

**Lake Champlain Basin Program  
Technical Advisory Committee meeting  
Wednesday, January 3, 2024, 9 AM – 12 PM  
Held remotely via Microsoft Teams**

**Approved TAC meeting summary**

**TAC Members:** Jennifer Callahan, Bryan Dore, Laurie Earley, Peter Isles, Neil Kamman, Steve Kramer, Bridget O'Brien, Jamie Shanley, Daniel Tremblay

**LCBP Staff:** Mae Kate Campbell, Colleen Hickey, Eric Howe, Steph Larkin, Elizabeth Lee, Ryan Mitchell, Meg Modley, Matthew Vaughan, Sarah Coleman, Sarita Croce, Erin Vennie-Vollrath

**Guests:** Nicole Balk, James Pinheiro, Dan Albrecht

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

- Laurie (US Fish and Wildlife Service): Andrew Milliken moved on to another position then retired. Our region has decided to backfill his position as a project leader, so that position will focus on just the Lake Champlain office. We will have a series of details in the interim, I will be serving in that position from April - May. We are hoping to hire for that position over the summer. We will be merging with another complex and will become the New England complex. There is lots of change going on in our region and transition over the next couple months.
- Neil (VT Agency of Natural Resources): On behalf of the State of VT our general assembly is reconvening starting today. They will be picking up a bunch of bills dealing with resilience and funding recovery efforts. There are some interesting bills coming up – including topics like dam safety, natural resources.
- Jamie (USGS): There was some near-miss flooding (from the perspective of Montpelier) in December – we came close, but the water didn't get to street level. Other areas of the state were hit harder. The US Geologic Survey (USGS) is working with University of Vermont UVM folks to install a new gauge on the Lemon Fair River. The projected start-up date is this summer, and the funding mechanism is still under discussion. The rationale is because that location is a highly wetland dominated system, similar to Otter Creek, so we'd like to learn more about it.
  - Neil: Is this one funded through research dollars through UVM?
  - Jamie: I believe so. I know Kristen Underwood is involved.
- Matt (LCBP): LCBP is hitting the ground running in the new year. TAC reviewed 13 major project workplans. The admin team at LCBP and NEIPWCC are working hard to get those contracts underway. For next year's budget, thank you again for reviewing proposals. The Steering Committee moved forward TAC's proposed recommendation, and advance letters went out. We will turn those around for TAC to review and discuss at our March meeting. We received a question from a former Citizens Advisory Committee (CAC) member who was confused about what looked like a potential change

in lake level. Not sure we mentioned this previously at TAC, but there was recently a change in vertical datum. The lake level gauge that has been operating for many years has been operating in NAD29, but last year they took public comments on making the change to the NAD88 datum. As a result, the official flood level for Lake Champlain has changed to 99.5 feet. If you want to convert from the old to the new datum, it's about half a foot (depending on the station) and that information is available on the NOAA website. In my observation it has caused some confusion from the public.

- Neil: Julie asked me for some information after the flood: if the lake level is really high after the fall, do we need to worry about spring flooding? I looked at historical data and, in my analysis, it looked like the lake always dropped no matter what happened in the fall. The lake will always recede substantially over the cold weather months, correct? Even if we get thaws or rain on snow events.
  - Jamie: There are fewer inputs in the winter since the water is stored in snow, so we tend to be continually draining that level through the winter. Whether it will have an impact between now and through the melt period, I'd need to look at the data. I imagine it would have some effect since the levels are so high going into the winter, but it would likely be nominal.
  - Neil: The gauges actually peaked higher in Addison County in December than they did in July.
  - Matt: Back to the datum issue, you just need to be a little more careful with which you are using when you go back and use historical data.
- Matt: Lake Champlain Sea Grant will be hosting a road salt research symposium that will be held on January 11th.
- Meg (LCBP): Thrilled to say we have 10 boat launch stewards that are planning to return this summer. We have lots of applicants so far, but if you know folks who would be interested, send them our way.

*Review and approve summary of previous TAC meeting*

Motion: To approve the summary from the December 2023 TAC meeting

By: Laurie

Second: Jenn

Discussion: Neil: Minor edits added for precision reflecting my comments on Clean Water funding.

