

## TRANSMITTAL MEMO

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL (BWQC)  
FR: MISSISQUOI BASIN CLEAN WATER SERVICE PROVIDER (CWSP) STAFF  
RE: MATERIALS FOR MEETING ON 8/7/24  
DA: 7/31/24

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**Greetings, Missisquoi BWQC members and others. The next meeting will take place on Wednesday August 7 at the normal starting time of 11 AM. However, this is the annual meeting, and so will be conducted in a hybrid format. The physical location of the meeting will be the Enosburgh Emergency Services Building at 83 Sampsonville Road in Enosburgh. A few words about each of the agenda topics are offered below.** Please let me know if you have any questions regarding the agenda or the meeting.

### **Introductions/Meeting protocols/Conflict of interest disclosures, if any**

Some of the faces we see at the meeting—either in person or online—will be new. More than at some meetings, an extended period of introductions may be warranted. New attendees may also appreciate the review of the meeting protocols. Finally, and simply as a reminder, the Conflict of Interest agenda item provides BWQC members and others opportunity to note possible conflicts of interest that could arise later in the meeting.

### **Approval of Minutes**

For the past several meetings, minutes have been prepared by NRPC's ECOAmeriCorps Service member Sara Gratz. Sara will be concluding her service on August 9. These will be the last BWQC meeting minutes that Sara will prepare. We are grateful for her help and support she has provided to the Council and the CWSP.

### **Budget Adjustments**

A budget request in the amount of \$606 was received and processed in the time since the last meeting. Details are enclosed.

### **Biannual Organization Tasks (includes recognition of BWQC Members and Alternates)**

At the meeting in June, CWSP staff described the DEC-prescribed process we must follow for renewal and/or appointment of members and alternates for the Council. At the meeting on August 7, we will conclude that effort. Renewal of membership helps ensure that the Council continues to have a diverse and representative membership, capable of effectively guiding water quality projects in the basin. An updated list of Members and Alternates is included in the packet. It should be noted that we continue to search for additional people to serve as Alternates.

### **Annual Meeting tasks/Election if Chair and Vice Chair**

The Missisquoi BWQC's bylaws specify that the election of officers (the Chair and Vice Chair) will take place at the first meeting following the start of the fiscal year (July 1). Nominations will be made from the floor. The Chair and Vice Chair may be drawn from the updated membership established during the proceeding agenda item.

### **Project Development funding proposal**

As a follow-up to the June discussion concerning ways we might respond to DEC's promotion of more spending on "project development" activities, NRPC staff have developed the following proposal. The proposal is inspired by steps being taken by the Northern Lake Champlain Basin Water Quality Council (Basin 5) but has attributes that are unique. In essence, the proposal is to create a program through which \$10,000 in funding would be provided to up to 10 entities in the basin in as simple and expedited manner as possible. To allow the CWSP to award these funds, CWSP staff seek BWQC approval of the two motions, which are contained in the meeting packet.

### **State of Lake Report**

I am providing you with materials relating the Lake Champlain Basin Program's State of the Lake Report. Some findings include:

- **Phosphorus loading from rivers remains a challenge for Lake Champlain, though recent monitoring has shown improvement in some tributaries, including the Pike.**
- **Despite higher phosphorus loading in recent years, the Missisquoi and Winooski Rivers have shown lower phosphorus loads in the past three years.**
- **Annual phosphorus levels in Missisquoi Bay have been lower than previous years since 2018, reaching their lowest point since 1994 in 2023.**
- **Still, Missisquoi Bay faces ongoing water quality challenges. Despite its small size, comprising less than 1% of Lake Champlain's volume, it represents 7% of the lake's surface area.**
- **The bay suffers from frequent cyanobacteria blooms due to high nutrient concentrations, particularly phosphorus, and the release of legacy phosphorus from lake sediments.**

### **Future meeting topics Updates and conclusion**

I will briefly update BWQC members on the NRPC's Public Participation Plan. Members will have an opportunity to suggest future meeting topics, etc.

Thanks to all who participate.

**AGENDA**

**Missisquoi Basin Water Quality Council (BWQC)**

**Wednesday, August 7, 2024**

**11:00AM -1:00 PM**

**ANNUAL MEETING**

**Hybrid /Zoom meeting with physical location at**

***Enosburgh Emergency Services Building***

83 Sampsonville Rd, Enosburgh Falls, VT 05450 (click for [directions](#))

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(Zoom details below)

1. Welcome and introductions
2. Meeting protocols
3. Conflict of interest declarations, if any
4. Review/adjust and approve agenda
5. Approval of minutes
6. Public comment not related to items on agenda
7. Report on budget adjustments, if any
8. Biannual Organizational Tasks:
  - a. Membership Renewals and New Appointments
  - b. Seating of Alternates
9. Annual Meeting Tasks:
  - a. Election of Chair
  - b. Election of Vice Chair
10. Funding proposal
11. State of the Lake Highlights
12. Future meeting topics
13. Updates and conclusion

Please Note: The schedule for the upcoming application round in Missisquoi Basin is as follows:

Round #	Open	Deadline
6	August 14, 2024	Sept 17, 2024
7	December 18, 2024	Jan 22, 2025

**Join Zoom Meeting**

<https://us02web.zoom.us/j/81332571725?pwd=UktCekQ5R2ZSbVNtMXlUcUlpYnVl3UT09>

**Meeting ID: 813 3257 1725**

**Passcode: 103651**

**One tap mobile**

**+13052241968,,81332571725# US**

**+13092053325,,81332571725# US**

Staffing provided by Northwest Regional Planning Commission (NRPC), the Basin 6 Clean Water Service Provider. NRPC’s physical / mailing address is 75 Fairfield Street, St. Albans, Vermont 05482.

