



**Submission to the House of Commons Standing Committee on
Environment and Sustainable Development's study on freshwater**

Submitted by:

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Introduction

[The Gordon Foundation](#) is a 56-year old charitable organization with a long history of supporting freshwater protection and promoting community engagement in policy-making.

For the past eight years, the Foundation's Water Program has focused on **improving access to water data** across the country, with an emphasis on ensuring communities have the information they need to actively engage in freshwater management and protection.

The Gordon Foundation's work in this area led to the development of **DataStream**, an open access digital platform for sharing water quality data. It is designed to provide data sharing infrastructure so that communities can both access and contribute data to inform decision-making at the local and regional levels. To date, over 130 organizations are using [DataStream](#) to openly share data from over 7,000 sites across Canada.

In addition to our work on DataStream, The Gordon Foundation also engages in and convenes discussions related to advancing: **open access to water data** collected across sectors; use of **data in decision-making** processes; support for **community / locally-driven monitoring, and research**; among other topics. In recent years this has included co-convening roundtables, workshops, webinars and training sessions at the national and regional levels.

About DataStream

DataStream was born of the recognition that unlike ever before, data can be a powerful lever for shaping effective water management and protection. While a tremendous amount of invaluable data is being collected across sectors in Canada, this data is often difficult to find and access (if it is available at all). To fill data gaps, community-based initiatives are increasingly playing an active role in monitoring their local watersheds. This work is key to answering community questions about their watersheds and to building resilience to environmental change.

Working with limited resources, community programs answer locally relevant questions while also providing invaluable insights at the watershed scale. For example, while the 2020 WWF Watershed Reports¹ highlighted that the health of 60% of Canada's sub-watersheds is unknown, it also illustrated the role that community-based monitoring groups play in filling knowledge and data gaps. **In the Lower Mackenzie Watershed, for example, the region was deemed "data deficient" in 2017 but, thanks to community-based monitoring data that was made available on Mackenzie DataStream, it was possible to assess freshwater health for this region in the 2020 report.**

Community-based monitoring organizations have also proven to be adaptable – for example, throughout the COVID-19 pandemic many communities carried on monitoring, often when other programs could not.

¹ WWF-Canada. 2020. 2020 Watershed Reports: A national reassessment of Canada's freshwater. Paquette C. Hemphill L. Merante A. Hendriks E. World Wildlife Fund Canada. Toronto, Canada.

DataStream is designed to support these efforts by providing the data management and sharing infrastructure needed to ensure communities can both access and contribute data to inform decision-making at the local, regional and national level.

Water monitoring, government and research organizations upload their data to DataStream in a standardized format that facilitates its use. DataStream makes it easy to find, visualize and download data. Among many benefits, DataStream facilitates collaboration among research and monitoring initiatives that may not have otherwise been aware of, or able to connect with, one another. By providing datasets in standardized formats, DataStream greatly reduces the upfront cost and effort needed to work with existing data contributed by programs across sectors and jurisdictions.

DataStream currently covers nearly half of Canada's landmass and contains over three million unique data points from a rapidly growing network of more than 130 data contributors. These data contributors include Indigenous, federal, provincial and territorial governments, academic researchers, watershed organizations, and citizen science programs.

There are currently three DataStream hubs:

- [Mackenzie DataStream](#), delivered in partnership with the Government of the Northwest Territories, DataStream's founding partner.
- [Atlantic DataStream](#), delivered in partnership with the Atlantic Water Network.
- [Lake Winnipeg DataStream](#), delivered in partnership with the Lake Winnipeg Foundation.

A fourth hub, [Great Lakes DataStream](#), is set to be released this fall and, longer-term, the platform will be extended across Canada. The map shows the coverage of existing and planned DataStream hubs.



Interaction and collaboration with federal departments and agencies

In recent years, The Gordon Foundation has interacted with the federal government in a number of ways. Environment and Climate Change Canada (ECCC) has provided funding to support research on data access issues as well as various activities related to DataStream programming.

During our national and regional gatherings, representatives of the federal government (often from ECCC) have been invited to participate in these events. This includes, for example, federal support for, and participation in, the 2018 National Roundtable on Community Based Water Monitoring, which brought together 50 leading Indigenous and non-Indigenous community monitoring practitioners, water scientists, policy and data experts from coast to coast to coast. More recently, in December 2020, representatives from ECCC, Fisheries and Oceans Canada (DFO) and Crown-Indigenous Relations and Northern Affairs Canada participated in a workshop designed to identify barriers and opportunities related to data sharing in the Great Lakes region².

