

**Lake Champlain Basin Program  
Technical Advisory Committee meeting  
November 6, 2024, 9:00 AM – 12:30 PM**

**Held remotely via Microsoft Teams**

**Approved TAC meeting summary**

**TAC Members:** Jennifer Callahan, Ryan Cunningham, Laura DiPietro, Laurie Earley, Michele Fafette, Curt Gervich, Peter Isles, Neil Kamman, Steve Kramer, Margaret Murphy, Bridget O'Brien, Helen Polanco, Andrew Schroth, Daniel Tremblay

**LCBP + Lake Champlain Staff:** Mae Kate Campbell, Eric Howe, Meg Modley, Matthew Vaughan, Sonya Vogel, Sarah Coleman, Sarita Croce, Erin Vennie-Vollrath, Colette Ward

**Guests:** Rebecca Diehl (UVM), Kristen Underwood (UVM), Brendan Wiltse (PSC AWI), Dave Braun (Stone Environmental), Roy Schiff (SLR)

**1. Updates, announcements, public comments**

- Laurie (USFWS): Out staff started lampricide treatment on the Winooski River yesterday. We had planned to do the treatment earlier in the year, but it was delayed because of flow levels. We will be aiming to get on the Missisquoi River next week.
  - Neil: Sounds like I missed some important news - Brad is moving to Wisconsin?
  - Laurie: Yes, he will wrap up before Thanksgiving. Our posting to fill his position closes today. I will be re-joining the TAC in the interim.
- Laura (VTAAF): We just passed two rules in VT – the first is a revision of an old rule for cost share management for water quality best management practices (BMPs). The reason we had to revise the rule was to update language since it was written in the 90s. The only other change was modifying the process for petitioning the Agency of Agriculture, Food, and Markets (AAF) to require BMPs, which was not widely used. It was modified so that the party filing the petition is now responsible for mailing the packet to the farmers they are petitioning. The other is a new rule, which regulates who can write nutrient management plans by instituting a technical certification process.
- Margaret (VTFWD): Our commissioner is leaving us, announced this morning. I am not sure what the interim will look like, but we will be looking for a new commissioner.
- Laurie: The Lake Champlain Fish and Wildlife Management Cooperative has decided to stop stocking trout. Currently, Vermont is the only group stocking lake trout, but will stop after the spring of this year due to evidence of increased natural reproduction.
  - Matt: How long-term do you think this decision is, could stocking be started up again if there is an adjustment to be made?
  - Margaret: Absolutely. We will be monitoring and are working on establishing a process to make that decision and outline how that will work. The current

program focuses on juveniles. There is some concern about the forage base, but we will continue to monitor.

- Laurie: Lots of fisheries updates today, but one more. As of this week it appears that last year's record return of 212 Atlantic Salmon to the Winooski River has been surpassed.
  - Margaret: For the Winooski fish lift - 217 was the latest number I heard yesterday. Also, Ed Weed started their salmon egg take this week.
- Erin (NYSDEC): The New York State Department of Environmental Conservation (NYSDEC) is undertaking surveys – fisheries folks for Atlantic salmon in the Saranac and Bouquet. Last month we were collecting info from the public on winter rock salt use and awareness of environmental and health impacts on rock salt use.
  - Matt: Lake Champlain Sea Grant (LCSG) has done a lot of public surveying work, and we have results from the Adirondack Watershed Institute (AWI)'s work in Lake Placid that is relevant to this discussion.
- Laura: I had a conversation with our lab about PFAS testing. There's a process of getting certified to run tests. They are going to work on Method 533 for drinking water to get certified. The other method, 1633, covers surface water, soil, and fish. They are not seeking certification in Method 1633 currently as they work to evaluate if there is a potential user base and costs. If you just need a sample and it doesn't need to be verified, that's one thing, but accreditation for official certification is another process. I am happy to be in communication.
  - Neil: The Vermont Agriculture and Environmental Laboratory (VAEL) has gone through a rate structure reevaluation and will likely be increasing costs. That's something for the LCBP Steering Committee to consider, but flag for others who are reliant on VAEL. It's been over a decade since a rate adjustment has happened.
  - Laura: Around \$800,000 of AAFM's budget was supplementing the lab shortfall, which was not sustainable.
  - Matt: Would it be helpful for you to know PFAS sampling demand and what's coming up?
  - Laura: For surface water, soil, and fish, the lab will be able to run samples, it just won't be accredited. The blank evaluation and sample collection methods are particular. If there is need for accreditation, they would like to know that.
- Neil (VTDEC): The Clean Water Board has opened its annual budget process and is seeking public comment. Please circulate this information to your network. NY invested parties are welcome to comment as well.
- Meg (LCBP): The 2024 Boat Launch Steward field program ended on 10/14. We have decommissioned gear and are no longer checking boats as the recreational season ends. Last week, we had a monitor collect a suspicious looking clam in the south lake, which has been confirmed to be the basket clam. Basket clam has been known to occur in the Champlain Canal and some inland lakes in the Lake Champlain basin. A press release is forthcoming. We are going to collect more data to determine if there is an established population, but it is likely we now have a 52<sup>nd</sup> established aquatic invasive species in Lake Champlain.