***In accordance with provisions of the Americans with Disabilities Act (ADA) of 1990, and Vermont’s Open Meeting Law, the NRPC will ensure public meeting sites are accessible to all people or provide an opportunity to request accommodations. Requests for free interpretive or translation services, assistive devices, designation of a physical meeting location, electronic access to a meeting, or other requested accommodations, should be made to Amy Adams, NRPC Title VI Coordinator, at 802- 524-5958 or aadams@nrpcvt.com, no later than 2 business days prior to the meeting for which services are requested.***

# Welcome and introductions

# Meeting protocols

## Zoom Norms and Inclusive Language

- Introductions of all participants at each meeting
- As possible, BWQC members should have in their Zoom Name/Title the following: Name, Organization, “Voting” or “Alternate”, and pronouns (if desired)
- BWQC members are expected to have cameras turned on during entirety of meeting, as technically possible.
- BWQC members are expected to stay focused / avoid multi-tasking and follow the guidance of: “if you wouldn’t do something in an in-person meeting don’t do it in a virtual meeting”
- BWQC members will use the “raise hand” function on Zoom to indicate a request to speak / come off mute – this is in an effort to make sure all are heard in turn.
- All members will stay muted until called upon; if needed, CWSP staff may mute participants to avoid background noise
- Any comments made in the chat will be read aloud at the appropriate time by the CWSP staff in full for the public record / record.

### **Inclusive Language**

<https://pronouns.org/what-and-why>

Conflict of interest declarations, if any

Review/adjust and approve agenda



**AGENDA**

**Missisquoi Basin Water Quality Council (BWQC)**

**Wednesday, August 7, 2024**

**11:00AM -1:00 PM**

**ANNUAL MEETING**

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## Approval of minutes

**Missisquoi Basin Water Quality Council (BWQC)  
MINUTES**

Wednesday, June 5, 2024, 11:00 AM-1:00 PM  
Virtual Meeting/Held Via Zoom\* (computer/smartphone/tablet etc.)  
Meeting video posted at <https://youtu.be/T5D9wvliplk>

**A VIDEO RECORDING OF THE MEETING IS AVAILABLE THROUGH THE NRPC  
YOUTUBE CHANNEL (Link above).**

**THE WRITTEN MINUTES ARE A SYNOPSIS OF THE DISCUSSION AT THE  
MEETING. MOTIONS ARE AS STATED. MINUTES WILL BE SUBJECT TO  
CORRECTION BY THE COUNCIL. CHANGES, IF ANY, WILL BE RECORDED IN THE  
MINUTES OF THE NEXT MEETING OF THE COUNCIL**

Council Members: Lindsey Wight (Q), Ted Sedell (Q), Barry Lampke (Q), Beth Torpey (Q), Kent Henderson (Q), Dan Seeley (Q), Lauren Weston (Q), Sarah Downes (Q), Dave Allerton (Q during vote on application). (Q= towards quorum unless otherwise indicated)

Staff: Dean Pierce, Sara Gratz

Others present: Chris Rottler, Karen Bates, Jim Pease, Julia Crocker

**1. Welcome and introductions**

Lindsey Wight opened the meeting as Chair at 11:03 and participants introduced themselves.

**2. Meeting protocols**

Lindsey reviewed meeting protocols.

**3. Conflict of interest declarations, if any**

Lauren Weston announced that she has a project being reviewed today, so she will recuse herself when it goes to vote.

**4. Review/adjust and approve agenda**

Kent Henderson motioned to approve the agenda and Dan Seeley seconded. Motion carried.

**5. Approval of minutes**

Dan motioned to approve the minutes from the last meeting and Kent seconded. Lauren abstained due to not attending the last meeting. Motion carried.

**6. Public comment not related to items on agenda**

No public comments were made.

**7. Seating of any new reps or alternate(s)**

No new representatives or alternates were seated.

**8. Report on budget adjustments, if any**

There were no requests for budget adjustments.

**9. Review of application filed in response to round 5 “Call for Projects”**

Dean introduced the topic and later noted the inconsistency in the description of project type on some of the meeting materials. Lauren shared a project from FCNRD that is seeking funds for 30% preliminary design for a floodplain restoration in Enosburgh. She also shared that there are erosion concerns and an undersized bridge on location. This project would allow them to collect data and perform modelling to determine the best methods for restoring the floodplain.

Jim Pease asked if the project would involve tree planting. Lauren responded by stating that yes, the goal is to plant some trees before the project reaches final design, and then plant more trees after implementation.

Kent expressed support for the project and discussed similar projects that he’s had experience with at FNLC. He also asked about the site being on or near agricultural land. Lauren shared that the site is on farmland and that the owners have expressed a willingness to take some land out of production.

Kent motioned to approve the project for funding and Dan seconded. Lauren and Sarah Downes recused themselves. Motioned carried.

**10. Discussion of proposed increase in Project Development funding allocation**

Dean Pierce provided an update to an increase in funds for Project Development, sharing that the amount would go from 7% of total funds to 28% in the ‘year 3’ contract. These funds do not have a phosphorus-reduction target associated with them and are meant to help support organization’s capacities to complete more projects.

Lindsey proposed a question to the Council, asking what barriers exist that prevent organizations from doing more in Project Development. Lauren shared that the process for bringing projects forward can be daunting, adding that there is some confusion and frustration about which projects are fundable. There are also a limited number of people who are doing this type of work, and her organization, FCNRCD, has other priorities to focus on as well. She also shared that some other funding opportunities are much easier to navigate, so they utilize funds from those programs. Lindsey agreed that other grant programs are often easier to navigate.

A discussion about the cost effectiveness of stormwater projects followed. Karen Bates suggested that Project Development funds might be used to think outside of the box to find alternative solutions for stormwater projects that have a lower cost.

A discussion was had about O&M agreements being a barrier to completing projects. Several Council members shared that it is difficult to get landowners to sign the O&M agreement. Beth Torpey shared that the O&M agreement became an issue in the Memphremagog Basin, causing a project to be lost. Chris Rottler shared that he is aware of concerns about the O&M agreement and has shared them with the O&M team at DEC.

Kent shared that it takes a lot of time and effort to identify projects, and that he has not yet found a way to be adequately compensated. He shared that FNLC relies on fundraising to make up for some of it, so he is glad that more funds are being allocated for Project Development.

Lauren asked if Project Development funds can be used to pay landowners, which might help entice them to support clean water projects. Chris responded that it is not part of the policy, but it is something that others have asked as well. Discussions followed concerning focusing efforts on projects on public lands, where it might be easier to get landowner permission, and using other funding sources, such as the Tactical Basin Planning grants, for educational outreach.

