7/8/20 DRAFT

Evolving Recommendations: Considerations for PSNGP Development

Document purpose: The AC is engaged in a months-long process to develop a set of recommendations to Ecology that will frame conceptual approaches to the first PSNGP. Everything in this document is subject to further discussion by the committee. The final version of this recommendations document will not be finalized until the AC meeting on October 21. Until then, it is a continually evolving document intended to capture AC member input given during and between meetings, to support moving the AC closer to understanding the range of issues and making decisions about preferred approaches. As the AC makes such decisions, they will be highlighted to help the group continue to focus on areas where decisions have not been reached. In this version:

Items highlighted in yellow need to be decided/recommended by the committee.

Items highlighted in blue have not yet been discussed by the committee.

Background information including committee purpose and list of members: in cover letter

This committee makes these recommendations for the purpose of achieving an actual, not perceived, water quality improvement. This committee has explored where the flexibilities are for the first permit term. Our final recommendations collectively provide a justifiable and defensible solution for the wide variety of plants that will be covered under the PSNGP. The following combination of approaches will achieve Ecology's goal to prevent nutrient-related water quality problems in Puget Sound from continuing to worsen during the first permit term, while also allowing contracted plant capacity to be utilized to support smart growth and comply with Growth Management Act requirements.

Overall considerations for developing the first PSNGP

1. The requirements of the first PSNGP must be practical and obtainable, and result in meaningful water quality improvements.
2. Growth capacity should be distributed equitably.
3. Plants that currently have nutrient reduction technology should not be required to make additional improvements during the first PSNGP.
4. Avoid unintended consequences to plants that are in different phases of planning, design, construction, operations.
5. Avoid immediate need to impose additional wastewater rates.
6. Plants should be given flexibility to make adjustments and experiment with new approaches without fear of penalty for noncompliance if the changes do not work as hoped or expected.
7. Early steps taken during the first PSNGP should lead to successful implementation in the second and third five-year permit terms.

How to calculate and implement a cap during the first PSNGP

8. For utilities, this first PSNGP must set achievable narrative limits or targets. Plants should not be in fear of being out of compliance, or of not being able to accommodate new connections associated with existing capacity agreements and/or future smart growth to serve increased urban populations.
    a. Prior to setting a cap, Ecology needs to clarify how plants will accommodate expected growth.
9. The committee recommends that the same caps should/should not be established for all WWTPs and that the caps be applied in zones or individually.
    a. Utilities believe that no single approach to setting a cap can or will simultaneously:
        i. Utilize the widely variable and in many cases very limited available data,
        ii. Avoid cutting off growth,
        iii. Meaningfully keep the water quality problem from getting worse, and
        iv. Keep plants in compliance.
    b. Utilities recommend that the requirements in the PSNGP be based on specific analysis of data for each facility.
        i. There is not one single solution to develop the cap.
        ii. Caps should be reflective of each WWTP's operations and water quality impact.
        iii. The cap should be a limit, but not a reduction.
        iv. The cap calculation must consider and accommodate growth.
10. The committee does not agree as to whether to use existing data to calculate caps or whether additional, higher quality data are needed.
    a. The committee recommends that 1 year/3 years of monthly/quarterly data are needed for the calculation; or just use the best available data and make sure the permit can accommodate better information that comes in during the permit term.
        i. Year to year variability due to climate and meteorological events (PDO, El Niño/La Niña/La nada) would not be captured in 1 or 3 year datasets.
    b. The committee disagrees as to whether adequate data exist – both as to quantity and timing (how recently data should have been collected) – and what data could be used.
        i. 2006-07 wastewater treatment plant effluent monitoring data are in EIM and not in PARIS because those data were not required for compliance.
        ii. Larger plants have long been required to do quarterly nutrient monitoring.

iii. Plants collect, at minimum, once-in-5 years data.

11. The committee does not agree as to whether the same approach should be used to calculate the cap for all facilities:

    a. The committee agrees that a representative load is most accurately determined using the flow for the day of the sample collection.

    b. Environmental groups recommend that Ecology should use same (non-parametric) approach for all plants, and maybe allow a waiver for a different approach if a compelling reason is provided by an individual plant.

        i. Plants should provide relevant data they have collected that was not permit-required, and therefore is not in PARIS.

        ii. Equitably distribute reserve capacity to accommodate growth.

        iii. No additional targets should be established for plants that are already operating nutrient removal technologies.

        iv. Make it a hard cap and use it as an interim limit until achievement of water quality based effluent limits is required.

    c. Federal agencies recommend the non-parametric approach and also recommend looking at categories of facilities to build permit requirements.

    d. State agencies recommend the non-parametric approach seems to make the most sense considering the large number of plants lacking data. The permit should anticipate tweaks as more data become available.