- Matt (LCBP): The Research request for pre-proposals (RFPP) has been open for several weeks and closes on Friday. Please circulate to your networks. Other open RFPs include Stream Wise and economic valuation opportunities. We circulated award notices for the Land Acquisition program today and are excited to get that program going. Core program descriptions are now going straight to the Steering Committee instead of being reviewed by TAC; if you have any questions or feedback, please let us know. We will be sharing review materials with TAC between this meeting and the December meeting to form a recommendation to the Steering Committee. Matt reviewed the pre and full proposal evaluation process and timeframe.

*Review and approve summary of previous TAC meeting*

Motion: To approve the October 2024 TAC meeting summary

By: Jenn

Second: Daniel

Vote: All in favor

Abstentions: Neil

2. **Workplan review: The effectiveness of natural infrastructure in building flood resilient communities in the Lake Champlain Basin** (Dr. Rebecca Diehl, UVM, and Roy Schiff, SLR)

- Rebecca shared a presentation and provided an overview of the project. The project goal is to define the landscape potential of floodplains within the Lake Champlain Basin to attenuate floods in order to understand the flood resilience co-benefits of clean water projects. The project will also provide specific guidance to two communities that are vulnerable to flooding; those communities will be selected during the project in consultation with a project advisory committee. Rebecca provided background on the modeling approaches that will be used in the project, which includes both simple and complex modeling representations to best address questions at different scales. Project objectives include:
  - Developing modeling tools
  - Undertaking basin scale assessments of landscape potential
  - Developing watershed scale guidance on the value of floodplain reconnection
- Project tasks include:
  - Develop QAPP
  - Identify target communities in consultation with a project advisory committee
  - Data collection and model development at target communities
  - Quantifying floodplain access upstream of riverside communities
  - Describe relationship between floodplain access and flood hazard change
  - Evaluate floodplain restoration projects upstream of target communities

Questions and Discussion

- Margaret: This is an exciting project. I am curious – in your scenarios, is there a way to look at aggregation to reconnect floodplains as opposed to lowering?

- Rebecca: The basin scale analysis is to better understand floodplain storage potential. The 3<sup>rd</sup> objective considers floodplain modeling and looks at what interventions are realistic.
- Matt: Can you talk more about the level of effort and data required for field surveys? Resolution, spatial extent?
  - Roy: We do a lot of flood mitigation work and are in the field designing flood mitigation projects. We get many questions like the ones that will be answered in this project, and it will be great to have this knowledge. Field methods are going to be defined better once we know the communities we are targeting.
  - Matt: Will that inform the high-complexity modeling, or the lower as well?
  - Rebecca: Field surveys are more targeted at the high-complexity models but could affect the low-complexity models too.
- Curt: Over time, as the energy dissipation zones are inundated more frequently, do they become less effective?
  - Rebecca: That's not something that stands out in my mind as a process I've seen documented. In some ways, recurring floods could help improve the "slowing the flow" approach, since more complex features in the topography will be re-invigorated (e.g., scouring channels, depositing wood). Broadly, the details of those features have an impact, but are less important than the bulk of the storage being provided.
- Sarah: For the project advisory committee (PAC), it looks like those folks are mainly engaged in task 2. Will they be contributing throughout the project, especially in terms of other ongoing work?
  - Rebecca: The idea to convene a PAC came out of specific feedback in thinking about the need to pick two communities. I don't see why they couldn't stay engaged in other parts of the project. The other piece is the broader model and implications. Working within communities after they are identified will be a different invested party and audience, so we may need to have different parties involved.
  - Matt: We often have TAC member engagement on PACs as well. Let me know if you are interested!
  - Sarah: I'd like to be involved.
  - Matt: Point people on this project are Jamie, Curt, and Michele.
- Laura: I have a question stemming from a recent farmer meeting. Generally, what you are looking at is flooding, inundation, and how to get more storage, not erosion, but I am curious about model inputs? A data point that struck me recently is that the town of Huntington buys lots of gravel every year to resurface roads, so that gravel can be an input to rivers in interim floods. How much of the inputs that are going in, or impervious surfaces that are increasing flows, are inputs to the models? Is there potential for doing some harvesting to address these gravel inputs?
  - Rebecca: That's an important question - people are asking about channel filling, sediment mobility and fluxes. We are not focused on that in this work, but it's a super important question to ask. It's tied in in terms of fluxes after these floods and how channels are reacting. Impervious surfaces will be an input in the high-

