

# Birch Bay Water Sewer District

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Submitted to the eComments portal at:

<http://wq.ecology.commentinput.com/?id=gi6Pr>

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**RE: Comment on draft NPDES Permit for Birch Bay Water and Sewer District**

To whom it may concern:

We submit this comment on behalf of Birch Bay Water and Sewer District ("BBWSD") to the Washington State Department of Ecology ("DOE") in response to its draft National Pollution Discharge Elimination System ("NPDES") permit released for comment on June 10, 2020. The Board of Commissioners BBWSD reviewed this comment and unanimously approved it in its entirety at its July 24, 2020 meeting. For reasons herein described, BBWSD objects to imposition of an annual nutrient load cap and requirement to develop a Nutrient Optimization Plan.

The draft NPDES permit contains an annual total inorganic nitrogen ("TIN," the combined amount of ammonia, nitrates and nitrites) load cap of 74,900 pounds per year. A nutrient load cap has never previously been imposed on BBWSD. A draft permit released by DOE for comment in August 2019 and then revoked also did not contain such a cap. It is BBWSD's understanding that before 2019, DOE did not impose nutrient load caps on wastewater treatment plants.

**I. The Annual TIN Load Cap**

BBWSD objects to the imposition of an annual TIN load cap at all, and of 74,900 lb/year in particular, for several reasons.

**A. The load cap was not calculated using data designed to indicate BBWSD’s highest nutrient loads.**

DOE calculated the average daily TIN load based on data collected by BBWSD once per month starting in July 2014 and ending in January 2020. DOE then applied a bootstrap analysis to the five years of daily load data collected once per month, took the 99<sup>th</sup> percentile mean of the data produced by the bootstrap analysis, and multiplied by 365 to get the 74,900-pound annual load. Essentially, DOE attempted to calculate the TIN load cap such that BBWSD should have a 1% chance of violating its NPDES permit and a 99% chance of not violating its NPDES permit each year.

However, the data BBWSD collected may not be representative of its largest TIN load. BBWSD’s service area includes substantial resort-type use. Many of its sewer connections are to vacation homes, and its service area also includes a number of RV parks. Its water usage and effluent discharge increase significantly on the weekends, during summer, and on holidays; weather also has an impact. BBWSD collected its nitrogen data once per month as mandated by DOE. Many events, such as holiday weekends or weather events, may not have been captured. That being the case, the 74,900 lb/year TIN cap is based on insufficient data, and there is likely a greater than 1% chance BBWSD will exceed the load cap each year. Neither the draft Fact Sheet nor the draft Permit acknowledge this point. In addition, the permit does not include a compliance schedule for this cap to allow the District to evaluate how it will remain in compliance with this new proposed limit.

**B. The impact of the nutrient load in BBWSD’s effluent on dissolved oxygen levels in the Strait of Georgia and the Salish Sea is unknown.**

The draft Permit and draft Fact Sheet are generally characterized by a lack of data supporting the annual TIN load cap. The Clean Water Act (“CWA”) describes two types of effluent limitations: technology-based effluent limitations and water-quality-based effluent limitations (“WQBELs”). In the draft Fact Sheet, DOE explains that it does not currently have enough data to impose WQBELs. Despite this, it still imposed an annual TIN load limit on BBWSD. DOE fails to explain why the data supports the annual TIN load cap but is insufficient to support WQBELs.