Vote: All in favor

Abstentions: Laurie

## **2. Informational presentation: Champlain Hudson Power Express Remediation Funding** (Nicole Balk and James Pinheiro, NYSDEC)

- Nicole and James presented. The Power Line project established a trust to offset any potential impacts they might have on the lake or its fisheries. A governance committee was established to include representatives from NY agencies and organizations to review and plan potential projects. Nicole reviewed committee membership and criteria used to evaluate potential projects. Priority projects will be identified for Lake Champlain,

the Hudson River, and New York City. For Lake Champlain, 4 priority focus areas were identified:

- Aquatic invasive species (AIS) management
- Fish population assessment
- Fish habitat assessment
- Critical habitat restoration
- Funding will be allocated in 5-year cycles following an adaptive management plan. Additional funding is being held for non-priority projects that may be identified as identified priority focus area projects begin to be implemented.

#### Questions/discussion

- Neil: For the benefit of others that haven't been involved in review and permitting, can you describe what the Champlain Hudson Power Express (CHPE) is doing?
  - Nicole: This project will run power from Québec, all the way down the length of Lake Champlain on the New York side, through to New York City as the final destination.
- Neil: For the academic request for proposals (RFP), is there any opportunity or has there been discussion with the LCBP technical team about co-funding or coordinating the annual research offering with what you might be doing next year? Is there an opportunity to work together to amplify priorities?
  - Meg: I'm looking forward to further collaboration. Fish folks are more focused on habitat assessments. Now that we know this funding is going to move forward, I think we have a lot more conversations to have between the TAC and the CHPE advisory groups.
  - James: LCBP has been really critical in molding and developing these priority projects, and Meg has contributed immensely. There is room for further conversation, and I've steered the governance committee towards LCBP as a hub for coordination, which will be critical over the next year or two.
  - Nicole: The RFPs are still in development. One of the key components for potential projects will be leveraging ongoing work and providing matching funds.
  - Meg: The Lake Champlain Fish Cooperative team was also very involved in shaping this work.
- Neil: This is a lot of money that didn't exist before. LCBP is also seeing a "high-water mark" of funding. The capacity of smaller organizations to take advantage of these funds may not be there yet as we see this rise in funding. It may benefit the robustness of the program moving forward if we can squeeze some funding forward through these funding cycles.
  - Meg: The details of the AIS funding does include the scoping of a comprehensive early detection monitoring program for Lake Champlain. The idea there is to bring together monitoring programs from each of the 3 jurisdictions to identify gaps and ensure future work is aligned with those programs. Other work includes economic assessments and funding to do an AIS transfer study through the Chambly Canal.

- James: This is a 30-year trust, and we are seeing the first 5-year priority plan now. Granted, we have to compete with the other geographic areas, but when it comes to Lake Champlain projects, these priority projects will be the building blocks we use for the next 25 years.
- Neil: I'd like to think more about potential collaboration.
  - James: We'd definitely like to reach out more to technical partners throughout the watershed.
  - Neil: I feel like someone with technical knowledge from your working group should be sitting with our TAC.
  - Meg: Laurie and Margaret are also heavily involved. I would like Nicole and Jim to share this presentation at the Steering Committee as well.
- Meg: Do we know if Wilcox dock will be accessible to the public in the 2024 summer season?
  - Nicole: We expect that access may be limited as construction materials will be staged there.
  - Meg: Good to know. We had a boat launch steward stationed there last season. I will get in touch with the town to confirm if the launch will be open.

### **3. Review and discussion: *2024 State of the Lake and Ecosystem Indicators Report science and messaging* (LCBP staff)**

- Matt provided an overview of the *State of the Lake* (SOL) report purpose, use, and development process. Reminder that SOL is highlighted with bolded statements that are take away messages that are followed by more detailed text.

