



**Public Works Department
City of Bellingham**

August 12, 2021

Eleanor Ott, P.E.
Washington State Department of Ecology
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Dear Ms. Ott,

Post Point Resource Recovery Plant

Comments on the Puget Sound Nutrient General Permit Final Draft

August 16, 2021

The City of Bellingham, Wash., (City) supports Ecology's initiative to reduce nitrogen in Puget Sound. Our community has a strong environmental ethic that has resulted in significant infrastructure investments to improve water quality, and we anticipate continued community support as part of the upcoming nutrient reduction program.

In 2014, the city invested more than \$60 million dollars to improve the treatment capabilities at the Post Point Resource Recovery Plant (Post Point). In 2017, we initiated a major resource recovery project to replace the aging sewage sludge incinerators with a more sustainable solids management process solution. This project has the full support of City Council and will reduce the Sewer Utility's CO₂ emissions by an estimated 60-80%. This new process will cost \$200 million dollars and require a significant increase in sewer rates.

The City is actively addressing salmon recovery and supports initiatives to improve water quality in Puget Sound. To advance our shared interest in reducing nitrogen discharged to Bellingham Bay, the City has begun evaluating potential nitrogen removal projects at Post Point, including assessing the likely rate impacts. This review identified substantial upgrades required to achieve nitrogen removal. The scale of the required nitrogen removal upgrades, along with the resource recovery project, would be unprecedented for the City and could ultimately result in tripling the sewer rates. Accordingly, the City has a significant interest in ensuring that the General Permit requirements are appropriate for the community and the result is the highest water quality attainable with rates that support economic sustainability and preserve affordability.

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

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Action levels should be raised, or postponed until the next permit cycle

Although the goals of this general permit are to monitor and optimize (setting the stage for future nutrient permit cycles to incrementally lower effluent nitrogen concentrations), it appears the proposed approach may prematurely trigger major capital investments. Further, it seems premature to finalize the draft Puget Sound Nutrient General Permit (PSNGP/General Permit) before the Salish Sea Model (SSM) optimization results are completed.

To date, officially released results of the SSM as part of Ecology Publication 19-03-001 (*Puget Sound Nutrient Source Reduction Project, Volume 1: Model Updates and Bounding Scenarios*, January 2019) have looked only at improvements using a seasonal (April-October) nitrogen removal for wastewater facilities. Ecology plans to issue the SSM Year One Optimization report (Year One) at the end of summer, 2021. Our understanding is that Year One will include scenarios designed to evaluate the effects of annual vs. seasonal nutrient reductions, as well as the location of marine point source discharge. These Year One findings should help Ecology refine the objectives for nutrient reduction evaluations so Permittees do not spend their limited time and budget completing unnecessary optimizations and evaluations that may no longer be relevant given subsequent SSM optimization efforts. The SSM Year Two Optimization, scheduled to be issued in 2022, is anticipated to provide additional information on required nitrogen removal to improve the health of Puget Sound that is also directly relevant to the PSNGP.

Nutrient General Permit Approach - General Comments

The City believes that the PSNGP compliance schedule would better align with and reflect the SSM optimization results after they become available. With this first General Permit, we propose either removing the action level (AL) quantification entirely or propose 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 Total Inorganic Nitrogen (TIN) loads beyond current levels.
- 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 like Post Point, even modest growth could easily push the plant beyond the AL. At this monitor and optimize regulatory stage (early phase of the General Permit), growth-driven exceedances should not trigger measures that implement significant capital investments if the facility remains within its Ecology-approved design capacity and has taken steps to optimize its treatment process.
- There are numerous equity issues with the ALs:
 - Facilities that have already optimized or otherwise improved treatment processes have lower ALs. While the Preliminary Draft PSNGP provided some relief for facilities already achieving less than 10 mg/L effluent TIN, this current Draft General Permit 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 wastewater treatment facilities has significant variances.
- An incorrect assessment of the base load was used to determine ALs. Refer to Recalculation discussion below for Post Point.
- Predicted dissolved oxygen (DO) excursions and the level of treatment plant nitrogen reduction needed to meet DO criteria for the SSM are currently uncertain.
- There is currently limited effluent data with which to draw justified conclusions for the SSM that may underrepresent the actual nitrogen load discharged into Puget Sound. For example, the Post Point limit is currently determined using one sample per month. As stated previously, this may result in a misapplied AL due to low sample frequency used in calculating said AL.

