

Alliance for a Healthy South Sound (AHSS) Council Meeting
July 17, 2014, 10:00 am – 12:30 pm
LOTT Clean Water Alliance, Boardroom
500 Adams Street NE, Olympia, WA

Participants

Anise Ahmed, ECY	Dani Madrone, DERT
Jay Allen, CLIPA	Neil McClanahan, City of Tumwater
Erica Bates, WSU Mason County Extension	Allen Miller, Olympia School Board
Joseph Beaulieu, CLIPA	Emmett O'Connell, NWIFC
John Bolender, Mason County Conservation District	Christy Osborn, Thurston County
Steve Booth, Pacific Shellfish Institute	Sue Patnude, DERT
Denis Curry, CLIPA	Dave Peeler, DERT
Lisa Dennis-Perez, LOTT	Greg Pelletier, ECY
Rich Doenges, ECY	Debbie Riley, MCPH
Chris Ellings, Nisqually Tribe	Joe Roush, City of Olympia
Justin Hall, Nisqually River Foundation	Laura Schleyer, DERT
Ray Hanowell, TPCHD	Chris Schutz, Pierce County
Zena Hartung, DERT	Alex Smith, Port of Olympia
Andy Haub, City of Olympia	Scott Steltzner, Squaxin Island Tribe
Jack Havens, CLIPA	Stephanie Suter, PSP
Bob Holman, CLIPA	Lydia Wagner, ECY
Robert Johnson, Mason County Citizens Rep	Helen Wheatley, DERT
David Milne, TESC (retired)	Jennifer Whipple, Taylor Shellfish
	Meeting Coordination:
	Elizabeth McManus, Ross Strategic
	Andy Chinn, Ross Strategic

Meeting Summary

I. Anthropogenic Dissolved Oxygen Impacts in Budd Inlet

Anise Ahmed, Greg Pelletier, and Lydia Wagner from Washington Department of Ecology (ECY) provided an overview of Capitol Lake and Budd Inlet modeling. This modeling was conducted as part of the Deschutes River Water Quality Improvement Project. ECY is delegated by the US EPA to implement the Clean Water Act, including NPDES permits and nonpoint source controls. There are a significant number of impaired waters in the Deschutes River watershed, and ECY is currently developing a water quality improvement report and implementation plan to address the freshwaters of the watershed.

ECY has three projects looking at dissolved oxygen problems in Puget Sound: Budd Inlet, South Puget Sound, and a Salish Sea model. Each project uses computer modeling to compare current conditions

with natural conditions, to determine human impacts on water quality. Dissolved oxygen (DO) levels in Puget Sound are a key source of concern that the modeling projects investigate, as low DO levels in Puget Sound can cause significant impact to fish and other aquatic life. The primary human driver of dissolved oxygen depletion is the addition of nitrogen; this occurs in estuaries around the world (e.g., Gulf of Mexico, Chesapeake Bay).

ECY modelers created a “natural condition” scenario for Budd Inlet using the South Sound model. Under this scenario, the 5th Avenue dam was removed, treatment plant inputs were removed, and contributing rivers were adjusted to reflect natural conditions. This model was compared to current conditions to quantify human impact on Budd Inlet. In Budd Inlet, water quality standards require a minimum DO of 5.0 mg/L or humans cannot cause dissolved oxygen to degrade by more than 0.2 mg/L below natural conditions. In Capitol Lake there is no minimum DO level; humans cannot cause dissolved oxygen to degrade by more than 0.2 mg/L below natural conditions. The modeling indicates that DO level violations in Budd Inlet are caused primarily by human activities related to circulation changes (the 5th Avenue Dam and river flows) and changes in nitrogen and carbon (wastewater and nonpoint sources).

