

## Lake Champlain Basin Program

### Technical Advisory Committee

Remote Zoom meeting due to COVID-19 social distancing

Wednesday, April 1, 2020, 9:00 AM – 12:15 PM

### Approved TAC meeting summary

**Attendance:** Angela Shambaugh, Breck Bowden, Neil Kamman, Andrew Schroth, Jamie Shanley, Bernie Pientka, Eric Perkins, Ryan Davies, Fred Dunlap, Ryan Cunningham, Bryan Dore, Jenn Callahan, Leigh Walrath, Ryan Patch, Ryan Cunningham, Bridget O'Brien, Stéfanos Bitzakidis, Steve Kramer, Curt Gervich

**LCBP Staff:** Matthew Vaughan, Lauren Jenness, Meg Modley, Mae Kate Campbell, Pete Stangel, Eric Howe

**Guests:** Dave Braun, Clelia Marti, Ken Wagner, Emily Porter-Goff, Chris Kopman, Michael Winchell, Lori Fisher, Marli Rupe, Amanda Holland, Linda Blasch

- Neil welcomed the group. Matt asked TAC members to send him updates, to be circulated later.

### Review and approve summary of previous TAC meeting

Angela moved to approve the March meeting summary. Jenn seconded. Andrew abstained. All in favor, none opposed.

### **Workplan review: Using a 3-Dimensional Coupled Hydrodynamic-Aquatic Ecosystem Model to Evaluate Alternatives for Controlling Internal Phosphorus Loading in Missisquoi Bay, *Dave Braun (Stone Environmental), Andrew Schroth, and Clelia Marti (UVM)***

- Andrew Schroth provided the background on phosphorus loading in Missisquoi Bay and his research.
  - Breck Bowden asked whether there was a correlation between grain size and phosphorus concentration. Andrew stated that the team plans to explore this question in the project.
- Clelia introduced the process-based model that will be used in this project.
- Dave provided an overview of the workplan tasks.
- Matt raised a point about the timeframe of when the Project Advisory Committee will convene: some expressed an interest in providing feedback on the sampling scheme, after the modeling output is ready but before field sampling. Dave responded that if this can happen in mid to late June. He is unsure when the sampling program can really begin, dependent on COVID situation.
- Neil asked for the core technical team to be involved in the workplan process related to sampling due to COVID, and noted that sampling isn't classified as essential under the governor's stay at home executive order. Dave agreed that the team needs to settle on a date after the workplan and QAPP are in place. He suggested that they can think about how to restructure sampling protocol in light of the new restrictions
- Neil asked if there is an optimal season or time to collect the core samples. Dave replied that they don't have the complete answers, and that the team has talked about it.

- Andrew asked if Neil and Matt had made decisions about the composition of the Project Advisory Committee.
  - Matt stated that everyone who expressed interest was a part of the confidential review committee, and that other members of the TAC can participate.
    - Stéfanos asked if there is a document about what is expected from the advisory committee. Matt will follow up but stated that it is mostly reviewing materials, providing feedback, and attending the 3-4 meetings.
- Neil asked Clelia about the grid size of the model and she responded that the cells are 100 m x 100 m. Neil asked if there were multiple depths, and what the thickness of the cell is? Clelia answered that 0.25 m is the vertical grid resolution.
- Breck asked Andrew if the available/anticipated core data supports a resolution of 100 m on the map. Andrew: the team needs to look at the data more, and they are not going to conduct 100 m resolution sampling.
- Breck asked whether the core data would be an input to the model. Andrew answered that it's an iterative model. Clelia said that the idea is to use the existing data to set up initial conditions, when new data comes in some parameters will be adjusted and then further integrated.
- Leigh stated that in the document provided, the team has indicated that dredging will cost \$30/cubic yard. Application materials submitted for a large-scale dredging project estimated \$20/yd. When you go through and complete the assessment, can you specify how you are deciding the cost? A large part of the cost is transportation, which is important for this project. The project team estimated that the cost can be \$10-\$100/cubic yard depending on a variety of factors.
- James said that he can see how you can model for other interventions, but for dredging would you model what happens during dredging or after? If after, how much material would you model, how much removal, and would the data go deep enough to see how much phosphorus would be at the surface after? Clelia said that the model can assume that you remove everything suddenly, but you can also simulate a progress in the dredging, such as removing phosphorus by a couple of cells in the model then running the model to see if you see any improvements. Then the model assumes steady state. Ken noted that hydraulic dredging may not lead to much phosphorus release.
- Andrew noted that the team would like more feedback on how to manage the current situation with COVID and uncertain field sampling. He asked what the TAC thinks the options for moving forward are? Neil suggested that this could be addressed during the first Project Advisory Committee meeting.
- Matt asked the TAC to notify him if you would like to serve on the Project Advisory Committee.
- **Leigh made a motion to approve the workplan pending edits submitted to Matt by the end of this week. Jenn seconded. All in favor, none opposed. Breck and Andrew abstained.**