complexity models, but not something we are specifically looking at in this project.

- Laura: We could get data from towns – the amount of gravel they are purchasing each year, which is presumably going into the rivers.
- Roy: The scale of these gravel inputs, although it is massive, in these big flood volume scales is a smaller piece of it.
- Neil: Accurately reflecting public sentiment towards digging the rivers out. Something to consider.
- Mat: I loved your illustrations, but figure 4 in the workplan confused me. Could you explain if the dots are downtown centers, restoration projects? And in the next panel, does that line represent one of the dots?
  - Rebecca: Each dot is a hypothetical scenario and represents a downtown community for a given scenario. Within that, stratifying it and accounting for the impacts of slope, the lines become the statistical model that describes that scenario.
  - Matt: So the panel on the right is a relationship that might describe 4 dots in the panel on the left.
  - Rebecca: Yes, it's generalizing to communities in a particular type of landscape setting.
  - Matt: So big picture, this is something you'd be able to produce for a community from the low-complexity modeling.
  - Rebecca: Yes, and it could be many dots for one given community. This is what the landscape can provide.
  - Matt: You could make a similar set of plots with less uncertainty for the two communities that are targeted.
  - Rebecca: Yes, and the diagram could be more specific as it will consider what is actionable within those communities.

*Review and approve the natural infrastructure and flood resilience workplan*

Motion: To approve the workplan

By: Laurie

Second: Margaret

Vote: All in favor

Abstentions: Andrew

### 3. **Final report review: Lake assessment and watershed action planning for New York Lakes (Dr. Brendan Wiltse, Paul Smith's College Adirondack Watershed Institute)**

- Brendan shared a presentation. This project had two main goals – updating assessment data for inland lakes on the New York side of the Lake Champlain basin, and developing management plans and guidance for communities that are scalable to broader areas
- Updated assessments across the basin were required since data that existed was >20 years old, not reflective of significant changes that have occurred in terms of land use and land cover in the Lake Champlain basin in NY over that time.

- Methods: Lakes sampled monthly from June-September, filters for chlorophyll, profiled lake for temperature, dissolved oxygen, conductivity, and pH. Surveys for aquatic invasive species (AIS) presence were undertaken. 18 lakes were sampled by volunteers, and the remaining lakes (32) were sampled by Adirondack Watershed Institute (AWI) staff.
- Multiple aquatic invasive species were identified (water chestnut, etc.), and cyanobacteria blooms were observed in waterbodies where they hadn't been identified before. Blooms indicated a need for more research on the harmful algal blooms (HABs) in these lakes and ponds, which will start next year.
- Results: Trophic status (determined by Chlorophyll-a, total phosphorus, Secchi) results indicate that most water bodies were mesotrophic, followed up oligotrophic, and eutrophic. Most sampled lakes were of circumneutral acidities. Road salt influence varied by lake. Most lakes/ponds had no observed aquatic invasive species, however as many as four AIS were observed in just a single waterbody. Most lakes/ponds had no observed HABs, but at least one had three observed HABs.
- With the input of the project advisory committee, 3 lakes were selected for action plan development.
  - Lake Roxanne (meso- to eutrophic, elevated P and N, new AIS detections in 2022)
  - Lake Colby (mesotrophic, high Cl, AIS present, HAB reported in 2022, DEC summer camp, public beach, popular spot for recreation)
  - Mirror Lake (oligotrophic, road salt impacts, no AIS, HABs reported in 2020 and 2022, engaged community)
- In 2023, monthly sampling continued on the three lakes selected for action plan development. Action plans are aligned with the LCBP's *Opportunities for Action* management plan, and include feedback from communities.

