

**Lake Champlain Basin Program**  
**Technical Advisory Committee meeting**  
**Held in person at the LCBP Office in Grand Isle, VT + remote participation**  
**Wednesday, October 5, 2022, 10:00 AM – 3:00 PM**

**Approved meeting summary**

**TAC Members:** Jennifer Callahan, Ryan Cunningham, Laura DiPietro, Bryan Dore, Laurie Earley, Michele Fafette, Peter Isles, Neil Kamman, Steve Kramer, Bridget O'Brien, Ryan Patch, Oliver Pierson, Jamie Shanley, Daniel Tremblay

**LCBP Staff:** Mae Kate Campbell, Eric Howe, Lauren Jenness, Matthew Vaughan, Erin Vennie-Vollrath

**Guests:** Ben Jessup, Ben Block, Les Carver, Dr. Kent Henderson, Alison Spasyk, Dr. Jody Styker, Dr. Heather Darby, Dr. Joshua Faulkner, Zachary Smith, Kellie Merrell, Leslie Matthews, Joe Ayotte, Christopher Holmes, Appala Raju Badireddy, Daniel Rearick, Dave Braun, Thomas Brieselden, Don McFeeters, Vicky Drew, Parker Eversoll

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

- Neil welcomed everyone to the first in-person meeting since February 2020.
- Matt: We have a new TAC member here with us today. Laurie Earley was just appointed by the Steering Committee. Welcome!
  - Laurie: Thank you! I am starting my position as the program manager for the salmon program in the US Fish and Wildlife Service Lake Champlain office. I oversee salmon restoration. Prior to this position, I was working in California on salmon restoration for the last 18 years. I have lots of experience with habitat restoration, channel alignments, and population assessments. I'm excited to be here!
- Laura: The water quality division at the Vermont Agency of Agriculture, Food, and Markets (VTAAF) now has a new deputy director, Nina Gage.
- Oliver: The Vermont wetland rules are being revised. A rule change will allow the Agency of Natural Resources (ANR) to streamline wetland mapping and improve the state wetland map. There are hearings coming up. The water quality standards are currently being reviewed by the Interagency Committee on Administrative Rules (ICAR), which is the first step in the formal rule making process. Revisions are working their way through the system. There are no major changes related to classification of waters in this iteration, but hopefully there will be next time.
- Neil: The tactical basin plan for the south lake watershed is about to be issued for public review. There are nice nutrient reduction numbers coming out of the agricultural sector.
- Jamie: Jerry Butch in the United States Geological Survey (USGS) NY office in Troy sent a link for NY's end of month hydrologic conditions mapper. I think there is a counterpart in VT. In general, conditions were dry, but some areas got helped by rain this year.

- Neil: We got a 2.5" rainstorm in my area, but it didn't bump the gauge on the New Haven or Lewis one bit.
- Jamie: Watersheds are sponges this time of year. Rain itself has been spotty.
- Jamie: USGS is trying to immerse itself more in Lake Champlain science, whether through program activities or requests for proposals (RFPs) we can work on. There are 8-10 of us interested in working on Lake Champlain issues, and we have had a few calls. Matt and Eric joined our last meeting to describe the Basin Program and collaboration opportunities.
- Laura: Cary Giguere is now working for the cannabis control board, so Steve D. will now be heading the pesticides program. He has experience working in the state of Florida for the last 20 years on the same issues, it's great to have his experience.
- Eric: You should have received an invitation to attend a Clean Water Act commemoration event happening this weekend at ECHO. The name of the new University of Vermont (UVM) research vessel will be announced, and the winner of the Sen. Leahy Lake Champlain photo contest will be awarded. For fiscal year 2023 (FY23) appropriations, Congress is now operating under a continuing resolution. LCBP is in the President's budget at \$20 million for Section 120, and in the Senate budget for \$25 million. We will be receiving our second allotment of infrastructure funding, which is level funded. Our National Park Service (NPS) appropriation is at \$500,000, and our Great Lakes Fisheries Commission (GLFC) appropriation amount is unknown at this time.
- Matt: Happy New Water Year! Matt provided an overview of the hybrid meeting technology. He noted that the Clean Water and Healthy Ecosystem implementation, planning, and aquatic organism passage (AOP) RFP is still open. The technical request for pre-proposals (RFPP) for research projects is now open. Thank you to TAC members for assisting with research priorities. Interviews were conducted for the new Aquatic Biologist to replace Pete Stangel upon his retirement. The AOP passage restoration specialist will be starting soon. Going forward, see TAC meeting invites. Some meetings will be hybrid and some virtual only. The Mallets Bay buoy that was part of the pilot program had a successful pilot season and was pulled out on Friday last week since Lake conditions can be challenging in Oct./November. The Lamoille River buoy is still in the water.