**Final report review: Refinement of Critically Needed Assessment Tools for Tile Drainage Phosphorus Loading in the Lake Champlain Basin, *Chris Kopman (Newtrient) and Mike Winchell (Stone Environmental)***

- Chris Kopman and Mike Winchell presented the final report. Chris provided a background on Newtrient and the project's timeline.
- Mike reviewed the study objectives and the criteria used for selecting sites for calibration. He reviewed characteristics of each site and provided an overview of the

APEX model setup and initial parameterization, including limitations, and their calibration and validation objectives and approach. He shared the calibration and validation results and described how the model can be used for global calibration. He described that if they were able to obtain accurate soil descriptions, the model could be made more accurate for site-specific calibration. He then described their conservation practice and manure management scenario modeling process and results.

- Chris described the innovative manure processing technologies used within the scenario modeling and Mike described the scenario model set-up and results. Mike provided a summary of the project's conclusions.
- Eric Perkins stated he wasn't surprised that manure injection had a limited modeled effect for tile-drained fields, but was surprised that the modeling showed manure injection had a limited impact on the surface runoff components. The literature suggests that manure injection has more of an impact.
  - Mike replied that he was also surprised by the modeled results. His current theory is that there is still interaction occurring between where the manure is placed and the upper soil layers due to tillage.
  - Eric requested this be explained in the report.
- Breck asked about Figure 15 on page 55 of the report. He suggests that the dots representing 1-10 year practices (blue) correspond to the dots on the right representing 10-20 year practices (orange).
  - Mike agreed. It is not necessarily the case that the dots correlate to the same practice. The figure will be modified.
- Breck suggested that the observed versus simulated average annual TP loads, found for example in Figure 2, should not have their regressions forced through zero as it often elevates the  $R^2$ . Rather, it should be shown as a 1:1 graph. Mike agreed.
- Eric Perkins added that he is glad that the project investigated the effects of innovative manure processing technologies.
- **Breck introduced a motion to approve the final report pending the incorporation of any comments/edits from TAC members submitted to Matt by Wednesday, April 8. Angela seconded. All in favor, none opposed.**

#### **Final report review: Volunteer cyanobacteria monitoring program, *Lori Fisher (Lake Champlain Committee) and Angela Shambaugh (VTDEC)***

- Angela presented on the 2019 Cyanobacteria Monitoring Report. The report showed the stations monitored in 2019 and how many samples were collected. She showed the different ways potential cyanobacteria blooms are assessed and provided examples of the number of blooms that occurred in smaller inland lakes and Lake Champlain. Angela explained that a seasonal severity index is in development to evaluate change in the frequency of cyanobacteria blooms over time and between sites.
- Lori discussed the Lake Champlain Committee's contributions to the Cyanobacteria Monitoring Program, centering on coordinating the volunteer monitoring efforts.
- Breck asked a question regarding Figure 6 in the presentation (the % of total reports). He stated that it looks like there have been fewer low and high reports since 2012 but that this change also coincides with the introduction of the visual assessment method. Angela answered that this apparent change could be a methods artifact, noting that UVM collected the data following a different protocol that made it hard to interpret. In some ways it seems we are seeing fewer blooms in some parts of the Lake. Direct comparisons between the UVM collected data and newer data are difficult because the UVM samples were based on water quality analyses and there are no visual records of what the water looked like.