Another discussion was initiated about a potential Communications Plan and the Public Participation Policy that NRPC has been developing. Many Council members expressed that DEC should have a Communications Plan to help get the word out to the public about clean water funds. Dean shared that NRPC's Public Participation plan will not serve as a Communications Plan, but that a Communication Plan would be a good next step. Barry Lampke asked if a Public Participation Plan would need to be adopted before the BWQC could advertise the availability of clean water funds. Dean responded that it is not necessary.

A final discussion touched on the desire to simplify the CWSP program. Karen suggested that the BWQC set aside time to discuss specific ways that the CWSP process can be improved. Chris shared that a lot of requirements for working with DEC have been removed to make the CWSP program simpler but agreed that there is room for improvement.

#### **11. Solicitation / Appointment of BWQC Member and Alternates**

Dean shared the process for reappointing BWQC representatives and alternates, stating that members need to be reappointed every 2 years pursuant to a DEC guidance document written after the creation of the BWQC. Returning and prospective new members will need to be identified by the middle or end of June so that they can be mentioned in a report to DEC.

#### **12. Future meetings, including annual meeting and hybrid meetings**

Dean shared that the election of the Chair and Vice Chair will occur at the next meeting in August. He stated that the election would need to go through a nomination process unless the Council decides today that they do not want to create a nomination committee. Sarah made a motion to forego creating a nomination committee and Dan seconded. Kent and Lindsey abstained. Motion carried.

Dean also shared a details on legislation known as S.55, which will go into effect on July 1<sup>st</sup> and places new requirements on the open meeting law. Under the new law, public meetings will have to provide a hybrid option so that participants can join in person. There is an exception,

however, for advisory bodies, which will still be allowed to meet remotely. The question is whether BWQCs qualify as advisory bodies. If the BWQC is required to make meetings hybrid, the NRPC office will be the designated location.

### **13. Updates and conclusion**

Dean shared that he is looking for suggestions for topics to discuss at the Annual meeting, which will be the next meeting in August. He also shared a possible presentation from Chris Smith, and the possibility to share a new Public Participation Plan being developed by NRPC.

The next round of funding opens on August 14<sup>th</sup> with a deadline of September 17<sup>th</sup>.

Sarah motioned to adjourn the meeting and Ted seconded. The meeting was adjourned at 1:00.

Public comment not related to items on agenda

Report on budget adjustments, if any



**MEMORANDUM**

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL  
FR: CWSP STAFF  
RE: BUDGET ADJUSTMENT NOTIFICATION  
DA: JULY 31, 2024

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CWSP staff write to notify the BWQC of the following budget adjustment:

- Date: July 24, 2024
- Requester: FCNRCD
- Project: Project Development for BMPs in three areas in Lake Carmi Watershed
- Amount of request: \$606, or <10 % of original project approval
- Authorization provided by staff, per policy
- Formalized by Task Order Amendment
- Rationale: Time required for landowner interactions was underestimated.

Please let us know if you have any questions.

Biannual Organizational Tasks:  
Membership Renewals and New Appointments  
Seating of Alternates

## MEMORANDUM

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL  
FR: CWSP STAFF  
RE: BIENNIAL REORGANIZATION PROCESS  
DA: JULY 31, 2024

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At the meeting in June, CWSP staff described the DEC-prescribed process we must follow for renewal and/or appointment of members and alternates for the Council. (Excerpts from [Chapter 4 of DEC Guidance Document](#), which spells out procedures for the appointment, reappointment, replacement, and dismissal of BWQC members were provided as part of an earlier meeting packet.) At the meeting on August 7, we will conclude that effort.

[Act 76](#) and the [Clean Water Service Provider Rule](#) specify that the BWQC is to be comprised of individuals representing various stakeholder groups. These groups are:

- Two representatives from Natural Resource Conservation Districts in that basin, chosen by the respective districts.
- Two representatives from Regional Planning Commissions in that basin, selected by the applicable commissions.
- Two individuals representing local watershed protection organizations operating within the basin. The applicable watershed protection organizations make the selection for these representatives.
- One representative from a relevant local or statewide land conservation organization, chosen by the conservation organization in collaboration with the Clean Water Service Provider.
- Two individuals representing municipalities located within the basin, selected by the Clean Water Service Provider in consultation with the basin's municipalities.

Each stakeholder group responsible for appointing members to the BWQC – in other words, Natural Resource Conservation Districts, Regional Planning Commissions, local watershed protection organizations, municipalities, and land conservation organizations -- can also appoint Alternate members.

Renewal of membership helps ensure that the Council continues to have a diverse and representative membership, capable of effectively guiding water quality projects in the basin. [An updated list of Members and Alternates is attached.](#)

DEC Guidance does not specify that a vote must take place to effect the renewal of BWQC membership or the seating of any new BWQC Representatives and Alternates. However, it has been the practice of the BWQC to seat proposed Alternates by acknowledging/recognizing them. Staff encourages continuation of this practice.

MISSISQUOI BAY  
BASIN (BASIN 6)

MISSISQUOI BAY BASIN	NAME OF REPRESENTATIVE	ORGANIZATION	NAME OF ALTERNATE*(S), IF ANY	ORGANIZATION
Natural Resources Conservation Districts	<a href="#">Lauren Weston</a>	Franklin County Natural Resources Conservation District	<a href="#">Melissa Affredou</a>	Franklin County Natural Resources Conservation District
Natural Resources Conservation Districts	<a href="#">Ted Sedell</a>	Orleans County Natural Resources Conservation District	<a href="#">Sarah Damsell</a>	Orleans County Natural Resources Conservation District
Regional Planning Commissions	<a href="#">Barry Lampke</a>	Northwest Regional Planning Commission	vacant	
Regional Planning Commissions	<a href="#">Beth Torpey</a>	Northeast Vermont Development Association	vacant	
Watershed Protection Organizations	<a href="#">Kent Henderson</a>	Friends of Northern Lake Champlain	<a href="#">Bridget Butler</a>	Friends of Northern Lake Champlain
Watershed Protection Organizations	<a href="#">Lindsey Wight</a>	Missisquoi River Basin Association	<a href="#">Ellen Fox</a>	Missisquoi River Basin Association
Land Conservation Organization	<a href="#">Allaire Diamond</a>	Vermont Land Trust	Remy Crettol	Vermont River Conservancy
			Tucker Malone	Vermont Land Trust
Municipalities	<a href="#">Sarah Downes</a>	Town of Enosburgh	<a href="#">Dave Allerton</a>	St. Albans Town
Municipalities	<a href="#">Daniel Seeley</a>	Town of Richford	vacant	

Annual Meeting Tasks:

Election of Chair

Election of Vice Chair

**MEMORANDUM**

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL  
FR: CWSP STAFF  
RE: ELECTION  
DA: JULY 31, 2024

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The Missisquoi BWQC’s bylaws specify that the election of officers (the Chair and Vice Chair) will take place at the first meeting following the start of the fiscal year (July 1). Nominations will be made from the floor, as the Council concluded at its meeting in June that creation of a Nominating Committee would be deferred.