#### Drinking Water

- Matt noted that LCBP hopes to provide more information about drinking water quality. He shared a map that would have drinking water intakes to see where water is being distributed to communities and statistics about how many people are served and possible infographic sidebar. Other mentions have been made about regulated contaminants and we want to provide clarification and more detail.
- Neil: This is an interesting idea. Both NY and VT DEC's oversee drinking water systems including maintaining database systems. The data is available and is centrally located with EPA. Also, an awareness about thresholds is of note, because the US Environmental Protection Agency (EPA) is always considering new thresholds, for example for lead and copper, and possibly a new criteria for PFAS.
- Matt: We will be focused on testing data from 2021, 2022, and 2023. Also, the thresholds might be influenced by drinking water treatment and not the water quality in Lake Champlain. So, we would first look at the data and see what there is to highlight. We have used the language "rarely [do not meet quality thresholds]" because we have not had the data to accurately say.
- Bridget: I like the idea of showing the populations served by drinking water, but that data is not available.
  - Neil: Maybe we can get input from the state drinking water.

- Jamie: I like the concept- can you adjust the size of the dot to reflect the number of people served?
  - Matt: It will depend on what data are available, but sure.

## Mercury

- Matt reviewed the existing mercury in fish tissue graphic and ideas for emphasizing the takeaway message of this data more clearly for readers. He provided an overview of several potential infographic presentations on this topic.

Do we need a take home point about how mercury consumption impacts human health? (just for our tech team notes on this graphic) - good thought

- Neil: I like the graph with just 2017 data from an aesthetic standpoint, but fish can swim up and also swim down.
  - Matt: I was concerned about fisheries folks worrying that the fish are not in their proper depth habitat area.
- Sarah: Is there no X axis on this plot?
  - Matt: Correct, this is like a jitter plot.
- Neil: What's the likelihood we are going to get the 2022 data?
  - Matt: I think pretty high. I've seen the raw data, but I haven't seen the length-adjusted, average concentration data by species.
- Neil: The data from 2022 are either going to show us a continued increase or it's going to pop back down. That may dictate whether we ignore the temporal dimension or not.
  - Matt: I know for lake trout it's looking lower than it was for 2017.
- Laurie: Personally, I like the first new one since it shows us data from other years, but for conveying the take home message to the public, the second new one may be better. But I agree with Neil that if we do get 2022 data, it may bend us towards showing more temporal data. Adding more years to the 2021 version could start looking cluttered.
- Neil: There are a lot of data that are not conveyed in the SOL report, for instance, we don't mention differences by lake segment in this panel. I think it would be interesting to see what the 2022 data look like and then come back to this question.
- Sarah: If we go with the jitter one, it may be better to size the fish according to the mercury PPM.
  - Matt: We've received feedback from the public that sizing things by a value is difficult to interpret. With a fish, since they are animals with different lengths, that may be more difficult.
  - Laurie: I think the threshold is important to include.
- Jamie: I like keeping the scale so you can see the EPA limit and agree we should wait to see the 2022 data. I generally like the 2<sup>nd</sup> new graph. I worry that if the data don't go back down in 2022, conveying all that may confuse people. Good discussion here, we've outlined pros and cons of both approaches, good to wait to see what 2022 data looks like.
- Matt: Good to hear there's support for both new approaches.

- Neil: We present this in terms of EPA thresholds, but the messaging is that fish is a good part of your diet when consumed following guidelines. Could be good to include consumption guidelines, another way to show data could be how many fish you can eat.
  - Matt: In 2015 there was a big figure that included advisory info, and it can get very complex since there are differences for women, children, etc. It would be hard to add part of that back and portray the guidelines accurately.
  - Meg: Graphic was complicated. Dartmouth and UVM were working to talk to health department folks to consider if there could be a lake-wide fish consumption guideline. In the states, fish consumption guidelines are generally based on collections from throughout the states and may not be representative of Lake Champlain specifically.
  - Bridget: We are advising the Vermont fish consumption guidelines currently, so that may be difficult to include.

