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August 11, 2021

Eleanor Ott, PSNGP Permit Writer
Department of Ecology
Water Quality Program
PO Box 47600
Olympia, WA 98504-7600

Re: Final Draft Puget Sound Nutrient General Permit Comments

Dear Ms. Ott:

The Midway Sewer District (District) appreciates the opportunity to comment on the Puget Sound Nutrient General Permit (PSNGP) Final Draft. The District owns and operates the Des Moines Creek Wastewater Treatment Plant (WWTP) in Des Moines, Wash. The District treats wastewater from the cities of Kent and Des Moines, and serves domestic, commercial, industrial dischargers, and the Port of Seattle, including Sea-Tac airport. While the District supports Ecology's initiative to reduce nitrogen in Puget Sound, we believe the approach should be based in sound science and equitable to all ratepayers.

In 2019, the District's ratepayers in the applicable Kent and Des Moines areas had median household incomes of \$72,062 and \$70,222, respectively¹. These median household incomes represent only 70 and 68 percent, respectively, of the median household income in King County (\$102,594) as a whole². Further, Kent and Des Moines had 13.4 and 9.8 percent of their respective populations living at or below the poverty level in 2019, according to Data USA. This is significantly higher than the overall rate for King County (8.9 percent) for the same period. Therefore, the District is eager to ensure the General Permit requirements are both sensible and equitable for our community, while still achieving the highest water quality attainable within affordable rates.

To this end, the District offers the following comments, in partnership with Ecology, to implement appropriate nitrogen reduction efforts to preserve and enhance water quality in Puget Sound.

Nutrient General Permit Approach - General Comments

¹ Source: Data USA [datausa.io/profile/geo/kent-wa/, datausa.io/profile/geo/des-moines-wa/]

² Source: <https://datausa.io/profile/geo/king-county-wa/>

It appears the proposed approach may prematurely trigger major capital investments given the goals of the PSNGP to monitor and optimize, setting the stage for future permit nutrient cycles to incrementally lower effluent nitrogen concentrations. As such, we propose either removing the action level (AL) entirely from the General Permit, or increasing it to provide the necessary flexibility for the following reasons:

- The monitoring, optimization, reporting, and planning requirements are substantial, enforceable, and sufficient to achieve the primary goals of the general permit at this stage, which is to prevent increases in TIN loads.
- Ecology states in the permit that it “is not intending to stop growth with the development and issuance of this permit”. Regardless of the stated intent, the permit essentially treats growth punitively; for facilities with few or no optimization options, such as ours, even modest growth could easily push the plant above the AL. At this regulatory stage, growth-driven exceedances should not trigger additional requirements if the facility remains within its current, Ecology-approved, design capacity and has optimized its treatment process.
- There is currently no relief or additional allowance in ALs for facilities that have contract obligations to outside entities, like industries or ports.
- Optimization of treatment may be available to facilities that utilize activated sludge secondary treatment technologies. However, some facilities, like the Des Moines Creek WWTP, operate non activated sludge processes that are particularly difficult or impossible to implement nitrogen reductions without significant capital improvements. Therefore, establishing ALs for facilities like ours, that have minimal to no optimization options, sets them up for failure from the day the permit takes effect.
- There are numerous equity issues with the ALs:
 - Facilities that have already optimized or otherwise improved treatment processes have lower ALs. While the previous version of the Draft Nutrient General Permit provided some relief for facilities already achieving less than 10 mg/L effluent TIN, this current version does not provide such relief.
 - Facilities with better process control and less variability in the effluent have lower ALs.
 - The amount of unused, Ecology-approved design capacity available to WWTPs has significant variances.
 - The permit’s characterization of Dominant vs. Small dischargers seems arbitrary. The proposed method of categorizing plants as either Dominant vs. Small (ranking largest to smallest discharge and taking the plants that make up 99% of the nitrogen load) yields many small treatment plants that are listed as Dominant along with the largest treatment plants in Washington. In addition, there is no differentiation due to location within the Salish Sea. For example, the permit lists Birch Bay in the North Salish Sea at 169 pounds per day (lb/d) discharge in the same Dominant category with plants that discharge tens of thousands of lb/d in the Central Sound region, implying that they have the same overall impact on water quality.

The Year One and Year Two optimization modeling is slated to examine the influence of both the area of discharge and the size of the plant on dissolved oxygen (DO) impacts. It

would seem that this would better inform the categorization of Dominant vs. Small dischargers than the method currently used by Ecology, and that waiting to characterize facilities and designated ALs until these results are available seems a prudent approach to avoid forcing unnecessary and costly optimization and expensive studies on utilities that may not have much impact on Puget Sound water quality.

