

Meeting #4 Summary: July 16, 2020

This meeting was held by webinar on a GoToMeeting platform
A list of acronyms used is provided on p. 9 of this meeting summary

ATTENDEES

Advisory Committee members in attendance, and the organizations and interest groups they represent:

Jeff Clarke (WASWD), small-medium treatment plants; **Joseph Grogan** (Coupeville), small treatment plants; **Patrick Kongslie** (Pierce County), all treatment plant sizes; **Eleanor Ott** (Ecology), state agencies; **Mindy Roberts** (WEC), PSNGP AC environmental groups caucus lead; **Mark Sadler** (Everett), large treatment plants; **Kai Shum** (USEPA, sitting in today for Jenny Wu), Federal Agencies; **Rebecca Singer** (King Co), large treatment plants, PSNGP AC Chair, and PSNGP AC local utility caucus lead; **Valerie Smith** (Dept of Commerce), PSNGP AC state agencies caucus lead; **Wendy Steffensen** (LOTT), treatment plant with nutrient removal; **Dan Thompson** (Tacoma), large treatment plants; **Bruce Wishart** (Puget Soundkeeper), environmental groups.

Invited Guests (Planners) in attendance:

Allyson Brekke (Port Angeles), **Jeremy Graham** (Olympia), **Peter Huffman** (Tacoma), **Rob Johnson** (Bellingham), **Katrina Knutson** (Gig Harbor), **Joyce Phillips** (Olympia), **Angie Sylva** (Kitsap Co), **Phil Williams** (Edmonds)

Advisory Committee members not in attendance:

Chip Anderson (Lummi Tribe Sewer District), tribal facilities; **Pete Tjemsland** (Sequim), small treatment plants; **Jenny Wu** (USEPA), PSNGP AC federal agencies caucus lead.

Advisory Committee alternates in attendance, and the AC member each is designated to represent:

Katherine Brooks (Patrick Kongslie), **Judi Gladstone** (Jeff Clarke), **Teresa Peterson** (Dan Thompson), **Terri Prather** (Wendy Steffensen), **John Rabenow** (Mark Sadler).

Advisory Committee alternates not in attendance:

Abby Barnes (Valerie Smith).

Ecology's AC support staff in attendance:

Karen Dinicola (facilitator), **Kelly Ferron** (coordinator and liaison to PSNF)

The list of other individuals that registered for the webinar begins on p. 10 of this document.

Purpose of this committee

To advise Ecology in drafting general permit requirements for domestic wastewater treatment plants discharging directly to Puget Sound that will lead towards reducing nutrient loads.

Ecology's goals for the first PSNGP

The first permit should stop the water quality problem from getting worse and require plants to take meaningful steps towards making future reductions that meet water quality standards. At the same time, the PSNGP needs to somehow accommodate approved capacity commitments identified in comprehensive and general sewer plans to support smart growth. Additional goals include flexibility for communities to collectively address nutrients and consistent monitoring requirements for all permittees.

AC caucus leads share constituent input

Each AC caucus staff lead reported input from discussions on the cap calculation approach. The written summary of input provided by each caucus is included at the end of this meeting summary, beginning on p. 12.

Invited planners provide perspectives on plant upgrades and smart growth

Jurisdictions want to coordinate facility upgrades with their GMA comprehensive planning processes. Having a permit-driven process that is disconnected/separate will be costly. Land use planning has already been done. Jurisdictions don't want to limit or shift growth to other areas due to plant capacity. Ecology shouldn't create another layer of problematic regulations, or set caps without considering other regulations and likely impacts to affordable housing, economic development, concurrency planning, and environmental justice.

Plant capacity can be used to reduce nutrients but then that capacity is not available to accommodate growth. Land limited jurisdictions are concerned about space and technology limitations, as well as impacts to ratepayers in areas that do not have new development coming in. Some jurisdictions are concerned about sprawl in rural areas of counties if development becomes too expensive in urban areas; rural areas are also concerned about rising costs preventing development from occurring.

The GMA set up a system whereby MPO's (particularly PSRC and Vision 2050 in King, Pierce, Snohomish, and Kitsap Counties) and OFM population projections are guiding changes over time. Jurisdictions are legally bound to allow development at the levels set for these growth targets, and risk losing federal transportation funding if they don't. County planning agencies develop comprehensive plans to assure that the growth numbers can be accommodated. This means working with their cities and various departments to see that there are transportation facilities, adequate zoned land, and ample utility services to serve both the existing population and planned growth. State law sets a number of goals for this activity, including environmental protection and affordable housing.

In comprehensive planning processes to date, wastewater utilities have had adequate capacity for the projected growth that might not be available with nutrient caps placed on the plants. Jurisdictions want to continue to allow connections to the system, not to stop growth in their service area if the plant has no short-term way to add customers without increasing nutrient levels beyond the cap.

