Lake Whatcom Policy Group
December 1, 2021 Meeting
Brief Digest of Presentations and Discussion

Policy Group members in attendance: Michael Lilliquist, Gene Knutson (Bellingham City Council); Todd Donovan (Whatcom County Council); Leslie McRoberts (Lake Whatcom Water and Sewer District Board); Nancy Alyanak (Sudden Valley Community Association). Other Council or Board members present: John Carter, Lake Whatcom Water and Sewer District.

1. Total Maximum Daily Load (TMDL) Model revision process

County staff and consultants provided an overview of the historical process used to model the Lake Whatcom phosphorus TMDL, and the current activities to revise and improve the model. Monitoring from the WWU Institute for Watershed Studies showed a steady decline in dissolved oxygen over time, and the lake was placed on the list of impaired water bodies by the Department of Ecology. Dissolved oxygen must be brought back to within 0.2 mg/liter of natural conditions that existed when the area was heavily forested. Achieving this goal is likely to take decades.

The original models used to develop the TMDL were designed to simulate both phosphorus loading into the lake and its response to that phosphorus. The loading model, called the Hydrological Simulation Program—Fortran (HSPF) loading model, was developed with limited data from the 2002-03 period. This means it did not reflect likely variations in phosphorus loads over time and could not capture long-term trends. The original TMDL issued by Ecology called for continued data gathering and a reassessment of the model every 10 years. If a reassessment indicates that the new model deviates from the old by 10% or more, Ecology will submit a request to the EPA for a TMDL revision. Additional data has been collected for a number of years for this purpose. For example, 1,900 water samples have been collected from over 30 tributaries under varying flow conditions.

A plan to reassess the TMDL models was submitted to Ecology for review and was approved. A new model, called the Hydrocomp Forecast and Analysis Model (HFAM), was developed to replace the HSPF model. This model simulates phosphorus and sediment loading into Lake Whatcom.

The results of the HFAM model will be used as inputs into a new lake response model, called CE-QUAL-W2, which will allow us to understand the implications of phosphorus loading in the lake. Simulations can be run for forested conditions and the 2002-2015 period after lake development. This is a hydrodynamic and water quality model and takes into account a number of variables including lake water levels, currents, mixing, and organic material sedimentation. Other inputs include wind speed and direction, precipitation, groundwater inflow, solar radiation, and tributary inflows and withdrawals. The model is run and the results are compared with actual data. When completed the model can be used to predict outcomes such as chlorophyll, total phosphorus, and dissolved oxygen.

	Next steps include additional calibration of the model against data such as temperature and dissolved oxygen levels. A series of water quality goal simulations can be selected and modelled to help guide policy decisions. The two models taken together will allow the TMDL to be recalibrated if the results warrant. Phosphorus impacts from the Nooksack diversion dam, which transports water from the Nooksack to Lake Whatcom, are not modeled as part of the TMDL because the diversion dam is exempt from regulation under the TMDL and it is considered part of the background conditions. Diversion falls outside the TMDL regulatory process because it implicates the City of Bellingham's water right. The city is committed to reducing phosphorus impacts on the lake and the overall diversion of water has been reduced as much as possible, and care is taken to minimize diversion when there are high levels of phosphorus in the Nooksack. Data collected and analyzed a few years back show that the diversion results in less phosphorus into the lake than was assumed during the original TMDL model development.
2. Topics for upcoming meetings	
	Topics for the February 2022 meeting will include: • Review the agenda for the annual Lake Whatcom meeting • Policy Group suggestions for inputs into the policy scenarios for the CE-QUAL model. Other topics for 2022 meetings include: • A request from Whatcom Mountain Bike Coalition (WMBC) to be exempt from seasonal land disturbance rules to repair trails • Aquatic Invasive Species program reports • Annual stormwater project overview We will schedule quarterly meetings for February, June, September, and December. The annual joint legislative meeting will likely be held in March.

Next meeting: February 2022, 3:00 PM; data and location TBD.