### Cyanobacteria

- Matt: In previous reports there was general info about cyanobacteria and what it looks like and what fuels it. In 2021, we did more with cyanobacteria data and cyanotoxin analysis data. Lake wide cyanobacteria routine reports were shown in the upper graph for a full lake-scale picture of conditions, then reports by lake segments were provided. A main take away is that St. Albans and Missisquoi Bay can have frequent blooms, but the rest of the lake has fewer blooms. Resource room staff noted that they don't use these graphs very much. There is a lot of info and one thing that is not clear is that blue indicates safe conditions. Matt shared an updated concept for the cyanobacteria reports by lake region graph. The portion of reports with no cyanobacteria visible, low alert, and high alert blooms are indicated.
- Neil: What do you mean the full lake?
  - Matt reviewed the 2021 graph to clarify.
  - Neil: The new graph is perfect from my mind and what I would ask. I am unsure about the general public.
- Bridget: I agree this is simpler. The one question we do get a lot that you don't see in this one is changes over time. I am wondering what the timeframe that was reported for this data is.
  - Matt: I'd have to go back to the analysis but whatever was considered routine we included. Routine would be weekly. If we also want to show the trends over time, that would be another graph or set of graphs. I think the reports are most important to the public. We do have the scorecard that includes the status and trend for each of the lake segments.
- Jamie: I agree that the message jumps out really well in this new concept. I think most should be able to interpret the data here. I wonder if we could do a simple timeline in the upper right that shows total number of reports made each year. I like to see the number of reports over time
  - Matt: We can look into that.
- Matt shared the graphic that shows the number of reports over time.

- Jamie: We don't want to mislead folks that blooms are increasing when we are just getting more reports.
- Neil: To contextualize it, we could note that it represents x numbers of reports at y locations to provide confidence in density of data. Average reports per year do vary; there are generally fewer in the South Lake, for example.

### Phosphorus from Wastewater Treatment Facilities

- Matt: Wastewater treatment facility (WWTF) phosphorus loading reductions is a success story we've highlighted in SOL for years. There is a lot going on in this graphic in the 2021 version. Matt reviewed the proposal for a new figure concept with data compared to loading limits and reviewed pros and cons identified by staff.
- Steve: I like the graphic that you have here (new one with infographic). It reads clearer and flows.
- Sarah: Does the draft new figure effectively control for the number of facilities?
  - Matt: The number of facilities is not, in my mind, relevant to this figure. We are looking here at total loading by jurisdiction compared to jurisdictional limits. We don't have to directly account for it or divide by that total number of WWTFs number since that factor is considered in total maximum daily load (TMDL) limits.
- Neil: "On track" - not sure it's the right verbiage since it considers the maximum allowable limit for loading under the TMDL. Loading limit I believe has a different meaning in Québec. I like the way this new figure explains it - I like borrowing from the New York Times style. I am wondering about the change in the limit - the change in the total waste load allocation in pre. vs. post 2016 TMDL in Vermont.
  - Matt: In previous versions the line did a jump. At some point in my time on the team we got rid of that jump, so now we just compare it to the latest limit. There are pros and cons.
- Erin: I like the new graph. I was going to see - I thought it would be helpful to lay out the limits for VT, NY, and QC just so the reader sees that they are different.
  - Matt: That could be included in the footnote or elsewhere in the text. We try not to overwhelm folks with numbers.
- Jamie: You really simplified the graph, which is the key thing. People may not understand how you got that ratio, but it doesn't take away from the main point. I agree that it still could be useful to include that info on limits. People may not read it, but it would be in there.
- Neil: +1 to side panel infographic portion. VT can certainly provide \$ millions invested. Might be a check-box in there for 2016 TMDL.
  - Matt: We do mention effluent limits, but could be clearer.

### Phosphorus Loading from Tributaries

- Matt: This figure has been done a number of different ways due to data availability . Matt reviewed several new options: keeping the same graph but incorporating it into a infographic-style panel outlining the main points of the graph. Another idea would be to simplify the graph and having a main point with an error bar. This would lose changes over time, folks might not understand the error bar, but simplifies things. Another idea is

to use the style of the new proposed WWTF graph to convey phosphorus data in an infographic style with main points outlined.