The Gordon Foundation has also sought technical expertise from the federal government. Most notably, in developing and maintaining DataStream's data schema—a foundational element of this data sharing platform—The Gordon Foundation regularly seeks cross-sector input. As part of this process, representatives from ECCC, DFO and Natural Resources Canada have provided (and continue to provide) scientific input and insights. This participation has been valuable in ensuring DataStream is scientifically robust, aligned with other data systems, and meets the needs of water monitoring and research groups across the country.

ECCC has collaborated with The Gordon Foundation to make data from the national long-term water quality monitoring program available on DataStream (this data is also available on the Open Canada site). This has been very well received by community monitoring groups who say this makes it easier for them to see what ECCC data is available in their regions.

Over the past year, The Gordon Foundation has contributed to discussions about the Canada Water Agency through written submissions and during various workshops. Moving forward, we welcome the opportunity to continue to engage in these discussions and contribute our knowledge and expertise, particularly as it relates to improving access to water data in Canada and the role of community-based monitoring and research in water management and protection.

Finally, more generally, we look forward to contributing to improving access to water data in Canada through DataStream. DataStream provides sophisticated and scientifically robust online infrastructure that is otherwise not available to community-based monitoring groups, many of which receive support from the federal government. Paired with our hands-on training and support, this is advancing access to data and community participation in water protection.

² Goucher, N., DuBois, C. and Day, L. 2021. Data Needs in the Great Lakes. Workshop summary report produced by The Gordon Foundation in collaboration with the University of Waterloo's Water Institute

Collection of water quality information and data

The federal government has a key role to play in ensuring policy makers, researchers, and communities can access the data they need to make effective, evidence-based decisions that protect Canada's freshwater resources. Addressing local and regional freshwater issues also requires governments of all levels to work together to make data open and usable.

At the federal level, there is a great deal of variability in the accessibility of the many parameters (or data types) that impact watershed health. The Gordon Foundation's work focuses on **water quality data** and our comments here relate specifically to this data type.

Currently, there are significant data gaps in Canada, despite extensive water monitoring and research. Where data exists, it is often siloed along sectoral lines, is not open, or is not in an accessible format. This challenge led to the development of DataStream.

While progress has been made to improve access to federally collected water quality data, much more work is needed. **A common challenge identified by many in the water community is that people are often aware of studies being conducted by the federal government but the water quality data generated is not shared with the public.** This can be a source of frustration for local monitoring and research groups, many of whom could apply this data to answer community questions or simply would like to see the data that informed published reports and findings. Providing access to data, not just interpreted results, is increasingly becoming the norm in the academic research community. Leading journals now require the open sharing of the data underlying the findings within a published paper. This improves transparency and reproducibility in science, facilitates data synthesis and reuse to advance scientific research and maximizes returns on public investments in research.

Many, including The Gordon Foundation, would like to see the federal government move in this direction by applying the "open by default" principle to all data generated. This would include water quality data that is generated, commissioned or funded by federal departments. For example, this includes data collected by external consultants performing studies for federal departments.

As a rule, water quality data collected with public funds should be made as open as possible and only closed as absolutely necessary (i.e. sensitive data that belong to Indigenous governments or organizations)³.

Finally, it is worth mentioning that Canada has work to do when it comes to data standardization. Currently, governments at all levels share water quality data in different formats and often do not adhere to existing data standards. This can make the data more challenging to work with.

By contrast, in the United States, all water quality data collection efforts funded by the federal government must be made openly available in the US EPA WQX data schema. It is currently used to share over 380 million water quality data records from 900 federal, state, tribal and other partners. Doing so greatly improves data interoperability and re-usability. **The WQX standard**

