wastewater treatment plants in Puget Sound by 2050. The EPA considers wastewater bills unaffordable when they exceed two percent of household income. Under the updated NRE limits alone, the share of "burdened" Tacoma households – those paying above that threshold – is projected to skyrocket from **14 percent (12,000 households)** to **67 percent (60,000 households) by 2050**. This sharp increase in on burdened households underscores the urgent need for additional funding sources or more achievable regulatory targets to avoid placing an untenable burden on our community.

Given these projected impacts, the City respectfully requests that Ecology carefully consider the financial and technical challenges detailed here in order to strike the right balance between achieving environmental goals and implementing practical, affordable solutions in partnership with stakeholders.

1.4 Ecology Financial Capability Guidance

The City previously expressed its concerns regarding Ecology's "Interim Financial Capability Guidance" (Ecology FCA Guidance, Ecology Publication 24-10-034) for the 2022 PSNGP on August 14, 2024. The City is troubled that many of these key concerns were not addressed in the final version. Additionally, Ecology continues to reference the Ecology FCA Guidance as the preferred method for assessing affordability. The key concerns that the City still has include the following.

1.4.1 City's Previous NRE FCA Efforts

The City started its evaluation for the financial capability assessment (FCA) as required by the PSNGP for the NRE earlier in 2024. In June of 2024, Ecology issued the Ecology FCA Guidance which tailors the 2023 EPA Clean Water Act FCA Guidance[3] (2023 EPA FCA Guidance) to Washington State utilities. The Ecology FCA Guidance is primarily grounded in the latest 2023 EPA FCA Guidance; however, there are several key takeaways from the Ecology FCA Guidance that will affect the City's FCA approach.

The Ecology FCA Guidance provides for the evaluation of impacts with Washington specific data using EPA FCA Guidance Alternative 1. Using national benchmarks limits the evaluation of community impacts in the State of Washington and can misrepresent local hardship. The updated guidance uses Washington State financial metrics as a benchmark rather than national financial metrics. The City generally agrees with this approach; however, Tacoma also has some concerns that are detailed in this comment letter.

A notable aspect of the Ecology FCA Guidance is the use of the lowest quintile residential indicator (LQRI) as a preferred metric for assessing the burden on low-income households. The LQRI examines the costs of clean water services for households at the 20th percentile of income (LQI) instead of the median, better reflecting low-income burdens. This metric has been

[3] Clean Water Act Financial Capability Assessment Guidance | US EPA

recommended by industry groups, and the City has calculated the LQRI as part of its initial assessment.

In its initial evaluation using EPA FCA Guidance, the City compared Tacoma's median household income (MHI) to the national MHI (and similarly for the lowest quintile income). Tacoma's MHI is $81,616, Washington State's MHI is $90,325, and the national MHI is $74,755. The Ecology FCA Guidance evaluates local income and assigns a mid-range result when it is within +/- 25% of the benchmark MHI. Tacoma's MHI is 9.18% higher than the national benchmark and 9.64% lower than the Washington State metric, resulting in the same outcome under either approach. However, this does not highlight that Tacoma's income is below the statewide median rather than above the national median, which is crucial for understanding Tacoma's affordability concerns.

Another element modified by the Ecology FCA Guidance is the lowest quintile poverty indicator (LQPI). This assessment compares income at the LQI, population below 200% of the federal poverty level, households receiving SNAP benefits, vacant housing units, and employment rates to a national/state benchmark. Shifting from a national to a state benchmark results in minimal changes to the overall score, with both indicating a medium impact for Tacoma with current wastewater rates. This medium impact does not account for other rate impacts, including the renewal and replacement of aging infrastructure, evolving regulatory requirements (e.g., emerging contaminants), and significant capital projects needed to maintain the existing utility and capacity for growth. These factors are practical realities for wastewater utilities and their ratepayers to consider when assessing affordability and financial capacity.

As part of the NRE, Tacoma has already started using EPA FCA Guidance Alternative 2 and other affordability metrics to more holistically evaluate long-term rate impacts on the City's burdened communities. It is concerning that the Ecology FCA Guidance did not consider Alternative 2 or other criteria. The use of Alternative 2 and alternative metrics or criteria is further discussed later in this letter.

1.5 It is Unclear if Ecology Will Only Consider Its FCA Approach

The Ecology FCA Guidance highlights several differences from the EPA FCA Guidance and explains why it is better suited for analyzing the economic and environmental justice impacts of Washington-specific and Nutrient Permit-specific projects. However, it remains unclear whether the Ecology FCA Guidance is the only acceptable approach for permittees under the PSNGP or if alternative methods for NRE will be accepted.

For example, the Ecology FCA Guidance states, "while Ecology recommends continued use of EPA's FCA guidance, the release of the February 2023 version (revised March 2024) and updated EPA spreadsheet tool created an opportunity to review and improve its usefulness for evaluating public project impacts in the context of state-specific data." Department of Ecology, Draft Interim Financial Capability Assessment Guidance (Updated June 2024), pg. 9. Additionally, while the Ecology FCA Guidance references the opportunity to "improve" the usefulness of the EPA FCA, it does not discount the EPA FCA's usefulness entirely. Id.

The term "recommend" appears multiple times throughout the document, such as where the agency "recommends" certain considerations in the Ecology FCA Guidance, steps to take when performing the analyses, or materials permittees should submit to the agency's Water Quality Permitting Portal. Id. at 10-11. The pervasive usage of the word "recommend" makes the Ecology FCA Guidance appear non-binding, thus allowing permittees to utilize approaches other than the Ecology FCA Guidance when conducting the required NRE. However, Ecology also incorporates more binding language, such as the statement that "permittees shall provide project costs at the Class 5 level of estimates." Id. at 14. Further, although Ecology is "recommending" certain actions, the Ecology FCA Guidance appears written with an assumption that all permittees will utilize its new tools and amended process for analysis.

Question:

- **Is Ecology's FCA Guidance the only accepted approach or will Ecology accept other alternative methods?**

1.5.1 EPA Guidance on Financial Assessments

The Ecology FCA Guidance does not allow for evaluation of the life cycle cost assessments and the impact to long-term utility rates. In August 2023, EPA released a revision to its Publication EPA 832-R-21-006A, "Life Cycle and Cost assessments of Nutrient Removal Technologies in Wastewater Treatment Plants" (EPA Nutrient Lifecycle Guidance). In its Executive Summary, EPA stated the following:

> Overall, two key findings emerged from this analysis. First, clear trade-offs in cost and potential environmental impact were demonstrated between treatment level configurations. This suggests that careful consideration should be given to the benefits from lower nutrient levels compared to the potential environmental and economic costs associated with treatment processes used to achieve those levels. Combining outcomes into metrics such as nutrients removed per dollar or per unit energy may help to identify configurations that strike an efficient balance

between these objectives. For example, this analysis found that electricity per unit of total N and P equivalents removed remained consistent from Level 2 through Level 4 but was 2-3 times higher for Level 5 configurations. Second, this analysis demonstrated the value of a life cycle approach to assessing costs and benefits. For example, considering trace pollutants from a life cycle perspective illuminated that the benefits of increased trace pollutant removal from effluent could be outweighed by trace pollutant emissions from materials and energy usage for the Level 5 configuration, an insight that would not have been gained by analyzing on-site WWTP processes alone. In summary, considering multiple economic, social, and environmental costs and benefits from a life cycle perspective can provide critical insights for informed decision making about wastewater treatment technologies.

The 2022 and 2025 PSNGP call for treatment alternatives to be developed for achieving AKART for nitrogen removal on an annual basis and a seasonal average of 3 mg/L TIN from April through October. Achieving effluent TIN of 3 mg/L is an extraordinarily level of treatment that is expected to be costly and result in external environmental impacts that should be carefully considered before being required. Ecology's seasonal average of 3 mg/L TIN would be equivalent to EPA's Level 4 in the Life Cycle Cost Analysis, the highest level of treatment short of reverse osmosis (Level 5). The shift from TIN to TN in the 2025 PSNRP would likely require Level 5. Costs increase as the treatment levels increase, as does energy use, chemical use, excess solids residuals generation, and damaging greenhouse gas emissions. Nitrogen removal at these levels requires supplemental carbon addition using dangerous chemicals, such as methanol. Ecology's FCA doesn't account for the costs of these externalities that impact the environment at this level of treatment.

The City requests that Ecology review the EPA Nutrient Lifecycle Guidance to revise the Ecology FCA Guidance to account for more factors to evaluate the balancing point where there are diminishing benefits and disproportionate impacts to the environment and economy. The EPA Nutrient Lifecycle Guidance should also be considered as part of Ecology's decision making moving forward for nutrient removal regulations. The City plans on using the EPA Nutrient Lifecycle Guidance as part of its NRE effort.

1.5.2 Alternative Financial Assessment Options

In the 2025 Draft PSNGP Fact Sheet, Ecology stated "Ecology recommends using EPA's Clean Water Act Financial Capability Assessment (2024) or Ecology's Final Treatment Plant Financial Capability Assessment Guidance (2024) when looking at options for assessing financial capabilities to implement requirements under the Clean Water Act" (page 53). The EPA FCA Guidance from 2021 has continued to evolve and was updated in 2024.