Comprehensive plans updates are due in 2024. Jurisdictions need time to align their comprehensive plans with a nutrient cap. It is hard to plan for the unknown, and at this point, nobody knows what the caps will be or what they will mean in the long term. Planners expressed concern about the uncertainty of the outcome of this process, and how it will affect their ability to confirm capacity and issue building permits if plants cannot tell them what capacity will be available, or a plant cannot both accommodate its allocated growth and meet the nutrient cap.

Housing developments are long term investments. They were made based on plans developed under Ecology's existing rules and cannot easily or cheaply shift elsewhere. It is unclear where in the region "nutrient capacity" exists to accommodate this growth. Resulting building moratoria could shift growth to rural areas on septic systems, which runs counter to GMA and smart growth concepts.

Olympia has successfully integrated nutrient reduction into their growth plan. For more than twenty years LOTT has been doing the necessary planning and capital construction to meet these challenges.

The process took about 8 years from first planning to completion; much quicker than Ecology's plan for 15 years (end of third 5-year permit). The LOTT jurisdictions ensure that functional plans address the water quality issue and the solutions which fall into the full range of urban services. It's a matter of timing, sequencing, and funding – but it is doable. Ecology needs to set clear standards and provide a workable timeline.

LOTT also treats wastewater at a satellite plant and produces reclaimed water at this site as well as at its main plant (similar to MS4 approach of having new and re-development treat and infiltrate stormwater on site). How much future growth can be accommodated without connecting to plants that discharge to Puget Sound?

AC members discuss planning concepts and challenges

AC members appreciate planners joining the conversation and look forward to learning more. The conversation is benefiting from these other perspectives, ideas, and understanding of the underlying concepts. The concept of an immediate cap, without a long-term target, poses the biggest challenge for planners – plant capacity should not drive land use decisions (what new land use patterns will result, and what other capital facilities are available?). How can we avoid the choice of *either* continued growth under current land use plans *or* water quality improvements?

What do planners need? What can the permit force plants to do on what timeline to help the process work successfully? What does Ecology need to provide plants and planners to make this work?

Jurisdictions must start planning for expansion when they reach 85% of their design capacity; how will a nutrient cap affect that requirement? What will happen if that instantly puts a facility well over the 85% mark? What triggers and benchmarks for flow and nitrogen could be useful? How to set up the PSNGP to achieve water quality improvement rather than a land use change outcome?

Jurisdictions' 8-year comp plan updates are due in 2024; the next will be in 2032. Plans for plant upgrades need to be in this update. Jurisdictions will start work on plans next year and the following. Plants and planners need targets and a timeline, and a clear understanding of how terms are used and what needs to be accomplished. They can't do this quickly before Ecology sets WQBELs or other meaningful goals to meet. LOTT (which serves the entire UGA) has managed nutrient loads using water conservation and reclaimed water approaches. Their 1998 "Highly Managed Plan" is an example of a successful approach to this work.

For short term planning, Ecology's permit writer asked if it makes sense (before WQBELs) to have all plants planning to evaluate solutions for reducing nitrogen concentrations to 10 mg/L – and/or lower, towards the limit of technology around 3-5 mg/L? Should plants do a high level evaluation of both? This would estimate the range of future costs and document specific initial and long-term site constraints and potential implementation challenges.

One environmental representative would like to see the engineering design report completed in the first PSNGP, not the second – particularly considering that permits are often not renewed on time. What first term PSNGP requirements will best expedite future decision making? The LOTT representative suggested looking for other discharge locations (i.e., reclaimed water). One utility representative suggested that it might make sense to address collaboration in the short term, perhaps first, to see what can be accomplished with the equipment plants have now. The environmental caucus lead suggested that the region needs to have a plan for equitable rate structures to address funding shortages and

ensure environmental justice in plant upgrades; there is a strong case for asking for federal funding for this critical infrastructure (water investments have been declining while transportation investments have remained steady). Utilities believe that ratepayers are still likely to bear the cost of upgrades.

Caucuses are asked to continue to discuss the short and long term planning concepts outlined in today's agenda, and bring back some answers as to what progress can be made during the first PSNGP and what plans/targets can/should be included in the 2024 Comprehensive Plan updates.

AC members discuss optimization concepts

In general, AC members agree that the concept of optimization is to evaluate existing treatment processes for opportunities to reduce nutrients. There is not yet agreement as to what constitutes "minor" retrofits that could be included in the definition. Utilities remain concerned about potential negative impacts, particularly carbon footprint and energy costs. Treatment plants are already major energy users in their communities, and many optimization methods and other steps to reduce nutrients (e.g. pumping wastewater to land dispersal sites) would significantly increase power usage. Measures also involve increased release of greenhouse gases through the denitrification process.

Some utility representatives believe the proposed approach is too optimistic and undefined; instead, we should take a collective, holistic approach and consider having a single entity evaluate all of the plants and learn what has worked best for plants elsewhere. Ecology's permit writer shared that the state is identifying funding to help with this concept next year, including identifying appropriate strategies if optimization for nutrients is not feasible at a plant. One utility representative suggested that we should address optimization on a regional level now as opposed to waiting until a permit limit is exceeded.

