

# the watershed observer



Lake Winnipeg  
Community-Based  
Monitoring Network



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# special edition

## A decade of community-based monitoring

In this special edition of the Watershed Observer, we're celebrating a decade of the Lake Winnipeg Community-Based Monitoring Network (LWCBMN), and the knowledge built along the way. Over the past ten years, our volunteers have gathered consistent, meaningful data that reflects the health and changes of Lake Winnipeg and its watershed.

Stories throughout this issue highlight how community-generated data informs real-world decisions. You'll hear reflections from long-time science advisors and partners, alongside insights into PhosphorusExplorer.ca, our new data-sharing platform.

This edition honours the collective effort behind each sample, data point, and hotspot map. Most importantly, it looks ahead with appreciation and purpose. Ten years in, the work continues, rooted in community and driven by the desire to improve the health of the lake we know and love.

“

“One thing I've learned is that many of the solutions to eutrophication are not in the lake. The solutions are in the watershed, and it takes the level of data and information that this network has generated over ten years to get to the solutions.”

– Dr. Scott Higgins, Chair,  
LWF Science Advisory Network

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## Thank you to the following LWCBMN funders

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RM of Sifton; Photo: Paul Mutch

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## lwcbmn online

Find the latest network news online at  
[lakewinnipegfoundation.org/evidence](http://lakewinnipegfoundation.org/evidence).

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# message from our chair

This letter marks the end of my term as board chair, as well as the end of my nine-year tenure on the Lake Winnipeg Foundation board. It has been an absolute pleasure to be on the board, working with the other board members and LWF staff, and observing firsthand the many successes the organization achieved during this time. One of these monumental achievements is the development and expansion of the community-based monitoring network.

When I first joined the LWF board, the monitoring program was only in its second year, with 58 sampling sites across five watershed districts. Now the network has 114 sampling sites across 12 watershed districts, with 60 volunteers. Data produced by the monitoring network has been presented to numerous stakeholders from academia and government and has been referenced in several peer-reviewed studies. This demonstrates the importance of the network's findings in guiding water-quality research as well as informing policy and land management in Canada. Kudos to the LWF team for building this program from scratch and maintaining strong quality control to ensure the rigour of collected data.

While many things have changed while I've been on the board, some things have stayed the same. LWF continues to advocate for better wastewater

management solutions in response to decades of inaction by the City of Winnipeg and the Government of Manitoba. Just last month, the provincial government decided to extend the deadline for compliance at Winnipeg's North End Water Pollution Control Centre. What does this extended deadline mean? It means that Winnipeg's largest wastewater treatment plant can continue to release excess phosphorus to the Red River for another seven years. This treatment plant has already been releasing effluent above regulatory limits for 11 years.

It is frustrating that we, LWF and its members, must continue to advocate for phosphorus compliance at the north end treatment plant. However, I know that our amazing members are up to the task! Whenever LWF puts out a call asking for help advocating on issues affecting Lake Winnipeg, you consistently step up. You also continue to support LWF's advocacy work with your fundraising efforts and donations. Accordingly, I look forward to joining LWF's phenomenal general members, as I step away from my board duties. And I can't wait to participate in summer fundraising events – I hope to see you there!

Signing off,

– Kathryn Dompierre,  
Chair, LWF Board of Directors

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# journey of a sample

LWCBMN volunteer Brooke Thomas prepares to collect a water sample from Grassmere Creek Drain. Follow this sample as it travels from the field to the lab, transforming a tiny bottle of water into insights about phosphorus hotspots in the Lake Winnipeg watershed.



Photo: Paul Mutch

## Sample collection

Brooke arrives at her sampling site at 4:19 pm on May 17, 2025. The air is cool and the ground is damp from rain the previous day – conditions that prompted her to collect this sample.

She places the collection bottle into the sampling device and slowly lowers it into the water. After rinsing the bottle twice, she collects a sample from the full depth of the water. Brooke waits until the steady stream of bubbles stops, then carefully brings the sampling device back up.

Brooke shakes the collection bottle well before preparing her sample. She labels bottle #25EIGC4 with the date, time, and her volunteer ID. For now, the sample is kept safe in a cool, dark place, until Fallon, LWF's Program Coordinator, can pick it up.

