Spokane DO TMDL
Monitoring Workgroup Meeting Notes
Nov. 8, 2016 1:00 - 3:00 pm
Ecology's Eastern Regional Office 2nd Floor Large Conference Room

Participants

John Beacham, City of Post Falls
Adriane Borgias, Ecology
Ben Brattebo, Spokane County
Mike Coster, City of Spokane
Lisa DallyWilson, Dally Env/SRSP
Dave Knight, Ecology
Doug Krapas, IEP Co.
Meghan Lunney, Avista
Chris Moan, Avista
Paul Pickett, Ecology
Jim Ross, Ecology
Jule Schultz, Riverkeeper
Elaine Snouwaert, Ecology
Karin Baldwin, Ecology

Monitoring Questions

When asked about monitoring objectives and the reason for monitoring efforts, the discussion revealed that different entities collect data for different purposes:

- Avista samples baseline nutrient conditions in Lake Spokane as required by their dissolved oxygen water quality attainment plan and to track their efforts to improve dissolved oxygen.
- Spokane County collected the final sample for their receiving water study this month. They sampled the Spokane River upstream and downstream of their outfall for four years. They also sample their effluent as required by their permit.
- The City of Spokane's permit requires monitoring of their CSOs and effluent, and some temperature monitoring of the river.
- The City of Post Falls and other Idaho dischargers began receiving water sampling for phosphorus this year, as required by their permits. The City of Post Falls samples twice a month during the summer months above and below their outfall.
- Kaiser monitors one site in the river per a permit condition.
- Inland Empire Paper worked with Ecology to perform groundwater monitoring.
- Ecology, through EAP's Ambient Stream/River Monitoring Program, collects samples every month at five sites within the Spokane River watershed (state line, Riverside State Park, mouth of Hangman Creek, downstream of Nine Mile Dam, and at the mouth of Little Spokane River). Ecology's EAP program also has a groundwater study at the mouth of Deep Creek/Coulee Creek to determine the groundwater quality entering the Spokane River.
- Stevens County Conservation District received an Ecology Grant to partner with USGS for a groundwater study in the upper portion of Lake Spokane, within Stevens County.
- Others collecting data include USGS and the Coeur d'Alene Tribe
- Data collected by Ecology's EAP Program and Avista are available in the EIM database. The other data is not.

Doug Krapas asked whether the Spokane DO TMDL was a "beta test case", or whether there were other examples in the State or nationally, of DO and phosphorus TMDLs and/or reductions similar to those being implemented in the Spokane River Watershed. Karin mentioned she thought they were doing this in Chesapeake Bay. Paul Pickett mentioned Lake Whatcom and Oregon with respect to model application, and that this question will be answered as part of the literature search that he will be conducting. The goals of the literature search include: (1) to identify different ways to evaluate improvement in system, (2)

to identify tools to help assess the health of the reservoir, and (3) to better understand the length of time expected to see DO improvements after implementing changes in nutrient loading.

Paul Pickett will begin work on the literature search project near the end of the year, but he is putting together a draft scope of work that should be available for review just prior to the Dec. 6 Advisory Group meeting. The Advisory Group will be able to provide input on the scope of work. After Paul completes the literature search, it will go through a policy review at Ecology's headquarters. Once that review for consistency with current policy or standards is complete, we will present the literature review to the Advisory Group. Asking for input from the WA Dept. of Fish and Wildlife on fish habitat assessments or measuring tools could help make sure we are providing useful, valuable information.

Several members of the workgroup asked Ecology how success will be evaluated by the agency. It was mentioned that this is something that needs to be determined before the Monitoring Workgroup can specify what data need to be collected and whether there are any gaps for determining trends over time.

The group discussed a variety of ways Ecology could evaluate progress and success, and agreed that the model is not the only way to demonstrate success. In addition to modeled outcomes, the group suggested other tools such as:

- Measuring biological response in the reservoir
- Measuring non-point source and point source discharges and determine whether the allocations from the TMDL are being met.
- Determining whether water quality standards are being met at the Riverine Compliance point and in Lake Spokane.
- Determining whether beneficial uses are being met
- Collecting water quality data for specific constituents at specific locations over time and conduct a trend analysis to determine improvement. (Paul Pickett suggested that this is one thing we might want to start fairly soon to ensure adequate data collection).

To complete a trend analysis, you need to have collected consistent, long-term data that spans a variety of conditions such as wet and dry seasons. Ecology's ambient data and Avista's lake data are sufficient to perform trend analyses. Dissolved oxygen and phosphorus data are essential data that have been collected and another trend analysis could be completed for plankton species (ex, has there been a shift in assemblages, etc.). Baseline conditions to compare against, as a starting point, would be the 2000 and 2001 data collected for the TMDL. We would also be able to look at data collected by Soltero or Funk for some parameters such as species assemblages (plankton, periphyton, algae, etc.).

Ben Brattebo suggested that a fair amount of biological data have been collected in the lake and river and are reported in a number of different studies. He suggested pulling these data together and then doing another set of samples to compare. Next steps have yet to be identified for this suggestion. Jim Ross agreed this was a good idea.

When it comes to the model, Paul recommended the group move through the following process to guide identification of data needs (estimated to be about a 4-year process):

1. Identify the question you want the model to answer (eg., what are you asking the output to be)..
2. Develop a model framework or plan to determine what data needs to be collected. The framework could also identify what data needs updated or if the model requires re-calibration.