Utilities asked about the optimization requirements in the draft individual permits Ecology released last month. How does the requirement for adaptive management differ from what plants are doing now? What ideas for optimization for nutrient reduction should plants be considering? Ecology's permit writer said that plants should document the changes they try out and identify what works best for nutrient reduction at their facility. How frequently should this be reported? Ecology's permit writer suggested and several AC members agreed that annual reports make sense, since this work should be ongoing except at plants already doing BNR. Some utilities suggested that perhaps this should only be done once in the 5-year permit cycle at BNR plants and the smallest plants (<2MGD?) that are not expected to have near-field effects. Ecology should make it easy for all of the operators to submit a compliant report.

Overall, the permit should treat plants differently; there is a wide range from plants already doing this well to plants where a rebuild is necessary. Ecology should consider not holding plants to successes gained in short term fixes at the expense of long term capacity. Some plants are using capacity meant for future growth to reduce nutrients in the short term; Ecology should find ways to encourage this activity and not punish the facility by having it adversely affect their cap. This will encourage innovation, and ensure plants are doing everything possible to reduce nutrients during the first PSNGP. Most plants will need to plan for future upgrades. Plants who are doing this work now need confidence that their early progress won't result in a future handicap.

Smallest plants might also be less well managed. They should be first in line for financial support where retrofits are needed. But some AC members stated that small plants, and particularly those with near field impacts, should not be exempt from optimization requirements in the first PSNGP.

AC members discussed the pros and cons of having Ecology provide list of all possible optimization techniques for individual plants to evaluate and rank in order of feasibility for their sites. The annual reports could identify what was tried, share what was learned, and list what is planned. Plants would need to explain/justify why certain techniques are deemed infeasible. Initial evaluations could provide the basis for future engineering reports. Ecology's technical assistance staff could help individual permit managers review the reports. AC members need to come to final decisions about these recommendations.

AC members did not reach consensus on how to define a "minor investment" for optimization. There was no agreement that a small percentage of the equipment budget is an appropriate cost ceiling. One problem is that organizations budget in many different ways, with varying definitions of "equipment budget." Consistency in such a definition would be needed, but difficult. Some AC members believe the requirements for investments should be driven by plant upgrade designs.

AC members discuss cap calculation concepts

We have to be consistent with both federal Clean Water Act and state Growth Management Act. How do we avoid moratoriums? Some planners still do not understand why this requirement is under consideration. Some utilities want a cap that allows for planned growth (or no cap at all), and are concerned about caps that have already been set for some communities. Environmental groups and LOTT want some sort of meaningful limit or triggers in this permit rather than just allowing growth to continue increasing nutrients. The LOTT representative expressed that further increases in nutrients from other plants will force LOTT to have to do even more, somehow, to address the water quality problems in the South Sound.

Utilities would like to take a more holistic approach to this problem, do it right once and without more delay. This could likely result in a short term increase in nutrients, not a plateau as Ecology envisioned, to gain the most meaningful long term solutions.

Jurisdictions asked about the cap requirements in the draft individual permits Ecology released last month. Can there be any future expansions or reversion of cap limits? Current permits issued by Ecology do not require nutrient reduction, and some transition time is going to be needed. Ecology's permit writer said that we cannot simply continue to let individual permits expire; all of the permits will be modified. A utility representative questioned whether Ecology would have adequate staff to adequately issue and follow up on these permits.

Ecology's permit writer said the Puget Sound Nutrient Management Plan will be released in 2022 with WLAs; the compliance schedule will be in the second PSNGP with the WQBELs. Utilities, planners, and environmental representatives expressed frustration and concern about Ecology's not planning to set targets until 2022. Without water quality targets, there are too many different ways to approach the problem of how to make progress on facility plans and cost estimates while jurisdictions adjust their growth targets.

AC members discussed what is the feasibility of accommodating allocations for growth? (Does it have to be either nutrient reductions or growth?) Ecology might use the same cap calculation method, looking at growth allocations for service commitments. One environmental caucus representative disagreed with providing allowances for growth. The environmental caucus lead suggested considering a two-phase approach where plants approaching 85% of their rated capacity – and growing – need to do more,

faster, leaving the others under less pressure. Some utilities want a cap set for their Ecology approved full rated flow capacity, since plants have no direct control over the rate of growth. The LOTT representative said it took only eight years to get down to 3 mg/L and a substantial net load reduction.

Nutrient reductions can also be achieved by side stream treatment and reclaimed water. Areas of new development can have different, innovative requirements like separate plumbing or approaches more similar to how an industrial pretreatment program works. It would be up to the jurisdiction to come up with a comprehensive set of solutions.

AC members remain concerned (1) about the inconsistent types of monitoring available for the cap calculation and (2) that allowing a growth factor does not keep the problem from getting worse over the permit term. Utilities want the data issue addressed first, but Ecology's position is that the current schedule does not allow for this to happen before the first PSNGP.