The current 2024 EPA FCA Guidance has two alternatives to consider:

- Alternative 1: Customer Burden Matrix (expanded 1997 EPA approach)
  - The Ecology FCA Guidance has only considered this option.
  - Generally intended for schedule development and negotiation.
- Alternative 2:
  - This alternative provides a more nuanced and specific assessment of local affordability including rate model forecasts with long-term rate impacts. It can account for many competing priorities at a utility including (to name a few examples):
    - Asset management: renewal and replacement of aging infrastructure
    - Increasing operating costs
    - Declining water sales due to water conservation (which can impact utility rate structures that rely on water usage versus fixed rate structures)
    - Utility specific rate structure and other rate limitations
    - This alternative would provide a more accurate financial impact to the City's rate payers than Alternative 1.

In its FCA Guidance, EPA includes Alternative 2 to provide a more realistic representation of financial impacts by including the entire schedule of projects in a cash flow analysis. The intent is to represent realistic wastewater utility bills that are within reasonable bounds when establishing compliance schedules.

In addition to the EPA FCA Guidance, there are other resources and approaches for evaluating and measuring household affordability including:

- Affordability Ratio (AR20): using the basic sewer price as a percentage of disposable income after non-water essential expenses for the 20th income percentile
- Hours worked at minimum wage
- Household Burden Indicator

- Poverty Prevalence Indicator
- Burden After Housing Costs
- Typical Bills by Neighborhood
- Additional Resources:
  - American Water Works Association (AWWA)
  - Water Environment Federation (WEF)
  - University of Washington Self-Sufficiency Standards
  - Massachusetts Institute of Technology (MIT) Living Wage Calculator
  - United States of America Census Public Use Microdata Areas (PUMAs) Statistics

The City has already used the other resources and approaches as part of its initial FCA evaluation. Tacoma has identified that essential expenses currently exceed income at the 20th percentile in the City. As part of the NRE, Tacoma has already started using EPA FCA Guidance Alternative 2 as well as the other metrics and resources shown above. The City's FCA evaluation is ongoing as the NRE components are completed.

1.6 Alternative Rate Structures

Alternative rate structures are not legal under state law or the Washington State Constitution.

Ecology has recognized that the financial impact of the costs of treatment can create an unreasonable burden upon communities served by wastewater treatment plants. See, *Northwest Environmental Advocates v State*, 2021 Wash. App. LEXIS 1558 (2021). Overburdened communities will bear a significant and disproportionate burden of the cost of compliance with the 2025 PSNGP and future cycles of the permit.

While the City appreciates Ecology's effort to address environmental justice by requiring an affordability assessment, the assessment will do nothing to address the disparate impact of the cost burden of the 2025 PSNGP upon communities of color, Tribes, indigenous communities, and low-income populations. State law does not allow dischargers to create rate classifications based upon ability to pay, except as authorized pursuant to RCW 74.38.070 for low-income citizens. See, RCW Chapters 35.67 and 35.92. Tacoma already has a program for rate reductions under this statute. These allowable rate reductions are offset by increased rates for the remaining ratepayers. All other rate classifications must be based upon the cost of service and must be allocated equitably based upon service received. *See generally King County Water Dist. No. 75 v Seattle*, 89 Wn. 2d 890, 903 (1978). A utility has a duty to fix rates that are just and reasonable

and not unduly discriminatory. *Faxe v Grandview*, 48 Wn. 2d 342, 347 (1956). Rates must comply with Article 1 § 12 of the State Constitution which requires that rates be non-discriminatory, meaning that rates apply alike to all persons within a class, and that there must be a reasonable ground for creation of different rate classifications. *Faxe*, 89 Wn. 2d at 348. Rate classifications under state law are based upon such factors as cost of service, the character of the service furnished, or the quantity or amount received. *Faxe*, 89 Wn. 2d at 349-350. State law outlines the criteria in Chapter 35.67 and 35.92 RCW. Neither state law nor the state constitution allow rate classifications based upon an affordability assessment with the exception of low income rate reductions authorized under state law and which are already being implemented. Accordingly, the concept of a study and proposal for rate alternatives only serves to create false hope that the enormous impact of funding the cost of treatment can be more equitably distributed. Further, it will not address the reasonableness of the overall costs of compliance to be borne by all of the rate payers.

Questions:

- **In response to comments, can Ecology explain what assessment Ecology has made to address environmental justice impacts from the proposed permit?**
- **In response to comments, can Ecology explain how the requested report will be used to regulate NPDES permits for publicly owned WWTPs?**

1.7 Environmental Justice Considerations

While the EPA FCA Guidance and other industry resources rely on the LQI focused on the 20th percentile of income, it may not be the best or only indicator to understand impacts to our community's burdened and vulnerable people. Income is only one component of the impact and a more meaningful approach using an equity lens would be to understand what the "living wage" and "cost of living" are in the community. Overall, the financial component of the Environmental Justice evaluation needs to have a holistic approach beyond just income. The City plans on using the other financial resources noted in Section 1.5.2 to address this concern.

1.8 Integrated Planning

As part of the March 2024 Revision to the EPA FCA Guidance, EPA included the following regarding the history of relevant guidance and an integrated planning framework:

> In 2012, EPA developed the Integrated Municipal Stormwater and Wastewater Planning Approach Framework (Integrated Planning Framework) that offers a voluntary opportunity for a municipality to develop an integrated plan to meet

> multiple [Clean Water Act] CWA requirements. Integrated planning is a process that municipalities can use to achieve clean water and human health goals while addressing aging infrastructure, changing population and precipitation patterns, and competing priorities for funding. With the release of the Integrated Planning Framework, the Agency [EPA] clarified that an FCA could include the following costs: stormwater and wastewater; ongoing asset management or system rehabilitation programs; existing CWA related capital improvement programs; collection systems and treatment facilities; and other CWA obligations required by state or other regulators. On January 14, 2019, the Water Infrastructure Improvement Act (WIIA) (H.R. 7279) added a new section 402(s) to the CWA to include the 2012 Integrated Planning Framework.

The Integrated Planning sections of the EPA FCA Guidance have not been included as part of the Ecology FCA Guidance, despite the added benefits and avoided impacts that come from such an approach. Integrated plans and components would "include a financial strategy and capability assessment that ensures investments are sufficiently funded, operated, maintained and replaced over time and include consideration of current and planned rates and fees." This is relevant and important for Washington State utilities that are facing potential significant upgrades at the same time as robust asset management requirements (aging infrastructure), capacity upgrades, and multiple regulatory requirements. Rate payers will ultimately shoulder the burden of costs from all these significant rate drivers, not just nutrient removal. In addition, an Integrated Planning Framework should be used to inform any viable compliance schedule.

1.9 Lack of Available Funding – Federal and State

The City requests a more comprehensive and centralized analysis by Ecology to identify applicable funding resources for nutrient removal costs and strategies to advocate for new resources, determine eligibility rules (e.g., whether certain programs are available only to specific wastewater utilities), and understand the levels, priorities and competition for available funding. This centralized approach would be more efficient than having individual utilities research eligibility and funding requirements or advocate for funding independently. It would also help regional partners better understand the adequacy or gaps in available funding compared to the estimated costs utilities will assess in their FCAs. Additionally, this would better position Ecology for any funding requests and proposals to the Legislature with coordinated utility support. While Ecology has indicated that an additional $10 million is available for nutrients, it does not provide any meaningful relief for Tacoma ratepayers based on the cost estimates Tacoma provided above, nor other Puget Sound utilities that will be similarly situated.

2.0 Growth

2.1 Moratorium

Permit limits based on 2014 Flow Based TIN loading conflict with Tacoma's obligation to provide wastewater services to the service areas of its facilities under the Growth Management Act.

Ecology has unreasonably based numeric effluent action levels on calculated levels of 2014 Flow Based TIN loading from flow data and nitrogen concentration data. The action levels do not account for inevitable future growth, even though Ecology acknowledges and bases much of its actions under the related 2025 PSNRP on such growth and that more updated flow data is available.

Tacoma is obligated under the Growth Management Act to accept and facilitate growth within the applicable urban growth boundaries. RCW 36.70A.020. The Growth Management Act is intended to ensure public facilities and services necessary to support development are adequate to serve the development without decreasing current service levels. Associated with this obligation is the parallel requirement under the City's individual National Pollutant Discharge Elimination System (NPDES) permits to maintain sufficient capacity to provide wastewater treatment within the service areas of its two facilities. This is a permit condition in both of Tacoma's individual NPDES permits issued by Ecology, the 2025 PSNGP, and a requirement that is reflected in the general facility plans and engineering documents generated by Tacoma under WAC 173-240-050 and WAC 173-240-060.

Ecology is locking in effluent limitations that fail to consider the City's obligations under the Growth Management Act and permitted design flows for its facilities that may be irrevocable under state and federal water quality anti-backsliding regulations. By adopting an effluent limit based on 2014 flow based loading and concentrations, Ecology will be denying Tacoma any ability to provide for anticipated growth or leave the City in violation of its permit until nutrient reduction technology can realistically be implemented. Ecology should instead be considering loading on the same time scale the facilities are regulated under in their facility plans and engineering documents, which account for growth over the next 30-40 years.