Comments regarding recalculating the proposed AL for Post Point

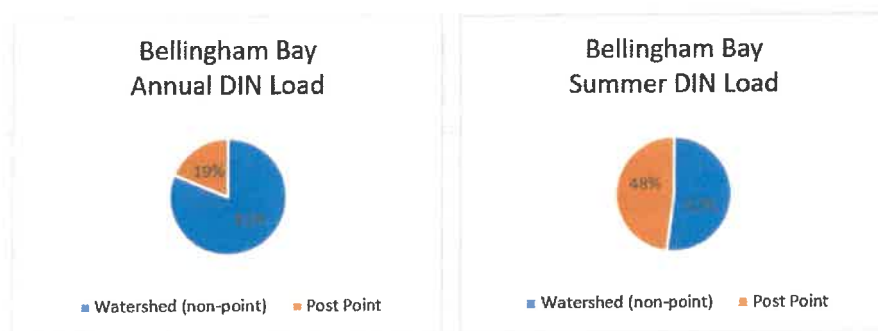
If ALs are kept in the permit, the Post Point AL should be recalculated as follows:

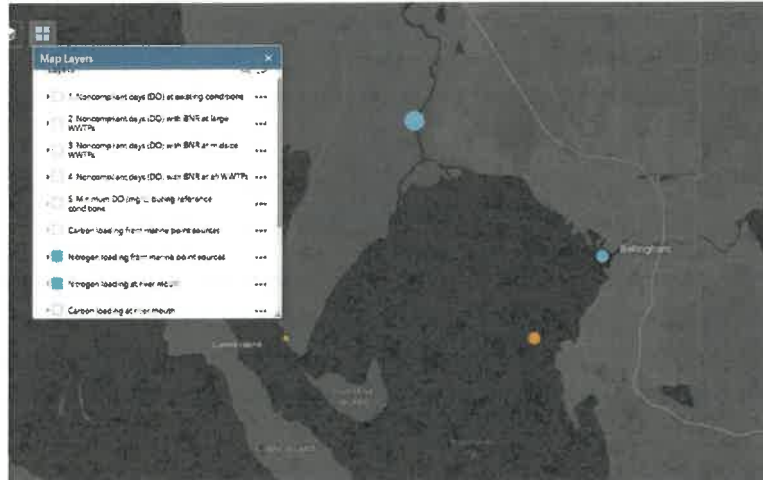
- **The City requests that the August and October 2019 data used to calculate the AL be updated to reflect the measured values from the WebDMRs for those dates.** The effluent TIN loads calculated using the data from the WebDMR for these months are higher than the effluent loads currently used in calculating the AL for Post Point. Adjusting the values used for these dates to true reported DMR values will result in an AL of 993,000 lb/year.
- **The City requests that it be granted a 1-year review period for the AL calculation.** With the increased nitrogen sampling occurring as part of the General Permit, the City will have a better understanding of Post Point’s true current loads than can be determined from the current 1x per month sampling. We would like the AL calculation to be revisited, with allowance for adjustment, after 1 year to determine whether a higher or lower level is warranted.

Comments regarding watershed nutrient reduction strategies

Watershed nutrient-reduction strategies should receive more attention

Ecology’s Bounce Scenarios Report (BSR) indicates that even if wastewater treatment facilities were “turned off”, anthropogenic watershed sources alone produce DO depletions in Bellingham Bay. Based on Ecology’s data (<https://waecy.maps.arcgis.com/apps/webappviewer/index.html>), most of the nitrogen loading into Bellingham Bay is from non-point sources (NPS) as indicated in the graphics below.





Therefore, the City proposes that Ecology allow for evaluation of watershed solutions as part of the General Permit to address these other obvious sources of nitrogen into Bellingham Bay. These evaluations should include a NPS offset feasibility study to review NPSs in the watershed and what treatment measures could be implemented. In addition, we request that Ecology consider the implementation of a NPS nutrient trading program in parallel to investing in upgrades at Post Point. These NPS actions could ultimately help achieve nutrient reduction more quickly and at the highest cost/benefit ratio than solely focusing on point source dischargers.

Nutrient General Permit Approach - Specific Comments

In addition to the general comments regarding the proposed AL and watershed nutrient-reduction strategies, the City offers the following specific comments on the General Permit as it is currently drafted.

Permit Section S4.C: Nitrogen Optimization Plan and Report

Under subsection 1.b of S4.C, Ecology has stated that Permittee may exclude optimization strategies found to exceed “reasonable implementation cost”. The use of the term “reasonable” is vague and subjective. Is it Ecology’s intent to allow each utility to determine that cost threshold themselves? If not, the general permit needs to define a normalized metric that permittees can use for their situation. ***The City requests clarity around what Ecology deems as “reasonable implementation cost”*** for a utility (e.g., a percentage of the annual operating budget for the treatment facility).

