PugetSoundPartnership
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Water Quantity Topic Forum Workshop

Edmonds, May 5, 2008
Workshop Summary

Meeting Purpose
In April and May 2008, the Puget Sound Partnership asked experts from around the region to lead a series of six topic forums, each designed to address one of the Partnership's six goals (human health, quality of life, water quantity, water quality, species/biodiversity/foodweb, and habitat/land use). Forum leads helped identify a core team and developed a discussion paper guided by science and policy questions provided by the Partnership. Each topic forum (with the exception of quality of life) hosted a public workshop to present their findings and solicit feedback.

Meeting Overview
Approximately 95 people attended the Water Quantity Topic Forum at the Edmonds Conference Center. Among those represented were local and tribal governments, local organizations, businesses, federal and state agencies, non-profit organizations, and citizens.

Meeting Summary
The meeting facilitator, Margaret Clancy, welcomed participants to the meeting, gave an overview of the agenda, and introduced presenters, Partnership staff and topic forum core team members. Martha Neuman, Action Agenda Director, gave a brief overview of the Action Agenda.

Session 1: What do we know about the status and threats to Puget Sound?

Water Quantity core team lead, Lisa Dally Wilson, introduced the topic of water quantity and Llyn Doremus, hydrologist for the Nooksack Tribe, and presented an overview of the first science question from the Water Quantity draft discussion paper.

Margaret Clancy facilitated a discussion based on the following questions:

- What did we get right?
- Have we missed any major findings (in the literature)? Locally?
- What are the key themes from this paper that should carry forward to the Action Agenda?

The following is a list of questions and comments heard regarding this session's discussion questions. Answers are indicated with italics:

- On page 3 there is a two sentence statement which I believe is the most important couplet in Science Question 1: "The amount of fresh water entering Puget Sound in June through September has decreased by 18 percent between 1948 and 2003 (Snover, et. al., 2005)."

It would be extremely useful to know if this is an inter-seasonal shift or if this is a year to year change. The next sentence states, "This likely represents changes due to warming, land use, and regulation of flows (Snover, et. al., 2005)." It would be useful to have more background on this issue to understand it better.

- The paper does not define who consumptive users are and their percent of use. There is heavy emphasis on targeting exempt wells in the paper. However, only 10 to 30 percent of people are using exempt wells. All the folks that live in urban growth areas, where they are served by water and sewer, are 100% consumptive users, so it is important to include this fact in the discussion.

- The paper needs to identify the following gaps: freshwater and major rivers in South Sound like the Nisqually and the Deschutes; the amounts of freshwater going into Puget Sound.

- When you assess the effects of freshwater shortages on various species, what level of abundance are you going to address? Are you going to use the same standards for all studies? Is the abundance for unimpaired habitat the same?

- I would like to mention that we really don't understand the consequence of the Growth management Act (GMA) on rural areas and how these rural areas change hydraulic continuity and stream flows. We are using old ideas that don't address landscape changes. I would argue very strongly for looking at hydraulic continuity of aquifers and instream flows.

- The United States Geological Survey (USGS) did a regional study of the water budget in Puget Sound in the late 1980s and early 1990s. The study was published and is available. It is dated but a good building block.

- Instream flow studies for WRIA 4 are completed. Other WRIAs have one or two points and very few tributaries.

- This is an excellent paper. Looking at the WRIA and map slide, my recommendation would be to avoid fragmenting our efforts in the Puget Sound. The profiles for each segment are very different. However, instead of dividing the WRIAs, perhaps we should concentrate on things that are affecting all WRIAs.

- I recently started working with Tacoma Water. Previously I studied fish at Fish and Wildlife. There is a lot of data on fish productivity that could be used in the document. I would also like to see a definitions page. For example, flow impairment means nothing without an exact definition of its meaning in the document.