An environmental representative brought up the adaptive management approach employed in the Industrial Stormwater General Permit where tiered actions are triggered by monitoring data. Ecology's permit writer explained the narrative limit approach: a package of actions that are defensible and enforceable, i.e., require plants to take a certain nutrient reduction actions and complete upgrade planning faster if the cap is exceeded. Under this scenario, the cap is a trigger, not a violation. Some utility representatives expressed that they felt more comfortable with this approach.

Ecology's permit writer brought up outstanding questions of a seasonal versus an annual cap. There are climate change concerns about limiting the season to June-September, so a May-October limit (LOTT has an April-October limit) is preferable if the limit is seasonal. Smaller plants might prefer a seasonal limit with more monitoring when nutrient reduction is possible. An annual pounds per year load limit gives plants more flexibility, but CSO plants are concerned about their winter loads. It is harder to achieve nutrient reduction in winter, but this might not be a big issue for CSO plants. The limits would be lower in May-October. There is less data available for setting seasonal limits, especially if plants only sample quarterly.

Larger utilities think an annual narrative limit, but not requiring an annual load decrease, might provide the most flexibility for both compliance and progress. They requested more clarification/thought about what type of N targets might be set that will not substantially change in future permits and will not punish plants that have made progress. They also asked Ecology staff to provide an example of cap calculation using different seasons and approaches for comparison of the methods under consideration, and what violations look like under the different scenarios.

Much of the committee still believes ten data points are insufficiently representative for setting the cap. Ecology needs to document the bootstrapping method in layman's terms. Ecology's permit writer said that plants that do not have ten data points might not have a cap until more data are collected. Ecology's permit writer assured plants that data from plant optimization or pilot studies would be excluded from evaluating plant performance and calculating the cap. Plants would need to notify and work with their permit managers to ensure the data are properly flagged.

What is the plan for future trading? Ecology's permit writer explained that equivalency factors are needed down the road. Bubble permits are possible for multiple plants operated by the same jurisdiction, but it is harder to envision trading among different owners in the first PSNGP, before WLAs

are set; an environmental caucus representative agreed that trading between jurisdictions in this permit would be premature. Meanwhile, the cap would be an average seasonal and/or annual load in pounds per day. The committee still needs to recommend how the cap will be expressed.

Public comments

- Heather Earnhart (Alderwood Water and Wastewater): Thank you for bringing in planners into the conversation. Please reassess whether there should be planning members and a planning caucus on the committee. Has Ecology established a timeline with WLA/WQBELs so that we can see what can and needs to be done in first PSNGP versus the second? Will there be flexibility built into optimization process to allow brief excursions during a pilot trial?
- Judi Gladstone (WA Association of Sewer and Water Districts): Good discussion today around areas of flexibility, which is important for all utilities. Not having a specific WQBEL in the first permit makes sense. First permit should focus on preparation for later implementation. Optimization should not cause any rate increase.
- Teresa Peterson (City of Tacoma): Agrees with Heather and Judy. Continue to have planners at the table. Seems like today there were more technical difficulties than other meetings. Please extend the process beyond October. Ecology should open up the July 23 nutrient science discussion to the AC. *[Note: Puget Sound Partnership, not Ecology, is hosting this discussion among a group of people who submitted "scientist statements" to PSP outside the Forum.]* The lack of consistent data is a problem for setting caps. Provide flexibility and time for optimization.
- Josiah Hartom (Alderwood Water and Wastewater): Adding to Teresa said, without good data we're not going to be able to measure changes moving forward. Goal number one should be getting better data; without it you're setting a cap just to set a cap. Likes how the narrative approach was described, and the incentives built into it.
- Jane Vandenberg (Pierce County): Agrees with what others have said and has no further comments.
- Dave Peeler (Deschutes Estuary Restoration Team): Remember that CWA is federal and supersedes state law. While we have problems integrating GMA and CWA, we have to figure out how to make that work in a smart way with short term innovation and long term investments. We can coordinate this effort with GMA planning and heard thoughtful comments from planners. We're not the first to face this issue. Other estuaries have made significant improvements, as shared in the Nutrient Forum. Concentration based limits aren't going to work anymore. The load limit can't be exceeded. Any allocations for growth have to be carved out of other allocations. Rename the short-term cap an "interim cap." WQBELs are long-term.
- Caitlin Dwyer (Lake Stevens District): Most Snohomish County plants get electricity from the Bonneville Power Administration (BPA). The increase in air flow to increase nitrification increases power demand. To keep up with WWTP power demand BPA started a group to explore energy savings incentives; getting the operators together was very educational. Utilities need grant funding, not loans. There are no federal grants available, and loans would be repaid by ratepayers.
- Corrin Hamburg (City of Anacortes): Agrees with Caitlin about energy demands increasing operational expenditures. Ecology should provide guidance for how to flag data and how to work with permit writers in conducting pilot tests. Anacortes has an incinerator and needs to consider other, conflicting regulations for balancing alkalinity, N, and air emissions.