- Predicted DO excursions and the level of treatment plant nitrogen reduction needed to meet DO criteria for the Salish Sea Model (SSM) are currently uncertain. This could result in an overestimate of the anthropogenic nitrogen impacts to Puget Sound and lower than required nitrogen limits for treatment facilities.
- There is currently limited effluent data with which to draw justified conclusions for the SSM that may under represent the actual nitrogen load discharged to Puget Sound. For instance, the Des Moines Creek WWTP is only sampled 4x per year using grab samples for effluent nitrogen species. This small sample set could under represent the actual nitrogen load discharged from Des Moines Creek on an annual basis if the samples are collected on days of low discharge load.

Nutrient General Permit Approach - Specific Comments

In addition to the general comments provided above, the District offers the following specific comments on the PSNGP Final Draft.

Permit Section S4.C: Nitrogen Optimization Plan and Report

Under subsection 1.a of S4.C, Ecology has listed a requirement for developing and maintaining a process model. Development and maintenance of a process model requires specialized training in the understanding and use of simulator tools and wastewater kinetics that are used to develop the models specific to each facility. While the District has a process model, it is 6 years old and was developed by an outside consulting engineer. The District currently lacks the ability to update the model. The costs to develop process models, including training (or hiring of trained staff or consultants), wastewater characterization, and annual software license fees can be substantial, generally exceeding \$10,000 per year just for the maintenance of these models, not including use for monitoring or planning purposes. This requirement puts an undue burden on many treatment facilities. ***The District believes this proposed requirement should be optional for utilities under a certain size.***

Under subsection 1.b of S.C, Ecology has stated that Permittees may exclude optimization strategies found to exceed “reasonable implementation cost”. The term reasonable is subjective and open interpretation by each utility. It would be helpful to have a normalized metric that Permittees can use to determine what the “reasonable” cost threshold would be for their situation. ***The District is requesting that Ecology provide additional guidance regarding “reasonable implementation cost” for Permittees.***

Under subsection 1.c of S4.C, Ecology has provided May 1, 2022, as the date for implementation for initial selection of the optimization strategy. Given that January 1, 2022, is the effective permit date, this allows only 4 months to complete the analysis of optimization options and make recommendations for an optimization strategy. This timeline is likely insufficient for completion of this task, given procurement requirements for most utilities, time to select a consultant to assist with the analysis, development and calibration of a process model (including wastewater characterization), and completion of the analysis to select a reasonable alternative for implementation. In addition, given the

number of facilities that are going to be required to complete this analysis during this timeframe, there may be insufficient consultants available to complete the work even if this timeline is extended. **The District is requesting that the timeline given to complete this proposed requirement be extended.**

Under Subsection 2.b.iii of S4.C, Ecology states that the yearly load evaluation must include a comparison between the actual performance of the nitrogen removal rate and the predicted performance from the process model. The District questions the necessity of this step and would like to point out that, while process models can be accurate for design and are useful in comparing optimization options, the accuracy of these models can vary significantly based on the quality of the data available for calibration, deviation of the wastewater characteristics throughout the year, and the type of simulation conducted with the model (steady state vs. dynamic). The costs to complete proper dynamic modeling to achieve more accurate results are very high. Additionally, while accurate dynamic models can be developed for conventional activated sludge processes, the only accurate model for our trickling filter solids contact process is steady-state and does not currently have capability to model fate of nitrogen in the system (as this process was not designed or intended for nitrogen removal). This limits the usefulness of process models to predict effluent nitrogen for our system, making the requirement for comparison to a process model impossible for the Des Moines Creek plant.

Under Subsection 3 of S4.C, Ecology states that influent source control methods must be investigated and that utilities must “develop an ongoing program to reduce influent TIN loads from septage handling practices, commercial, dense residential and industrial sources”. While the District agrees that this could be helpful, facilities that do not accept septage and do not have significant industrial influent, like our facility, would not gain much through source control. Further, source control of nitrogen using non-biological treatment methods are only cost effective when nitrogen waste strength is high (i.e., high concentration). Low strength nitrogen wastes typical of domestic and most industrial sources will likely require biological treatment. Requiring private entities, especially residential buildings and developments, and commercial entities like the Port of SeaTac, to maintain and operate biological pretreatment systems would put an undue burden on those entities and could result in conflicts with existing contracts for accepting waste streams or pre-approved District comprehensive plans completed as part of the Washington State Growth Management Act. Therefore, **the District believes the influent nitrogen reduction measures/source control program should be optional.** Rather than a separate requirement, this type of program should be one option that utilities can consider for optimization and remaining under the action level should it be feasible and not in conflict with existing agreements.