- Do the core team members agree with the characterization of water flow in this paper? *There are concentrated areas where we have a lot of data. Cedar, Tolt, and Sultan all have multiple studies. It is difficult to extrapolate fish information from one place to another. For example, using the Columbia model doesn't work for Sockeye data gathered from the Cedar River. In central Puget Sound—including Snohomish, King and Pierce counties—we have quite a bit of information. As a result, we are fairly successful at ensuring adequate instream flows for managed streams. Additional studies on the Sultan are going on now. The challenge now is to achieve a similar level of protection for fish resources across the Puget Sound basin. There's great divergence from one site to another. Previous studies show adverse impacts from certain high flows. Other studies have found benefits from very high flows. Same with low flows—some studies show benefits and others show adverse effects. Stream flows are unique to the setting or particular stream.*

- Stormwater was addressed in the Water Quality discussion paper, but it also has an impact on water quantity and should be addressed in this paper as well. The effects of flood control need to be examined. King County has done modeling exercises on Vashon Island which should be looked at and may be useful in other rural areas.

- You talked about a population increase of 1.4 million people in the Puget Sound region. What percent of that number is already factored into municipal water supplies? You need to clarify the numbers on water use. Do these numbers assume people use 96 gallons per day or 5,000 gallons per day? Tertiary water use should be part of the discussion on water quantity.

- There are 1,600 water system plans in Puget Sound, but they are not rolled up into regional plans. We need a regional summary.

- There aren't 1,600 water system plans, there are 1,600 watersheds. There are only 100 facilities and 800 watershed systems that are in the six year update cycle.

- As a potential foundational piece, include a regional forecast and an evaluation of supply that covers three counties.

- Climate change was covered well in the document, but I didn't see specific mention of glaciers and snowpack and the need to understand that aspect.

- There is also a consolidated water plan from Kitsap County.

- I don't understand how you want to use the information in the paper. A lot of studies have been done in Whatcom County. The Coordinated Water System Plan is not referenced here, but it would be useful.

- It was difficult to get a clear picture of status and threats from the document.

- Data gaps and uncertainties in the document suggest we don't understand this subject very well. That left me wondering how we can have freshwater flow impairment if we don't understand how flow and ecosystem health are related. For example, at the bottom of page four the paper reads, "…lower levels of hydrologic alteration are found in large undeveloped areas where there are no mainstream dams (including Olympic National Park) (Beecher, 2008)." The Paper then goes on to name the North and South Forks of the Nooksack and a host of others. This excerpt suggests that the system is less altered; however, the document suggests that conditions are poor at this site. This presents a confusing picture.

- A paper was recently published by NOAA on the evolution of salmon and how changes in flows affect salmon.

- There is a detailed Skagit Basin study by Mansmen on inputs from groundwater to summer flows and temporal changes in watershed.

- The paper was well written and easy to understand. Tertiary treatment of wastewater is important to include in the paper. Water reuse can alleviate water supply needs and replenish groundwater to allow for additional stream flow. We use hundreds of millions of gallons of water per day.

- I would like to compliment the authors. This is the best of the papers I've read. We have heard a need to include tertiary treatment and stormwater in the paper. I would caution against overly complicating the process. The more we try to cover, the tougher it's going to be to accomplish. There is a disclaimer in the paper stating that we are not going to worry about funding yet. I find this interesting because I hear the cash register ringing when I hear stormwater and tertiary treatment. Let's get things done that make sense, are worthwhile, and are a clear nexus with restoring the Sound. I think that the subjects of stormwater and tertiary treatment make more sense in other topic papers.

- We need to look at what we want as a society. What about local agriculture? Water needs to come from somewhere. Yes, it costs money, but consumptive users need to think about use and responsibility. A key theme is that agricultural users return most of the water they use back to the land. We expect agriculture to provide habitat. It would be nice to not force-feed contraceptives to fish so we can have fish to provide habitat for.

- One theme is the dichotomy between focusing on supply vs. holistic management of resources. If we focus on water supply then a lot of these issues don't need to be included. If we focus on holistic management then the quantity associated with other factors is really important- flood control, reclaimed water, etc. What is the scope and what are we trying to achieve? *We are covering both water supply and holistic*

management. For the most part this topic forum is focused on supply, and then we will weave this topic together with the other topics.