Staff recommends that the elections be conducted separately rather than as a slate. Staff will be prepared to hold the gavel during the election of a Chair (should the current Chair be nominated to continue and he does not wish to preside over a vote of which he is part). The Chair will then preside over the election of a Vice Chair.

Relevant excerpts from the BWQC’s bylaws are provided below.

**ARTICLE VI        ELECTIONS**

**Section 601        Nominations**

In support of elections, a Nominating Committee made up of three Council members may be appointed by the Chair at the regular meeting preceding the annual meeting. The Nominating Committee will prepare a slate of nominations for officers. This slate of nominations will be presented at the annual meeting. Additional nominations will be taken from the floor at the annual meeting.

Prior to the appointment of a Nominating Committee in any given year, the Council may vote to forego the establishment of a Nominating Committee in that year.

**Section 602        Election of Officers**

The officers shall be elected by the Council members present and voting at the annual meeting.

**Section 702        Chair**

The Chair of the Council shall guide the planning and facilitation of BWQC meetings in coordination with the CWSP. The Chair may perform such other duties as customary to the office. The Chair shall cast a vote on all issues voted on at a Council meeting, unless the Chair wishes to abstain or has a conflict of interest. Whenever possible, the Chair will pursue decision making by consensus.

**Section 703        Vice Chair**

The Vice Chair shall act as Chair in the absence, recusal, or incapacity of the Chair.

Expedited Project Development funding proposal

Motion to approve funding for CWSP program

Motion to award subgrants for project  
development

**MEMORANDUM**

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL  
 FR: CWSP STAFF  
 RE: PROJECT DEVELOPMENT FUNDING PROPOSAL  
 DA: 7/31/24

=====

As a follow-up to the June discussion concerning ways we might respond to DEC’s [promotion of more spending on “project development”](#) activities, NRPC staff have developed the following proposal. The proposal was inspired by steps being taken by the Northern Lake Champlain Basin Water Quality Council (Basin 5) but has attributes that are unique. Last week, the Lamoille BWQC adopted a nearly identical proposal, the difference being the size the of maximum annual award.

In essence, the proposal is to create a program through which \$10,000 in funding would be provided to up to 10 entities in the basin in as simple and expedited manner as possible. To allow the CWSP to award these funds, CWSP staff seek BWQC approval of the two motions:

**Motion 1 –Authorize creation of program and establish basic parameters**

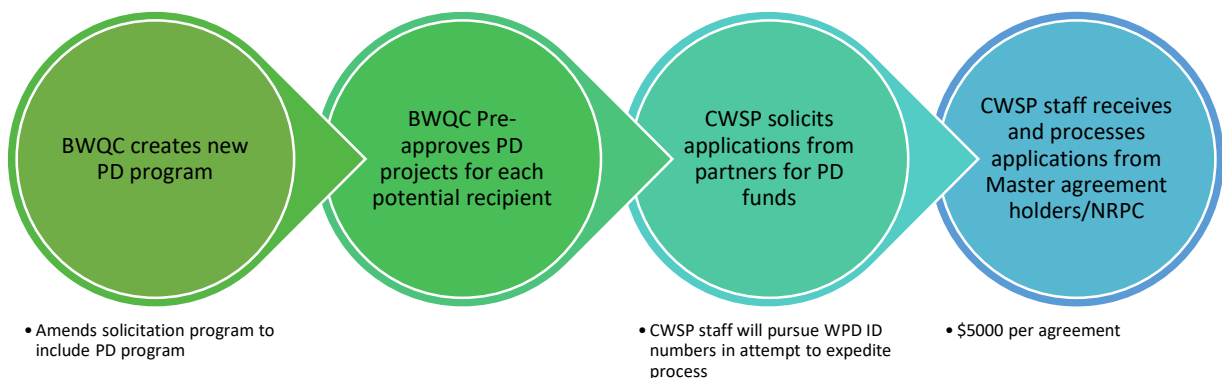
Text	Comments
<p>I move that the BWQC approve obligation of up to \$100,000 dollars in Basin 6 CWSP formula funds for the purpose of establishing a ‘general project development’ program. Basin 6 project solicitation processes are hereby amended to include ongoing solicitation of general project development applications consistent with this program.</p> <p>As part of this program, new ‘task awards’ would be issued by the CWSP to prequalified partners for project development initiatives consistent with DEC requirements and as clarified by a motion to be made following this one. The NRPC would be eligible for awards in the same manner as the prequalified partners.</p> <p>Upon adoption of this motion, CWSP staff will:</p> <ul style="list-style-type: none"> <li>-solicit project development funding requests using a simple application form.</li> <li>-pursue one or more Watershed project database ID numbers to facilitate the award process.</li> </ul> <p>The CWSP would be authorized to award funds in amounts of up to \$10,000 annually for each recipient.</p>	<p>This would create the program, specify its purpose, and integrate the new program into the system of ‘calls for applications’ we issue 3-4 times per year. The final sentence is meant to protect program from challenge.</p> <p>There are 9 prequalified partners with more than incidental area in the Basin and one CWSP, for a total of 10 potential recipients. Funds reach prequalified partners though agreements known as task awards. Project development work would be performed consistent with DEC policies.</p> <p>This is mostly practical language to guide the CWSP and attempt to simplify the process for those who seek funds.</p> <p>This amount was considered to represent a reasonable starting point. It could be altered in the future.</p>



**Motion 2 –Approve individual projects and create inventory of funding from which entities may draw**

Text	Comments
<p>I move that, in furtherance of the prior motion, the BWQC hereby approves the following individual projects:</p> <ul style="list-style-type: none"> <li>-separate general project development projects by each holder of a Master agreement with non incidental land area in the Basin in the amount of up to \$10,000;</li> <li>-project development work by NRPC in the amount of up to \$10,000.</li> </ul> <p>However, holders of Master agreements are under no obligation to move forward with these projects</p> <p>The individual projects above are deemed to have been preliminarily evaluated by the CWSP and are considered worthy of funding by the BWQC.</p>	<p>This would establish that the BWQC has approved funding for each project /initiative as required by the Act 76 Rule and Guidance.</p> <p>This language is intended to protect the program and any awards from challenge.</p>

A graphical representation of the proposal is provided below. This proposal is subject to change prior to the meeting on August 7, at which time any changes will be described.