Questions:

- **In response to comments, can Ecology explain why it has not considered design flows and the need to maintain treatment capacity in setting effluent limitations in the 2025 PSNGP?**
- **In response to comments, can Ecology explain how it has evaluated the impact of the effluent limitations on the ability to develop low and moderate income housing?**
- **In response to comments, can Ecology explain how it has evaluated the potential environmental justice concerns that will result from reduced access to affordable housing?**
- **In response to comments, can Ecology explain how it has evaluated the applicability of anti-backsliding regulations to the proposed effluent limitations?**
- **In response to comments, can Ecology explain how it has evaluated the potential concerns that will result from little to no growth in the customer base that will be responsible for paying for nutrient reduction upgrades?**

2.2 Corrective Actions = De Facto Moratorium

The 2025 PSNGP sets action levels for TIN loading at historical (initial years prior to 2020) discharge levels for large and moderate-sized facilities and requires the facilities take specific corrective actions if reported TIN levels exceed the action level. When a permittee exceeds the action level, Condition S4.D requires the facility to prepare a strategy, in the form of an engineering report, that identifies treatment options and design alternatives to reduce the annual effluent load by at least 10% below the action level. The required 10% reduction in annual effluent load is essentially a de facto moratorium. By capping TIN levels at historical loading, the action levels laid out in the permit do not account for future growth. As a result, it is almost inevitable that facilities will trigger corrective actions. Based on previous data, current discharge levels demonstrate that many facilities are expected to exceed the draft action levels within the first permit cycle. The 2025 PSNGP requires those exceeding action levels to submit a proposed approach to reduce effluent levels, utilizing solutions that can be "implemented as soon as possible". Planning for and implementing technologies to reduce TIN loading is a long and complicated process which the corrective action provision in the 2025 PSNGP does not take into account.

Further, requiring facilities to submit and implement proposals for 10% reduction will effectively delay any current major capital projects to address nutrient issues at the effluent limits in the 2025 PSNRP. It is also important to note that part of the NRE analysis Tacoma has already conducted did not identify any viable solutions to incrementally reduce nutrient loading by 10%;

to effectively reduce loading, decisions would need to be made farther in advance to account for more significant improvement projects. In fact, the next step for implementing any nutrient reduction technology at CTP, Tacoma's largest WWTP, would be side stream treatment that could achieve approximately 20% reduction, but would cost $30 – 60 million and take 12 to 15 years to be operational. In addition, Tacoma had already identified a solids project that would relocate CTP's solids system ($325 to $650 million) to the other side of the plant and would strand any side stream process near the existing solids system. The timeline for the solids project is still being evaluated and will likely occur after the 12 to 15 years from today. In summary, efforts to implement the corrective actions will divert funds and personnel from ongoing planning of capital projects and other measures that are already in progress to reduce nutrient loading and likely result in significant stranded costs.

Interim limits should be based on current discharge levels that include design capacity and anticipated growth. The Ecology Permit Writer's Manual states that the agency has, "observed over the years that it takes municipalities several years to plan and fund expansions of the wastewater treatment plant," and therefore permit writers should, "note the population growth of a municipality when redrafting their wastewater discharge permit."4 The Permit Writer's Manual also states that the capacity outlined in a plan, "must be sufficient to achieve the effluent limitations and other conditions of [the] permit."5 When parties appealed the 2022 PSNGP, Ecology had agreed to a partial stay that included staying the permit conditions related to corrective actions, due to the various issues outlined above. It is inappropriate and unreasonable to retain these provisions in the 2025 PSNGP. Imposing corrective actions under the general permit will potentially result in lost capital expenses and deflect resources that should be focused on completing the NRE process and long-term solutions for nutrient loading.

[4] Washington State Department of Ecology, Water Quality Program Permit Writer's Manual (July 2018), pg. 156.

[5] *Id.* at 157.

2.3 Conflicting Deadlines for Corrective Action Versus Other Project Implementations

Condition S4.D of the 2025 PSNGP outlines corrective actions facilities must take if reported TIN loading exceeds the permit action levels. The 2025 PSNGP requires facilities that exceed their action level to submit to Ecology for review a proposed approach to reduce the annual effluent load by at least 10% below the action level and be implemented "as soon as possible." The proposed approach must be submitted in the form of an "engineering report or technical memo" unless Ecology has already approved a design document with the same proposed solution. This engineering document must include much of the same information Tacoma has submitted or is preparing and planning to submit in similar reports as part of its comprehensive sewer planning and facility planning required under state law. Tacoma is unaware whether Ecology has even begun to review the reports the City has already submitted. The corrective actions required under the 2025 PSNGP directly conflict with timelines set out in other planning documents the City is required to submit per state law.

When constructing or modifying domestic wastewater facilities, engineering reports and plans and specifications for the project must be submitted to and approved by Ecology before implementation. WAC 173-240-030. This requirement and related timeline are separate from what Ecology is proposing be required under the 2025 PSNGP. The corrective action required under Condition S4.D would effectively impede facility efforts to submit other similar reports as required under state law. It is unreasonable and unlawful to impose deadlines for corrective actions that conflict with these other requirements. The engineering document required under Condition S4.D is thus not allowed under state administrative code, as Ecology does not have the authority to require a utility to violate state law. WAC 173-06-120(8).

3.0 Desire for Collaboration/Partnership

3.1 Significant Reviews with Limited Time and Missed Opportunities for Collaboration

The City appreciates that Ecology has provided meetings and opportunities for public comment. However, our experience has been that these opportunities often come after key decisions have already been made, limiting the ability to influence outcomes in a meaningful way. While procedural requirements for public engagement may be met, the spirit of true collaboration and engagement has too often been absent. As a result, opportunities to explore viable, cost-effective alternatives are being lost. The City has consistently requested more meaningful collaboration to address the complex challenges of nutrient reduction.

By way of more recent examples, Ecology staff indicated during the March 2025 Nutrient Forum that Ecology intends to issue the finalized 2025 PSNGP and 2025 Reduction Plan by the end of the year (2025). However, we did not receive any further details until the draft documents were issued for public comment in June 2025. This compressed timeline has significantly limited the opportunity for transparent, substantive engagement on critical issues raised in this comment letter.

Moreover, from mid-June through August 27, Ecology released a large volume of documents, totaling thousands of pages, for review. The scale and pace of this review process have placed a substantial burden on stakeholders. The City was disappointed that Ecology declined to extend the review period, a mere four weeks, despite the complexity and significance of the materials.

In light of these concerns, the City respectfully requests that Ecology commit to a more robust, transparent, and collaborative stakeholder process. Specifically, we urge Ecology to engage regularly, at least monthly, with all partners prior to finalizing the 2025 PSNGP and the 2025 PSNRP. This approach will help ensure that the final plan and permit reflect the best, most achievable path forward, developed in partnership with the communities and utilities most affected and integral to its success.

3.2 Technical Advisory Committee

Appendix H of the 2025 PSNRP outlines the formation of a Technical Advisory Committee (TAC) and emphasizes the importance of stakeholder input in making key decisions. The City requests that Ecology convene the TAC promptly and before finalizing the PSNRP. Given the limited opportunities for input during the draft phase, establishing the TAC now in a collaborative environment would allow for meaningful contributions and result in a more robust final PSNRP. This approach would demonstrate Ecology's genuine interest in feedback from dischargers and better understanding the opportunities and challenges on the ground for implementing such significant upgrades to facilities region-wide. Finalizing the document without this critical input and only convening the TAC after the 2025 loads and timeline are set would diminish the TAC's effectiveness and ultimately, the 2025 PSNRP’s effectiveness. Tacoma requests to be a member of the TAC and looks forward to hearing from Ecology about it. Additionally, Tacoma requests that the TAC be facilitated by an independent facilitator to ensure meaningful engagement.

Questions:

- **When will Ecology convene the Technical Advisory Committee?**
- **What are Ecology's goals for the Technical Advisory Committee?**
- **When will Ecology provide more information about the Technical Advisory Committee?**
- **Will independent and unbiased facilitation be available for the Technical Advisory Committee?**

3.3 Power Impacts and Regional Energy Considerations

As part of its NRE effort, the City assessed the anticipated increase in power demand resulting from nutrient treatment upgrades needed to meet the proposed concentration limits of 3/5/8 mg/L TIN for hot, warm, and cool seasons, along with a year-round CBOD limit of 8 mg/L. The analysis indicates that these upgrades would increase power consumption by approximately 2.8 times at the CTP and 3.6 times at the NETP. These are substantial increases that will place significant additional demand on the local power grid.

Preliminary discussions with Tacoma Power revealed that local power utilities were not fully aware of the scale of these projected increases. This highlights a critical gap in coordination between regulatory planning and utility infrastructure readiness. With over 50 wastewater treatment plants expected to implement similar upgrades by 2050 under the 2025 PSNRP, the cumulative regional power demand could be considerable. Similar to wastewater utilities, power utilities face complex regulatory and long-term planning processes to implement significant capacity or other upgrades to the local and regional power grid.