Later that year, the sample is delivered to Dr. Nora Casson's Water Quality Lab at the University of Winnipeg. Alongside dozens of others, it is analyzed by Karl, LWF's Water Data Specialist. Karl matches the sample number with a new analytical ID, to ensure the sample can be traced throughout its journey.

To measure phosphorus, a chemical is added to the sample, causing it to change colour. The deeper the blue, the higher the phosphorus concentration. The sample is then placed into a spectrophotometer, which uses light to determine the phosphorus composition of the sample. Sample #25EIGC4 measures 0.34 mg/L of phosphorus. Karl notes the results in a spreadsheet.

## Lab analysis

## Data analysis

The data from sample #25EIGC4, along with other samples from Brooke's site, are combined with data from the Water Survey of Canada to calculate phosphorus export – the amount of phosphorus exported from each hectare of land in Brooke's watershed.

Karl combines data from across the network to create colour-coded hotspot maps, which reveal where phosphorus exports are highest.

The 2025 hotspot map, including data from Brooke's sample, is uploaded to **PhosphorusExplorer.ca**. Phosphorus concentration data is also available at **LakeWinnipegDataStream.ca**. Easily accessible online, this data will be seen and referenced by many people: informing research, changing policy, and helping community members like Brooke learn more about what's going on in their watershed.

## Data sharing



Photo: Kanak Kulhairi

# data for decision-making

Data is all around us. At LWF, we believe that accessible data has the power to drive action and accountability. Publicly shared data connects people to the information they need to make informed decisions about Lake Winnipeg and its future.

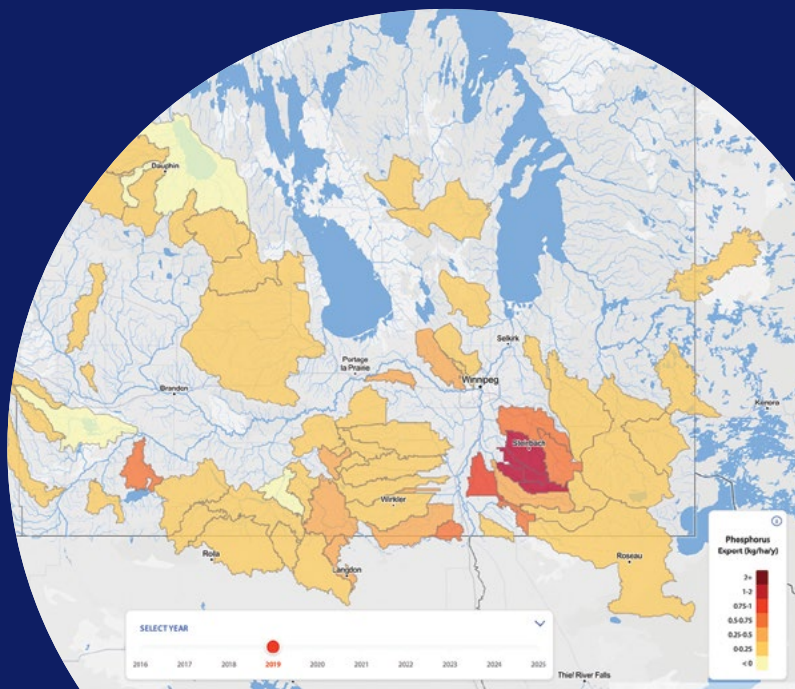
To ensure LWCBMN data is accessible to all, we have launched PhosphorusExplorer.ca – a new interactive online mapping platform that brings ten years of phosphorus data to your fingertips. In the past, our findings were published annually in separate reports for each region, making it difficult to compare trends across years and regions. PhosphorusExplorer.ca streamlines data sharing and makes it easier than ever to explore patterns at multiple scales, from individual sites to watershed districts to the provincial scale.

Launched on March 4, 2026, the platform is already enhancing how data is used. As Joey Pankiw, Manager of the Seine Rat Roseau Watershed District, notes:

“PhosphorusExplorer.ca is a valuable new tool. Its interactive format helps us better understand year-to-year phosphorus loading patterns, strengthening our ability to plan strategically and communicate priorities

with partners and funders. We see it becoming an integral part of our local decision-making and long-term approach to effective phosphorus management”.