ECY modelers then examined the effect of various approaches to decreasing or eliminating water quality violations in Budd Inlet, including:

- Removing the Capitol Lake/5th Avenue Dam
- Cleaning up nonpoint sources in the Deschutes River watershed
- Adding advanced treatment at the three local wastewater treatment plants
- Extending the outfall of the LOTT treatment plant
- Eliminating flows from the LOTT treatment plant during various time periods
- Reducing external sources on DO levels
- Dredging Capitol Lake
- Various combinations of the above approaches

ECY modeling shows that removing the Capitol Lake/5th Avenue Dam would have the most benefit to DO in Budd Inlet. Reducing sources beyond Budd Inlet has the next greatest benefit, and reducing LOTT inputs and controlling nonpoint sources have roughly equal benefits.

ECY’s next step is to draft a freshwater Water Quality Improvement Report (WQIR) and issue the report for public review and comment. Following public review, ECY will submit the freshwater WQIR to the US EPA for approval.

Following the presentation, meeting participants asked clarifying questions. Responses to these questions are below:

- The benefit of improved DO levels would be less stress on aquatic life in general.
- There is no shellfish protection district in the area of Budd Inlet; due to the outfall from the LOTT treatment facility, commercial shellfish beds are not allowed.
- The effect of the LOTT outfall on East Bay flows has not been analyzed but could be modeled.

- Macrophytic plants are rooted, and ECY estimates that the majority of their nutrition comes from the roots (i.e., they are not receiving nutrients from the water column). These plants could be removing nutrients from sediment and adding nitrogen to the water.
- ECY modeling uses a virtual dye to examine water flows. Using physical dye would be much more expensive and implementation would require an entire flow season.
- The ECY model is calibrated using field data. One of the primary field data sources was a 1997 study.

II. Role of Capitol Lake in Budd Inlet Water Quality

Dr. David Milne provided an overview presentation of his report "[Capitol Lake: Protector of Water Quality in Budd Inlet](#)". Dr. Milne's report, which reviews ECY's 2012 [TMDL technical report](#), finds that Capitol Lake does not negatively impact water quality in Budd Inlet, and in fact serves to improve water quality in Budd Inlet through sediment retention.

Dr. Milne noted that according to the TMDL report, 94% of Budd Inlet shows no water quality violations under current conditions. All violations are adjacent to the LOTT treatment facility outfall and/or in East Bay, and all water quality violations are very small. Within the Budd Inlet violation area, three small creeks and the LOTT treatment facility outfall pipe contribute nitrogen. West Bay, at the outlet of Capitol Lake, shows no water quality violations. In addition, changes in DO concentrations can be explained by natural system variability: A 0.2 mg/L change in DO level is significantly smaller than the natural variation occurring at different depths and at different times throughout a typical day.

Dr. Milne discussed the regional Puget Sound water quality model, noting that the "natural" condition of waters in Budd Inlet would not violate 21st century water quality standards except around Priest Point. This implies that wherever and whenever the "natural" water violates 21st century standards, the Budd Inlet Model could use the "natural" water as the standard instead of fixed 6 and 5 mg/L standards. Half of the violations flagged by the Budd Inlet Model are relatively minor variations from the "natural" water presumed to exist in Budd Inlet before the modern era.

Dr. Milne also noted that the root mean square error (RMSE) of the ECY computer model is 2.07 (i.e., the average difference between what the computer calculates and what is actually observed). Because of the RMSE, the ECY model will detect several violations that do not actually occur. When the RMSE is used as the violation threshold, the model shows fewer affected areas, and more serious (and likely real) violations.

Dr. Milne commented that ECY modeling of higher DO levels in Budd Inlet in the absence of Capitol Lake is not conclusive. For example, the largest DO increase due to dam removal is estimated at just one depth on just one occasion in each grid square, for the duration of an entire summer. If Capitol Lake is lowering DO throughout Budd Inlet, water quality violations would occur throughout. Instead, the Estuary is raising DO everywhere, at an unspecified depth and date. In addition, different factors

contribute to DO concentrations in Budd Inlet at various levels in the water column. The direction of water movement throughout the water column, combined with water circulation patterns, suggests that a more accurate model of DO in Budd Inlet would account for hydrologic mixing and return effects beyond the boundary of Budd Inlet.