This issue is further compounded by the broader context of increasing demand for electricity across the Puget Sound region. The transition to electrification in transportation, heating, and industry, along with the need to support data centers, housing growth, and climate resilience means that power utilities are already facing mounting pressure to expand generation capacity and grid reliability. Adding large, uncoordinated loads from wastewater treatment upgrades could strain the system and lead to unintended consequences, including delays, increased costs, or reliability concerns.

Given these intersecting challenges, the City strongly urges Ecology to proactively engage with regional power providers, including Tacoma Power and other public and private power utilities, to assess and plan for the cumulative energy impacts of nutrient reduction requirements. A coordinated approach is essential to ensure that power infrastructure can support these upgrades without compromising other critical energy needs in the region.

The City also recommends that Ecology:

- **Conduct a regional energy impact assessment in collaboration with utilities and stakeholders.**
- **Integrate power demand considerations into the planning and phasing of nutrient reduction requirements.**
- **Explore opportunities for energy efficiency, resource recovery, and renewable energy integration as part of the upgrade strategies.**

3.4 Nitrogen Removal Operations at Wastewater Treatment Facilities

The operational frameworks presented in the 2025 PSNRP are based on seasonal concentration limits of 3/5/8 mg/L TIN for hot, warm, and cool seasons, respectively, along with a year-round CBOD limit of 8 mg/L (with some variation for some dischargers, e.g. 3/3/8 mg/L TIN at CTP). Appendix E translates these concentration-based frameworks into monthly load targets for each facility, using 2014 flow conditions as a baseline.

However, this approach does not reflect the operational realities of biological nutrient removal at wastewater treatment facilities. Nitrification and denitrification processes rely on the development and maintenance of a stable microbial biomass, which is highly sensitive to fluctuations in flow, load, and environmental conditions. These biological systems cannot be turned on or off on a monthly, or even seasonal, basis without risking significant process instability. Even minor changes in influent characteristics or operational parameters can result in biomass loss (through die-off or washout), requiring days or weeks to reestablish the microbial populations necessary for effective nutrient removal.

The current framework assumes a level of operational flexibility that is neither technically feasible nor advisable for maintaining consistent and reliable treatment performance. While Appendix H suggests that annual or concentration-based load compliance may be possible, the structure and assumptions embedded in Appendix E do not align with that approach. The monthly load targets derived from seasonal concentration limits do not account for the need for operational stability and continuity in biological treatment processes.

The City respectfully requests that Ecology revise Appendix E to better reflect the realities of treatment plant operations. Specifically, we recommend that Ecology:

- Rerun the SSM using an annual average load or concentration framework that aligns with how facilities can realistically operate.

- Provide flexibility in compliance structures that allow for stable, year-round operations rather than rigid monthly or seasonal shifts.
- Engage with operators and engineers to ensure that regulatory frameworks are grounded in practical, science-based understanding of biological treatment systems.

This adjustment would support more reliable compliance, reduce operational risk, and better align regulatory expectations with the technical capabilities of treatment facilities.

3.5 Timelines and Planning Uncertainty

The 2025 PSNGP NRE requires utilities to provide "viable implementation timelines that include funding, design, and construction for meeting both the AKART and seasonal average 3 mg/L TIN preferred alternatives" (pages 20 and 28 of the 2025 PSNGP Permit document). However, Ecology's FCA Guidance states:

"We also emphasize that [FCA] results, for the purpose of the Nutrient Permit, are not intended for schedule negotiation."

This statement is deeply concerning and appears to directly contradict the NRE requirement. If utilities are expected to propose viable implementation timelines, then affordability and schedule development must be inherently linked. The FCA spreadsheet tool, which Ecology notes aligns with the 2023 EPA FCA Guidance (pg. 34), is designed to evaluate the economic impact of water quality decisions. It is not reasonable to separate affordability from implementation timelines when both are essential to determining what is feasible for each utility.

Additionally, the 2025 PSNRP proposes a regional implementation target of 2050. This date was not discussed with utilities prior to its inclusion, nor was it informed by the results of the NREs, which are still underway. This top-down approach undermines the collaborative planning process and fails to account for the diverse financial, technical, and logistical realities faced by individual utilities.

Compounding this issue, the 2025 PSNGP reintroduces the Corrective Action requirement, which mandates upgrades to reduce effluent TIN by 10% below the Action Level. This requirement, reinstated after being stayed in the 2022 PSNGP, creates significant planning challenges. Requiring two separate upgrades for the same parameter within overlapping timeframes introduces confusion, inefficiency, and potential duplication of effort in design and construction.

Planning around the evolving limits remains a significant challenge due to the shifting regulatory, financial, and strategic landscape. Each iteration introduces new constraints or priorities that can alter other City project scopes, timelines, and resource allocations. This fluidity makes it difficult to establish long-term plans with confidence, as assumptions made under one framework may no longer hold under the next.

The City respectfully requests that Ecology:

- Clarify the role of the FCA in informing implementation timelines and acknowledge that affordability and scheduling are inseparable.
- Explain the rationale for setting a 2050 implementation target without prior consultation with utilities.
- Consider removing the Corrective Action requirement due to its timing relative to the broader nutrient reduction planning process.
- Commit to aligning regulatory timelines with the outcomes of the NREs to ensure that implementation schedules are grounded in real-world feasibility.

Questions:

- **Why does the NRE require an implementation timeline when Ecology has proposed a 2050 target in the 2025 PSNRP?**
- **Why was the 2050 timeline not discussed with utilities prior to its inclusion?**
- **Why did Ecology not wait for the completion of the NREs to better understand viable corrective actions and feasible timelines for each WWTP and utility?**

3.6 Regional Capacity Constraints for Nutrient Removal Upgrades

Requiring over 50 wastewater utilities in Washington to upgrade for nutrient removal within the same 25-year period (compliance target in 2025 PSNRP) presents a significant logistical and workforce challenge that the regional engineering and construction sectors are not equipped to handle. The scale and complexity of these upgrades, which involve advanced treatment technologies, will place unprecedented demand on a limited pool of qualified engineers, consultants, equipment suppliers, and construction contractors. This situation is reminiscent of the transition to secondary treatment under the Clean Water Act, which took several decades to implement across the state due to similar capacity and funding constraints.

3.7 Examples of Robust Collaboration

Successful collaborations are based upon transparency, mutual trust, a shared mission, sustained participation among stakeholders, and a capacity to take action. There are examples of successful collaborations on watershed nutrient management, such as San Francisco Bay where the Bay Area Clean Water Agencies (BACWA wastewater dischargers) and the San Francisco Regional Water Quality Control Board (RWQCB regulatory agency) collaborated on the nutrient watershed permit for the Bay over 3 permit cycles. Under the watershed permit, members work together to fund nutrient monitoring programs, support load response modeling, and conduct studies to better understand treatment plant optimization opportunities and upgrade needs to achieve nutrient removal. The collaborative nature of the BACWA Watershed Permit has gained national attention as evidenced by their 2019 NACWA Platinum Award for Partnerships (National Association of Clean Water Agencies). Beyond the overall partnership, there are numerous collaborative efforts to advance the nutrient management strategy, such as the nutrient management strategy group that is led by San Francisco Estuary Institute (SFEI) which focuses on the science. The EPA Regional Office have been strong supporters of this effort by annually speaking at the BACWA Annual Conference and financially sponsoring regional grants, specifically on side-stream treatment and a Nature Based Solution (NbS) demonstration facility (Water Research Foundation (WRF 2023)[6].

Partnerships are one of the foundational aspects of collaborations to develop effective nutrient management strategies and achieve equitable water quality improvements. Watershed partnerships need to address complex environmental problems that span organizational and jurisdictional boundaries. For these reasons, the traditional bureaucratic approaches to environmental management and partnerships may be ineffective and could be a hinderance to producing effective environmental outcomes (Biddle 2017[7]). Effective watershed partnerships are based upon establishing principled engagement, shared motivation, and a capacity for joint

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[6] Clark, D.L., Stober, J.T., Falk, M., Holmberg, H., and Vanrolleghem, P. (2023). Holistic Approach to Improved Nutrient Management. WRF4974

[7] Biddle, J. 2017. *Improving the Effectiveness of Collaborative Governance Regimes: Lessons from Watershed Partnerships. Journal of Water Resources Planning and Management.* 143(9) September 2017.

action within partnerships. Each of these elements include key subcomponents that are critical to producing outcomes, such as mission consensus, mutual trust, and sustained participation.