Under subsection 1.c of S4.C, Ecology has provided May 1, 2022 as the date for implementing initial selection of the optimization strategy. Given an anticipated January 1, 2022, effective permit date, this provides just 4 months to procure consulting services, collect data, complete an analysis of optimization options, and make/decide on a recommendation for an optimization strategy. This timeline is insufficient for conducting a thorough investigation that can be developed in the context of other on-going planning efforts at Post Point. ***The City requests a minimum of 12 months from the issuance of the General Permit to determine the best optimization strategy to implement.***

Under Subsection 2.b.iii of S4.C, Ecology lists that the yearly load evaluation must include a comparison between actual performance for nitrogen removal rate and the predicted performance from the process

model. While process models can be accurate for design and are useful in comparing optimization options, process modeling experts have cautioned that the accuracy of these models will vary significantly based on the quality of the data available for calibration, deviation of the wastewater characteristics throughout the day/year, and the complexity of the model simulation conducted. Even accurately calibrated models carry accuracy limitations of +/- 5% (or more) from actual data used to calibrate the models.

In particular, the ability of models to accurately predict effluent nitrogen species is highly dependent on the parameters mentioned previously, but also the method used to model the effluent. While a single steady-state model run based on yearly average flows, loads, and temperatures may be used, the accuracy of the predicted effluent nitrogen would be questionable, as most steady state long-term models tend to overpredict the actual performance for nitrogen removal, sometimes by as much as 50%. For the most accurate results, a 365-day dynamic simulation would be required, adjusting for daily changes in influent flow, temperature, and loads, among other potential external and internal process impacts. This would require additional sampling for nitrogen beyond the requirement of this permit to achieve accurate results.

The cost of implementation of this level of modeling and sampling, as well as time required to complete the model and get results, is substantial and presents an undue burden to the City for limited value in achieving the ultimate goal of reducing nitrogen discharge. **The City requests that the requirement to compare actual performance to modeled performance for the annual load evaluation report be removed from the PSNGP.**

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”. Post Point already accepts minimal septage and does not anticipate significant industrial influent reductions through source control. Furthermore, source control of nitrogen using non-biological treatment methods are cost effective only 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. Such a program would result in requiring private entities (i.e., residential buildings and developments) to implement, maintain and operate costly biological pretreatment systems. This would result in an undue burden on those entities and can create a conflict with City comprehensive plans developed as part of the Washington State Growth Management Act. **The City requests the influent nitrogen reduction measures/source control program be evaluated as part of the overall Nitrogen Optimization Plan, but implementation of source controls be optional, dependent on the findings of the evaluation.** Rather than a separate requirement, this type of program should be presented as a method that the City can consider for optimization and remaining under the AL.

Under Subsection 1 of S4.D, the PSNGP would require the Permittee to determine the number of days the Permittee discharged above its AL. The AL listed in Table 5 of the General Permit are annual values based on monthly nutrient loads measured over a 1-year period. **The City requests clarification on 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”. Although the analysis has not

been completed, it is possible that multiple options fitting the description of optimization set forth in S4 may not exist. **The City requests this requirement be amended to require additional optimization only if the City identifies meaningful additional cost-effective options 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 City believes that references to 10% reduction should be revised to allow attainment of the AL. It's possible that 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 first permit term to optimize treatment and cap nutrient loads at the AL, the permit should not require utilities to reduce TIN loads below their AL. **The City requests references to "10% reduction" be replaced with "10% reduction OR a reduction needed to attain the action level, whichever level of reduction is less stringent".**

In addition, the City 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 with stakeholder input, is inadequate to complete this task. **The City requests the timeframe be extended to an minimum of 18 months for completion of this effort.**

Under Subsection 1.d of S4.D, the draft permit states that "If a Permittee exceeds an AL 2 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 AL as recommended above) might not be achievable with optimization alone, and so might require significant capital upgrades and associated compliance schedules. 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 City believes that the requirement to "immediately" implement should be revised to allow the City to develop a compliance schedule for implementation that more fully considers 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 which the feasible approaches for implementing a 10% load 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.

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 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. **The City 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 S4.E, the requirements for the NRE appear to be “sufficiently complete that an engineering report may be developed” for the preferred alternatives at each assessed level of removal indicate a Facility Plan level of effort for three different effluent criteria. This requirement presents a high level of effort; completing 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 proscribed timeline. **The City requests the timeframe be modified to allow for beginning the NRE study by December 31, 2025, and allow for submission within 30 months of beginning the evaluation.**

Thank you for the opportunity to comment on the Final Draft PSNGP. The City 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,



Eric Johnston, P.E.
Public Works Director

cc: Eric Johnston, Director of Public Works
Mike Olinger, Asst. Director - Operations
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Steve Bradshaw, Maintenance Superintendent PW