*Review and approve summary of previous TAC meeting*

Motion: to approve the September 2022 meeting summary

Motion by: Jenn

Second: Laurie

Vote: All in favor

Abstentions: Jamie, Bridget

## **2. Full workplan review: Biological Index Development: A "Three-legged Assessment Stool" for Lakes within the Lake Champlain Basin (Ben Jessup and Ben Block, Tetra Tech)**

- Ben noted that the structure of this presentation follows the workplan for this project. At Tetra Tech, we have been working on biological indicators for lakes for over 25 years. Ben reviewed the project purpose and partners, tasks and project schedule, project

outputs, and budget. The project team would like to develop assessment tools for three lake biological assemblages: macroinvertebrates, diatoms, and macrophytes. Assessment will inform managers and the public about local and regional biological conditions to help meet goals of the Clean Water Act and LCBP. The New York State Department of Environmental Conservation (NYSDEC) staff members we spoke with about this project raised a few concerns; they noted they are leery of having new indicators that would somehow compete with or give different answer for work they are already doing. We are sensitive to that concern and want to highlight that we are creating indicators that could be used by various organizations, but don't need to be. Our end product will not give a narrative condition threshold, but rather will place results on a scale between 0-100. In that case, NYSDEC can take it any way they want. The Vermont Department of Environmental Conservation (VTDEC) may want to create that narrative like they already do for their lake report cards. We want to make this project work for our partners. This would be a basin-wide VT, NY project. Targeted site sampling may not be appropriate for a basin-wide study.

- Neil: Concerning the timeline presented in the workplan, have you given yourself enough time for this work? You indicate you will undertake one field season, what about two? If you're worried about the analysis time, we could extend the timeline.
  - Ben: The schedule is okay, but the budget might be thin. A lot of funding is going to tasks 4 and 5. We want to reserve some of the budget for making good indicators. Also, for reporting - other pieces including improving communication tools about how to calculate indices and communicating this information to the public and the states.
- Neil: For beginning this analysis, you have all sorts of existing material available: National Lakes Assessment (NLA), Oliver's program, NYSDEC program.
  - Oliver: We definitely don't always succeed, but we do try to get all the data we collect online and publicly accessible. Are any NY data in the public domain?
  - Ben: We looked and have not been successful. We need to continue to work on it.
  - Neil: You could try the Adirondack Lake Survey Corp.
  - Ben: Good idea, so far, we've mostly searched within DEC.
  - Zach: Existing data would be housed by the stream section. I may be incorrect, but I don't believe we collect any macrophyte data or have aquatic invasive species (AIS) data to pass onto you. I haven't seen or heard of that data being collected.
  - Erin: Different NY organizations collecting data include the Adirondack Partnership for Regional Invasive Species Management (PRISM), the Adirondack Park Invasive Plant Program (APIPP), and Rensselaer Polytechnic Institute (RPI) did point intercept data.
  - Neil: Paul Smith's Adirondack Watershed Institute is currently undertaking a monitoring project in the Adirondacks, funded by LCBP. It would make sense to cross-pollinate.
- Peter: Will you be sampling for diatoms in deep benthic sediments or littoral sediments? Since these are two different communities, how will you deal with two separate indices?