3.8 PSNGP Appeal Issues

Ecology has not adequately addressed utility concerns raised during the development of the previous 2022 PSNGP and the 2025 PSNGP, despite these issues being brought forward during the Advisory Committee process and again in over 40 separate issues raised during the 2022 PSNGP appeals process. Notably, the PCHB did not review these utility-specific concerns in its February 2025 ruling, which focused instead on broader legal questions such as the mandatory nature of the permit. Utilities have consistently expressed that the permit imposes significant obligations without providing the necessary regulatory clarity, updated science, technical guidance, or financial support. Key unresolved concerns include:

- Implementation of action levels or caps based on historical discharge data, which do not account for variability in influent quality, seasonal flows, or operational constraints.
- Mandatory corrective actions requiring 10 percent reductions in nutrient loads, which would trigger costly infrastructure upgrades without guaranteed funding or realistic implementation timelines.
- Unclear application of AKART (All Known, Available, and Reasonable methods of prevention, control, and treatment), leaving utilities uncertain about compliance expectations and enforcement risks.
- Insufficient consideration of affordability and ratepayer impacts, particularly for smaller or financially constrained utilities.
- Absence of a phased or adaptive management approach, which could allow for more flexible, science-based implementation as monitoring data becomes available.
- No clear pathway for permittees to demonstrate compliance through non-capital strategies, such as optimization or source control, which could be more cost-effective and timely.
- Concerns about how Ecology applied the DO water quality standard, including reliance on outdated or overly conservative modeling assumptions that may not reflect current conditions in Puget Sound.
- The need for updated science and site-specific data, particularly regarding nutrient impacts on DO levels, to ensure that regulatory decisions are based on the best available evidence and tailored to actual environmental risks.

- Failure to conduct a cost-benefit analysis, leaving utilities without a clear understanding of the economic implications of the permit's requirements relative to the anticipated environmental benefits.
- Inadequate SEPA (State Environmental Policy Act) analysis, which did not fully evaluate the environmental, economic, and social impacts of the permit or consider reasonable alternatives.

These concerns reflect a broader frustration that the permit imposes significant obligations without providing the necessary regulatory clarity, technical guidance, or financial support to ensure successful implementation.

4.0 Science

4.1 Dissolved Oxygen Standard and Requirement to Use Sound Science

Under Section 303(c) of the Clean Water Act (CWA) and federal implementing regulations at 40 CFR § 131.4, states and authorized tribes have the primary responsibility for reviewing, establishing, and revising water quality standards, which consist primarily of the designated uses of a waterbody or waterbody segment, the water quality criteria that protect those designated uses, and an antidegradation policy to protect high quality waters. The Washington State surface water quality standards are established under WAC 173-201A.

The dissolved oxygen criteria Ecology uses to determine whether a water body is "impaired" do not meet federal requirements of 40 CFR 131.11. EPA's Water Quality Standards Regulation requires states to adopt water quality criteria using "sound scientific rationale". § 131.11(a). The law also requires criteria be established based on federal guidance or "other scientifically defensible methods." 40 CFR 131.11(b)(1). The state's DO criteria fail to meet both of these standards, as they are not biologically-based and there is no evidence of the criteria being established according to any sound federal guidance or scientifically-defensible methods.

The state first adopted marine DO numeric criteria in 1967, and these criteria continue to be the applicable water quality standards despite being 58 years old. Ecology reports have claimed that the marine water quality standards were developed under the CWA framework, specifically 40 CFR 131.11, but that is a factually impossible statement, since the 1967 criteria were adopted before the CWA even existed. Ecology searched through historical archival records in an attempt to find the origin of the current marine DO numeric criteria. Finding no definitive records, Ecology determined that, "little information exists in general regarding the water quality

standards."[8] Ecology admitted it could find no basis for the criteria in the state's archives and does not have supporting information on the technical basis for the existing criteria.[9]

In 2018, Ecology claimed to have found the basis for the DO criteria, asserting unambiguously that the basis lies in a Department of Interior (DOI) water quality criteria document published in 1968. The 1968 DOI report states that, "surface dissolved oxygen concentrations in coastal waters shall not be less than 5.0 mg/l, except when natural phenomena cause this value to be depressed," and, "dissolved oxygen concentrations in estuaries and tidal tributaries shall not be less than 4.0 mg/l at any time or place except in dystrophic waters or where natural conditions cause this value to be depressed."[10] The report's recommendations of 5 and 4 mg/l do not resemble the marine DO criteria of 7, 6, 5 and 4 mg/l adopted by Washington in 1967. Further, directly after these statements, the report cautions, "[t]he [National Technical Advisory Committee] would like to stress the fact that, due to a lack of fundamental information on the DO requirements of marine and estuarine organisms, these requirements are tentative and should be changed when additional data indicate that they are inadequate."[11] Based on the lack of knowledge or materials supporting Ecology's current DO criteria, paired with the fact that the 1968 DOI report (the one piece of documentation Ecology asserts as a basis for its criteria) explicitly admits to this lack of knowledge and instead speaks to the need for updated standards, it is clear there is no supporting evidence to claim the current DO criteria Ecology uses for the state DO water quality standards is based on "sound scientific rationale" or is based on a "scientifically-defensible method".

The DO criteria also fail to meet the requirements in Chapter 2 of the state's Water Quality Policy 1-11: "Ensuring Credible Data for Water Quality Management". State law requires that Ecology use credible data when determining whether a water body is impaired or whether any surface water of the state is supporting its designated use. RCW 90.48.570 - 90.48.590. With no historical record or evidence of the current DO criteria being based on credible data, the standard cannot be used to determine impairment of water bodies based on DO, nor can it drive permitting requirements or other related nutrient reduction actions.

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[8] *Id.*

[9] Letter from Mark Hicks to Lincoln Loehr (July 8, 1998).

[10] Department of the Interior Federal Water Pollution Control Administration, Water Quality Criteria Report (April 1968), pg. 70.

[11] *Id.*

Apart from there being no supporting materials for how the current criteria were established or that they were established using credible data, there is supporting information showing the criteria do not accurately reflect the needs or behavior of the local aquatic species. For example, marine waters with 5 mg/l DO in many deep-water basins are considered noncompliant under the current standards, when in fact the oxygen level poses no threat to organisms the standards are intended to protect. A study was conducted to identify where oxygen falls below critical levels for certain species in areas of Puget Sound.[12] Results showed that environmental conditions for Dungeness Crab remained above the threshold oxygen level in all but three distinct areas of Puget Sound. Where DO was lowest, in Southern Hood Canal, it was only below the oxygen threshold for one month out of the year (November 2014); spatial variability was only impacted in Southern Hood Canal for that one month as well. The study showed the same results for Chinook Salmon in Southern Hood Canal, but the impact was further limited to only the deeper layers of the water column, where the Dungeness Crab exist as well, whereas DO in the upper layers remained at sufficient levels. Further, for the Chinook Salmon, a map of where oxygen fell below the threshold level was even more confined than that for Dungeness Crab, showing almost an absence of impact on a wider scale across Puget Sound. This initial analysis confirmed that DO impacts for these local species are limited to certain Puget Sound areas and specific periods of the year.

Additional studies have expounded on the fact that marine life may be more resilient than the current standard assumes.[13,14]. For example, fish were found at lower DO levels, as low as 1.3 mg/L for herring and 2.06 mg/L for Chinook salmon, even when DO levels higher in the water column were greater than 6 mg/L.[15] Maintaining adequate levels of DO is critical for the survival and well-being of marine organisms, but accurately predicting responses and impacts on aquatic species can be difficult. The current scientific understanding and ability to predict habitat and species shifts due to changes in oxygen supply and demand are limited by a lack of available

[12] University of Washington Puget Sound Institute, Presentation on Temperature Dependent Oxygen Thresholds for Marine Life (Aug. 15, 2025).

[13] Puget Sound Institute Nutrient Discussion (Jun 6, 2025); Genoa Sullaway & Tim Essington, Biological sensitivity of Salish Sea taxa to low oxygen levels: determining observed metabolic demand thresholds of key taxa based on concomitantly measuring abundance, oxygen, and temperature (Feb. 2025) ("Salish Sea Species Sensitivity Report").

[14] Salish Sea Species Sensitivity Report at 1.

[15] Salish Sea Sensitivity Report at 1.

knowledge on Salish Sea species' vulnerability to the combined impacts of low DO and warming waters.[16]

Additionally, the current criteria allow for no less than 6 or 7 milligrams of DO per liter, but studies have surmised most of Puget Sound has never met those standards, even in pre-anthropogenic times. Simply stated, the current DO criteria Ecology uses to determine whether a water body is "impaired" are not biologically based and therefore do not meet federal requirements of 40 CFR 131.11.17.

Before using a new Natural Conditions Rule and associated performance-based approach – both of which have yet to be approved by EPA – to develop water quality standards, Ecology should first develop biologically based DO criteria. Ecology has ignored inputs from EPA, multiple municipalities, Tribes, and other parties urging the adoption of such a standard.[18] Ecology is already in the process of updating its freshwater criteria. There is no reason it cannot begin to do the same for marine water.

4.2 Natural Conditions Rule has not received EPA approval and cannot be used in water cleanup plans.

Ecology adopted amendments to Chapter 173-201A WAC on November 14, 2024. The amendments include a new section in the Code and definition to describe and reference a "performance-based approach" that Ecology plans to apply when determining natural conditions criteria. Ecology is still reviewing comments on the guidance document for the performance-based approach, and neither the Natural Conditions Rule nor the associated performance-based approach have been approved by EPA. Ecology plans to submit both as a package to EPA in December 2025. When the first iteration of the PSNGP was originally issued, Washington had a natural conditions rule in place; that is not the case now. In 2021, EPA disapproved sections of the previously approved natural condition provisions in the state's Surface Water Quality

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[16] *Id*. at 1-2.