Explore the data yourself at [PhosphorusExplorer.ca](https://PhosphorusExplorer.ca).



## How the federal government uses LWCBMN data

With its latest call for project proposals, the Canada Water Agency (CWA) is using LWCBMN data to prioritize federal investments in phosphorus hotspots. By directing funding to persistent hotspots, LWCBMN data is helping ensure that public funds for Lake Winnipeg will be invested where they are most needed.

The CWA’s Lake Winnipeg program is focused on reducing phosphorus loading to Lake Winnipeg by supporting projects within the lake’s watershed. Now, the program will prioritize projects located in phosphorus hotspots. Priority watersheds were identified by combining LWCBMN’s phosphorus data with estimates from a federal watershed model developed by Environment and Climate Change Canada.

To develop this map, LWF’s Programs Director, Chelsea Lobson, participated in a federal working group that brought together academic and government scientists, watershed modelers, and other key partners.

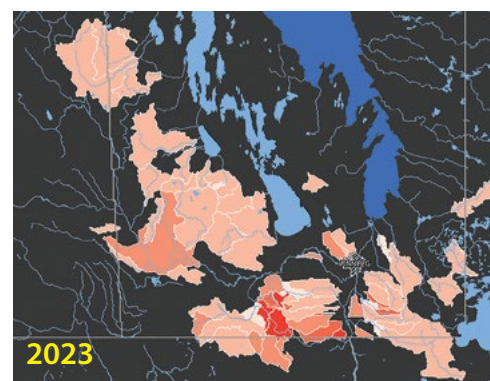
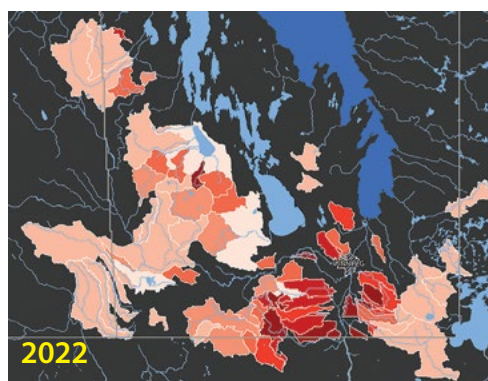
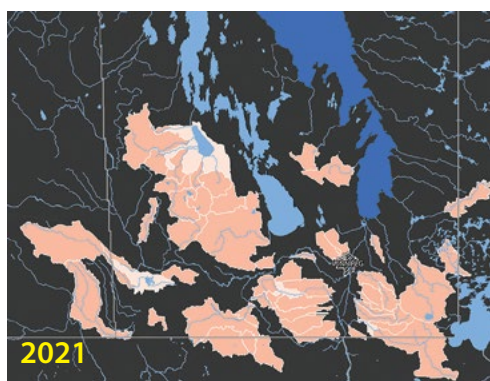
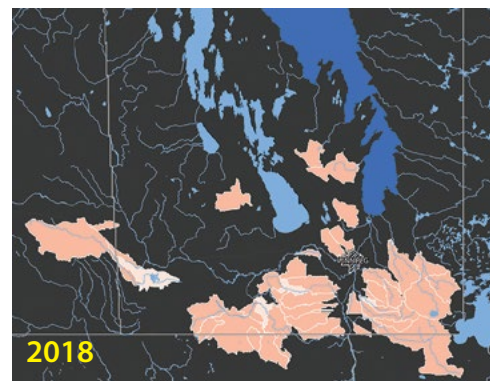
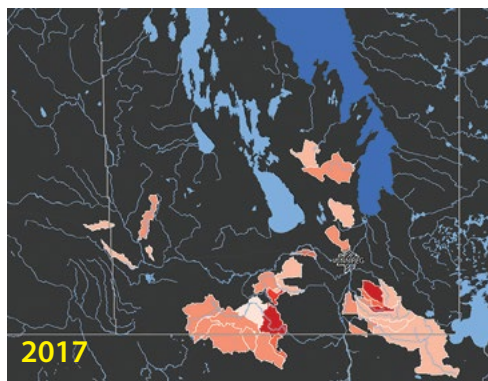
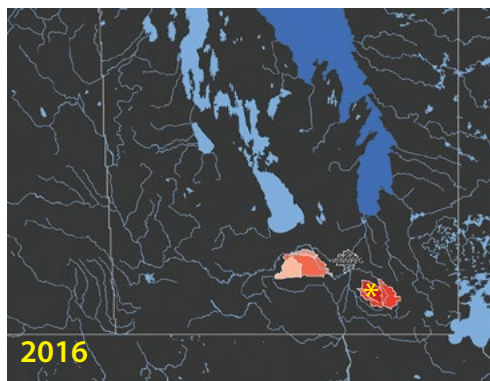
This collaborative effort underscores the value of LWCBMN and the important work the network does. The use of LWCBMN data by the federal government is a meaningful step forward for evidence-based phosphorus reduction in the Lake Winnipeg basin – and the network’s volunteers, partners, and staff have made it possible.