- Ben: We proposed to do deep sediment cores, not littoral sediments for diatoms.
- Peter: New York may be collecting more littoral diatoms. Zach, can you clarify?
- Zach: I think we collect deep sediments, as part of the National Lakes Assessment (NLA) Process.
- Peter: That would check that box, then.
- Zach: Everything we have was collected as part of the NLA process. We don't have the same data for lakes vs. streams. I am not too surprised to see that there were only 5 existing samples identified for NY.
- Kellie: From the regional diatom collaboration effort, there are 607 lakes for which taxonomy has been reconciled. New York and Vermont DEC are on track to collect data in the same way. I am under the understanding that New York has been putting in a big push to undertake collections over the past few summers and are working on a request for proposals to get the taxonomy done. We will need to ensure this ongoing work is incorporated. The regional diatom effort has made progress. There is an MS student at UVM in Mindy Morales's lab who is using the Vermont diatom dataset to do analyses. By the time that Tetra Tech is at the analysis stage of this project, they should be able to stand on the shoulders of this ongoing work and those analytical approaches. The Wisconsin Department of Natural Resources has had their approach peer-reviewed and has begun integrating that work into their water quality standards within the last month. For the bugs analyses, it seems to me that this is where New York is ahead of the game. My understanding is that they are working on publishing their approach and their approach is more similar to the NLA effort than what Vermont has used. Even though Vermont has a huge bug dataset, it may be more useful for shoreline stressors, while New York's approach is whole lake.
- Neil: I did find a reference to soft substrate diatom sampling in your workplan. Especially since you are only doing one year of sampling, there would be the potential for a lot of variability with that approach. Maybe you could focus on the sediment diatoms, forgo the littoral sampling for the diatom work.
  - Peter: I agree with that suggestion.
- Matt: You have the QAPP as a 2-phase process right now, but we could likely condense that into one phase. We can follow-up.
- Matt: It's helpful to hear this description of your thinking, thank you. You described either enhancing different datasets or sampling lakes, but there might be the opportunity to do both.
  - Ben: I agree. Kellie also said it's likely VTDEC could contribute to the field sampling. We'd have to decide how to go about that effort.
  - Oliver: It seems like it's a safe bet. We want to prioritize this field effort.
- Oliver: One comment about the macrophyte surveys: what is the potential of using a point-intercept survey? It would be a preference.
  - Ben: Does that method take considerable time?
  - Oliver: Our field teams get it done in a day on any given lake. If we provide the human power, and you undertake the point intercept survey, it could balance out.
  - Ben: We have to discuss all of these details and also discuss how to undertake this work in New York as well.

- Zach: How do you plan to classify places as degraded and reference conditions? What definitions are you planning to use?
  - Ben: We haven't nailed this down yet, but we have an index that we put together for an Illinois lake. In that work we did have the watershed delineated and we used Lake CAT, so it was more of a basin-wide thing. There may be more things we can get from Lake CAT. Land use will be considered, that's what we typically use as primary indicators.
  - Ben B: For the Illinois lakes, we worked with the EPA to do lake macroinvertebrate projects, used the US Geological Survey (USGS) stream stats, created upstream buffers at 1 and 5 km, and tested different landscape metrics. We summarized those metrics as average or maximum. EPA Lake CAT uses the National Hydrography Dataset catchments, which is good for large-scale analyses like this. The map produced on screen is coarser. EPA hasn't come out with a new version using the finer-scale data. That could be a tradeoff, since watershed delineation and summarizing takes more time. Lake CAT already has common identifiers and can more easily get these metrics.
  - Oliver: In our lake scorecards, every lake is scored using a landscape development index. Those data may be applicable here. We also have high-resolution aerial land use maps for most lakes, which could be of use.
  - Kellie: I was also going to mention the high-resolution dataset that LCBP funded. VT has used this to gauge some of the drawbacks of typical surveying, which can often underestimate shoreline stress. In terms of identifying reference lakes, shorelines stressors are a factor.
- Peter: For selecting reference lakes, have you thought about the different disturbance gradients in addition to the natural community type?
  - Ben: That was the classification issue we talked about. We may need to focus on one type of lake or a smaller geographic area. This is still in discussion. It might be an effort to come up with an index that works but needs adjustment for different lake types. This is why we are aiming to build on different datasets.
  - Peter: This is often what we run into. It would be useful to have relevant categories and fill in gaps in existing datasets.
- Neil: You may want to talk with Oliver and Kellie about partnering on the water chemistry work.
- Mae Kate summarized next steps on this workplan, which will include review of additional written comments from the TAC point people.