[17] Ecology has acknowledged it has no documentation as to the scientific basis for the marine DO standards adopted by a predecessor agency in 1967.

[18] Letter from Sara Thitipraserth, Director, Stillaguamish Tribe Natural Resources Department to EPA (May 26, 2023); Letter from EPA to Vince McGowan, Water Quality Program Manager, Washington State Department of Ecology (Nov. 19, 2021); City of Tacoma, Comment Letter on the Department of Ecology's draft Puget Sound Nutrient General Permit and draft Fact Sheet (Aug. 16, 2021); Email from Chad Brown to Ronald L. Lavigne (Nov. 21, 2022); Michael Connor and William Stelle, *Elements of a Comprehensive Puget Sound Nutrients Program*; Petition to the Department of Ecology from Tad Shimazu and Lincoln Loehr (Jul. 17, 1998).

Standards and has not yet approved the new Natural Conditions Rule adopted by Ecology in November 2024.

The Natural Conditions Rule and performance-based approach cannot be applied to the 2025 PSNGP or PSNRP until they have been approved by EPA. Under section 303(c) of the Clean Water Act, EPA must review and approve or disapprove state-adopted water quality standards. CFR §131.5. The CR-103 filing for the Natural Conditions Rule states that the Natural Conditions Rule, "goes into effect for Clean Water Act purposes, such as for the Water Quality Assessment and water quality permits, after it has been approved by the EPA." The filing also states that, until Ecology receives EPA approval, it "will not be able to use the performance-based approach document for site-specific criteria under the Clean Water Act, 'such as for water clean up plans (alternate restoration plans and Total Maximum Daily Loads).'" Further, Ecology included in its response to comments on its 2022 Water Quality Assessment and 303(d) list ("2022 Assessment") that Policy 1-11, Chapter 1 was updated for the 2022 Assessment in March 2023 with a note stating, "Ecology will not utilize the following Natural Conditions methodology for waterbodies relevant to the disapproved provisions until a new natural conditions provision has been adopted into our Surface Water Quality Standards and approved by EPA." Ecology has clearly acknowledged it may not apply its Natural Conditions Rule or associated performance-based approach to water quality permits or alternate restoration plans until obtaining EPA approval; yet, Ecology states that it is applying the newly adopted natural conditions to its modeling scenarios for the purpose of developing nutrient targets under the PSNRP: "Ecology targets the applicable numeric and natural conditions water quality criteria in its modeling scenarios [and] considers results acceptable where DO concentrations are above the numeric criteria or where local and regional sources do not cause more than a 0.2 mg/L decrease in DO below the natural condition."[19] Additionally, there is no guarantee that EPA will approve the rule shortly after submission. Before approving the rule, EPA must also consult with US Fish and Wildlife Service and the National Marine Fisheries Service to determine if the rule adequately protects endangered species. Given the time that has already passed and the steps still left to go, it could take years for EPA to approve the Natural Conditions Rule. Therefore, it is certainly not appropriate for Ecology to use this rule and related methods to base permitting and nutrient limits that require immediate action and compliance.

[19] Washington State Department of Ecology, Draft Puget Sound Nutrient Reduction Plan, pg. 30.

Ecology has itself acknowledged it cannot use the Natural Conditions Rule or associated methods such as the performance-based approach for alternate restoration plans, which includes the proposed PSNRP. Given the new proposed natural conditions provisions have not been approved by the EPA ("only EPA approved natural conditions provisions can be used for CWA purposes such as the Assessment"), please explain how the PSNRP is a valid approach.

4.3 The draft narrative water quality-based effluent limits ("WQBELs") do not control discharges as necessary to meet applicable water quality standards for dissolved oxygen.

As Ecology admits, it does not have the data to determine if the 2025 PSNGP will control discharges in a manner that will result in meeting water quality standards. Ecology has further determined that current levels of TIN in WWTP effluent are causing or contributing to violations of the DO standards in Puget Sound. See Fact Sheet, Page 32. Ecology has not proposed a monitoring program that adequately measures DO in the "impaired" water bodies. Without this data there is no way to tell whether the proposed actions in the 2025 PSNGP have any impact on DO.

Questions:

- **In response to comments, can Ecology explain whether discharges from a facility at or below the total inorganic nitrogen action levels in Condition S4.B will cause or contribute to a violation of water quality standards?**
- **In response to comments, can Ecology explain how the proposed permit narrative effluent limits will meet water quality standards for dissolved oxygen?**
- **In response to comments, can Ecology explain whether a facility in full compliance with the permit and discharging total inorganic nitrogen at or below action levels in Condition S4.B will be meeting water quality standards for dissolved oxygen? Can Ecology explain the basis for its answer to this question?**

4.4 Binding Nature of Nitrogen Targets and SSM Assumptions

Ecology states in its PSNRP that it has utilized the SSM to develop nitrogen targets. These targets are included as basin-wide TN targets, generated from SSM scenario runs using 2014 data. The PSNRP asserts the TN targets are the "basis for calculating water quality based effluent limits ("WQBELs") in future reissuances of NPDES permits for domestic WWTPs."[20] Specifically, "the marine point source nitrogen targets will be translated into WQBELs in the future reissuance of the General Permit, individual domestic WWTP permits and industrial permits," and although WQBELs in future permits do not need to be "identical" to the targets in the PSNRP, they must be "consistent" with the targets set by the Plan.[21] The City would like confirmation whether future permit writers will be obligated to apply the assumptions produced by the Salish Sea Model to develop effluent limits in future permits.

Questions:

- **In response to comments, can Ecology explain whether permit writers will be required to implement the assumptions from the updated Salish Sea Model as though they are Waste Load Allocations?**
- **The PSNRP lays out that the City of Tacoma will need to achieve 3/3/8 mg/L; will a permit writer issuing future iterations of general or individual NPDES permits have discretion to choose different levels of loading, or are these levels binding? If the former, what other considerations will permit writers take into account other than these stated values?**
- **Will the Waste Load Allocations produced using the SSM be the applicable Waste Load Allocations the City of Tacoma will need to meet for compliance with future permits?**
- **Is the science complete with respect to using current criteria and modeling to produce Waste Load Allocations? If not, is there additional science facilities can provide showing other pathways to achieving Water Quality Standards?**
- **Is meeting the seasonal average loading limits listed in the draft voluntary permit a binding obligation?**
- **Will Ecology consider alternative modeling scenarios that achieve the similar results to the nutrient loading targets in the PSNRP?**

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[20] Washington State Department of Ecology, Draft Puget Sound Nutrient Reduction Plan (June 2025), pg. 36.

[21] *Id*. at 41.

4.5 Ecology has not Provided Adequate Information for a Meaningful Comment on the Reasonable Potential Analysis that Forms the Basis for the General Permit

EPA and Ecology regulations require sufficient information to evaluate and comment on the basis for a NPDES permit. In the case of the 2025 PSNGP, Ecology has relied entirely on the 2019 Bounding Scenarios Report, Optimization Scenarios Phase 1 and 2, and the SSM model runs described therein. The Bounding Scenarios Reports (Phase 1 and 2) suggest that Ecology did not conduct a facility specific or watershed level assessment to determine whether each WWTP has a reasonable potential to cause or contribute to DO impairment – whether through nearfield or farfield impacts. Federal regulation (40 CFR 122.44(d)(1)(iii)) requires that a Reasonable Potential Analysis account for "the variability of the pollutant or pollutant parameter in the effluent." For TIN, variability cannot be accurately determined from the limited 2014 monthly, quarterly, or annual nutrient data available from WWTPs. Despite requiring Puget Sound WWTPs to collect expanded monitoring data since 2022, Ecology has not incorporated this more robust dataset into its current regulatory approach. This omission undermines both the precision and defensibility of the proposed limits, and underscores the need for a targeted, data driven Reasonable Potential Analysis before advancing new requirements. Given these deficiencies, there is not enough information for Tacoma to comment on the reasonable potential determination.

Tacoma has been trying to understand the SSM runs done by Ecology for the Bounding Scenarios Report Phase 1 and 2. Tacoma cannot provide meaningful comments on the reasonable potential analysis forming the basis for the 2025 PSNGP without completing this work.

The input files and post-processing of SSM results should be subject to review.