- Neil: In this version (current with infographic) I'd clip off the red part that exists between lines so it's more of an area under the curve - subtle change, but might make a difference.
  - Matt: That would be more like the phosphorus from tributaries figure in the 2021 report.
  - Neil: I think that gives you an indication of how not-good things are in a more precise way than the current graph does. It might visually, aesthetically give a more precise opinion.
  - Matt: I agree, people find it effective with the phosphorus in lake concentrations figure, so why not keep same style.
  - Neil: It might be worth it to code up a figure that mimics the WWTF figure just to see what that looks like.
  - Matt: I agree, but I worry it could be busy.
  - Jamie: That was going to be my comment, I think the lines will cross each other. I do like Neil's suggestion of just showing the red area under the curve.
- Matt: Support for pulling out main points and making an info graphic?
  - TAC responded favorably.
- Neil: What do you think about pulling out a bullet contextualizing loading from water input? I'm concerned about 2023 summer being the last point and being high.
  - Matt: We can include the idea of river flow being associated with phosphorus loading.
  - Neil: It feels like that idea should be stated. Climate effects have an influence not withstanding our best efforts to reduce loading.
  - Matt: We will be including climate messaging for sure.

### Other ideas

- Matt: We want to go over some other ideas we have for SOL2024.

### *Contaminants*

- Mae Kate: One idea is to include data on contaminants. We get a lot of questions on this topic. We have text on it, but want to include some data. Lead testing, PFAS, pesticide data. Any thoughts?
  - Bridget: Lead testing in schools?
  - Mae Kate: Yes.
- Sarita: Talk about emerging contaminants in general? Endocrine disruptors in ppm. Like the comments on lead and copper, new requirements are coming out. In addition to pesticides, also PCBs?
  - MKC: We touch on emerging contaminants in the text, but want to expand on what data we have in hand and display graphically.
  - Sarita: 10 years ago, maybe less, there was an incredible article in England where they found that fish, because of hormone discharges to waterways, were changing gender. These contaminants are having a huge impact. We should talk



about some of these bigger concepts. In all honesty, this is going to be a huge issue moving forward. All the ppm things in water that we don't test for. It's a potential area of concern for industry, etc.

- Mae Kate: We will have more Lake Champlain specific data to share in the 2027 report after the emerging contaminant study is complete as well.
- Neil: all three jurisdictions are doing a lot of planning on how to react to PFAS contamination, limits, etc.

#### *Impacts from Beach Closures*

- Mae Kate: We currently highlight the number of beach closures over the 3-year period for each report. We want to add more info on the impact of this to show how many people might be impacted by these closures. We were thinking a buffer analysis to determine population nearby beaches to determine impact.
- Erin: With beach closures, would you highlight impacts on communities with disadvantages in text?
  - Mae Kate: Yes, we could do that.
- Sarah: I have heard from the Lake Champlain Committee (LCC) that town monitoring of beach closures varies from place to place. Some areas may be impacted by cyanobacteria but will not have recorded beach closures.
  - Mae Kate: Yes, and there is some variations in cyanotoxin limits, etc. between states.
  - MV: We will need to make sure the analysis is not misleading due to differences in beaches, public access.

#### *Number of people served by wastewater treatment facilities.*

- Sarita: This can be a guessing game, you might know the number of homes or condos, etc. but you can make a guess based on number of people in the census. Great idea, but be OK with a guessing game.
  - MKC: We could report the number of households/businesses instead of the number of people as well.
- Sarita: I can help make this estimation if needed.
- Neil: Could we use connections?
  - Sarita: Yes, that's perfect and will be easy to quantify. The public identifies with people, not connections. For example, an apartment complex with 150 units is a lot of people.

#### *Shoreline access*

- Mae Kate: We are thinking about the amount of Lake Champlain shoreline that is public vs private. This analysis could complement the public access map in the Thriving Communities section.
- Neil: Will we keep the conservation layer?
  - Mae Kate: Yes, we plan to keep that in 2024 version.
  - Neil: It will be interesting to see what this looks like.

## Climate Change

- Mae Kate: We are also exploring including more climate change info. We included lake freeze over in the last version. We may propose new climate change indicators.
  - Neil: I agree, important consideration.