# STATE OF THE LAKE

## MEMORANDUM

TO: MISSISQUOI BASIN WATER QUALITY COUNCIL  
FR: CWSP STAFF  
RE: STATE OF THE LAKE REPORT  
DA: JULY 31, 2024

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The Lake Champlain Basin Program recently issued the latest version of the so-called [State of the Lake Report](#). Owing to the role being played by the Missisquoi BWQC and partner organizations in the improvement of Lake Champlain, your annual meeting seemed like a good time to share or highlight certain aspects of the report. A PDF version of the full report can be found at <https://www.lcbp.org/wp-content/uploads/2024/06/2024-State-of-the-Lake-Report.pdf>.

The 2024 State of the Lake Report highlights both ongoing challenges and positive findings regarding phosphorus reduction efforts in Lake Champlain. **While phosphorus levels in Lake Champlain must be reduced to consistently meet water quality goals, monitoring shows some encouraging trends in phosphorus reduction.**

Some key findings include:

- **Phosphorus loading from rivers remains a challenge for Lake Champlain, though recent monitoring has shown improvements.** Compared to previous years, annual phosphorus loading has been significantly lower in these tributaries:
  - Great Chazy River; Little Chazy River; Saranac River; Little Ausable River; Mettawee River; Lamoille River; and Pike River
- **Despite higher phosphorus loading in recent years, the Missisquoi and Winooski Rivers have shown lower phosphorus loads in the past three years.**
- **Annual phosphorus levels in Missisquoi Bay have been significantly lower than previous years since 2018, reaching their lowest point since 1994 in 2023.**
- **Wastewater treatment facilities (WWTFs) in all three jurisdictions (New York, Vermont, and Québec) have significantly reduced their phosphorus loading thanks to recent investments.**
- **Phosphorus contributions from WWTFs have been lowered due to policy changes and infrastructure improvements.** Since 1976, jurisdictions have implemented policies and invested tens of millions of dollars to reduce phosphorus loading from WWTFs. Some notable actions include:
  - Banning phosphorus in laundry and dishwasher detergents
  - Establishing effluent limits

The report also emphasizes that phosphorus loading to Lake Champlain is strongly influenced by annual differences in precipitation and temperature. This variability, which may be exacerbated by climate change, underscores the need for adaptable and resilient management strategies to meet water quality goals.

The Report mentions the Missisquoi and Pike Rivers in key findings:

- **Even though phosphorus concentrations in Missisquoi Bay show a downward trend, phosphorus loading from the Missisquoi River to Lake Champlain has been relatively higher in the past decade compared to previous years. This highlights the need for continued efforts to reduce phosphorus inputs from the Missisquoi River Basin.**

- **Despite this challenge, phosphorus loading from the Pike River has decreased in the last three years.** This suggests that management actions within the Pike River watershed may be contributing to the overall improvement observed in Missisquoi Bay

The report identifies the following key findings related to Missisquoi Bay:

- **Missisquoi Bay, primarily fed by the Missisquoi, Pike, and Rock Rivers, faces ongoing water quality challenges. Despite its small size, comprising less than 1% of Lake Champlain's volume, it represents 7% of the lake's surface area.**
- **The bay suffers from frequent cyanobacteria blooms due to high nutrient concentrations, particularly phosphorus, and the release of legacy phosphorus from lake sediments. These blooms negatively impact recreation and tourism in Venise-en-Québec and other bayside towns.**
- **Encouragingly, recent monitoring reveals a downward trend in phosphorus concentrations in Missisquoi Bay since 2018. This positive development suggests that phosphorus reduction efforts in the bay and its tributaries, including the Missisquoi, Pike, and Rock Rivers, are beginning to yield positive results.**

# NUTRIENTS

**Nutrients are essential for life but create problems for lakes when in excess.**

Nutrients, including nitrogen and phosphorus, are a natural part of all ecosystems, are essential for all forms of life, and have been delivered to Lake Champlain by natural processes for millennia. In the post-industrial era, however, human activities have rapidly increased the rate of nitrogen and phosphorus delivery to Lake Champlain and to waterbodies around

the world, with profound effects on water quality and ecosystem health.

For every square mile on the surface of Lake Champlain, 18 square miles of land in the Lake Champlain Basin deliver water to the Lake and contribute sediment, nutrients, and other pollutants. Most nutrients come from sources on the land (Figure 6), so the relatively high land-to-lake area ratio for Lake Champlain poses a significant challenge in limiting nutrient pollution.