- We are already working with just part of the picture since we are not considering the Fraser River. We should be looking at all freshwater inputs including glaciers, tap water, wastewater and irrigation. We need to get a picture of everything that is flowing from the watershed into the Sound.

- Water quantity issues differ across the landscape; however, this variation is not addressed in the document. For example, in the headwaters exempt wells are an issue, while they are not in the lower mainstreams of rivers.

- I would like to mention possible incompatibilities of mandates. Administrators can only budge so far when looking at the ecosystem as a whole. For example, at the Federal level, how effective is the Marine Management Plan? The Corps of Engineers have a policy of no habitat within protective facilities. The Seattle Water Plan is a fantastic model of a conservation program for growth and what growth might require. There is an uncertainty about supply. Climate change is not the only example. With the Corps of Engineers mandate and the Water Plan of Seattle, the reliable supply of Cedar Dam was cut in half.

- For water supply planning, I think there should be a joint overlay to examine ties from an ecosystem point of view. This is a complex problem. The Partnership should maintain an ecosystem view, otherwise we will get stuck dealing with micro-problems.

- Some sort of quantitative approach and scale relating to water use would benefit the document because it is fully absent.

- We are missing the idea of mitigating for climate change with 1.4 million additional people expected in Puget Sound. We need to develop infrastructure to support instream flow for this additional population before climate change hits.

- The Department of Ecology has a lot of data on agriculture. Through their water permits farmers can calculate their total acre-feet used. We need to go one step further and ask them for the data. Whatcom and Skagit Counties have data on how much water agriculture is using annually.

- We need a standard, quantifiable number for instream flows that can be applied across watersheds. We need to look at historical debt. What was the historical instream flow? My guess is that managers try to drive the instream flow for fish standards higher than has ever been achieved historically. How is that going to be achieved?

- We need to consider the interconnectedness of threats. The synergy between threats acts as another kind of threat. Energy usage was not mentioned in the paper; this requires more flood control. There will be more energy used as the population grows.

- With wastewater issues for the City of Victoria in mind, we need to look at mixing public and environmental health impacts. The paper wrote off impacts from the Fraser River.

- A gap in the science section is a lack of emphasis on modeling and using watershed models for existing flows as well as historical and climate change scenarios. Let's use models to answer questions. They can be used for status, threats and management strategies.

- The page 19 discussion on instream flow is very well done. The nature of the methodology guarantees that the flows will not be met because of natural variation not because of anthropogenic input.

- Can instream flows be achieved? This question was aimed at protecting natural variation in flows; the flow levels are focused on the degree to which fish populations vary in response to flows. We don't want to drive fish populations down to the worst case. Were these flows met it would indicate drought year after year. We don't want to allocate water elsewhere when we have a wet year. Flow levels are not always met and that is intentional.

Session 2: What is the documented effectiveness of solutions to addressing the threats? What are we, in Puget Sound, currently doing to address the problem?

Brian Walsh, Department of Ecology, presented on the second science question and first policy question of the draft discussion paper.

Margaret Clancy facilitated a discussion based on the following questions:

- What did we get right?
- Have we missed any major findings? References?
- Have we missed any major threats?
- What are the key themes from this paper that should carry forward to the Action Agenda?

The following is a list of questions and comments heard regarding this session's discussion questions. Answers are indicated with italics:

- We need more information about municipal and Department of Health conservation programs and short and long term expectations for those programs. Customers are going

to have to conserve aggressively and need more information on what resources are available to them.

- We have talked about not having the money to investigate illegal allocations. I think the real problem is the clash between the ideal and reality, which is important to the Partnership. The final paper should address institutional and financial barriers to implementation of proposed and existing regulations. We need to reinforce Washington State's power to manage water resources.

- The paper is not clear on the difference between flow rules. Also the paper should expand discussions about desalination. The water supply would cost more but it may be necessary.

