Item 6Bi.
BCWMC 2-20-20

Bassett Creek Watershed Management Commission

MEMO

To: BCWMC Commissioners and Alternate Commissioners
From: BCWMC Technical Advisory Committee
Date: February 12, 2020

RE: Recommendations on BCWMC Water Monitoring Program

At the August 2019 meeting, the Commission asked the Technical Advisory Committee to review the BCWMC water monitoring program. It was recognized that because the Commission's monitoring program is a large part of the annual operating budget, a thorough review of the program was warranted to help inform the annual budgeting process. The goals in reviewing the program included:

1. Learning the history of the BCWMC monitoring program, how and why it evolved over time
2. Articulating specific monitoring goals for the BCWMC monitoring program based on current needs
3. Gaining a better understanding of all the monitoring taking place in the watershed by various stakeholders
4. Determining if there are gaps in the data collection, based on project, planning, or reporting needs
5. Learning about what other watersheds are monitoring for (their goals and practices)
6. Learning about potential alternatives to our current monitoring techniques
7. Determining the right level of BCWMC monitoring including parameters and frequency

At their meetings in October and November 2019 and January 2020, the BCWMC Technical Advisory Committee (TAC) reviewed and discussed the Commission's water monitoring program in detail.

At their October meeting, the TAC received a presentation from the Commission Engineer with details of the Commission's current monitoring program, a history of the program, and some information on other watershed monitoring programs. The TAC then brainstormed all the different goals and objectives for monitoring in the watershed and assigned a priority level of "high, medium, or low" to each of the goals (Table 1).

The Commission's water quality monitoring program as stated in the 2015 Bassett Creek Watershed Management Plan, Appendix A can be found here: www.bassettcreekwmo.org/application/files/7914/4676/6436/Appendix_A_Monitoring_Plan.pdf. Section 2.8.5.1 and Policy 28 of the 2015 Watershed Management Plan describe the Commission's water level monitoring program.

The water monitoring presentation to the TAC can be found here: bassettcreekwmo.org/application/files/9815/7056/0055/10-2-19_Version-Oct_4_TAC_mtg_presentation.pdf.

At their November meeting the TAC reviewed how the current monitoring program aligns with or meets the goals and objectives considered a high or medium priority. They reviewed a detailed memo by the Commission Engineer (bassettcreekwmo.org/application/files/8815/7594/2804/BCWMC_monitoring_prog_memo_revised.pdf) that identified some gaps where the current program does not fulfill the goal, and some areas where the program exceeds the goal. The TAC discussed potential changes in the monitoring program that could be considered to eliminate gaps or remove unnecessary monitoring activities. Specifically, they discussed how the monitoring program aligns with state protocols and guidance for assessing streams and lakes for impairments (including the frequency of monitoring and the parameters measured). They also considered if the level of monitoring was appropriate to detect new issues that may arise and track trends over time.

Table 1. Results of Goals Brainstorming and Prioritization by TAC October 2019

Goal/Objective	Priority Level	Notes
Assess waterbodies against State standards	High	
Track changes and trends	High	
Detect issues early for proactive management	High	
Understand impacts of climate change	High	• Particularly changes related to flow. • Noted need to track temperature changes. • Noted need to communicate trends.
Gather chloride data	High	
Understand effectiveness and function of stormwater ponds (sink vs. source)	High	
Avoid duplication of monitoring efforts by other agencies/groups	High	
Gather data to help stakeholders understand aquatic ecology and chemistry conditions	High	
Assess ecological health	High/Med	
Gather data needed to maintain pollutant loading and hydrologic/hydraulic models	High/Med	
Effectively target projects and programs	Med	
Detect new AIS and assess suitability of AIS	Med	
Analyze effects of high chlorides	Med	For instance, at what chloride level does a lake stop mixing? U of M is studying effects of chlorides as well.
Assess effectiveness of specific BMPs including CIP projects	Med	This is likely more a role for cities rather than Commission
Identify and track emerging contaminants	Med/Low	PFAS, for instance
Understand fish communities	Med/Low	Bassett Creek Main Stem – fish impairment; data gap
Assess bacteria sources	Low	
Assess wetland health and function	Low	
Assess for harmful algal blooms	Special case	
Identify biological stressors	Special case	
Understand impacts of carp	Special case	
Gather data to help with grant applications or grant requirements	Special case	