## Phosphorus is a key nutrient driving cyanobacteria blooms.

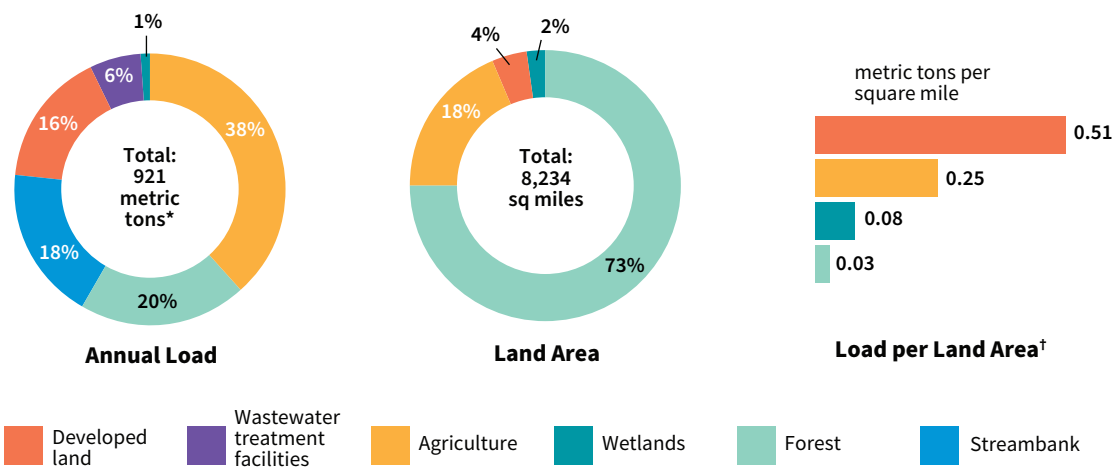
Plants, algae, and cyanobacteria all require carbon, nitrogen, phosphorus, and sunlight in their environment to grow. Because other nutrients are generally plentiful in Lake Champlain, phosphorus is often the resource that limits growth of cyanobacteria. To reduce the occurrence and persistence of cyanobacteria blooms, lake managers aim to lower in-lake phosphorus concentrations and phosphorus loading to the Lake from its tributaries. In 2016, the U.S. Environmental Protection Agency produced an updated Ver-

mont Total Maximum Daily Load (TMDL) for phosphorus loading into 12 Vermont segments of Lake Champlain, while New York continues to work toward meeting a TMDL set in 2002.

## Phosphorus levels in Lake Champlain must be reduced to consistently meet water quality goals.

Phosphorus concentration limits for 13 segments of Lake Champlain were first established in 1991. These limits represent maximum annual average levels needed to protect important uses of Lake Champlain, including swimming, recreation, aesthetics, water supply, and ecosystem health. Since 1990, none of the Lake's segments have maintained annual phosphorus levels consistently below these limits (Figure 7). This underscores the need for restoration efforts and science-based management strategies for the Lake and its surrounding watershed.

Lake Champlain segments vary in how their annual phosphorus levels compare to established limits from year to year. For example, 7 of the 13 Lake segments had annual phosphorus levels below their limits for at least one year in the 2021-2023 period. For most years in the 34-year time frame since 1990, annual phosphorus levels in Burlington and Cumberland Bays were

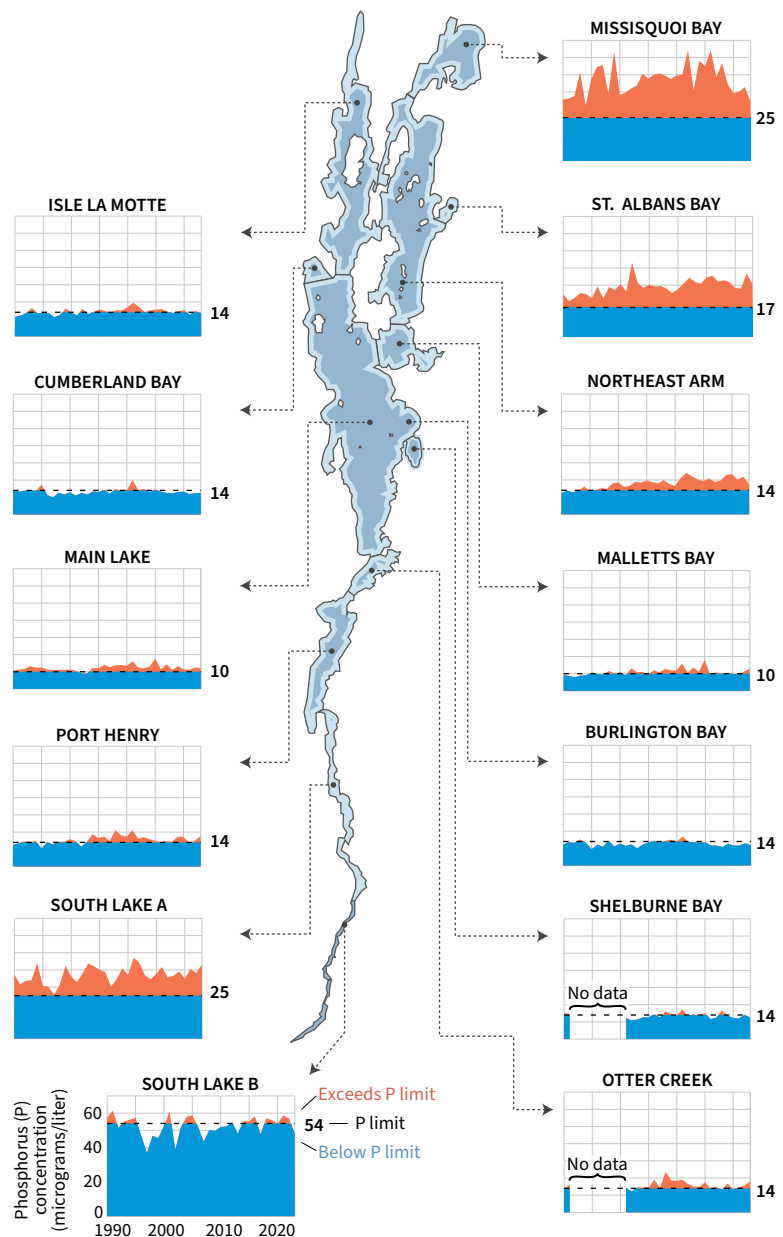


\* Estimated 2001-2010

† Does not include load from streambanks and wastewater treatment facilities

DATA SOURCES: 2016 Phosphorus TMDLs for Vermont Segments of Lake Champlain

**Figure 6 | Annual phosphorus loading to Lake Champlain by land cover**



NOTE: Data for Isle La Motte segment include two stations.  
 DATA SOURCES: Lake Champlain Long-Term Monitoring Program (LCBP, VTANR, SUNY Plattsburgh)

**Figure 7 | Annual average phosphorus concentration by Lake segment**

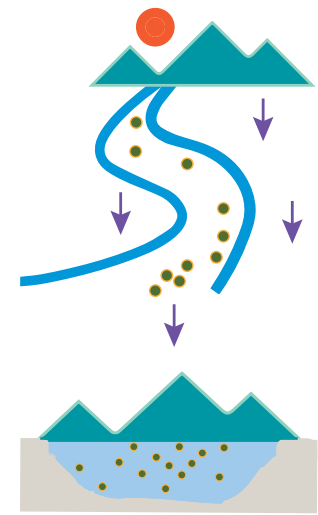
below their limits. For 40–50% of the years during the same time frame, annual phosphorus levels were below limits in Isle La Motte, Shelburne Bay, and South Lake B segments.