- Zainab Nejati [for Kevin Patching] (Thurston County): Our treatment plants were funded by utility local improvement districts. How can the future conversion of loads for Boston Harbor homes now on septic to the sewer system be accommodated in the calculation? These connections are currently unused but already paid for through the LID. What data are needed?
- Jim Voetberg (Mukilteo): A one size fits all cap solution is not appropriate. Plants with <1.5 MGD already below 8 mg/L have little room for improvement. Ecology should focus on plants with higher flows to establish targets that can make meaningful impact. By setting caps without allowance for growth, plants will be downgraded and not able to meet their design flows. Ecology should publicly acknowledge this.

Key Takeaways from Today's Discussion

- Future growth and a cap seem irreconcilable. Jurisdictions do not want land use to be driven by plant capacity; upgrades and other infrastructure improvements should accommodate land use plans. Additional funding and innovative solutions are needed.
 - Jurisdictions have to address both Clean Water Act and Growth Management Act requirements. The challenges are: sequencing, timing, and funding.
 - Planners and utilities need a cap that includes a comfortable allocation for growth.
 - If other plants continue to increase nutrient loads, LOTT may be forced to further reduce their nutrient load.
 - Facilities can be looking at alternate discharge locations and creative ways to address space limitations. LOTT's "Highly Managed Plan" can be a resource.
 - As plants upgrade, those with more flexibility and space will be able to achieve more nutrient reduction and can trade with others.
- The timing could be good for including plant upgrades in 2024 Comprehensive Plan updates. However, it is difficult (and potentially costly) to plan without a target. Ecology should address this problem as soon as possible.
- Rather than focusing on what plants "should have been doing for the past 20 years" our AC discussions need to focus on starting now and successfully setting the region up for water quality improvements and potential future trading as part of the solution.
- Adaptive management/optimization could be what plants are doing now, but focused on nutrients and documented. Information should be shared among plants. A regional approach might be useful.
- Annual loading limits will provide plants with more flexibility to make adjustments and meet the cap requirement.
- Using a narrative limit approach, a cap exceedance could trigger actions (to achieve long term reductions sooner) instead of being a permit violation.

Summary of Action Items for Ecology staff

- Schedule a call with planners before the August AC meetings and invite AC members as well.
- Include LOTT's "Highly Managed Plan" on the AC resources webpage.
- Investigate what N targets might be set that will not substantially change in future permits.
- Provide an example of cap calculation using different seasons and approaches for comparison.
- Develop a layman's definition of the bootstrapping method.

- Look for additional information regarding combined plants with CSO flows and their nutrient discharges in the winter months.

Summary of Action Items for AC members

- Review this meeting summary and provide timely feedback for its approval by email
- Add your thoughts to the “emerging recommendations” document
- Gather feedback from constituents to bring to the August AC meeting. Caucus leads:
 - Share this meeting summary along with the specific short and long term planning concepts and questions listed in today’s agenda
 - Prepare a written summary report out to include in the meeting summary
- Contact the chair and facilitator with questions, concerns, and/or suggestions about process.

Future meetings

The remainder of our meetings will be held from 9:30-3:00 with a 1-hour lunch break.

- Thursday, August 20: introduce monitoring and compliance; continue with cap, optimization, and planning
- Wednesday, September 30: finalize draft recommendations
- Wednesday, October 21: adopt final recommendations

List of acronyms and abbreviations used in this meeting summary

AC – Advisory Committee

AWC – Association of Washington Cities

BNR – Biological Nutrient Reduction

CSO – Combined Sewer Overflow

Forum – Puget Sound Nutrient Forum

GMA – Growth Management Act

LID – Local Improvement District

LOTT – LOTT Clean Water Alliance (a wastewater utility in Olympia, serving the urbanized areas of Lacey, Olympia, and Tumwater in Thurston County)

MGD – million gallons per day

mg/L – milligrams per liter

MPO – Metropolitan Planning Organization

MS4 – Municipal Separate Storm Sewer System

N – nitrogen

O&M – Operations and maintenance

PARIS – Permitting and Reporting Information System

PSNF – Puget Sound Nutrient Forum

PSNGP – Puget Sound Nutrient General Permit

PSNGP AC – Puget Sound Nutrient General Permit Advisory Committee

PSP – Puget Sound Partnership

QA/QC – Quality Assurance and Quality Control

QAPP – Quality Assurance Project Plan

SAP – Sampling and Analysis Plan

TMDL – Total Maximum Daily Load (required limit to meet WQS)

TSS – Total suspended solids

UGA – Urban Growth Area (designated under GMA)

WASWD – Washington Association of Sewer and Water Districts

WEC – Washington Environmental Council

WLA – Waste Load Allocation (in a TMDL or TMDL alternative)

WQS – Water Quality Standard

WWWD – Water and Wastewater District

USEPA – U.S. Environmental Protection Agency

Individuals that registered for the webinar, and the organizations they represent:

Name	Agency or Organization
Amanda McInnis	HDR
Asa Reyes-Chavez	Parametrix, Inc.
Bill Davis	City of Bremerton
Brian Funk	City of Sultan WWTP
Caitlin Dwyer	Lake Stevens Sewer District
Carl Schroeder	Association of Washington Cities
Cassandra Moore	Pierce County Planning and Public Works - Sewer Division
Chris Cleveland	Brown and Caldwell
Chris Sheridan	Kitsap County
Chris Thomas	The Freshwater Trust
Christopher Stoll	Kennedy Jenks
Corrin Hamburg	City of Anacortes WWTP
Dan Mahlum	RH2
Darrell Winans	City of Gig Harbor
Dave Peeler	DERT
Donald A. Seeberger	Coalition for Clean Water
Doug Navetski	King County Stormwater
Eric Burris	City of Bremerton WWTP
Heather Earnheart	Alderwood Water & Wastewater District
Heather Stephens	Stantec
Jacqueline Klug	King County WTD
James Tupper	
Jane Vandenberg	Pierce County
Jason Myers	The Freshwater Trust
Jeff Lafer	King County Wastewater Treatment Division
Jeff Langhelm	City of Gig Harbor
Jim Voetberg	Mukilteo Water and Wastewater District
John Barton	Lake Haven Water and Sewer District
John Conway	King County Wastewater Treatment Division
John Ewell	City of Lynnwood
John Phillips	Parametrix
Josiah Hartom	Alderwood Water & Wastewater

Puget Sound Nutrient General Permit Advisory Committee (PSNGP AC)

Judi Gladstone	Washington Association of Sewer & Water Districts
Katherine Brooks	Pierce County Planning & Public Works - Sewer Division
Kevin Buckley	Seattle Public Utilities
Kevin Patching	Thurston County Public Works
K Johnson	
Laura Fricke	WDOE
Laurie E Pierce	Pierce County
Li Lei	Jacobs
Lincoln Loehr	City of Everett
Lyset Cadena	City of Everett
M.W. McCarthy	Mac McCarthy, Inc.
Marty Grabill	WSUD-SKWRF
Matthew Gregg	Brown and Caldwell
Michael Isensee	WSDA
Michael Martinez	NWIFC
Michael Shaw	Pierce County
Ned Lever	City of Bremerton
Nina Bell	NWEA
Patrick Burke	Jacobs
Paul Marrinan	City of Puyallup
Richard Kelly	Brown and Caldwell
Roan Blacker	KCSD7
Robert Knapp	Jamestown S'Klallam Tribe
Ron Basinger	City of Sumner WWTF
Russ Shiple	Kitsap Building Association
Scott Weirich	Parametrix
Shane Hope	City of Edmonds
Shelley Davis	Planning & Public Works - Sewers
Stella Vakarcs	Kitsap County
Teresa Peterson	City of Tacoma
Thomas Knuckey	City of Bremerton
Tim Berge	Southwest Suburban Sewer District
Tom Coleman	RH2 Engineering
Tom Swartout	Parametrix
Tyler White	City of Port Angeles
Zainab Nejati	Thurston County

PSNGP AC Caucus discussion summaries

Utilities/plant operators:

1. How would you define optimization?
 - Reducing the levels of nutrients as much as possible, in a sustainable manner. Sustainability includes being able to sustain the cost over time.
 - Explore using existing equipment to change processes to reduce nutrients as much as possible at a minimal cost while still maintaining other permit requirements. No capital funds would be needed.
 - To improve the performance of an existing system by changing available process control variables and evaluating system response. Generally this would start by brainstorming potential pathways to improve performance, developing an optimization plan specifying specific control variables to change, developing a sampling and performance plan to monitor system response, implementing changes per the optimization plan, data collection/performance monitoring, and evaluating system response compared to anticipated results. An optimization plan needs to define success as well as failure, set defined limits for failure, and include informed provisions for failure recovery to prevent run-to-failure events.
2. Do you understand the goal of optimization?
 - Yes, the goals are to limit the discharge of TIN to the maximum extent practicable from our treatment plants while complying with all permit limits and conditions, and to stay below the load cap allocated by Ecology with no or very minor capital expenditures.
3. Do you understand proposed components?
 - Evaluate possible operational adjustments to drive nitrification/denitrification: When referring to operational adjustments, this is going to be driven by the individual plant and their processes. What works for one system may not work for another and many plants don't have options for optimization that would result in reduced nitrogen discharges. There are also consequences to consider when making operational adjustment because any adjustments affect downstream processes and performance. Each plant will need to come up with their own customized approach and many will be unable to find low cost options for nitrogen removal based on the intent of their design (i.e. a lagoon systems)
 - 5% equipment budget: There is more than one way to interpret "equipment budget" (e.g. operating budget vs. capital budget). Can Ecology please provide more context for how Ecology intends equipment budget to be interpreted?
 - Optimization and budgeting need to be part of the planning process – needs to be plant specific.
 - Septage receiving policies and procedures as part of the Optimization Plan Components: It is understood that if we were to stop receiving septage at our facilities, especially our facilities with digesters (e.g. South Treatment Plant), our effluent nitrogen load would be reduced. However, septage haulers would need a disposal option with sufficient capacity to handle this load while avoiding the mere transfer of this load to another part of the Puget Sound region (e.g. another treatment plant that currently removes nitrogen). Is Ecology proposing the coordination of a Puget Sound-wide septage hauling practice? Is Ecology considering alternatives to septage hauling to Treatment Plants?