## Aquatic Organism Passage

- Matt reviewed thoughts LCBP staff have discussed on aquatic organism passage (AOP) messaging. The 2021 version includes a map of historic vs. current landlocked Atlantic salmon habitat in the Lake Champlain Basin which has been popular and will continue to be included in the 2024 version. We will likely modify the existing map to add zoom-in boxes to highlight progress, including the Winooski trap and truck program and Saranac dam removal. Other proposed ideas are a new figure showing road/stream crossings as a bar graph of passable, some passage, or not passable. This could be accompanied by a map showing the assessed crossings or more of a cartoon showing a cross-section of a stream-road crossing and explaining how that can present a challenge for AOP. The final idea would be to incorporate climate and look at how projected changes in climate would affect habitat availability.
- Erin: I like brook the trout work, but I think it would be confusing as presented (screenshot from USGS map).
  - Matt: It would need to be simpler than this, agree.
  - Meg: I liked the idea of showing in a fuzzy way how the higher order streams are important for brook trout while the lower reaches are important for salmon.
  - Laurie: I like how you are linking the two. The headwater restoration will benefit brook trout downstream which will then benefit salmon closer to base level.

## Boat Launch Steward Data

- Meg: The boat launch steward (BLS) infographic will be updated with 2021-2023 data. New decontamination stations are added, and survey figures are updated.
- Laurie: Is it possible to call out the easiest things to do to remind people about the importance of AIS spread prevention?
  - Meg: Absolutely - we typically highlight those in the "what you can do" sections of the report.
  - Laurie: We could include that right on the BLS graphic with available space.
- Meg: The waterbodies visited prior to Lake Champlain graphic has also been updated.
- Neil: I like this graph, it says a lot. I wonder if this is a place where a thicker arrow might make sense relative to the frequency of boats coming into that location.
  - Meg: We could easily make the arrow or line different.
- Erin: Meg, check - Misspell of Chateaugay Lake on connected waters map.

## Public Survey Data

- Ryan: One of the things we hope to do is incorporate metrics into the Informed and Involved Public section to reflect the state of knowledge and behavior of the public relevant to water quality. Lake Champlain Sea Grant (LCSG), UVM, and LCC conducted a survey in 2021. We asked questions related to perceived relationships between land

cover and phosphorus contributions. Lots of folks still believe that WWTFs contribute more phosphorus than other sources. This is one way to get at the state of public knowledge.

- Neil: There could be a companion line across the bar that shows what the TMDL says. That could be pretty informative. If you publish this, it gives credence to the idea that agriculture and developed land contribute the most to cyanobacteria blooms which is not exactly the case.
- Sarita: I am interested in the breakdown in the contribution of each WWTF. How many facilities do not have any phosphorus removal or are so old they would not be able to optimize treatment?
  - Mae Kate: This graph does not show the actual data on phosphorus inputs, it shows what the public thought in terms of contributions to the lake.
  - Sarita: That is a super important clarification. I am concerned that in publishing this, the public will come to wastewater treatment plants and blame them for lake issues.
- Ryan reviewed a pie chart of which option best describes your personal familiarity with what a watershed is. He suggested that we review what the public's level of knowledge is and then consider what we might include in the report to address misunderstandings.
- Sarah: We don't want to reinforce the public's misunderstanding.
- Neil: This is very interesting data. I am excited about these results. There may be a space in SOL to address common misperceptions. Maybe include it in one section or put it in the Informed and Involved Public section?
- Bridget: A bullet point might sum this up better than a graphic.
- Ryan: Our intention is to repeat the survey so that we can report on how public understanding of water quality issues might change over time. Ryan also reviewed the public's response to how to find info about things they can do to reduce water pollution. Another graphic shows what actions the public has taken to improve water quality. The results showed that the majority of the public took 1 action but did not take more than 1 action.
- Neil: I received this survey. I would be surprised if the survey did not circulate through our water quality networks.
  - Ryan: The people that received the survey were distributed randomly and anonymously. It is likely that the people that took the time to respond to the survey are more water quality interested.