The discussion at the November TAC meeting resulted in consensus regarding some aspects of the program and more questions about budget implications of possible changes to the monitoring program. At their meeting in January, the TAC reviewed information on expenses of some monitoring program aspects and discussed the pros and cons of adding or removing some specific activities or parameters.

Some key take-aways from the TAC's discussions include:

- Acknowledgement that the number of waterbodies sampled, frequency of monitoring, and reporting have the highest impact monitoring costs.
- Acknowledgement that the new stream monitoring program that began with adoption of the 2015 Watershed Management Plan increased monitoring costs considerably.
- Acknowledgement that the BCWMC water monitoring program should avoid duplication of monitoring efforts by other parties and should continue close coordination and collaboration with cities and other organizations.

After a full review and discussion of program goals and expenses, the TAC forwards the following recommendations for the Commission's consideration:

TAC RECOMMENDATIONS ON THE BCWMC WATER MONITORING PROGRAM

Lake Monitoring:

- Maintain water quality monitoring frequency at once every three years for Priority 1 lakes and once every five years for Priority 2 lakes.
- Maintain number of sampling events at six per year: one just after ice-out, which is important for collecting TP data needed for modeling and assessment, and five during June – September.
    - Note: State assessment protocols only require four samples June – September. Although removing one sample event results in $1,700 per lake sampled in savings, the TAC recommends keeping five samples during June – September to better track and assess conditions. It was noted that many partners, including MPRB and TRPD, collect many more samples during the summer. The TAC also noted that eliminating one lake sampling event could be a cost saving measure in years when the budget is especially tight.
- Maintain aquatic vegetation monitoring frequency concurrent with water quality monitoring

Stream Monitoring:

- Align BCWMC stream monitoring program with Met Council's WOMP monitoring as much as possible and when it makes sense in meeting BCWMC monitoring goals
- Remove collection of alkalinity, sulfates, total organic carbon, and chemical oxygen demand from current sampling protocol:
    - These parameters are currently collected at the WOMP station but there are no state standards for these parameters
    - These parameters are not used to detect issues or concerns and can be added back into monitoring program if data becomes necessary to understand an identified issue.
    - Results in $820/year in savings
- Add 4-day continuous dissolved oxygen (DO) measured once per year; instantaneous pH and DO collected during routine grab sample collection to the monitoring protocol:
    - These parameters have not traditionally been collected at the WOMP station, but there are state standards for these parameters

    - These parameters can help the BCWMC better understand the biological impairment on the Main Stem of Bassett Creek and can help assess the biological condition of other streams
    - 4-day continuous DO measurement adds $2,800/year to monitoring budget
    - Instantaneous pH and DO during grab sampling adds $2,700/year to monitoring budget
- Maintain protocol to collect 15 bacteria samples over 2 years of monitoring even though up to 54 bacteria samples are collected at the WOMP station over 2 years.
    - Current BCWMC protocol meets state monitoring guidance.

Lake Level Monitoring:

- Maintain current lake level monitoring program while avoiding duplication with DNR's program.

Assessing Stormwater Ponds:

- Maintain role as providing assistance to cities if requested and authorized by the Commission. Assessing the effectiveness of stormwater ponds should remain primarily a city function.

Bottom Line:

The BCWMC's water monitoring program is meeting the high priority goals for the program. Only minor changes are recommended for some of the stream monitoring parameters resulting in an annual monitoring budget increase of $4,680.

The most recent annual water quality monitoring program costs have a 3-year average of $87,100. The TAC's recommendation results in an average annual 5.1% increase to the monitoring budget.