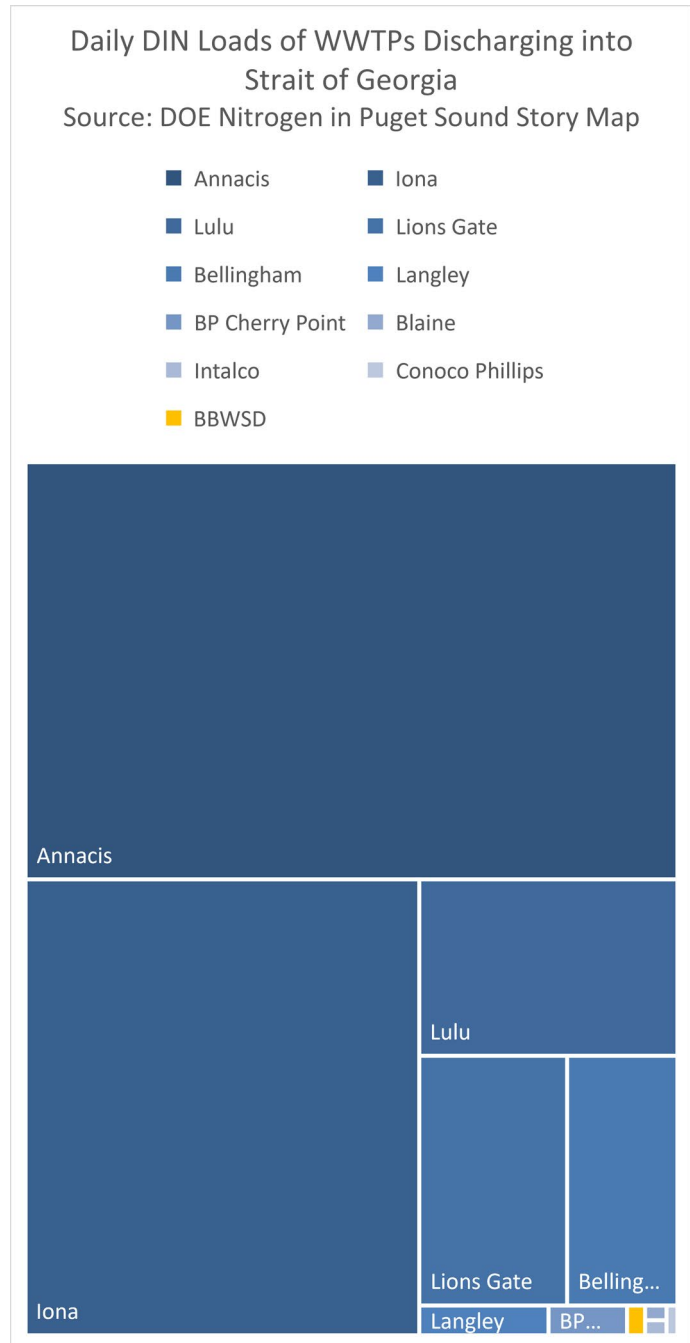
**1. The data does not show that BBWSD has a measurable impact on nitrogen levels in the Salish Sea.** BBWSD contributes an extremely tiny amount of nitrogen into the Strait of Georgia. According to the “Nitrogen in Puget Sound” story map produced by DOE,<sup>1</sup> which uses data from 1999 through 2008, BBWSD’s treatment plant produced an average of 25 kilograms of dissolved inorganic nitrogen (DIN) per day (the story map provides DIN loads, not TIN loads). BBWSD observes that the Fraser River contributed an average of 33,140 kilograms per day of DIN to the Strait of Georgia and the Salish Sea – 1,325 times the amount produced by BBWSD. BP Cherry Point Refinery, the next-closest plant to

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<sup>1</sup> Available by link from this website: <https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Issues-problems/Dissolved-oxygen-nitrogen>

BBWSD, produced an average of 90 kg per day; the City of Bellingham produced 1,280 kg per day; Canadian wastewater treatment plants produced tens of thousands of kilograms of DIN per day. These are all dwarfed by the amount of nitrogen contributed by the Pacific Ocean, which is the source of roughly up to 70% of the DIN in Puget Sound. The treemap to the right shows the DIN loads of just wastewater treatment plants into Georgia Strait; BBWSD is the yellow rectangle in the bottom right corner. Assuming TIN and DIN are roughly proportional, it is clear that BBWSD contributes a minuscule amount nitrogen compared to other human and natural sources. It is doubtful that BBWSD even has a measurable impact on the total amount of nitrogen in the Strait of Georgia.