Motion: To approve the workplan pending incorporation of comments from the TAC point people

Motion by: Jenn Callahan

Second: Laurie Earley

Discussion: Zach - comments suggested say NY can be used, but not be a part of the reporting. Want to make sure entire group received this point.

Vote: All in favor

Abstentions: none.

### 3. Full workplan review: Framework for Monitoring Emerging Contaminants in the Lake Champlain Basin (Les Carver, Stone Environmental)

- Neil: This is an important project that came out of a conversation with the Citizen Advisory Committees (CACs) on priorities; I'm excited to hear more about it.
- Les introduced the project and noted that the project advisory committee (PAC) has already met to guide workplan development and to discuss the overall project goals. He then introduced the project team and discussed their research backgrounds. Les provided an overview of the project rationale, objectives, and key outputs and outcomes. The main objective for the project is to develop a long-term monitoring framework for emerging contaminants in the Lake Champlain Basin. Les and Dave walked through the tasks of the project, which includes 3 broad categories: background development, data development, and framework development. Preliminary monitoring is proposed over a range of anthropogenically-influenced sites, potentially including wastewater treatment facilities, combined sewage overflows (CSOs), stormwater outfalls, and agricultural streams, urban streams, and shallow bays. Sampling will consider analytes within a suite of 700+ potential contaminants.
- Matt: Are you planning to sample a CSO during an overflow?
  - Dave: Yes, hopefully during when flow exceeds that first ½ inch over the weir, when the concentration is highest (least dissolution from stormwater) and when scouring is potentially occurring.
- Neil: As you are thinking about taking a representative look at streams in highly agricultural areas, there are those super-intensive agricultural ones, but also other that might not represent valley floor conditions but still have extensive management.
  - Dave: Good point. Newport town, for example.
- Matt: The stream and bay sampling plan seems weighted heavily on Vermont.
  - Dave: Part of that is logistics. There is a Plattsburgh stream I am looking at. We are seeking input from the project advisory team particularly on the sampling and selection methods related to the shallow bays, since our project team has less experience working in that environment on the New York side.
  - Neil: There would be value in NY side embayments there, maybe Willsboro. Something that reflects a less intensively managed agricultural landscape.
  - Matt: With industrial history.
- Dave described the proposed number of samples for each type of site, which will be discussed in greater detail with the Project Advisory Committee.
  - Neil: I know Amy P. and her team in the wastewater program are about to launch a program for monitoring for per-and polyfluoroalkyl substances (PFAS) in wastewater treatment facility management. Accessing those data could be useful.
  - Oliver: We have additional existing data.
- Les described the proposed methods for the water and sediment analysis.
- Neil: If modified means limit of detection modification, that's the method VT is going to be using for PFAS. In the past there have been concerns around high detection limits for pesticides, I am assuming these are the high-precision methods?
  - Les: Yes, the USGS methods have super low detection limits.

- Neil: I recommend including in the workplan that you are going to be using these low-detection limits.
- Peter: For these methods, is there the potential for doing composite samples? To what extent is that possible given sample holding times and preparation?
  - Les: We have discussed that approach to ensure we are selecting the right sample for analysis, but we will need to do more research to determine feasibility. The PAC will be involved.
  - Dave: We haven't ruled anything out yet.
- Matt: Another thing to consider would be a spatial composite. With that approach, you'd lose information in one way but you gain it in another.
  - Dave: For instance, one dozen storm drains.
  - Peter: It might be good for the purposes of a large-scale picture.
  - Jamie: A lot of this is presence/absence.
  - Les: There is passive sampling as well, which could speak to presence/absence.
- Matt: Thinking about the presence/absence idea, if you did a spatial composite of all the CSOs for example, and get no-detect for all of them, you could focus resources elsewhere.
  - Dave: I like the idea of a spatial composite that might then allow us more flexibility on time. Multiple spatial composites in time. Do a screen-and-sample method, and then refine the sampling plan for 2024. Having a second field season to dive into more of these areas is where I would like to see this go.
- Oliver: I heard atrazine use is on the rise, will that be analyzed?
  - Les: Yes, that is part of the suite.
  - Dave: EPA just lowered their threshold on atrazine.
- Oliver: We collect some samples in Lake Champlain for pesticides analysis that are analyzed by VTAAF.
  - Les: That will be considered in the interview process.
- Les noted that a long-term monitoring plan with recommendations on analytes to be monitored, monitoring sites, estimated level of effort, and potential costs will be a major deliverable of this project.
- Peter: How many contaminants have environmental health data?
  - Les: That is something we are hoping to learn about.
  - Neil: What we recommend to monitor will be influenced by what we know has impacts.
- Lauren: The CACs are very interested in this topic. I'd advocate for the project team to provide updates as appropriate.
  - Neil: They are all quite interested and endorsed this project.
- Neil: We should be thinking on if an additional field year will give us significantly more information towards building a monitoring plan.
- Ben B: Is there any interest in moving towards sampling the biology, such as collecting fish and other organisms, to quantify impacts to them?
  - Peter: Including biomagnification
  - Neil: Dartmouth is doing mercury in fish tissue monitoring.
  - Oliver: We have fish tissue PFAS data.
  - Neil: Good point Ben, more of a long-term goal.