- LOTT accepts STEP system septage from Lacey, Olympia, and Tumwater but has instituted a moratorium on other septage because it adds to loading in an unpredictable manner, often has many filaments, FOG, and higher metal concentrations.
- When referring to side-stream management process changes, is Ecology referring to side-stream treatment (i.e. installing a nitrogen removal process for the side-stream) or a change to how dewatering operations are conducted (e.g. 8-hour/5-day operation vs 24/7 operation)?
 - Add evaluation of side-stream treatment in the planning process. This assumes plants are designed for dewatering and digestion.
 - LOTT: Dilution and dosing of centrate has been helpful. This can represent 25% of their plants ammonia loading.
- 4. Do you understand where the challenges may lie?
 - Challenges to implementing optimization plan components; the challenges are broken down into categories:
 - Fundamental: Treatment plant vary and planning needs to be considered in evaluating what will and will not be effective for plants on an individualized basis.
 - Considerations:
 - Timing
 - Adequate data for evaluations
 - Potential for violating permit requirements while experimenting
 - Capital costs: Investments in makeshift tools through minor retrofits will cause capital to be spent on short-term solutions with potentially minimal nitrogen capping or reduction benefit. These investments may cause capital projects in other wastewater infrastructure to be delayed or foregone. These choices would be occurring when the required investments for future nitrogen removal would make decisions in capital investments in other wastewater infrastructure more difficult.
 - Operations: Optimization will require additional plant staff time and operating budget. Operations staff would presumably need to operate the treatment plants in a different and more complex way for optimization. This will require staff to be trained and operations manuals and standard operating procedures to be updated. The instrumentation and/or equipment that are part of minor retrofits will require additional training, maintenance and calibration by maintenance staff.
 - Greenhouse gas emissions: Optimization will increase the greenhouse gas emissions from treatment plants. Nitrogen removal inherently has higher greenhouse gas emissions associated directly with nitrous oxide emissions and indirectly through increased electricity and chemical addition. The higher greenhouse gas emissions associated with nitrogen removal risk us missing our goal of carbon neutral operations which we have achieved since 2017.
- 5. What concepts/principles do you agree with? Why?
 - We agree with the following optimization plan components, in theory:

- In general, we support optimization concepts that are limited in scope and investment of time and resources with the existing infrastructure.
 - Operational adjustments to drive nitrification/denitrification, minor retrofits and changes to side-stream management processes should be considered, but may incur more costs and other impacts than the benefits they achieve. Investment in these components should be considered on a basis of technical and economic feasibility.
6. What concepts/principles do you disagree with? Why?
- We disagree with the following optimization plan components, in theory:
 - It is unclear what is meant by the component to evaluate septage receiving policies and procedures, but in any event, there must be a way for septage haulers to dispose of septage. Requiring treatment plants or municipalities to decide not to receive septage on an individual basis could cause confusion and back-lash from the septage haulers. We believe a coordinated approach would be better to determine how and where septage would be best disposed of to reduce nitrogen discharges to the Puget Sound.
 - Side-stream treatment using an anammox technology could be part of a permanent nitrogen removal strategy for plants with solids treatment. While this component could not be implemented in the short term, it would result in significant and year-round nitrogen reductions instead of making capital investment on short-term / temporary solutions with potentially minimal benefit. Therefore, it might be beneficial to require the studies to include this component for the purpose of understanding the feasibility of measures across the regional treatment facilities. But as a likely significant capital investment and requiring substantial time to implement, it's not favorable to be requiring such measures in the short timeframe before the anticipated development of the PSNRP and nutrient reduction allocation requirements.
7. What are universal optimization requirements that could apply to all dischargers?
- All dischargers could evaluate possible operational adjustments to drive nitrification/denitrification and implement if economically feasible. An economic assessment could be completed as part of the optimization plan considering the challenges described above. An economic feasibility threshold could be established to determine whether the operational adjustments must be implemented. If operational adjustments are below the economic threshold, they would be required to be implemented. If they are above the threshold, they would not be required to be implemented. The threshold could be on a unitized basis such as dollar-per-pound of nitrogen removed.
 - All dischargers could investigate minor retrofits as part of the optimization plan and implement if economically feasible.
 - Optimization or Nitrogen removal Planning
 - Monitoring and Reporting: Data collection to fill in gaps

State agencies:

- **How would you define optimization?** State caucus members agree the goal of optimization is an adaptive management strategy to limit nutrient discharges to the greatest extent possible for the plant's design