- Andrew referenced the plot of inter-annual availability. He said the Missisquoi data were interesting, and noted that last year there were a lot of alert reports, which differs from the monitoring data his team has collected. Angela said the primary sampling locations are along the shoreline, and that there's a difference between the shore vs. the open water. She noted that satellite data could be used to investigate this difference but that they haven't had the capacity to get that going.
- Neil noted that the Lake Champlain South results showed an apparent increase, and that this may be explained by the increase in monitoring reports there. He said that we will need to be careful of our use of this dataset when it comes to the State of the Lake report.
- **Jenn moved to approve both the VTDEC report and the LCC final report pending any additional comments sent to Matt by Wednesday, April 8. Bernie seconded. All in favor, none opposed. Bridget and Angela abstained.**

**Workplan review: Identifying and Fixing Erosion Issues on Private and Park Roads in the Lake Carmi Watershed, *Linda Blasch (Northwest Regional Planning Commission)***

- Linda Blasch and Amanda Holland presented the draft workplan. Linda provided an overview of the project timeline and described each task and the budget.
- Neil asked if NRPC thinks landowners will be wary about signing operation and maintenance agreements.
  - Linda answered there is always some concern. Amanda added that she believes it will depend on the practices to be installed. She has seen landowners sign O&M agreements when installing shoreland projects in the past.
- Neil stated that an option may be to bring external services in to complete O&M activities. This may be feasible with the new clean water service providers in Act 76. This is not something to promote now because it isn't certain. Neil also requested that NRPC keep Karen Bates at VTDEC involved in the project.
- Eric Howe stated his appreciation of the clear presentation and cost-effective nature of the proposal.
- Mae Kate asked TAC members to consider membership of the Project Advisory Committee. Jenn Callahan suggested Jim Ryan from VTDEC. Matt added that the confidential review committee members would be members of the committee. If any other TAC members are interested please contact Matt.
- **Jenn moved to approve this workplan pending any edits TAC members sent to Mae Kate by Wednesday, April 8. Breck seconded. All in favor, none opposed.**

**Interim report review: 2019 Long-term Monitoring Program, *Pete Stangel and Angela Shambaugh (VTDEC)***

- Before the presentation, Matt noted that the potential upgrade to the Long-term Monitoring Program will be presented to the Steering Committee for consideration in April and if approved, would begin next field season.
- Pete gave a brief presentation outlining the 2019 Long-term monitoring program annual report.
- Neil noted that the wastewater phosphorus load table showed a relatively low phosphorus load but a relatively high flow figure for 2019. Angela said there are several factors, possibly including optimization and that this is the first year wastewater treatment plants are reporting online.
- Matt noted that he is working to redo the analysis that was done by Eric Smeltzer et al. ~10 years ago to do a comprehensive examination of all the in-lake data.

- Matt noted that the QAPP and workplan for this project are now on a 5-year cycle. If the LTMP upgrade is approved, the QAPP will need to be updated next year, but for now the current documents are approved through 2023.
- Angela said that all VTDEC sampling is suspended at this point due to COVID-19 precautions. The VTDEC temporary seasonal technician has not been approved for this season.
- **Jenn moved to approve this report pending comments sent to Matt by Wednesday, April 8. Breck seconded. Fred and Angela abstained. All in favor, none opposed.**

#### **Other notes**

- Neil noted that the Steering Committee is meeting April 14th and 15th to review FY20 technical proposals that the TAC approved for consideration. Please email Neil and Matt any thoughts and guidance.
- Neil said that the State is carefully considering the COVID-19 situation. Currently, the State is on hold for hiring.
- Matt asked the TAC members to send updates about their work and organizations, including COVID-19 impacts. He will distribute these updates to the TAC by email.