For another example, in a February 2019 email to Dustin Bilhimer and Mark Henderson at DOE, BBWSD Operations Manager Mike Sowers pointed out that BBWSD discharged 0.866 MGD with a biochemical oxygen demand (“BOD”) of 12-15 mg/l. By contrast, just two of the treatment plants in the Vancouver area produced 23.2 MGD with a BOD of 90 mg/l and 150 MGD with a BOD of 80 mg/l. BBWSD’s BOD production was only 0.09% of what just those two Vancouver plants produced. There are three other treatment plants in Vancouver also discharging into the Strait of Georgia; BBWSD’s contribution of BOD when those other plants are added becomes almost incalculably small. BOD is not TIN because nitrogen is not the only component of BOD, but the two are roughly proportional. The point stands that BBWSD contributes a negligible and likely immeasurable amount of nitrogen to the Strait of Georgia and the Salish Sea.



**2. The data suggests that the Strait of Georgia has “extraordinary” dissolved oxygen levels.** The lack of data to support WQBELs may be because the Strait of Georgia does not seem to have a dissolved oxygen problem. According to DOE Publication 19-03-001, the Strait of Georgia experienced no days in 2006, 2008, or 2014 during which dissolved oxygen levels fell below acceptable levels. Diagram pg. 10. That same publication labeled the Strait of Georgia’s dissolved oxygen levels as “extraordinary,” with at least 7 mg/L. Diagram pg. 16. There is no mention of the healthy dissolved oxygen levels in the Strait of Georgia in the draft Fact Sheet or draft Permit. And, of course, if the dissolved oxygen levels in the Strait of Georgia are “extraordinary,” there is nothing to be gained by attempting to reduce BBWSD’s TIN load.

**3. The data does not demonstrate that BBWSD has a measurable impact on dissolved oxygen levels in the Salish Sea.** The Draft Fact Sheet states that DOE uses nitrogen as an indicator parameter for dissolved oxygen. Draft Fact Sheet pg. 27. “Use of this indicator parameter requires modeling to demonstrate water quality impacts from a discharge.” Id. BBWSD is not privy to any modeling showing that BBWSD’s minimal TIN discharge has any impact on dissolved oxygen in the Strait of Georgia or the Salish Sea. BBWSD is aware that DOE concludes that some areas of the South Sound have less than ideal dissolved oxygen levels, but BBWSD has also seen no analysis of how the minimal TIN it discharges into the Strait of Georgia impacts the South Sound. In fact, currents in the Strait generally flow north, away from those areas. Further, the total amount of nitrogen is not the only significant factor in a discharger’s impact on dissolved oxygen levels. The location of the discharge, its placement in the water column, the currents and water flow around the discharge, and other factors all contribute to how much the discharged nitrogen actually impacts the dissolved oxygen levels. As far as BBWSD is aware, none of these factors have yet been studied or modeled for BBWSD’s nitrogen discharge. It appears that BBWSD’s actual impact on dissolved oxygen, either with or without the annual TIN load cap, has not been studied at all.

**4. BBWSD encourages DOE to wait until further modeling more clearly shows its impact on nitrogen and dissolved oxygen levels in the Salish Sea.** DOE’s Puget Sound Nutrient Reduction Project is currently underway. The end result will be a Nutrient Reduction Plan to reduce human-generated nitrogen discharges into the Salish Sea, a draft of which is scheduled for release in 2022. BBWSD is also aware that the Puget Sound Institute at the University of Washington is working on further refinements to the Salish Sea Model, which may allow it to take more factors into account. BBWSD suggests that if a load cap is to be proposed for it at all, that DOE wait until the Nutrient Reduction Plan is released, the Salish Sea Model is updated, or even sufficient data is gathered to support WQBELs. These are all projects actively being worked on, so the delay will be a few years at most. Right now, DOE simply does not have the data to justify a TIN load cap on BBWSD.