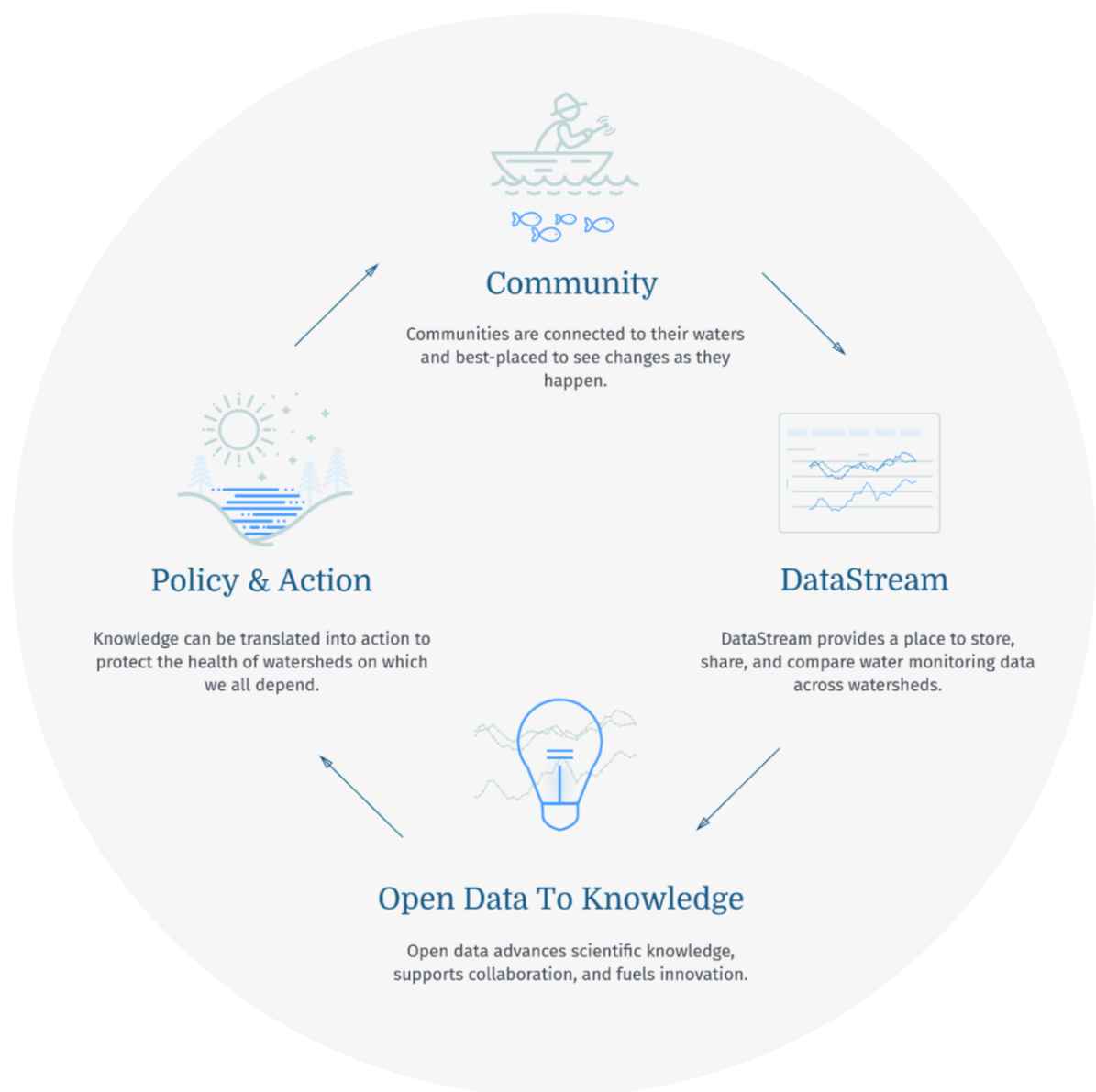
³ CODATA, the Committee on Data of the International Science Council (2019). *The Beijing Declaration on Research Data*.

is well-established and is the result of a decade of input from water scientists and, like many standards, it continues to evolve with continued input. This is the standard that we have chosen to use in our platform, DataStream.

Use of community-based monitoring data by federal departments

Clarity about data use is vital. Communities collecting freshwater data want it to be used to guide decision-making and being able to trace data use back to the original data source and data system drives this.

The data-to-policy cycle, below illustrates the value of community-based monitoring programs to policy development.



The *Elevating Community-Based Water Monitoring in Canada*⁴ report, identified using community-based monitoring data in decision-making, which includes tracking and reporting ways in which community-based monitoring data is ultimately used, as an actionable step the federal government can take to show leadership around engaging community-based monitoring groups. The federal government should commit to using community-based monitoring data where applicable in regulatory, legislative, and policy processes and identify opportunities to integrate and apply community-based monitoring data in federal water decisions.

Summary

Federal freshwater policy should support the vital community-based monitoring sector and make water quality data open and comparable, in order to drive evidence-based decision-making that protects Canada's freshwater.

This brief draws on The Gordon Foundation's experience and expertise in delivering DataStream, an open-access, online platform for sharing freshwater data.

⁴ Living Lakes Canada, WWF-Canada and The Gordon Foundation (2019). *Elevating Community-Based Water Monitoring in Canada Final Recommendations*.