- Peter: For some contaminants, the best way to monitor them might be through fish tissue.
- Jamie: When you had sediment and water samples together, do you see them as being concurrent?
  - Dave: Yes.
- Jamie: You mentioned not wanting to get hit with another issue like PFAS. Will your analytical scheme detect a 'new PFAS'?
  - Dave: You get a chromatogram, and there are unidentified peaks. That is not part of this project as scoped, but other researchers may be interested in doing those analyses.
  - Joe: The laboratory that will be doing the pesticide work just hired a non-target analysis chemist. If we look at non-target peaks, it's probable that you can identify peaks you are not thinking of. There are also suspect screens that aim to hone-in on non-target analysis for unlikely but possible analytes. Researchers indicated that they are always interested in more samples, so we might be able to do some non-target analysis work through this project.
  - Neil: That would be fantastic to bring that into this project, bring in work happening on the national scale.
  - Joe: Once the samples are analyzed, chromatographs can be analyzed by multiple researchers without re-running the samples.

Motion: To approve the workplan pending incorporation of comments from the TAC PAC

Motion by: Jenn

Second: Laurie

Vote: All in favor

Abstentions: Jamie

#### **4. Full workplan review: Rock River sub-watershed drainage network assessment (Dr. Kent Henderson and Alison Spasyk, Friends of Northern Lake Champlain)**

- Kent and Alison presented. Kent thanked the TAC for providing feedback on the workplan and for their support of this project. Planning began two years ago. FNLC staff designed the study to help target troubled parts of the watershed. We worked with Marli Rupe and Staci Pomeroy at VTDEC to design this study. The workplan has been a collaborative effort. Kent also provided an overview of the Friends of Northern Lake Champlain (FNLC)'s work. FNLC was founded 20 years ago, and its current primary focus is on reducing non-point source pollution.
- Alison provided an overview of the geography and land use of the Rock River watershed. She reviewed past implementation work to reduce phosphorus loading in the watershed, but noted that water quality analyses in recent years have not indicated significant changes in total or dissolved phosphorus concentrations despite implementation efforts undertaken so far. This project in the Rock River watershed will undertake:
  - Increased monitoring in the region to monitor the effects of best management practice implementation