### Questions and Discussion

- Erin: Where will the lake data report live? How can we share it with the public?
  - Brendan: The data report is currently on the AWI website. Action plans will be posted to our website, and the action plans are already being used by the communities. There is energy to move these plans forward as much as possible.
- Margaret: Great work! I'm curious how you leverage this work for other lake/watershed associations. This style of action plan seems like a more usable document for members of the public. Also do you have plans to incorporate any biological data into these documents?
  - Brendan: We wanted to make a standard operating procedure on the development of these action plans such that a watershed group could do this on their own without spending too much money. In terms of biology, I don't really know. We could have done a better job of pulling info from fishing communities.
- Neil: I would love to have you forward these over to the Lakes program for the state of Vermont, I like how these are structured compared to what we do in VT. It would be great to make this communication between the teams.
  - Brendan: I would love to share this information.

*Review and approve lake assessments final report*

Motion: To approve the final report

By: Margaret

Second: Jenn

Discussion: None

Vote: all in favor

Abstentions: None

4. **Workplan review: Extended monitoring of phosphorus filters to evaluate changes in performance** (Dave Braun, Stone Environmental)

- Dave shared a presentation on the workplan for the extended monitoring phosphorus filters to evaluate their performance project. Filters are installed in the outflows of stormwater ponds or tile drains in St. Albans, South Burlington, and Lake Carmi. Following installation, these filters were monitored for 8-12 months after installation. The Carmi-area filter was recently installed and is still being actively monitored. A longer-term dataset is needed to evaluate performance over time and determine if these types of filters are a management solution that could be implemented more broadly across the basin.
  - Project tasks: QAPP, monitor flow rates and water quality parameters in 2025 and 2026 (monthly grab sampling) at each site, data analysis of new data, cost-benefit analysis (would be excellent to have feedback on how to structure this from TAC), and reporting.

Questions and Discussion:

- Steve: With your filters, do you have bypass capability, or do you manage to take all of the flow?
  - Dave: All three of the projects/sites have bypass. One is on a tile drain and it has high dissolved phosphorus typically, but it is more than we can handle on a single filter.
- Laura: Glad to see this extension! You've been through a lot of trial and error, what do you see as the biggest challenge to this next phase of the project?
  - Dave: We have a good handle on the Lake Carmi site. Our first maintenance visit to the other sites will be telling, since any number of things could go wrong. Flow measurements at the Dorset Park site may be required, but it's a tricky installation. I don't worry too much about technical issues. But if we run into a problem, we may have to revisit the scope of the project.
  - Laura: Would you say winterizing and flow levels are the biggest problems?
  - Dave: We have problems with sediment, aquatic vegetation clogging the filters that require maintenance. Human error, difficult weather can also be problems. They are built to be durable, but issues can arise.
- Ryan: I wonder how municipalities and farms may use this in the future.
  - Dave: Not everyone is going to be interested in drainage water management. Most people just want the water gone. If they fail hydraulically in a dramatic way, a farmer checking the structure would notice that. From a chemical standpoint,

there won't be evidence. With that said, I am more optimistic about long-term chemical potential than I am about their structural long-term capabilities. We'll see. I'm optimistic.

- Ryan: Is much known about the agricultural site in terms of flow, chemical info, compared to the municipality sites? Sometimes agricultural drainage systems are inherited, I wonder if these affect the studies.
  - Dave: There is a lot there. If there are standpipes in existence and those are known, it's not a good candidate. If we want some separation to groundwater at the filter site, one of our Lake Carmi filters is too low, and there are implications. From a chemical standpoint, a middle of the road tile drainage system would be cost effective to treat (in excess of 60 mg/L). There are fewer stormwater ponds where this will be useful. But where it is, it works. I advocate for more concentration data on phosphorus outflows from stormwater ponds. Ponds with organic litter accumulated and release dissolved phosphorus. These sites may make more sense for filters than ponds less affected by legacy phosphorus.
- Sarah: It would be great to have information on how these will be managed over time. That will be important to highlight in the final report.
  - Dave: Great point.