### Insight to impact: LWCBMN data at work

LWCBMN data is helping researchers better understand what causes phosphorus runoff across the watershed. Researchers at the University of Winnipeg are using LWCBMN data to study how flooding, soil conditions, and land-management practices affect phosphorus runoff during snow melt.

LWCBMN data also helps guide action on the ground. Watershed districts use the data to identify local hotspots and target projects where they will have the greatest impact.

# celebrating ten years



In March 2026, LWF released LWCBMN data from 2024 and 2025, marking ten years of community-based monitoring across the watershed. This growing dataset provides a clear picture of where Lake Winnipeg’s phosphorus pollution is coming from – enabling us to target solutions where they will have the greatest impact.

Differences in phosphorus export were evident from the very beginning of LWCBMN’s sampling. In 2016, with just six monitored drainage areas, phosphorus hotspots stood out. The more drainage areas we added, the more pronounced differences became between high-contributing areas and the rest of the watershed.

LWCBMN data also shows that phosphorus export is strongly influenced by climate and hydrology. Dry years, such as 2018 and 2021, consistently show low phosphorus exports across the watershed. In contrast, wetter years – including 2017, 2019, and 2022 – are characterized by much higher phosphorus exports, driven by spring flooding and major rainstorms.

Because volunteers live, work, or commute near their sampling sites, they can respond quickly to high-flow events, allowing LWCBMN to capture a level of detail often missed by government monitoring programs.

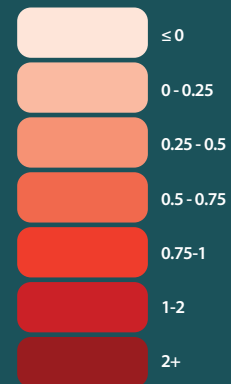
“What stands out to me about LWCBMN is the commitment to collecting really high-quality data, to using state-of-the-art lab methods, and to refining protocols as new techniques arise.”

– Dr. Nora Casson, Canada Research Chair in Environmental Influences on Water Quality

# definitions

## Phosphorus export:

the amount of phosphorus exported from each hectare of land in a year (kg/ha/y), calculated by dividing the phosphorus load by the drainage area



Phosphorus export (kg/ha/yr)

## Phosphorus load:

the total amount, in tonnes, of phosphorus flowing past a sampling site in a field season, calculated by multiplying phosphorus concentration by water flow