- Identification of key areas for network evaluation methods
  - Evaluate upstream managed drainage networks for condition and contribution of sediments and nutrients
  - Test the Minnesota Agricultural Ditch Research Assessment (MADRAS) protocol
- The project will include 2 field seasons, and a consultant will be hired to assist with this work.
- Oliver: What is the best-case scenario for 10 sites in terms of downstream effects, proximity to existing BMPs, former BMPs, etc.? Are you trying to get a range/minimum requirement?
  - Alison: We are aiming for a segmented approach. We want to ensure that we are looking at different areas of the river. We will work with experts at DEC, consult with landowners, and focus on areas where the river crosses a main road.
- Matt: For site selection, areas where you are seeing plumes would be good places to investigate further, but the ones that aren't sending plumes can be equally as important as a control. How your water quality sampling sites for year 1 will relate to the MADRAS sites for year 2 will be key. That will provide information about how effective the methodology is.
  - Alison: We are thinking ahead when we start the water quality samples. We will use imagery to assist with site selection. We are thinking about positioning sampling so it will refine which sites we want to choose for the MADRAS analysis.
- Matt: Is there any stream flow gauging as part of this project?
  - Alison: This previous year, we've been recording the USGS gauge height on the day of sampling. The Cassidy Rd. gauge site is right in the middle of the river. Sites we were sampling this year were all within 5-10 miles of that site. We haven't considered additional gauging for this project.
  - Matt: You can get the exact time from the USGS gauge (15-min increments), that would be valuable. Installing staff gauges at monitoring sites is another option to consider. Even if you don't know the discharge at that site, you know the level on the staff gauge, and you can see how it correlates to the USGS gauge.
  - Oliver: Over time, DEC has supported the Rock River group with load monitoring. If that's of use, let us know.
    - Alison: thanks for the suggestion
- Neil: I'd suggest doing total nitrogen sampling along with the total phosphorus. Could there be a partnership opportunity with the Vermont Agency of Agriculture, Food, and Markets?
  - Alison: We would be happy to add that analysis this to the project. The way it was budgeted was based off current lab costs.
  - Neil: Is FNLC in the La Rosa project?
  - Kent: Yes.
  - Neil: You could adjust the LaRosa project to cover total nitrogen costs.
  - Laura D: I just did the budget, and the lab is overbudgeted, so there's no room for that additional analysis right now.

- Jamie: Could you clarify your thinking about total phosphorus and dissolved phosphorus? A lot of wording in workplan just talks about sediment phosphorus, so what will you do with dissolved phosphorus?
  - Alison: Total phosphorus and dissolved phosphorus is what we've been measuring in the Rock River for the past decade or so. We are only doing total suspended solids at one of the sites.
  - Jamie: I'm curious about the wording about sediment-bound phosphorus. What dataset is it based on?
  - Kent: We're concerned about lab costs, so we tried to get the most important parameters.
  - Oliver: The range of total phosphorus data in this watershed is much higher than dissolved phosphorus, so the majority seems to be in particulate form.
- Neil: Could the Regional Conservation Partnership Program be involved in supporting this work?
  - Alison: That's where we have funding for water quality analysis from now. That funding goes through this fall, with additional funding for "early spring" runoff. Those times are really crucial to capture.
  - Neil: We are trying to get the most out of this project, so let VTDEC/Marli know how we can leverage other programs like LaRosa.
  - Alison: Another challenge with LaRosa is that it's only 8 sample dates.
  - Kent: Winter and spring sampling is key if it's done safely.
  - Oliver: We can work on this with you to see how these programs can work together throughout the season.
- Peter: A turbidity probe would be good to include if you can find one as a stand-in for total suspended solids.

Motion: To approve the workplan as written

Motion by: Jenn

Second: Oliver

Discussion: Neil: Add sentence about exploring funding or options for additional analyses considered. Matt: Add staff gauges.

Vote: All in favor.

**5. Brief workplan presentation: Development of a Soil Health Calculator Tool to Quantify Impacts of Agricultural Management Practices on Soil Health in the Lake Champlain Basin** (Dr. Jody Stryker, Stone Environmental)

- Jody presented. This project would create a new module of the Farm Phosphorus Reduction Planner (FarmPREP) model (based on the Agricultural Policy/Environmental eXtender Model (APEX)). FarmPREP is developed and hosted by Stone. APEX already includes tracking for several parameters. FarmPREP already contains many aspects that can be used to develop the soil health module. This work will incorporate soil health metrics into the FarmPREP framework. Overall project outcomes include the improved adoption of healthy soil practices, increased confidence in model-based tool that can be used for other needs. Data compilation will be focused on collecting data from literature and other sources. The project will determine which soil health metrics to use for a soft calibration of APEX and for representing soil health outcomes in Farm-PREP. The

project will involve modifications of the existing web tool, including building in the new inputs and new reporting components. This will result in a new page or tab in FarmPREP so if you are interested in soil health metrics you could see how your simulations affect soil health and phosphorus losses. This project includes training and outreach sessions on the new module.