**C. The impact of the load cap proposed for BBWSD is unknown.**

Because there is not enough data to support imposition of a WQBEL, to calculate the annual TIN load cap, DOE simply used the data BBWSD has already collected on the levels of nitrogen in its effluent. There has been no analysis of whether BBWSD’s TIN load cap of 74,900 lb/year will actually alleviate or prevent the worsening of any perceived problems with either nitrogen or dissolved oxygen. BBWSD anticipates that capping its TIN discharges will have no measurable impact on the Strait of Georgia and Salish Sea, but that has not been studied.

The annual TIN load cap is unnecessary and premature. No data has been supplied demonstrating the need for a TIN load cap for BBWSD at all, and nothing shows the impact that this particular TIN load cap will have on the Strait of Georgia or the Salish Sea. Instead, it appears DOE decided to begin imposing nutrient load caps on wastewater treatment plants, and what little justification that has been provided is post-hoc rationalization of that decision. Because BBWSD already has such a minimal impact on nitrogen released into the area, the most likely outcome of the proposed annual TIN load cap is that BBWSD will devote a portion of its limited budget to studying and attempting to ameliorate a problem of unknown scope to which it is not meaningfully contributing.

**D. DOE's imposition of the 74,900 lb/year cap without consideration of the above-described factors is unreasonable and arbitrary and capricious.**

There must be a reasonable basis for NPDES terms issued by Ecology. "Arbitrary or capricious action is willful and unreasoning action taken without regard to the attending facts or circumstances." *Squaxin Island Tribe v. Washington State Dep't of Ecology*, 177 Wn. App. 734, 742, 312 P.3d 766, 771 (2013). An agency "must not act cursorily in considering the facts and circumstances surrounding its actions." *Puget Sound Harvesters Ass'n v. Washington State Dep't of Fish & Wildlife*, 157 Wn. App. 935, 951, 239 P.3d 1140, 1148 (2010). Instead, it should "carefully consider and weigh the pros and cons of various proposed responses." *Squaxin Island Tribe*, 177 Wn. App at 747.

State environmental review boards have found permit conditions to be arbitrary and capricious or unreasonable where they are the product of insufficiently analyzed data or a flawed pro/con analysis. See, e.g. *Puget Soundkeeper Alliance v. DOE*, PCHB No. 13-137c, 21-22 (July 23, 2015) (PCHB found the granting of a mixing zone exception within a pollution discharge permit to be arbitrary and capricious where DOE relied on a study that failed to adequately analyze known critical discharge scenarios); *Taylor Shellfish Farms v. Pierce County*, SHB No. 06-039, 6-8 (January 23, 2009) (SHB found permit's day and time restrictions on Petitioner's geoduck harvesting operations were arbitrary where County failed to consider the intertidal nature of Petitioner's operations when weighing the benefits and burdens of those restrictions). Likewise, Washington courts have been critical of major permit decisions underpinned by thin evidence. See, e.g. *Hayes v. City of Seattle*, 131 Wn.2d 706, 709, 717-18, 934 P.2d 1179, 1180, 1184-85 (1997) (Permit condition restricting length of proposed building was arbitrary and capricious where little evidence to support the restriction beyond notion that "smaller was better."); *Norquest/RCA-W Bitter Lake P'ship v. City of Seattle*, 72 Wn. App. 467, 476-77, 865 P.2d 18, 23-24 (1994) (Denial of building permit was arbitrary and capricious where decision was based on City's drawing of unreasonable conclusions from the information in the permit application and surrounding circumstances).

BBWSD believes that DOE's imposition of the nutrient load cap suffers from many of the same flaws as the cases above cited and as a consequence is unreasonable and arbitrary and capricious. DOE has determined that there may be higher-than-ideal levels of inorganic nitrogen in the South Sound. However, this seems to be all that DOE considered when it imposed the 74,900 lb/year TIN load cap on BBWSD. It cannot be said that DOE considered the other "attending facts or circumstances," namely because: (a) BBWSD's data may not accurately reflect its highest nutrient loads; (b) the Strait of Georgia has "extraordinary" dissolved oxygen levels; (c) BBWSD contributes barely a fraction of one percent of the total nitrogen flowing into the Strait of Georgia; (d) there has been no analysis of the TIN BBWSD discharges into the Strait of Georgia on areas of the Sound that do have higher nitrogen or lower dissolved oxygen levels; (e) factors such as BBWSD's depth of discharge were not considered when DOE assumed that BBWSD's TIN impacts dissolved oxygen levels; (f) DOE has not analyzed the impact the load cap will have on the Strait, the Salish Sea, or the parts of the Salish Sea with poorer water quality; and (g) DOE has not considered the impact the annual TIN load cap will have on BBWSD, which will be significant.