- Old instream flow rules are inadequate compared to today's rules. We are completing the development of flow rules in basins where rules don't exist, but we may also need to go back and revisit old rules. Some people say don't bother with methodology but just go in and try to improve flows. We need to decide how we are going to approach this issue.

- The document does not mention pricing to encourage conservation. Water needs to be priced "right" to promote good stewardship of the resource.

- Pricing is an important tool to spur demand management. The document should also address alternative sources of supply, e.g. rainwater, stormwater and greywater. There is a document on this subject available from the water resources adaptation working group.

- The paper referenced a link between land use planning and water system planning but this link was not documented. I think there is a link, but people may not like it. The document needs to explore this link further. The state tells local government where growth is going to be and the water is expected to be there. *The urban growth areas require adequate water supply for building permits to be issued. How are we defining adequate water supply? Another consideration is the legal availability of water. If the instream flow is not set, how do we know if water is legally available? We need to work together to answer these questions if we are to manage growth effectively. Also, the regulations governing non-municipal water differ from those governing municipal water.*

- I'd like to caution everyone about desalination. We are not sure how it impacts the marine ecosystem. It may benefit freshwater but we don't want to harm to the marine ecosystem with desalination plants. *A desalination feasibility study was done in a location with high currents. Some areas in the rain shadow might be suited for desalination. In Island County and in San Juan County, desalination is happening. They are using portable desalination, which may be a viable option for rain shadow communities.*

- For a discussion on stormwater we are directed to other papers. Stormwater quantity was inadequately discussed in the water quality meeting, yet it is important. Until 20 years ago, the stormwater conveyance system was not regulated. If we are going to return streams to their natural state, we need to address stormwater. The underground injection control (UIC) program is addressing stormwater returns to groundwater.

- The document uses examples fairly well. The Skagit project is a good example. I would caution you to be careful when using tools and to pay attention to the particulars of each individual project.

- The idea of reusing stormwater is good. In large systems, however, this reuse is concentrated at the river mouth. Freshwater needs to be recycled upstream to be of real use.

- Watershed councils are very focused on establishing instream flows. Watershed councils are looking at utilizing water available at high flows and taking it out of the stream. We need to establish guidelines to support environmental flows. *Maximum allocation - we are trying to get there, the science isn't real clear and we need help on how to come up with those numbers.*

- The document underscores the current reuse philosophy. Water is recycled near the outfall. It is important to put water above where it came from so it can be filtered through the ground again. We haven't quantified water going through stormwater and plants to see how much is available to us. We need to pump water uphill.

- I have been doing comparative studies in Puget Sound. Twenty years ago the USGS put gages in lowland rivers and determined natural stream hydrographs. For smaller catchments there are large geographical gaps in our knowledge of natural hydrographs.

- I would like to comment on how to pump water upstream without a pump. A mechanism was developed for this. It pays for habitat programs with transportation money. I would recommend doing the same thing on a larger scale.

- The chapter on effectiveness needs to clarify how you are determining effectiveness of actions. In 2003 there was a change in state law on penalties for water use violations; charges were increased to $5,000 per day. If the real issue is enforcement staffing, then we need to make that clear and if the maximum penalty is too low we need to make that clear as well.

- The report didn't explore what the future could look like if different tools are used such as decentralized treatment, low impact development, and others.

- Most wastewater is going into the marine ecosystem. The amount of water going to surface streams is very minimal. To successfully reuse stormwater it will take a statutory change because the law effectively excludes stormwater right now.

- The paper is missing an economic analysis of the supply side.

- I would encourage high accuracy concerning legal matters. I was taken aback when the current water code was listed as a limitation. The law is what it is. There are many people who think that environmental goals should be met with existing laws. I would like to see the document address overlap between the urban growth areas and water availability. The relationship between reclaimed water and water rights is complicated. I think reclaimed water is the appropriate tool given individual locations and circumstances. It can harm or help instream flows. It is important to consider cost; some tools are too expensive. Stormwater is more complex than we have seen.