Missisquoi Bay, St. Albans Bay, and South Lake A segments continue to face significant challenges, as their annual phosphorus levels have consistently exceeded established limits since monitoring began. Conditions in the Northeast Arm segment are also concerning, where annual phosphorus levels exceeded the established limit most years since 1990, and have an increasing trend over this time period. Since 2018, annual phosphorus levels in Missisquoi Bay have been significantly lower than previous years, and despite phosphorus inputs following summer

flooding, the 2023 annual phosphorus level in Missisquoi Bay was at its lowest since 1994.

Some areas of Lake Champlain with higher phosphorus levels are impacted by “legacy phosphorus,” which is phosphorus deposited in the past from human activities in the watershed and stored in lake bottom sediments. Legacy phosphorus can be released from sediments into the water and fuel cyanobacteria growth.

Water quality monitoring helps managers target restoration efforts in areas where improvement is most needed. Lake segments with relatively higher phosphorus levels often have high phosphorus loads from their contributing sub-watersheds and are the focus of water quality improvement work.



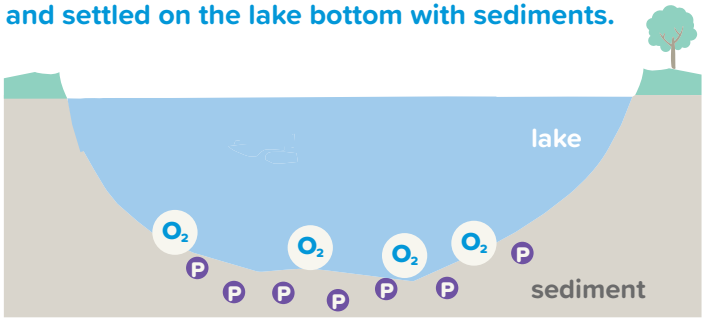
**LOAD**  
 Total amount delivered to the Lake in a period of time, typically reported as metric tons\* per year.

**CONCENTRATION**  
 The amount measured in a unit volume of water, typically reported as micrograms per liter.

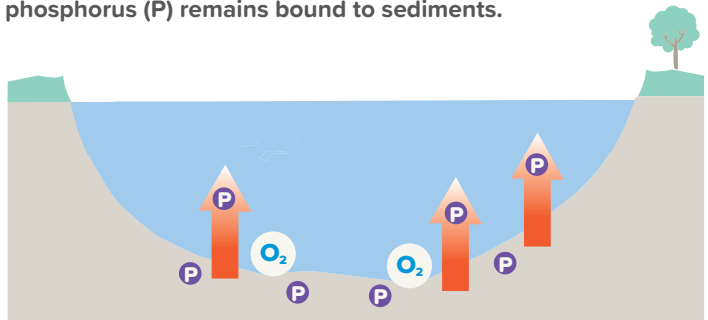
\*One metric ton = 2,205 lbs.

### Release of Legacy Phosphorus in Lakes

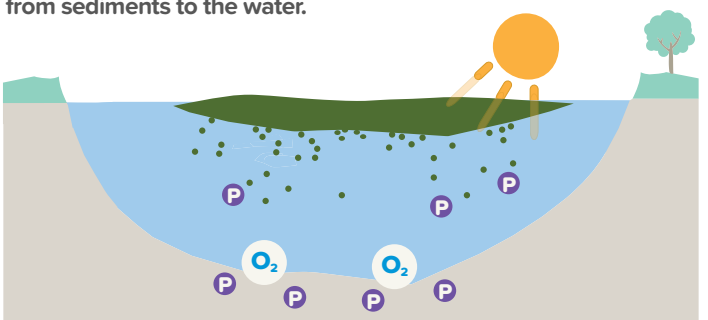
For decades, phosphorus from human activities on the landscape has been delivered by rivers and settled on the lake bottom with sediments.



If oxygen (O<sub>2</sub>) is plentiful in water at the lake bottom, legacy phosphorus (P) remains bound to sediments.



When oxygen levels decrease at the lake bottom due to biological activity and calm conditions, legacy phosphorus can be released from sediments to the water.

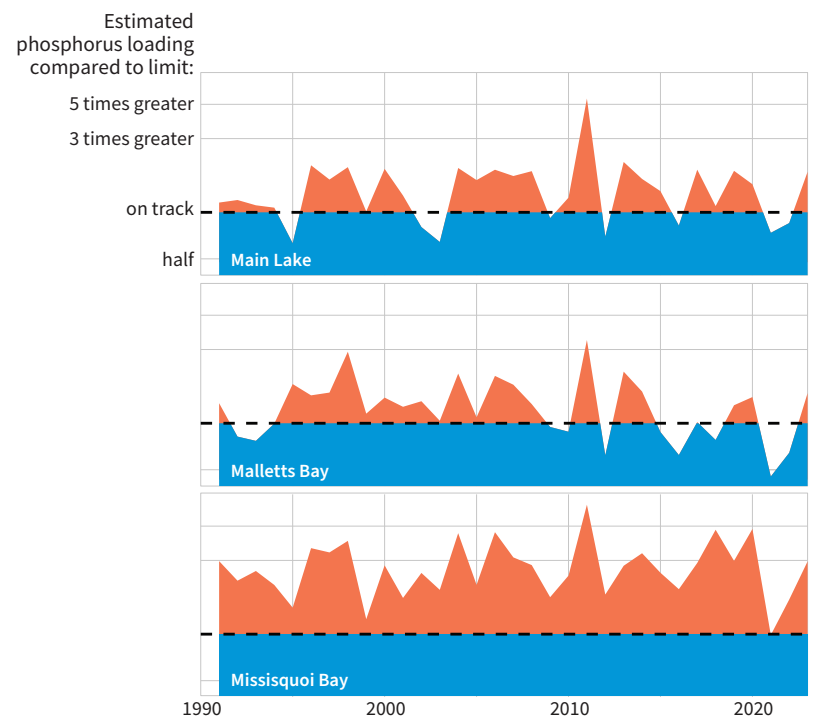


In shallow areas, cyanobacteria blooms can form where sunlight and released legacy phosphorus fuel growth.