Nor can it be said that DOE weighed the pros and cons of imposing an annual TIN load cap or imposing a load cap of a different amount. Determining the "pros" for the annual TIN load cap would require analyzing the impact it will have on the Strait and the Salish Sea, which DOE has not done, and given BBWSD's small size, would be negligible. On the other hand, the "cons" are apparent: BBWSD's customers will pay the cost of studying the issue and determining how to ensure BBWSD's effluent

meets the TIN load cap, which could require expensive plant improvements, restrictions on growth, or both. Nor does DOE explain how the data can support imposing the annual TIN load cap, but not imposition of WQBELs. BBWSD believes that the annual TIN load cap requirement generally and the TIN load cap of 74,900 lb/year specifically are unreasonable and arbitrary and capricious, and urges DOE to carefully consider whether it has the data needed to support the annual TIN load cap.

**E. DOE may not be able to remove or raise the load cap in a future permit if it imposes a load cap in this permit under the anti-backsliding provisions of the CWA.**

Section 402(o) of the Clean Water Act (33 USC § 1342(o)) states that, with some exceptions, a permit may not be “renewed, reissued, or modified... to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.” DOE may take the position that the annual TIN load cap does not fall within the scope of Section 402(o), but a plain reading of the definition of “effluent limitation” leads BBWSD to conclude that the anti-backsliding provisions would apply. An “effluent limitation” is “any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance.” Section 502(11). The annual TIN load cap is a restriction on the quantity of total inorganic nitrogen that BBWSD may discharge into the Strait of Georgia. The TIN load cap appears to be an “effluent limitation” within the meaning of the CWA and Section 402(o).

DOE may take the position that the exception in Section 402(o)(2)(B)(i) would apply to the annual TIN load cap, so that a less stringent standard could be imposed in the future. That section allows application of a less stringent effluent limitation if “information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.” BBWSD is concerned that refinements to or re-analyses of the Salish Sea Model and information on costs to optimize will not constitute new information within the meaning of this exception. Even if DOE disagrees with BBWSD’s reading, a third-party group might not, and a court will evaluate the above definition and exception.

The Draft Fact Sheet states that DOE intends to develop numeric water quality based effluent limitations (“WQBELs”) for nitrogen for BBWSD based on modeling to be performed in the future. The state-wide Nutrient Management Plan is also forthcoming. But because of the anti-backsliding provision in the CWA, the limits for total inorganic nitrogen will likely need to be at least as stringent as the 74,900 lb annual load cap, even if the modeling suggests that a looser limit would be more appropriate. Given this potential consequence, which was not factored into DOE’s analysis, BBWSD again asks that DOE eliminate the new nutrient load cap in this draft permit until such time as it does have sufficient information.

If DOE is unwilling to eliminate the annual TIN load cap, it should consider clarifying in the permit that it intends to replace the annual nutrient load cap with WQBELs or a general permit in the future. This would at least demonstrate that DOE intended the load cap to fall within the cited exception to the anti-backsliding provisions.

**F. The proposed nutrient load cap may prevent BBWSD from providing services required to accommodate urban growth in the Birch Bay UGA as planned under the Whatcom County Comprehensive Plan per GMA requirements.**

Much of BBWSD's service area is designated as an Urban Growth Area (UGA) in Whatcom County's Comprehensive Plan. The County's Comprehensive Plan predicts that the Birch Bay UGA will reach a population of 12,822 by 2036, an increase of 41% over the UGA's current population. BBWSD anticipates that its entire service area will have a population of 13,381 in 2036. The TIN load cap of 74,900 lb/year does not give BBWSD room to accommodate this growth. DOE anticipates that BBWSD will be able to accommodate growth and stay under the annual load cap by optimizing its plant, but this is merely wishful thinking. BBWSD will need to study the options available to it for optimization, but as described above, it does not currently have representative data to do so. If it is unable to optimize its plant to stay under the annual TIN load cap while accepting more growth, BBWSD may be forced to stop permitting growth in its service area in contravention of the Whatcom County Comprehensive Plan and its implementation of the GMA.