- It is important to understand how water quantity relates to the economy. If you don't know what you are trying to solve then you don't know what your alternatives are. One size doesn't fit all. Regional problems may have local solutions.

- Page 26 states that stalk watering is limited to 5,000 gallons per day, however the Attorney General says there is no water limit for rural uses. This discrepancy needs to be addressed.

- There are major gaps in accountability within the water management system. We need to focus more on these overarching flaws. There is a lack of information and a lack of accountability.

- A key theme I saw is the defense of science. Using science to patch up something that is common sense is the problem. This relates to the precautionary principle. Not every recommendation needs to be backed up by science definitively. Every potential tool should be looked at, but I am concerned that some are taken out of the toolbox because they are not backed up significantly by science.

- I saw two themes in the document: strategies that affect timing of flow and quantity of flow. For quantity of flow we need to address over-extraction. There are a variety of options available. Timing relates to dams, stormwater management and flood management. Additionally it covers summer vs. winter flows and water stored at different times of year. I didn't see this presented as a key theme in the paper, although it was present throughout the paper.

- My concern is that water quantity is not addressed in numerical fashion. The USGS water budget for Washington is available and useful. The Partnership should utilize these numbers.

- Temporal and seasonal issues need to be looked at beyond just an annual basis.

- The paper contains a good table showing policies, but lacks a table of threats and actions to address each threat. Are they comprehensive? A threats table would give a better sense of strategies that need to be ramped up and continued.

- We lack consistent management strategies across Puget Sound. We need to identify some high-impact measures for all the tools listed and consider accountability. Why aren't the tools working? Some are being used, some aren't, some more effectively than others.

- I didn't see a discussion on public education. Many people are not aware of water issues especially when we have a rainy season. They might think there is too much water.

- Education and outreach are not mentioned. Even though you are saying they will be addressed in some other form, they should at least be explained. People can have a positive impact as individuals. *We asked people not to focus on funding and education, which will be addressed in other groups. The Partnership has started to work on funding and will be posting information on the website as soon as possible.*

Session 3: What needs to be done to address threats to the freshwater resource? What actions should we stop, add, realign, continue? What principles/criteria should we use?

Lisa Dally Wilson gave an overview of the core team's findings.

Three facilitated workgroups were asked to consider the following questions:

- Have we accurately captured the principles that should be reflected in the strategies to address threats to Puget Sound?
- What is your immediate response to the recommendations?
- What else should we recommend?
- What are the key themes from this paper that need to be carried forward into the Action Agenda?

Discussion notes from these workgroups are available upon request. Key responses are highlighted below:

Have we accurately captured the principles that should be reflected in the strategies to address threats to Puget Sound?

- Pursue low hanging fruit: look for biggest bang for buck
- Build in transparency and access to data
- Ensure water for people and the environment

- Broaden group of engaged constituents
- Recognize real time frame: 2020 is not realistic
- Set priorities and be careful to not over-promise
- Provide incentives for conservation in small water systems

What is your immediate response to the recommendations?

- We need to learn more about groundwater, where it is, how much is there, quality of aquifers
- Use different strategies for different scenarios: urban/rural, wet/dry, local/regional and identify appropriate tools for each
- Improve data access and transparency

What else should we recommend?

- Incorporate adaptive management
- Consider ecosystem conservation
- Include tiered accountability, starting at the local level

What are the key themes from this paper that need to be carried forward into the Action Agenda?

- Broaden and clarify instream flow rules
- Beware of overly quantitative approaches to managing species
- Look beyond just salmon for fish recovery
- Incentives vs. regulations
- Need to tell the story about personal choices and consequences
- Consider the precautionary principle
- Gather more information on groundwater (databases available)
- Act on common-sense solutions now
    - Conservation
    - Exempt wells
    - Stormwater
    - Funding for Ecology
- Be explicit in linking ecosystem outcome to threats

Wrap up and Next Steps

Margaret Clancy thanked everyone for coming and working hard to make this workshop successful. She thanked the core team for their hard work and dedication to the process. She encouraged people to continue submitting comments up to the May 6th deadline.