    e. Utilities' main concern is lack of data and ability to accommodate growth.

        i. Provide an allowance for contracted capacity.

        ii. The cap must be based on historical data not on randomly generated data.

        iii. Make sure the load calculation doesn't lead to foreseeable violations or unintended consequences without sufficient baseline information.

        iv. There is not enough data for the bootstrapping method. Concern about variance and skew.

        v. The first permit should collect more data: three years is needed. Give subsidies to smaller plants to collect this data.

        vi. For this permit, targets make more sense than a cap to get water quality improvements.

        vii. Provide flexibility with a bubble or offsets.

        viii. Discuss implications of quarterly/annual caps or targets.

12. The committee does not agree on a fundamental averaging strategy, and particularly disagrees about using a non-parametric method for calculating the cap:
    a. Federal agencies, state agencies, and environmental groups recommend using a non-parametric 95% or 99% confidence interval where if a plant's average load does not increase it will still be in compliance.
    b. Utilities believe that, given the limited amount of data:
        i. They may be subject to non-compliance, which is an unacceptable risk.
        ii. Small plants do not have sufficient data for this approach; need to collect more data before calculating cap.
        iii. Consider a focus on larger plants this first permit term.
        iv. This approach will not appropriately inform decisions concerning infrastructure investment. Nor will it result in actual (as opposed to perceived) reductions in loading.
13. The committee does/does not recommend that each of these alternates to a cap can/should be considered:
    a. Targets versus limits
    b. a combination of targets and incentives
    c. load reductions instead of a cap
    d. performance-based limits, i.e., percent removal (influent versus effluent)
        i. This idea was dismissed by environmental groups as inadequate, because it still allows an increase in nutrient loading as flows increase. Utilities posed the question as to whether this approach would be adequate for a first permit round, while data is being gathered and water quality limits being determined by model?
            1. Could an approach like this be used in combination with a somewhat lenient cap for the first round?
                a. This only makes sense if a second permit is timely, and the first permit does not become administratively extended ad infinitum.
        ii. A performance goal might be appropriate for a plant that is already implementing nutrient removal technology.
        iii. Explore a flow or performance-based trigger that requires additional actions to reduce nutrients.
14. The committee recommends that the cap calculation be seasonal/annual/both (different limits for different seasons).

15. The committee does not agree as to whether to focus on seasonal or average annual loads during the first PSNGP term.
    a. The committee agrees that annual load reductions will be needed in the long term.
    b. Utilities suggest seasonal caps in the first permit, with the long term goal of annual limits.
        i. An average load would need to encompass the wide variety of seasonal loads; a plant can do more in the summer and might not be able to do anything in the winter.
        ii. Plant staff advise having different limits for different seasons.
    c. Federal agencies suggest an annual approach, perhaps using a 12-month average but taking the peak of available data.
    d. Environmental groups suggest addressing near-field seasonal effects during the first permit term.
        i. Investigate two phases of seasonality: critical June-August versus May-October.
        ii. Calculate the average using a robust enough method should be that the seasonal variation would not show up as a trend in loads
    e. Tribal facilities suggest considering the photo period versus temperature for seasonal loading.
16. PSNGP cap calculation needs to/should not address CSO events. How?
    a. A CSO plant's loading is seasonal with large wet/dry variations. CAP should be seasonal where appropriate and allow the plant to operate in compliance.
    b. For CSO plants, quarterly or even monthly data is not adequate to capture variations in loading caused by wet weather events. Calculating loading based on monthly averages for flow and TIN concentration may be one way to mitigate this in the cap calculation.

How to assess compliance with the cap

17. Focus on a plant's overall pattern, not a single day, for assessing compliance.
18. Plants that accommodate growth without increasing concentrations should not be penalized. That will be measured how
19. Compliance should be assessed how. Adaptive management will be used how. These penalties and enforcement strategies will keep plants accountable: examples

Outstanding questions for committee discussion:

Will compliance be phased?
What are appropriate actions if the cap is exceeded?
How to encourage optimization?
Will trial activities related to the optimization plan be exempt from cap compliance?
Would a violation be considered a violation for just the day of monitoring or for every day the cap is exceeded (likely the latter)?
Clarify whether a failure to meet compliance will result in an exceedance or a violation
Clarify what data sets will be used (e.g. seasonal or year-round)
Clarify how the permit will address growth/moratoriums

How to require optimization and adaptive management in the first PSNGP

20. The purpose of optimization and adaptive management of plant operations is to help achieve the cap and reduce nutrients.