## Drainage area :

the area of upstream land (km<sup>3</sup>) that drains past a sampling site

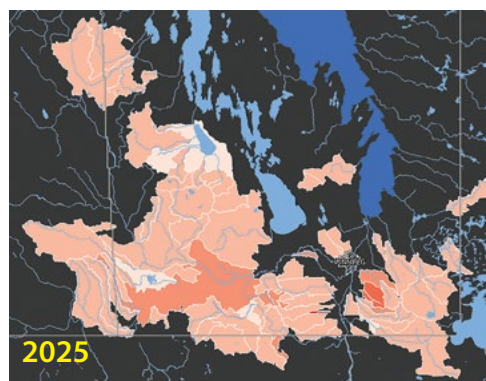
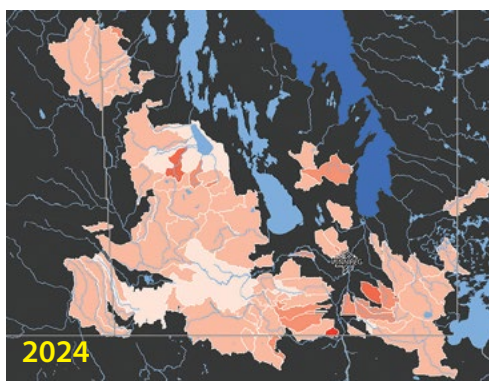
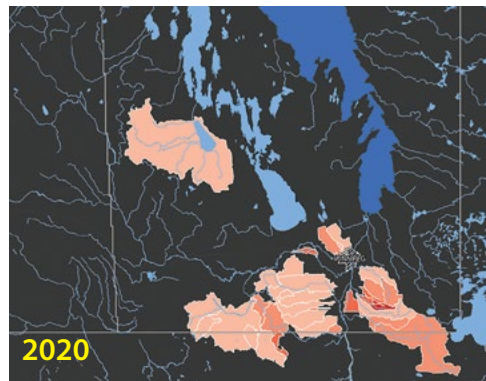
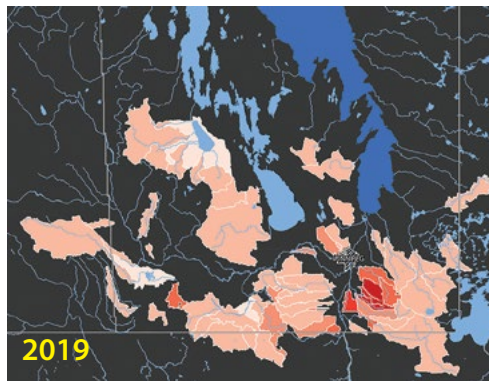
## Phosphorus Hotspot:

a drainage area with a high phosphorus export, which contributes more phosphorus to downstream waterways

## Hydrology:

the study of how water moves across the landscape

✳ Manning Canal phosphorus hotspot



Year-to-year differences in the data highlight an important point: low phosphorus export in a given year doesn't mean the problem has been solved – it may simply mean there wasn't enough water to move phosphorus downstream.

This variability is exactly why long-term monitoring matters. With ten consecutive years of data, LWCBMN enables us to identify persistent patterns. While phosphorus exports fluctuate with weather, certain areas repeatedly stand out as higher contributors. These “persistent hotspots” are defined not by a single wet year, but by consistently elevated exports across multiple seasons.

One example is the Manning Canal drainage area\* in the Seine River watershed. Identified as a hotspot as early as 2016, it continues to stand out year after year – even during relatively dry years like 2024 and 2025. Patterns like this give us confidence when recommending targeted action.

As the dataset continues to grow, so does its value. Ten years of monitoring data provide a powerful foundation for identifying patterns, linking phosphorus export to land-use activities, and supporting a focused approach to phosphorus reduction to protect Lake Winnipeg.



Mike Stainton and Dr. Greg McCullough, Photo: Kanak Kulkarni

# from vision to reality

## LWF Science Advisors Mike Stainton and Dr. Greg McCullough look back on ten years of community-generated phosphorus data

Today, the Lake Winnipeg Community-Based Monitoring Network (LWCBMN) is a cornerstone of water-quality research in Manitoba. Powered by volunteers, the program collects water samples from across the province to measure phosphorus levels, producing data that fills critical gaps in Manitoba's monitoring landscape.

Ten years ago, the network was just an idea, born out of necessity. Mike Stainton, a chemist whose 45-year career focused on phosphorus and water quality, and Greg McCullough, a geographer devoted to the study of hydrological processes and nutrient transport, saw an urgent need to change the way water data was collected.

### What gaps existed before the network began?

GREG: Early on, government monitoring of the largest rivers flowing into the lake showed that only the Red River had concentrations of phosphorus high enough to explain the increases in the lake. Yet, except for the City of Winnipeg's wastewater treatment system, we simply didn't know exactly where most of the phosphorus came from.

### What did the monitoring landscape look like?

MIKE: The monitoring landscape was calendar-driven: four times a year, samples were taken at some locations in the watershed. It was a lottery as to whether the sample was taken at the time of peak phosphorus loading. It was not a very reliable estimate of the loading coming off various watersheds.

GREG: Mike and I had spent much of the decade before LWCBMN lobbying the provincial government for an improved monitoring program. But change wasn't happening. The idea that maybe we could do something ourselves was bubbling up out of everyone's frustration.