Dr. Milne suggested several hypotheses that could be tested to determine alternative scenarios for causes of water quality violations in Budd Inlet (e.g., nutrient loading from Moxlie, Mission, and Ellis Creeks, impoundment by LOTT's freshwater discharge, artifacts of the ECY model, unknown errors in the ECY model source code or data input, negative influence of Capitol Lake and/or the 5th Avenue dam) and suggested several ways in which these hypotheses could be tested.

Following the presentation, meeting participants asked clarifying questions. Responses to these questions are below:

- Budd Inlet water is already compromised by anthropogenic sources north of Edmonds.
- A water quality standard is a reasonable numerical goal that can sometimes acquire the force of law but is in reality not a significant issue. For example, when DO concentrations drop below 6 mg/L, the water quality is reclassified from "excellent" to "good".
- The South Sound DO study analyzed Eld Inlet, which also has depleted DO concentrations.

III. Discussion of Water Quality in Budd Inlet

Denis Curry noted that the Washington State Department of Enterprise Services (DES) has entered into a contract with the William D. Ruckelshaus Center to identify a path forward for the impasse over removal of the 5th Avenue Dam. The Ruckelshaus Center will recommend a plan that the disputants can follow.

Scott Steltzner commented that the Squaxin Island Tribe has participated in past processes with the Ruckelshaus Center and has found these processes to be biased in favor of a particular outcome. The Tribe is considering whether to participate in the current process.

Dave Peeler commented that the remarks from ECY and Dr. Milne were highly technical and should be discussed in a technical forum with the proper expertise.

Lydia Wagner noted that ECY has responded to some of Dr. Milne's comments in a July 2 [memo](#). In addition, ECY is currently concentrating on the water cleanup plan for freshwater; Capitol Lake will be addressed in a future marine waters cleanup plan, the timing of which depends on the completion of the Puget Sound DO study. Conservatively, the completion of the marine waters cleanup plan is likely two years away. ECY technical staff are preparing an addendum to include all work completed since the 2012 technical study. Ecology will notify the AHSS when this information is available.

Denis Curry commented that the AHSS NTA to remove the 5th Avenue Dam and restore the Deschutes Estuary was not approved by AHSS consensus and has progressed through PSP with virtually no

discussion. PSP has now listed this NTA under the updated 2014 Action Agenda, which means that PSP, as a state agency, has assumed an advocacy position. In other words, the AHSS Council wields significant influence.

Justin Hall responded that the NTA was forwarded to the AHSS Executive Committee, and AHSS Council members provided their position on the NTA throughout that process.

Sue Patnude noted that significant influence from local groups is a benefit, as local groups should be a voice for their communities. There are a significant number of NTAs from AHSS, some of which could prove even more controversial than Deschutes Estuary restoration. However, the Deschutes River will continue to flow, regardless of human activities.

IV. Reporting on NTA Financial Information

Stephanie Suter from PSP outlined PSP's guidance on reporting NTA financial information, including total cost estimates of the NTA and projected funding sources. This information helps PSP advocate for funding, and also helps other funders understand the status of NTAs. Information is due back to PSP by August 29th.

Action Items:

1. Stephanie will circulate guidance for reporting on NTA financial information.

V. Potential Future Council Meeting Agenda Items

Participants suggested the following potential agenda items for the next Council meeting:

- Updates on South Sound projects.

VI. Other Items

- The Council approved the May meeting summary.
- Jack Havens suggested acknowledging the important work of David Jamison and Billy Frank, Jr., both of whom passed away in 2014.
- Jack also noted the need to address socioeconomic factors during the course of the Council's work; this is in the Council's bylaws.
- Stephanie Suter noted that in the future PSP's goal is to apply the results from the Puget Sound Pressure Assessment to Puget Sound recovery work; the assessment includes human well-being and wellness indicators.
- The Council confirmed the dates for its next three meetings: September 16, November 18, and January 20.

[Meeting adjourned at 12:02 pm]