- Steve: I like most of the project, though I do have some thoughts on the calibration. The single training session might not be enough. I wish you had two. I'd like to know more people could use this.
  - Jody: We want to make it more accessible, and could add another training if others think it's necessary.
  - Steve: What do you think your training session goals would be? Are there beginner/advanced sessions you could offer?
  - Jody: We could tailor one for folks who have existing knowledge of FarmPREP and another that includes the full FarmPREP + Soil health module.
- Neil: Are you following along with how the climate council is engaging in this space?
  - Ryan Patch: Yes, the soil health calculator would be very useful for policy initiatives in Vermont. Not just for supporting quantification for agricultural greenhouse gas mitigation work, but with the coming farm bill to prioritize and emphasize pay for performance, the soil health calculator can provide other metrics that can form the basis for future work. It's useful to have this tool prepared for the Payment for Ecosystem Services working group.
- Matt: Can you remind me where we are with FarmPREP support from LCBP?
  - Jody: We have funding through some time in 2023 for hosting FarmPREP. We also support VTAAFMs version. One of the biggest decisions we need to make is what version do we want to build this soil health calculator tool onto? We will discuss this with the PAC. We see some benefits to either cloning pieces of VTAAFMs or tacking pieces on to that version. We have flexibility on our end. If we do build it in to the non-ag version, we have not considered hosting past this project.
  - Ryan P: VTAAFMs is very interested in providing as many assessments as possible, and this calculator fits in with those goals.

## **6. Brief workplan presentation: Discovery Acres: A Water Quality Research and Education Site in the St. Albans Bay Watershed** (Dr. Heather Darby and Dr. Joshua Faulkner, UVM)

- Heather introduced the project. Discovery Acres is an on-farm water quality research and education site established in the St. Albans Bay watershed. The goal of this project is to continue and expand the research and outreach at this site. Josh noted that this site has recently become part of a national network of Discovery Farms. The site includes 4 prepared watershed research plots, two with tile drainage and two without. Josh reviewed the soil health measurements being monitored at the sites, then reviewed data collected over the past few years at the sites during their calibration period. LCBP

funding will support the implementation of several different treatments on the plots to determine their effects on water quality and soil health parameters.

- Matt: I know that roller-crimpers are often used to terminate cover crops. Is that usually done with pesticide?
  - Heather: Rolling on cover crop is done on occasion. We did end up selecting planting green, which may or may not include rolling down the cover crop. Generally, herbicide is still used in management, not just to terminate the cover crop but to control weeds.
  - Matt: The trial would be done with LCBP funds, and I don't think we've supported herbicide treatment in the past. We could consider if there is another conservation practice that could be used to terminate the cover crop without herbicide.
- Heather reviewed the data collection procedures for analyses in soil, water, cover crops, and crop yields. The project will also involve several outreach initiatives, including on-farm field days, research reports, signage, and web-based outreach.
- Laura: It is nice to have a farmer collaborating. A lot of people are interested in the types of questions this project will address.
  - Heather: Our goal was to manage the site and eliminate factors that are out of our control as researchers when operating on someone's farm.
- Neil: Is there a component of herbicide monitoring in surface and/or tile flow?
  - Heather: Yes, we will be monitoring pesticides in our water quality monitoring. That's a critical aspect of this work and something we don't have a lot of data on in this area.
  - Neil: I understand that herbicide use is common practice, so to have a controlled field-scale experiment on how that impacts water quality has a lot of value.
  - Matt: It's just something we'll have to justify carefully in our updates on the project and make the case about why it will be helpful for water quality monitoring.
  - Heather: I agree that how we frame that will be really important.
- Ryan P: The Natural Resource Conservation Service (NRCS) conservation practice standards often include the use of herbicides for a number of different control areas. EPA 319 funding also includes herbicide use in many state agriculture programs. For a research project, testing business as usual seems within the bounds of other work undertaken nationally.
  - Heather: The goal of this project is to support a reduced herbicide use program. We aren't testing the herbicide itself. We are encouraging farmers to work towards only one herbicide application. We have challenges in this soil type with tillage and herbicide application.
  - Matt: Describing it as reduced herbicide application would be helpful.