3. Design a focused and comprehensive monitoring program to provide a comprehensive look at corroborating the existing model calibration and information needed to answer questions from step #1.

Paul Pickett mentioned that there are probably at least 2 or 3 other measures/tools that can be used to demonstrate success besides the model, and that these are all policy choices by the agency.

The workgroup recommended that the DO TMDL Advisory Committee or Monitoring Workgroup hold a meeting to discuss the model and invite the modeling experts to provide input regarding how the model might be used moving forward and what data would be required to use the model in an effective way. The timing of this workshop was discussed due to the pending literature search results and the potential need to measure long-term trends. Topics to be discussed could include:

- An overview of how the model was used for the Spokane DO TMDL
- An overview of the new, added features in model software
- An understanding of how recent data will be or could be integrated into the model and whether that will require new calibration
- How the model can be used to determine success in the 10 year assessment and what would be involved from a modeling perspective.
- Other tools/methods that can be used to determine success in the 10-year assessment in addition to the model

<u>10-Year Assessment</u>

Ecology estimates that they will start data collection for the assessment in 2021, and it will continue for 2 years (if a trend analysis is used, additional data may be collected sooner than 2021). The model or other tools will be used to analyze the data in the third year (2023). This means that results from the assessment would not be available until around 2024.

The group reviewed the questions the TMDL anticipated the 10-Year Assessment would answer (see the Monitoring Progress section, page 76-77 of the TMDL). A summary of the discussion follows:

- The group thought that we are currently collecting the data needed to quantify the amount of phosphorus removed, because we have DMR and ambient data. For nonpoint sources, we have data from the mouths of Hangman and the Little Spokane, plus data collected for the TMDLs. We will also have some edge-of-field data collected as part of the RCPP program that might be able to be extrapolated to other fields in the watershed.
- In order to detect changes in dissolved oxygen as a result of nutrient reductions, more diurnal dissolved oxygen data from the river may need to be collected. There were some locations where the Spokane River in Washington was listed for dissolved oxygen, so collecting data in these areas prior to the ten-year assessment could be helpful. Post Falls collects grab samples for dissolved oxygen, but not continuous or diurnal data. We may also be able to collect periphyton data and compare current levels with that collected for the TMDL or associated with studies by Saltero or Funk. In Lake Spokane, Avista has been measuring the response to nutrient reductions for the last five years, but they are scheduled to evaluate their monitoring program in 2017.
- The likelihood of further phosphorus reductions, actions to be initiated in the second ten years, and reasonableness of pursuing other strategies were likely questions developed when the group thought that tertiary treatment would not lower nutrient levels called for by the TMDL. So, these questions may need to be clarified or revised. These questions could also refer to the

effectiveness of BMPs. Answers to these questions may not be possible until after the results of the 10-Year Assessment or specific studies, such as the USGS Lake Spokane groundwater study. Questions about effects of macrophyte die-off and lack of stone flies in the river were posed, which could be studied in the future.

- It was mentioned several times that it may take DO levels in Lake Spokane a long time to respond, so we need to build this into our assessment approach.
- Altering allocations was discussed. There is concern amongst workgroup members that if we are not meeting DO levels in the hypolimnion and the non-point allocations are not met, that the point source allocations will be racheted down – even though there may be no proof that further lowering nutrient outputs from point sources will result in compliance in the hypolimnion.
- Whether the hypolimnion in the lake is meeting the dissolved oxygen standard or whether the water quality standards for this should be modified. The group discussed how this question is dependent upon flow conditions, and being able to measure 0.2 mg/L from natural conditions.
- General brainstorming on what we need to do to determine success – answer the following questions:
    - Are the beneficial uses being met?
    - Are the wasteload allocations and non-point allocations being met?
    - Have the trends in Phosphorus gone down in the river, in the reservoir?
    - Have the trends in DO gone up in the river, in the reservoir?

Group Goals & Objectives:

Lisa suggested that the goal of the 10 Year Assessment be defined, and then we can more clearly identify the objectives to accomplish the goal which will involve monitoring. For example, a possible goal is to demonstrate the health of the Spokane River and Lake Spokane by meeting water quality standards or by meeting beneficial uses (note that the goal is ultimately a policy question that Ecology will need to answer). The objectives would then outline how we will demonstrate the health of the river and Lake Spokane. Members of the workgroup will brainstorm the goal, and objectives required to accomplish the goal prior to the next meeting. At our next meeting we will review the suggestions and develop an overall goal and objectives. Once the goal and objectives are developed it will be easier to answer questions such as what additional data we need for the 10-year Assessment or to evaluate success.

Dave Knight offered to provide a work plan to the group that lays out a process or logical steps leading up to the 10-Year Assessment. Ecology will present a draft workplan for the Advisory Group to consider at their next meeting on December 6th. Possible steps the work plan will include are:

- Literature search
- Policy review
- Model workshop to discuss the model and how it might be used moving forward and other tools
- 2-3 logical and legal ways to evaluate success of the TMDL.
- QAPP development

Next Steps:

- Karin to check possibility of David Dilks providing a 10-minute overview of how the CE-QUAL-W2 model was used on the Spokane.
- Karin to send draft scope of work for the literature search once it is ready to the advisory group around the first of December.

- Monitoring Workgroup members of the to provide a list of topics and references for Paul Pickett's consideration in the literature search.
- Monitoring Workgroup members to provide suggestions for goals and objectives to define success for Ecologys consideration and approval, and a list of measures or tools that can be used to determine whether the goal is being achieved.