21. The committee disagrees as to whether optimization should be a primary focus of the first PSNGP as the sole/primary means for many plants to comply with a cap in the short term (besides moratoriums).

    a. Many plants have already reduced concentrations by a combination of improved technology, design efficiencies, and utilization of reclaimed water systems.

    b. The PSNGP needs to identify what all plants are currently capable of and fully incentivize optimization, but not penalize plants who:

        i. have already gone above and beyond to reduce their nutrient loadings, and/or

        ii. are geographically situated to have minimal impacts.

            1. How will Ecology address optimization requirements for plants that do not have far-field effects?

            2. Plants have far-field impacts, regardless, and that those should be addressed.

    c. Optimization provides the most realistic means of improving water quality over the current conditions during this permit period at some plants.

    d. Optimization is not possible at all plants.

    e. The question is not either/or cap versus optimization, but how to make them complementary.

    f. Utilities question/are not clear on the PSNGP definition and purpose of optimization.

    g. Current plant optimization addresses different issues (energy use, carbon footprint, air emissions) that might be impacted by optimization of operations to reduce nutrient loads.

    h. Some members expressed that optimization should be primary and caps secondary.

i. Utilities caution that expectations concerning the ability of "optimization" to produce actual, not perceived reductions in loading are unrealistic.

22. Each plant should use existing resources, or perhaps up to 5% of their equipment budget [what is appropriate level of effort/doable without rate increase] to address nutrients to the extent possible.

23. Adaptive management should address seasonal variations, equipment functionality, and competing plant priorities.

24. The PSNGP should allow plants to use their own ingenuity to meet nutrient reduction goals.

25. Plants that don't know what their current nutrient loadings are will have a hard time evaluating the impact of operational changes.

26. The PSNGP needs to connect optimization and adaptive management with short- and long-term planning appropriate for each plant.

27. What level of review and approval by Ecology is appropriate prior to trying out new approaches.

    a. Advance notification should be adequate for what types of adjustments?

28. Limitations posed by current treatment technologies at each facility and as well as commitments to accommodate growth should be addressed how.

How to conduct monitoring to provide consistent data needed for future permit decisions

29. The committee disagrees as to whether additional data collection is needed prior to calculating caps for plants to meet in the first PSNGP. The committee agrees that better and consistent data collection is needed across plants during the first PSNGP.

30. The first PSNGP should have new monitoring requirements overlaid on individual permit requirements to address the wide variety of and variability in the available data, and the paucity of data in PARIS for many plants.

31. The monitoring will need to be robust enough to support adaptive management.

32. Monitoring needs should be similar to those involved in a re-rating process.

33. The PSNGP should require plants to gather consistent data that all plants can reasonably incorporate into their operations and improves calculations for the next PSNGP. These data are needed: constituents. Number of samples, sampling interval, over what period of time will be sufficient for most plants/approaches.

    a. Engage lab personnel in identifying parameters; locations; instrumentation; frequency/sampling intervals; and protocols/methods of sampling.

    b. Address internal and external factors that might influence variation and skew data for a particular plant.

    c. Standardize or normalize daily flow monitoring calculations.

34. The PSNGP should include a QA/QC plan or SAP for monitoring during the first permit term, or even earlier, for widespread, long term, consistent data collection. The SAP should be adequate for all influent and effluent tracking (possibly multiple times per week) and for each key stage in the process. Data should be such that it aids in any future CAP calculation, and optimization efforts, and any future plant upgrade. The SAP should be developed by an experienced plant process consultant with their Operators.
35. Smaller plant operators agree that better data are needed but they are also concerned about capacity for greatly expanded monitoring requirements.
36. Ecology should look at ways to assist with funding additional testing at smaller plants.

How to approach short- and long-term planning requirements for facilities

37. Keep plants accountable for both making improvements during the first permit term and taking steps toward making necessary improvements in future permit terms
38. GMA comp plan updates are due in 2024 or 2025. If a city/county cannot accommodate expected growth without keeping their nutrient loads in check then they must make a six-year plan to provide the required services.
39. The PSNGP should provide a compliance schedule to plan and build the infrastructure needed to accommodate future growth and meet eventual WQBELs.
40. Plants should evaluate new investments for their nutrient impact, similar to how purchases are currently evaluated for carbon footprint, energy efficiency, greenhouse gas emissions.
41. Manage septage intakes how.

Outstanding questions or concerns to address in parallel with PSNGP issuance

42. Get more science to address near versus far field contributions and seasonality
43. Apply emerging science during the first PSNGP term
44. Consider allowing small plants to make demonstrable reductions in other sources of nutrients
45. Match new PSNGP monitoring with individual permit requirements
46. Improve Ecology's schedule and priorities for updating permits that are overdue for reissuance
47. Put monitoring and planning requirements in permits overdue for reissuance now, and focus on optimization efforts