*Review and approve P filters workplan*

Motion: to approve the workplan

By: Ryan

Second: Jenn

Vote: All in favor

##### 5. **Discussion: Pre- and post-flood sampling program** (LCBP Staff)

- Matt provided an overview of the conceptual post-flood sampling program. LCBP has received a lot of questions from the media and members of the public on water quality impacts of flooding events shortly after they occur. Our response is based on what we think is true, but it became clear we could be more responsive to these inquiries if we had greater capacity to be responsive in our sampling efforts. We have the Long-Term Monitoring Program (LTMP) which is very successful and long-lasting with consistent methods through time. That program provides regular sampling throughout the field season, allowing us to monitor long-term change, but the resultant data largely becomes available after the field season is over. We've also been increasing high-frequency monitoring through our network of monitoring buoys, which provide data on shorter-term changes. What we are missing right now is the capacity for LCBP to be responsive to partner needs when questions arise due to specific events. We are developing a program to monitor a suite of water quality parameters on a regular basis throughout the year and then in response to flooding events. This differs from other monitoring efforts in scope and study design – our intention is for this program to be quantitative in our approach to data collection, but qualitative in terms of targeting response to a specific event. We envision that this could be the beginning of a program that could evolve



because of the ongoing emerging contaminants program; this program could respond to that framework. Sonya has been interviewing partners (beach managers, parks and rec, state contacts) to discern what is being done now, what could be useful. What we'd like from the TAC is what do you think of this idea in general, types of locations, parameters that could be important to consider, timing, frequency of samples, how to be responsive to needs.

- Sarita: Great idea. You mentioned that people are asking questions about swimming safety - we need to be careful that we don't provide that guidance. In other states, Departments of Health share that guidance. If we provide that guidance, then there can be liability concerns. When you are talking about sampling - will that be immediately following the flooding event, during, or not certain yet?
  - Matt: Good caution. In terms of swimming safety – our goal with this program is not to provide guidance on if it's safe to swim, but to provide data to inform that process. States have guidance that beach managers follow. This would be more to respond to, for example, I've received questions on if there is oil contamination in Lake Champlain following flooding events. My response is that there probably is not, but it would be nice to have definitive data to support that. In terms of timing, our working draft of this program is regular baseline condition sampling (standard set of sites that could be sampled in 1-2 days), and then to capture flooding events it would likely be a day after the flood. We are interested in looking at downstream impacts.
- Sarita: Are you going to write a health and safety plan for samplers to follow to account for protocols for those high flows?
  - Matt: Certainly. I envision physical sampling would follow LTMP protocols, dropping buckets from bridges, so that mitigates risk. Lake sampling would be concentrated at beaches.
- Neil: I've had the opportunity to do day-after tours following flooding events. I'd exercise caution in collecting samples at LTMP sites at that time. Not sure bucket sampling would be representative of some of the parameters we are after. I'd consider a more targeted sampling that reflects what we are hearing is a concern or what could be a concern. Day after when flows are still high is difficult.
  - Matt: Right, our site selection would take those concerns into consideration.
- Sarita: Will you have a protocol to look for a sheen both when there isn't an event and post event? Because of the flow of the lake during those time, the probability of detecting hydrocarbons could be better - thoughts?
  - Matt: That's what I had been doing after floods. I envision for this program, a lot of the value will be non-detects. A lot of what we do in current sampling protocols is target places where concentrations will be highest to ID problem areas, but this program will serve a different purpose to respond to concerns of the public. We'd like to provide useful info to people asking questions. Providing resources and a QAPP with a suite of analytes gives us options.
- Sarita: One concern is when sampling, being sure you're not churning up sediment that could impact results. Would you consider clean sampling during non-flood conditions,

and total and dissolved concentrations of appropriate analytes to provide an indication of how much of the results are from sediment disturbance vs. dissolved?