Under Subsection 1 of S4.D, the PSNGP would require the permittee to determine the number of days the Permittee discharged above its action level. The action levels listed in Table 5 are annual values based on monthly nutrient loads measured over one year. **Please clarify how the days of exceedance would be calculated for this annual limit.**

Under Subsection 1.b of S4.D, the draft permit states that if a utility exceeds their AL, they must “Select an additional optimization strategy from the list developed in S4.C.1.b”. As stated previously, the District’s current treatment system does not facilitate nitrogen removal and it is entirely likely that no options for optimization will exist. Therefore, **this requirement should be amended to only require additional optimization if the utility has additional cost-effective options that they have not yet implemented.**

Under Subsection 1.c of S4.D, Ecology states that if the AL is exceeded, a revised approach for reducing the most recent effluent nitrogen load by 10% must be completed by the next annual report. The District believes that references to 10% reduction should be revised to allow attainment of the AL. In cases where a utility has only marginally exceeded its AL, achievement of a 10% reduction could represent a significantly larger reduction than simply achieving the AL and could be significantly more costly. Given the intent of this permit term to optimize treatment can cap nutrient loads at the AL, the permit should not require utilities to reduce TIN loads below their ALs. Therefore, **references to a 10% reduction should be replaced with “10% reduction OR a reduction needed to attain the action level, whichever level of reduction is less stringent”**. In addition to modifying language to allow for attainment of the AL, the District believes that the 12 month timeline for implementation of even an abbreviated engineering report, including procurement of a qualified engineering firm, alternatives analysis, cost-benefit analysis, and selection of the recommended alternative, is inadequate to complete this task. **A revised extended timeline for implementation is requested.**

Under Subsection 1.d of S4.D, the draft permit states that “If a Permittee exceeds an action level two years in a row, or for a third year during the permit term, the Permittee must begin to reduce nitrogen loads...”. The fact sheet confirms that the requirement would be to “*immediately* [emphasis added] begin implementation...to reduce effluent loading by 10%”. This requirement is problematic in two respects:

- It does not acknowledge that a 10% reduction (or achieving action level as recommended above) might not be achievable with optimization alone, and so might require significant capital upgrade project and associated compliance schedule. The allowance for compliance schedules is a core component of the Clean Water Act and NPDES permitting framework.
- It does not recognize that a capital project to reduce TIN loads by 10% might be incompatible with, or superseded by, longer-term nutrient reduction efforts, such as those identified in the required nutrient reduction evaluation (NRE) or SSM Year One and Year Two optimizations. Therefore, it could lead to large expenditure for infrastructure that will soon be obsolete or possibly exceed what ultimately may be required.

Therefore, **the District believes that the requirement to “immediately” implement should be revised to allow compliance schedules and consider compatibility with longer-term nutrient reduction efforts.**

The associated recommendations are as follows: (1) revise the permit and fact sheet to make it clear that any requirement triggered by two consecutive exceedances would be implemented in accordance with a compliance schedule to be agreed upon by the utility and Ecology; and (2) include a provision where the feasible approaches for implementing a 10% reduction (or achieving the action level) should be evaluated with respect to compatibility with longer-term nutrient removal efforts. If the only feasible or cost-effective approaches would require the construction of major infrastructure that would be made obsolete by longer-term nutrient reduction efforts, the reduction should be deferred for this permit term, and the utility should focus on optimization and planning for future upgrades to meet final permit limits.

Under Subsections 2 and 3 of S4.E, Ecology states an AKART analysis and an analysis of treatment technologies and alternatives to meet a 3 mg/L annual and seasonal average TIN limit must be included as part of the Nutrient Reduction Evaluation (NRE). AKART is a subjective analysis, dependent upon the interpretations of each individual utility completing the analysis and the Ecology permit writer approving the report. It does not define a clear goal for effluent nutrient reductions. There have been no indications, to date, from the SSM that any 3 mg/L TIN limit (seasonal or annual), which is the limit of technology, is necessary for protection of the health of Puget Sound. Further, refinements of the SSM may indicate a specific limit for nutrient removal that is more appropriate to achieve the goals of the Puget Sound Nutrient Source Reduction Project. **Therefore, the District requests that the requirements of the NRE be modified to reflect limits specific to findings of the SSM Year One and Year Two optimizations that will be completed within the allowable timeframe of the PSNGP.**

Under Subsection 4 of S.4.E, the requirements for the NRE appear to be “sufficient complete that an engineering report may be developed” for the preferred alternatives at each assessed level of removal indicate a high level of effort for three different effluent criteria. Further, completion of this level of effort will likely require specialty services for which only a limited number of consulting firms are qualified. Because such a large number of planning efforts will be required at the same time, there is some concern that there will not be enough specialist resources available for all utilities to complete this effort within the timeline available.

Under Subsection 5 of S.4.E, in addition to effluent quality, the treatment technology evaluation, individual utilities should be allowed to develop additional evaluation criteria beyond the effluent nitrogen limit as part of the evaluation. For example, inclusion of criteria like greenhouse gas emissions, biosolids production, and energy use, will present more sustainable solutions that may be better suited to reduce overall environmental impacts than effluent criteria alone for the Puget Sound/Salish Sea region.

Thank you for the opportunity to comment on the PSNGP Final Draft. The District supports the work that we and Ecology have done to improve water quality in our communities and in the state of Washington and look forward to continuing to work together on these goals.

Sincerely,



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General Manager

Midway Sewer District

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