Questions:

- **In response to comments, can Ecology disclose how it processed it the results from the SSM modeling to make impairment determinations used in its reasonable potential analysis?**
- **In response to comments, can Ecology explain the extent of cells deemed out of compliance with DO standards based solely on model results in the deepest layer of a cell?**
- **In response to comments, can Ecology explain if WQP 1-11 represents the current interpretation and application of the marine DO water quality standard?**

4.6 Collaboration with University of Washington Puget Sound Institute

To strengthen the scientific foundation of nutrient regulation in Puget Sound, it is essential that Ecology actively collaborate with academic institutions such as the University of Washington Puget Sound Institute (UW PSI) and the Washington Academy of Sciences. These organizations bring deep expertise in marine science, ecosystem modeling, and environmental policy, and can provide critical, independent analysis to inform regulatory decisions. Similar collaborations have proven highly effective in other regions. In the San Francisco Bay, the partnership between the San Francisco Estuary Institute (SFEI), regional universities, and the Bay Area Clean Water Agencies (BACWA) has led to adaptive, science-based nutrient management strategies that balance ecological protection with practical implementation timelines. Likewise, in the Chesapeake Bay, long-standing collaboration between the Chesapeake Bay Program, academic institutions, and regulatory agencies has been instrumental in developing nutrient reduction strategies grounded in rigorous science and supported by robust monitoring and modeling. These partnerships have helped ensure that regulatory frameworks are both environmentally effective and operationally feasible. By engaging Washington's academic community in a similar way, Ecology can foster a more transparent, informed, and regionally appropriate approach to nutrient management in Puget Sound.

4.6.1 Available Science That Should Be Considered

For many years, UW PSI has been a leader in advancing the science and modeling of water quality and species health in Puget Sound. This leadership has included organizing a series of scientific workshops and convening an international modeling group to evaluate and improve the performance of the SSM. According to UW PSI in its August 22, 2025 Technical Memorandum, "Review of the 2025 Salish Sea Model Updates and Application to Nutrient Management" (UW PSI August 2025 Memo)[22]:

"In 2023-2024, the Puget Sound Institute convened global experts to advise on how to improve the application of the Salish Sea Model to inform recovery goals and nutrient management decisions in Puget Sound. The Model Evaluation Group included scientists who have led pioneering research and advised regional managers on the application of modeling and monitoring in nutrient management programs in other regions, like the Baltic and Chesapeake Bay. These experts – Bill Dennison, Jacob Carstensen, Jeremy Testa, Kevin Farley, and Peter

[22] https://www.pugetsoundinstitute.org/wp-content/uploads/2025/08/2025.08.22-Review-of-2025-Salish-Sea-Model-Updates-and-Application-to-Nutrient-Management.pdf

Vanrolleghem – shared several recommendations to improve confidence in applying the Salish Sea Model to support Puget Sound's recovery goals and regulation (Mazzilli et al., 2024). In Figueroa Kaminsky et al. (2025), the State made significant advances addressing the prior Model Evaluation Group's recommendations."

While Ecology has made progress in refining the model between Phase 1 and Phase 2 of the Bounding Scenarios Report, key challenges remain. Model performance and associated errors still exceed Ecology's proposed human use allowance of 0.2 mg/L dissolved oxygen, as outlined in the draft Natural Conditions Provision. Additionally, Ecology continues to rely on subtracting two model scenarios, a method that does not adequately address the inherent uncertainty in model outputs. As UW PSI further notes in its August 2025 Memo[22]:

"As a result, when compliance is determined by comparing existing and reference scenarios, the true level of uncertainty in the outcome is larger than the model statistics alone suggest and must be explicitly considered in regulatory applications. It seems unlikely that any model could reduce uncertainty to the point that it is lower than the current human use allowance of 0.2 mg/L."

UW PSI's 2025 memorandum also includes additional evaluation points regarding Ecology's use of the Salish Sea Model, particularly in relation to nutrient reduction targets and watershed management. These insights are critical to understanding the feasibility and implementation challenges of proposed nutrient reductions. As stated in the same Memo[22]:

"Reducing nutrients from diffuse sources in watersheds is notoriously challenging because actions are often voluntary, require buy-in from thousands of independent landowners, and are frequently undermined by competing agricultural incentives that encourage fertilizer-intensive cropping practices. The proposed reductions range from 53 – 67% in most basins, which exceeds what has been achieved even in the best cases in Denmark and the Chesapeake Bay (Scientific and Technical Advisory Committee (STAC), 2023). Since 1990, Denmark has cut its nitrogen surplus by ~50%, but only through decades of strong political will and strict regulations on livestock, manure, and fertilizer use (Riemann et al., 2016). Implementing the proposed targets will also require a more sophisticated understanding of the watershed sources. Recent modeling by USGS SPARROW, in collaboration with the State, has taken strong initial steps by estimating seasonal loads from both marine point and watershed sources (Schmadel et al., 2025). A helpful next step would be to show watershed sources separately and aligned to the watershed boundaries in the State's Draft Puget Sound Nutrient Reduction Plan. This would allow managers to see how the nutrient sources line up with the watershed-specific targets set in the plan."

Given the depth and breadth of UW PSI's scientific evaluations, Ecology is strongly encouraged to review and condsider this Memorandum along with the many others published by UW PSI. These documents provide critical context, technical recommendations, and real-world examples that can inform more effective and realistic nutrient management strategies.

4.7 Use Attainability Analysis/Variance Applications

A Use Attainability Analysis is the tool used to evaluate the potential to remove non-existing and non-attainable designated uses, or to establish subcategories of uses. It is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in 40 CFR § 131.10(g). Section 131.10(g) of the federal regulations contains the rules governing the circumstances under which a state can remove a use. Under 40 CFR§ 131.10(g), states may remove a designated use which is not an existing use, or establish subcategories of a use requiring less stringent criteria, if the state can demonstrate that attaining the designated use is not feasible (not an attainable use) because certain conditions exist. Of the six factors to analyze in whether attaining the use is feasible, the following are relevant for addressing how nutrient discharge from a WWTP may exacerbate dissolved oxygen depletion: (1) Naturally occurring pollutant concentrations prevent the attainment of the use; (2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use; (5) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; and (6) Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact. Criteria can also be revised to represent the attainable level of water quality without changing the designated use; this exercise is tied to the application of natural conditions criteria. As it relates to dissolved oxygen and regulating nutrients, has Ecology considered a Use Attainability Analysis required under 40 CFR § 131.2?

Relatedly, as attaining the reduction targets in the PSNRP may not be feasible for a number of WWTPs, Ecology should more seriously consider the option of allowing variances. The PSNRP only mentions variances once, as an additional permitting tool alongside compliance schedules and interim limits, "recognizing the significant nutrient reductions needed from marine point sources." After WWTPs complete NREs, would Ecology be open to variance applications? Especially with the shift from TIN to TN, it is likely that many WWTPs will not be able to attain the target limits without expending a significant amount of time and money, and should therefore be provided alternative means of still working towards nutrient loading reduction without facing the consequences of noncompliance.

5.0 Permit Condition Issues

5.1 Condition S3 is Unlawful

Condition S3 of the 2025 PSNGP is unlawful according to the Supreme Court's recent decision in *City and County of San Francisco v. Environmental Protection Agency.* The Court held that it is unlawful to include "end-result" conditions in a NPDES permit. Although Ecology revised its general permit language to align with this recent decision, the current draft language still subjects permittees to automatic violations.

Condition S3 states that Ecology presumes compliance with water quality standards when a permittee complies with the terms and conditions of the permit, "unless discharge monitoring data or other site specific information demonstrates that a discharge causes or contributes to an exceedance of water quality standards." Yet, Ecology concludes in the draft fact sheet for the 2025 PSNGP that it has such site-specific information, as it is relying on this information for the PSNRP and SSM, through which it concludes many of the dischargers that could opt into coverage under the 2025 PSNGP would be violating water quality standards. Specifically, Ecology has concluded that the current TIN discharges from the 58 covered WWTPs are causing or contributing to violations of the DO water quality standards. See Fact Sheet for the Puget Sound Nutrient General Permit at 32-33 (explaining that modeling demonstrates that TIN collectively discharged from domestic wastewater treatment plants contributes to low dissolved oxygen concentrations in Puget Sound that do not meet water quality criteria). Thus, if such a facility opts in to be covered under the 2025 PSNGP, it would be immediately subject to liability for violating the permit based on the language in Condition S3.

In short, under Condition S3, Ecology has both authorized and prohibited the same discharge, rendering all dischargers covered under the 2025 PSNGP susceptible to liability for discharging nutrients in amounts that Ecology has concluded violate the DO water quality standards. The inconsistent provisions of the permit subject permittees to legal liability as soon as the permit would take effect.

5.2 Condition S4.C Nitrogen Optimization Plan and Report is vague and does not credit past and current utility optimization efforts.

Condition S4.C requires a permittee to develop and implement a Nitrogen Optimization Plan and apply an adaptive management approach at the WWTP. The Condition does not acknowledge or credit optimization efforts that facilities have already evaluated and implemented, or are in the process of doing so. For example, the City of Tacoma has already completed many of the requirements under Condition S4.C, such as assessing the nitrogen removal potential of the current treatment process and identifying viable optimization strategies, implementing specific optimization strategies to reduce nitrogen in effluent, and investigating opportunities to reduce influent loading. The City has received no indication that Ecology has reviewed optimization-related reports it has already submitted to the agency. The draft permit language does not credit any of the City's current or previous efforts and therefore it is assumed the City will need to duplicate such work in order to comply with the 2025 PSNGP. The immediate implementation of the permit's optimization requirement will adversely affect the City's ability to complete other major capital project upgrades currently scheduled that would accomplish the same goals.