- Neil: That aligns with LTMP protocols. In recent floods, turbidities were quite high in both the river and lake and took two or more weeks to dissipate. Sediment that may be disturbed during flood sampling would be negligible.
- Bridget: I am curious – is this intention to be a long-term engagement vs. a one-time thing? You'll get very different results depending on the flood. I'd encourage you to work with the health departments since we will have to respond to concerns from baseline sampling if they arise.
  - Matt: We plan to be in communication with the health department throughout this program, including with the opportunity to review the QAPP. We are considering this a pilot currently in what was approved by the Steering Committee. I envision with current funding this could last 2-3 years, then we will look at how useful this is to our partners. I'd like this capacity to sample responsively to remain in place, but the exact process may change over time.
- Neil: Focusing on lakes, beaches, lake segments and when we can get back on the lake after flooding is the highest value we can provide to our partners.
  - Matt: Could think about it that way. When Department of Health guidelines are clear and it's been 48 hours after a moderate storm, that could be the most valuable to confirm.
- Neil: We should have a discussion on what's the magnitude of an event that would cause us to deploy this resource. May be lake segment specific - something that could affect the lake for a longer period? Still need to start with a smaller event to get some baseline.
- Curt: Do you foresee this being carried out in both VT and NY? There's lots of variability in where flooding occurs, especially with summer storms. Time and location sensitive. Curious about the organization of that - volunteers in different parts, ID same locations? Also, I'm curious if we can ID before flooding occurs where the sampling locations will be in specific sub-watersheds, and prioritize locations where we know there are existing concerns or site-specific considerations that would be valuable to people.
  - Matt: The site-specific piece is one way this could be valuable and something we want to target. We want to include NY and are planning to do specific sites on each side of the lake. We could coordinate with the State University of NY (SUNY) LTMP team if it's not more onerous than their existing sampling. Right now, we are envisioning we'd run this internally and can respond as needs arise.
- Sarah: There's an inherent environmental justice (EJ) question to this type of program – I'm wondering how we can prioritize EJ communities in our protocol and response and variation in impacts to different communities while considering time and space distributions of floods.
  - Matt: Happy to incorporate.
- Bridget: Are you planning any additional pathogen testing aside from *E. Coli*? More chlorine resistant pathogens can remain a concern when wastewater treatment plants are doing emergency disinfection.
  - Matt: We'll follow-up with you on those concerns and if you have lab recs.

- Andrew: I'm struggling to wrap my head around this in the context of scale and objective. You'd need to establish temporally effective background concentration of these sites before an event of concern. Do you have more thought on scope?
  - Matt: I envision this as different from a typical research study with comprehensive info on baseline. We should have some baseline, but we're really trying to be responsive to concerns. I expect many things we test for will be non-detects, which will be valuable to partners and the public. Targeting specific sites if concerns arise would be in addition to normal operating procedure of baseline sites close to mouths of tributaries and public access sites. We'd have a QAPP in place where we can be responsive to the needs of our partners, not a research question to establish how flooding affects concentrations.
  - Andrew: Would you incorporate new measurements into the LTMP, then look at how much responsive sampling deviates from the LTMP?
  - Matt: I was thinking we should duplicate LTMP parameters at new sites and different times, but an alternative is we could add parameters to the LTMP to get more background.
- Curt: I'm concerned and interested in informal waste dumps that are often in floodplains. There are many of these types of sites in the Adirondacks, and they tend to be more of a problem during flooding I assume. This program could be a way to understand the impact of those. This might not be the project to do that, but I'm curious if this type of project could help identify finer geographic scale water quality concerns.
  - Matt: This could evolve, and we'd need to think carefully about who we are responding to. This program would give us the capacity to address questions on contaminants of concern.
- Neil: Plan is to put QAPP outline together?
  - Matt: Yes. After gathering feedback, our next step is drafting a QAPP so we have that approved with NEIWPCC and EPA and ready to use when the spring comes around. We have a process to update the QAPP if new needs arise. Anyone want to volunteer to review the QAPP or be more in touch on this?
    - Bridget, Curt. Neil wants updates. Peter Isles.
- Helen: Discussion about pre- and post- flooding. Wanted to clarify if the petroleum is a separate idea? Could satellite imagery and screening be considered for that part?
  - Matt: Interesting, but likely outside the scope of this study. For petroleum contamination, I don't expect it to be an issue, more of a ruling out type of sampling.
  - Helen: I thought of it from the perspective of looking at satellite data is less intense than going out there.
  - Matt: I'm not familiar with remote sensing for low levels of hydrocarbon contamination, but worried about issue of when images are captured vs. when floods are occurring.