Finally, these considerations must be taken in the context of the anti-backsliding provision of the CWA. Due to what appears to be a needless interim requirement, there is a real risk that BBWSD will be indefinitely subject to an annual TIN load cap it cannot meet while accommodating future growth assigned to it by Whatcom County under the GMA. How substantial that risk is cannot be known until more data is collected and BBWSD's ability to optimize its plant is analyzed. Given this, BBWSD requests that DOE refrain from imposing the TIN load cap during this permit cycle.

**II. The Nutrient Optimization Plan**

If the annual TIN load cap is ultimately not eliminated from BBWSD's NPDES permit, BBWSD needs: (1) clarification of what is expected in the required Nutrient Optimization Plan; and (2) more time for completion than was allotted. The Nutrient Optimization Plan must "evaluate existing treatment processes for nutrient optimization," including "identifying opportunities through operational adjustments designed to enhance nitrification and denitrification, minor retrofits such as the incorporation of anoxic zones, review of septage receiving policies and procedures, side-stream management opportunities, and minor upgrades" as well as "describing changes already made, and changes that are not possible without a major upgrade, and estimates in nutrient load reductions related to any process changes." Fact Sheet pg. 28. BBWSD has one year to compile the Plan and it must be updated annually. Id.

BBWSD finds this description of the Plan to be too vague to guide its development. The Plan requires BBWSD to evaluate various ways its systems could be improved. The suggested areas of evaluation are broad and may or may not be applicable to BBWSD. The level of investigation and detail BBWSD should put into the Plan is also unclear. Is DOE anticipating a 15-page document or a 15-chapter document? Most confusing to BBWSD, while the Plan requires it to evaluate changes that could be made to its system, BBWSD is not actually required to take any action based on the analysis in the Plan. BBWSD presumes that the Plan is meant to inform its decision as to how to meet the TIN load cap, but if no modifications are needed, or if larger modifications beyond those contemplated by the Plan are required, then the Plan is not necessary. This is especially true as DOE will require a "formal engineering evaluation" once DOE develops numeric WQBELs for BBWSD.



Further, BBWSD will need more than one year to write a useful Plan. The data BBWSD previously collected on nutrient loading, as explained above, was not collected to be representative of BBWSD's true highest nutrient loads. At least a year's worth of additional data will be needed to support a useful Plan. Once this data is collected, BBWSD can use it to inform planning decisions in the Plan.

In short, if the annual TIN load cap ultimately remains in place, DOE should amend its draft Fact Sheet and draft Permit to provide a clearer explanation of what it is looking for with the Nutrient Optimization Plan and to give BBWSD at least two years to complete the Plan.

Finally, BBWSD questions the purpose of updating the Plan annually. Annual updates will not provide enough time to make and evaluate improvements. Changes that are made during peak summer months may not have an immediate impact and would warrant further testing and scrutiny the following year, before moving onto planning for additional changes. Likewise, BBWSD will need to study changes made during the "off season." If the annual TIN load cap and Plan requirement remain in BBWSD's permit, DOE should require an update to the Plan not more than every other year, or only in years where BBWSD exceeds the TIN load cap.

Thank you for the opportunity to comment on BBWSD's draft NPDES Permit and Fact Sheet. I look forward to DOE's response.

Yours Truly,

A handwritten signature in blue ink, appearing to read "Robert Carmichael".

Robert A. Carmichael

A handwritten signature in blue ink, appearing to read "Cathy M".

Catherine A. Moore

c: Board of Commissioners, Birch Bay Water & Sewer District