Further, Ecology's requirement that optimization strategies be planned and implemented in under a year is unrealistic. The facility must select a strategy, define metrics, measure the baseline data, implement the strategy and then use the selected metrics determine if the strategy works. It is not feasible to complete this work within one year.

Ecology has also not adequately defined what optimization means and how an operator can determine if it has "optimized" or how Ecology or a third party will determine if the operator has optimized. The permit defines "Optimization" as a "best management practice (BMP) resulting in the refinement of WWTP operations that lead to improved effluent water quality and/or treatment efficiencies," but by Ecology's own admission, optimization does not have a large impact on the perceived DO impairment. A more effective measure would be to put effort into determining WQBELs and begin planning design and construction of facilities that would actually have a significant impact on DO impairment, assuming there is an impairment. Other issues with Permit Condition S4.C are outlined below.

Condition S4.C.2.a.v requires documentation of any impacts to the overall treatment performance as a result of process changes. Ecology does not explain how a facility or how Ecology will address potential negative impacts to overall treatment performance. It is not clear if a facility may violate its individual permit if that results from implementing optimization efforts or whether this will be addressed in modified or reissued individual permits.

Condition S4.C.2.b.i requires a load evaluation by June 30 each year to determine the facility's annual average TIN concentration and load from the reporting period. Since there will only be one year of data in year two of the permit, it is impossible to calculate an annual loading average.

Condition S4.C.3.b requires identification of strategies for reducing TIN from new multi-family/dense residential developments and commercial buildings. The Fact Sheet does not explain or provide any guidance on what strategies should be considered under this condition of the permit.

Condition S4.D.2 requires, when a facility exceeds its action level, it must include in its next Annual Report a proposed approach to reduce the annual effluent nitrogen level by 10%. The permit does not explain how a facility can be capable of obtaining an additional 10% reduction in loading if it has already reduced nitrogen loading to the maximum extent under the permit.

The Fact Sheet, at 46, cites two EPA Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants (2015) as a resource for evaluating alternatives for optimizing nitrogen reductions at activated sludge plants. The EPA study concluded that most opportunities for optimization were only found in facilities with existing BNR capabilities. The EPA document does not apply to the Tacoma facilities and Ecology has cited no other guidance for optimization alternatives.

The Fact Sheet, at 49, suggests that facilities evaluate strategies for reducing nitrogen loading including increasing production volumes of reclaimed water (if applicable to the facility), implementing side stream treatment for a portion of return flows from solids treatment, reducing influent nitrogen loads, alternative effluent disposal options and any other intermediate treatment alternative which results in decreased nitrogen loads into Puget Sound prior to major facility upgrades. All of these alternatives require substantial capital investment or some sort of growth moratoria. This is contrary to the previous statement that substantial capital investment would not be part of the optimization program.

Questions:

- **In response to comments, can Ecology explain if a plant initially optimizes for maximum nitrogen removal but exceeds the action level, then what adaptive management strategies are left since they have presumably already optimized for maximum nitrogen removal?**
- **In response to comments, can Ecology explain how a facility can document the exclusion of optimization strategies under this section?**

- **In response to comments, can Ecology explain whether Condition S4.C.1.b applies to consideration of an additional 10% reduction – namely, that a facility does not need to consider optimization strategies that exceed a reasonable implementation cost or timeframe that exceeds one year?**
- **In response to comments, can Ecology explain the consequence to a facility if there are no optimization strategies that can reasonably be implemented to reduce nitrogen loading by an additional 10% within five years?**
- **In response to comments, can Ecology explain whether a facility will be in violation of the permit where there are no reasonably available optimization strategies to achieve a 10% reduction in annual nitrogen loading?**

5.3 Condition S4.E Nutrient Reduction Evaluation is Vague and Unsupported

Condition S4.E.1 states that a facility must submit an "approvable" nutrient reduction evaluation report. There is no regulatory standard for nutrient reduction evaluation report and no basis for a permittee to know what might constitute an approvable or unapprovable evaluation. The 2025 PSNGP states that the nutrient reduction evaluation must include an AKART analysis. Since Ecology has determined, and the state courts have affirmed, that BNR and other tertiary treatment technology are not automatically AKART for Puget Sound WWTPs, it is assumed that these technologies do not have to be considered in the evaluation. The 2025 PSNGP and Fact Sheet do not provide any explanation or basis for considering these types of treatment technologies as AKART.

Condition S4.E.3 of the permit requires consideration of treatment technologies to achieve an effluent concentration of 3 mg/L TIN. The 2025 PSNGP and fact sheet do not explain the basis for this requirement and how this requirement applies in the context of the Condition S4.E.2 AKART evaluation. It is assumed that a facility does not need to include an evaluation of any technology that would not constitute AKART.

Questions:

- **In response to comments, can Ecology explain what specifically constitutes an "approvable" Nutrient Reduction Evaluation?**
- **In response to comments, can Ecology explain the basis for inclusion of a requirement to evaluate treatment technologies to achieve TIN effluent concentrations of 3 mg/L?**

5.4 Condition S4.E.5.D is Vague

Condition S4.E.5.d requires an environmental justice review and affordability assessment for what "overburdened communities" can afford to pay for the wastewater utility. There is no explanation as to what constitutes an overburdened community or how to determine what a member of an overburdened community can afford to pay for the wastewater utility service. It is not clear the basis on which Ecology is asking for this information. There are no regulatory standards under Ecology regulations for the assessment and there is no basis for a facility under the state constitution or state statutes to vary the utility rates of its customers based on environmental justice. This is an assessment that Ecology should undertake on its own initiative prior to issuance of the 2025 PSNGP.

5.5 SEPA Compliance

Ecology should withdraw its SEPA determination for the 2025 PSNGP and prepare an environmental impact statement. Ecology acknowledges that a "modification of permit coverage for physical alterations, modifications, or additions to the wastewater treatment process that are substantially different from the original design and/or expands the existing treatment footprint" requires SEPA compliance. Ecology is incorrect, however, in concluding that optimization does not require additional SEPA review. The draft Fact Sheet, at 49, suggests that facilities evaluate strategies for reducing nitrogen loading including increasing production volumes of reclaimed water, if applicable to the facility, implementing side stream treatment for a portion of return flows from solids treatment, reducing influent nitrogen loads, alternative effluent disposal options and any other intermediate treatment alternative which results in decreased nitrogen loads into Puget Sound prior to major facility upgrades. All of these alternatives will require substantial capital investment or some sort of growth moratoria by Tacoma. The Tacoma facilities were not designed for de-nitrification and the optimization alternatives proposed by Ecology will require modifications that subject the general permit to SEPA review under an environmental impact statement.

Regardless of the applicability of any SEPA exemption, Ecology is also required to assess the potential climate impacts from the optimization requirements and the evaluation of treatment technologies, particularly treatment technologies that can achieve an effluent concentration of TIN at 3 mg/L. These alternatives will have a profound impact on energy consumption at the Tacoma facilities. *See Washington Dairy Federation v. Department of Ecology*, 18 Wash.App.2d 259, 265 (Div. II June 29, 2021) (Ecology must consider climate change impacts in issuing a NPDES permit).

5.6 Nutrient Reduction Evaluation Deadline

Ecology has extended the due date for the NRE under the draft 2025 PSNGP to June 30, 2026. This is a six-month extension from the original December 31, 2025 deadline established under the 2022 PSNGP. While the extension offers some relief, it may still be insufficient for many utilities. Following the invalidation of the 2022 PSNGP by the PCHB in February 2025 and the introduction of revised nutrient targets during Ecology's March 2025 Nutrient Forum, utilities were left in a prolonged state of uncertainty regarding how to proceed with the NRE. This ambiguity significantly disrupted planning efforts, delayed consultant and contractor engagement, and in some cases, brought engineering and financial evaluations to a standstill.

Many utilities were forced to pause or revise scopes of work while awaiting clarity from Ecology, resulting in lost time and the need for contract amendments. These administrative and logistical setbacks are further compounded by the evolving regulatory landscape. For example, the 2025 PSNRP introduces a shift to a 2014 flow cap, changes the nutrient parameter from TIN to TN, and adds CBOD as a new parameter. These changes require utilities to reevaluate previously completed work and potentially renegotiate consultant contracts to align with the new requirements.

Given these challenges, Tacoma respectfully requests that the NRE deadline be extended to December 31, 2026. This additional time would allow utilities to complete the necessary technical evaluations, secure funding, and amend contracts without compromising the quality or integrity of the NRE. Furthermore, if final effluent limits are aligned with the 2025 PSNRP, all affected utilities will require additional time to revisit and revise their NREs accordingly, ensuring compliance with the updated regulatory framework.

6.0 Additional Available Resources

As part of this review, the City referenced many documents that are attached to the City's comment letter for the 2025 Reduction Plan. The City requests that Ecology review and consider these reference documents (and recommendations) as part of the proposed draft 2025 Reduction Plan and 2025 PSNGP efforts.