### What convinced you that community-based monitoring was the right path forward?

MIKE: Reality. It was the only way to get that level of detail. The problem with the professional monitoring being done, was it required well-paid staff, government trucks driving out to various points in the landscape. It's expensive, so it's done infrequently.

### What did you do to get the network off the ground?

GREG: Mike and I supplied the experience and expertise to guide the initial program design. LWF provided the institutional stability and commitment; their staff supplied first unbounded energy and enthusiasm and now experience and expertise to build the program into the success it has become today.

### How did the network build trust in its data to support use by government agencies?

GREG: Our emphasis on data quality was to support an underlying requirement: credibility. It was important that the data be used, especially by agencies responsible for the management of water quality in the province. It is gratifying to see that this is now happening; through the persistent work of LWF staff, federal agencies are now using LWCBMN data – at first for research, and now to select watersheds for pilot phosphorus-reduction projects.

### After ten years, what do you consider to be the monitoring network's most significant achievement?

MIKE: I think the greatest accomplishment is demonstrating the power of this organized network of passionate people out there on the landscape. You've given them the tools to do things that we used to have to pay professionals to do. Whether you're collecting phosphorus data or any other parameter, the success is the network that you've developed. Hopefully it will be a model for extending this concept across a lot more watersheds.

### What do you think is the most important question that LWCBMN data can answer in the coming decade?

GREG: Perhaps the greatest value of this decade-long record of phosphorus export will be realized when it serves as baseline data for measuring the successes and failures of our efforts to reverse the increased phosphorus loading that has damaged the health of Lake Winnipeg. The record will only become more and more valuable as the staff and volunteers of LWCBMN continue their work through the decade (and decades) to come.

# supporter spotlight



James Hood: Photo: Assiniboine College

James Hood wears many hats. He's an instructor in Land and Water Management at Assiniboine College in Brandon, Manitoba, and when he's not in the classroom, he's usually outdoors: cycling, kayaking, or even scuba diving (ask him sometime about the winter dive he once did in Lake Winnipeg!).

James joined the Lake Winnipeg Community-Based Monitoring Network (LWCBMN) in 2021 and has since become deeply familiar with his sampling site on the Little Souris River. Like many volunteers, he's witnessed first-hand how quickly his site responds to weather. Because the watershed is small, every storm causes a noticeable spike in water flow, making each sample an important snapshot to capture.

He's especially drawn to the changing seasons along the river. "I like watching the ebb and flow of the seasons," James says. "From the cold, barely moving trickle in March, to the roaring torrent in April, to a less attractive, but still important, series of stagnant and occasionally smelly pools for the rest of the season. It's all part of nature." He also treasures the quieter moments in the Brandon Hills, where sampling gives him time to watch the fog burn off and listen to the frog chorus. Even on stressful days, being at his site helps him reconnect.

For James, the network is about more than collecting data. He values the program's organized, hands-on approach and believes strongly in its impact. "Addressing the problems in Lake Winnipeg and the prairie ecosystem requires action," he says, "and LWCBMN does action." He takes pride in knowing that volunteer-collected data is helping inform real solutions for Lake Winnipeg.

James also supports the next generation of water stewards. In late September, LWF staff members Chelsea and Fallon travelled to Brandon to deliver a hands-on LWCBMN training session for Assiniboine College's Land and Water Management class. The session was organized by James, who has coordinated this annual event for several years. Students were given the chance to learn sampling protocols and put them into practice. It was a valuable opportunity to build on classroom learning and gain real-world experience in water monitoring.

Whether mentoring students or collecting samples, James embodies the spirit of community-based monitoring. We're grateful to have him as part of the LWCBMN community.

# people powered

You make our community-based monitoring network possible! Whether it's taking a water sample or attending Walk for Water, these shared efforts show what's possible for the lake when communities act with purpose. This summer, join us at the following events and connect with the community caring for our waters.

- **Sunday, July 19, 2026 | Walk for Water Victoria Beach**
- **Sunday, July 26, 2026 | Walk for Water Dunnottar**
- **Friday, August 7, 2026 | Bike to the Beach**

Watch for event details online at [lakewinnipegfoundation.org](http://lakewinnipegfoundation.org).



Truro Creek; Photo: Paul Mutch



**Donate online at:**  
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