- **Do you understand the goal of optimization and the proposed components?** Evaluate possible operational adjustments to drive nitrification/denitrification and an overall reduction of nutrients. Investigate minor retrofits and the effect on the nutrient reduction process.
- **What other optimization options could be considered?** Other options to assist in optimization could be regional training for operators to continue to find methods for optimization success.
- **Where might the challenges lie?**
 - (1) There is a great variability of WWTPs: Variation in design and capacity affect ability to optimize, variation in facility size/discharge and location affect the plants' impact on the dissolved oxygen problem, variation in issues such as I/I and overflow.
 - (2) How to develop a guidance for the WWTP optimization plan conception but allow enough variability for WWTPs to identify specific needs of their facility.
 - (3) A point of ongoing discussion is if there is adequate nutrient monitoring data available to begin to identify reduction goals.
- (4) What about plants that can't optimize? Larger plants and plants at or near capacity have less flexibility for operational changes. So, is optimization just a planning exercise for the future? Or are they managing two plants together – moving growth around the area (example of Tacoma where the north end is out of capacity).
- (5) One GSP said that “since we won't have to meet WQS we won't deal with this for 10 years” – ECY should provide a road map to encourage folks to work on reaching nutrient reduction even if the WWTP is significant time away from having to meeting water quality standards.
- **What concepts/principles do you agree with?**
 - (1) Agreement that optimization is needed, but that each WWTP will have a different plan for implementation of that process. The process needs to have an adaptive management approach that continues to identify next steps for improvement in nutrient reduction and encourages progress.
 - (2) WWTPs should not accrue loans during this permit term for this work.
 - (3) Checklist (or a list of questions) is a good starting point, guidance even better. This checklist should be as comprehensive as something similar to the SEPA checklist. It would assist with developing deficiencies while not requiring an immediate plan for solutions
 - (4) Monitoring should measure the success of optimization.
- **What concepts/principles do you disagree with? Why?**

Some disagreement about whether Ecology should “approve” optimization plans developed by WWTPs. Either Ecology is going to have to review each facility's plan in a timely fashion OR the permit needs to be specific enough that the plan is compliant. Ecology can look to other permits in the US for guidance on how to develop.
- **What are universal optimization requirements that could apply to all dischargers?**
 - (1) The timing of the permits and how the cap works with development of their municipal Comp Plan updates.
 - (2) Level of service –WWTP nutrient reduction Optimization could also utilize an adaptive management if level of service isn't met. Jurisdictions are obligated to act to provide the service. Identification in Comp Plan what capital improvement and facility upgrades are needed?
 - Must provide sewage treatment for current and expected population without impacting water quality
 - What changes are possible without capital improvement (short term)?

- Short term permit focus on operational changes – implement with current budgets
- Special session ask for grants to help facilities with equipment, consulting help, planning this permit term
- GMA checklist gets updated with new laws and elements of comp plans. They will need to point to these requirements

(3) Ecology should provide some incentives to get monitoring going now, and specify what parameters

Federal agencies:

- The caucus discussed the difference between small and large WWTPs, their impacts on Puget Sound and resources. The caucus discussed different permit limits, optimization, and monitoring requirements based on the size/impact of the facility. For optimization, the caucus discussed that larger facilities most likely had more monitoring data to begin optimization studies. For smaller facilities with less data, sharing information and templates about different areas to optimize their operations could be helpful.
- We discussed the cap and the idea of percent removal vs. nitrogen loading targets, and concluded that nitrogen loading is the best statistic for capping the load. We recognized the merits of a percent removal target for eliminating variability in influent nitrogen. However, the caucus also recognized that nitrogen loading could also increase with a percent removal target, which would be inconsistent with the goal of the first nutrient general permit to cap nitrogen loading.
- We also discussed nitrogen trading in the future and that nitrogen loading (mass loading statistic) would be the way that permits would need to be expressed for trading, and that percent removal could not be used for trading. If percent removal were included in the first permit, note that the second permit would have to be in mass loading, so this would be a shift in the nitrogen statistic for the permit.
- Re: trading, we also discussed work in Wisconsin where a statewide TP limit was established. There were three mechanisms for trading: set statewide TP limit; created incentive for point sources; some could arrange private trades; some could pay into a fund; band together to create a local fund. We also discussed the idea of a bubble limit in the first round.

Environmental groups: (no written report provided; these are the facilitator's notes of the caucus lead's report out at the beginning of the meeting)

- We didn't agree on a particular definition for optimization, but we did agree that the concept is to reduce nitrogen sooner.
- We would like to know what it would take for each plant to achieve a given percent reduction.
- We also want to open up the opportunity for innovation. Would plants be willing to partner with academic institutions to try out experimental technologies?
- We identified three challenges:
 - A level playing field to ensure that all plants are making a reasonable effort.
 - A reward structure in place for the greatest reductions in nitrogen. Perhaps access to grants? Preference for small facilities and low income areas?
 - How to develop a bigger picture for trading. What is the currency? A place-specific pound of nitrogen?

- Minor retrofits and side stream options should be evaluated and ranked.
- Bruce Wishart has done some research on other states that might help Ecology develop guidance.
- Utilities should create a clearinghouse of information considering plant size.
- We agree that all plants must pursue optimization. We recognize that what works for one won't work elsewhere.
- We don't expect engineering consultants to be needed in all cases.
- We're moving toward a common understanding.

Tribes/tribal facilities: no report out for this meeting