### River phosphorus loading to Lake Champlain varies greatly from year to year and needs to be reduced to meet water quality goals.

Rivers are the pathways for water, sediment, and nutrients to move into Lake Champlain. Phosphorus loading from rivers remains a challenge for Lake Champlain, though recent monitoring has shown improvements.

Compared to previous years, the annual phosphorus loading from the past decade has been significantly lower in the Great Chazy, Little Chazy, Saranac, Little Ausable, Mettawee, Lamoille, and Pike Rivers. Although the past decade has seen relatively higher phosphorus loading in the Missisquoi and Winooski Rivers compared to previous



NOTES: The vertical axis is log-transformed to clearly show how phosphorus loading compares to limits. Three lake segments are shown out of 13 in Lake Champlain. DATA SOURCE: Lake Champlain Long-Term Monitoring Program (LCBP, VT ANR, SUNY Plattsburgh, USGS)

**Figure 8 | River phosphorus loading to Lake segments compared to targeted limits**

years, loads from these rivers in the past three years have been relatively lower compared to previous years.

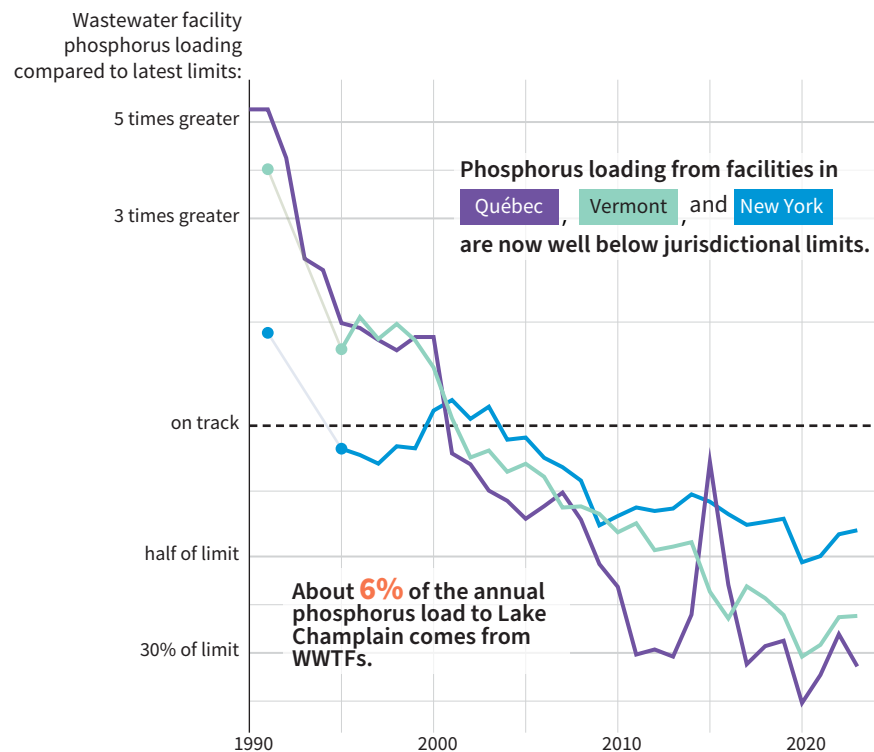
Phosphorus loading to some Lake segments, such as Malletts Bay, has been at or below these limits; phosphorus loading to other segments, such as Missisquoi Bay, has been well above limits (Figure 8). Because nutrients and sediment are primarily transported to the Lake during periods of high river flows, phosphorus loading is strongly influenced by annual differences in snowpack, rainfall, and periods of drought. This year-to-year variability in loading is likely to continue and may increase because of changing precipitation patterns due to climate change.

**Many efforts are underway to reduce phosphorus loading and ultimately reduce phosphorus levels in Lake Champlain.**

Lake Champlain has been the focus of renewed investments in watershed management practices by the U.S. federal government, state and provincial agencies, and municipalities. Recent investments in wastewater treatment facilities have driven significant reductions in phosphorus loading from these

sources in all three jurisdictions (Figure 9). In 2015, the Vermont state legislature passed the Clean Water Act (Act 64), which established several new rules and revenue requirements for the Vermont Clean Water Fund to reduce the amount of phosphorus and other pollution entering the state’s waterways. Vermont and Québec adopted an agreement concerning phosphorus reduction in Missisquoi Bay in 2002. The agreement reaffirmed the phosphorus concentration limit for the bay and established a phosphorus loading limit for the bay’s watershed. In 2021, the two jurisdictions renewed the agreement to affirm shared common goals for the restoration of Missisquoi Bay.

Farmers, resource management agencies, and local watershed organizations have long recognized that farms in the Basin play a significant role in nutrient pollution challenges. Several initiatives are underway to help the agricultural sector in meeting targeted phosphorus loading limits and ultimately reduce in-lake phosphorus concentrations. Ongoing grant programs, wastewater treatment upgrades, agricultural support to implement best management practices, and outreach programs all contribute to the reduction of phosphorus loading.



Policy changes and infrastructure improvements have **lowered** phosphorus contributions.

- ✓ Phosphorus banned in laundry and dishwasher detergents
- ✓ Effluent limits established
- ✓ Tens of millions of \$ invested

NOTE: Targeted limits are based on the 2002 Vermont-Québec agreement for Missisquoi Bay, the 2002 New York Lake Champlain Phosphorus TMDL, and the 2016 Phosphorus TMDLs for Vermont Segments of Lake Champlain.

DATA SOURCES: U.S. EPA, NYSDEC, VTANR, QC MELCC

**Figure 9 | Annual phosphorus load from wastewater treatment facilities (WWTFs) by jurisdiction**



Future meeting topics

Updates and conclusion