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# Evaluation of Freshwater Action Plan: Lake Winnipeg Basin Program



Canada 

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## List of acronyms and abbreviations

AAFC	Agriculture and Agri-Food Canada
DFO	Department of Fisheries and Oceans
ECCC	Environment and Climate Change Canada
FY	Fiscal year
FAP	Freshwater Action Plan
G&C	Grants and Contributions
LWBP	Lake Winnipeg Basin Program
MOU	Memorandum of Understanding
PIP	Performance Information Profile
the Consortium	Lake Winnipeg Research Consortium
US	United States

## Executive summary

### Context

This report presents an evaluation of Environment and Climate Change Canada (ECCC) activities supported by Freshwater Action Plan (FAP) funding for the Lake Winnipeg Basin Program (LWBP).

The Lake Winnipeg Basin is almost a million square kilometres and stretches over four provinces and four U.S. states. The majority of the waterbodies across the basin drain into Lake Winnipeg then flow north to Hudson Bay. With 70% of Canada's farmland, 62% of Canada's cattle population, and 40% of Canada's hog population, agriculture is the dominant land use within the basin, generating 53% of the annual phosphorus production from manure in Canada. Given the size of the basin, activities are often focused on portions of the basin or watersheds - meaning subsections of the basin draining into major waterways that flow into Lake Winnipeg. For example, the Red River Watershed is that portion of the basin that flows into the Red River, which then flows into Lake Winnipeg. The Red River Watershed contributes the largest percentage of nutrients to the lake and accounts for 68% of the phosphorus load and 34% of the nitrogen load.

Announced in Budget 2017, the FAP is a framework to advance ECCC's programming to protect and restore freshwater quality in the Great Lakes and the Lake Winnipeg basins. The FAP includes \$70.5 million in funding between Fiscal Year (FY) 2017 to 2018 to FY 2021 to 2022, with \$25.7 million allocated to the Lake Winnipeg Basin Program, and \$44.84 million allocated to the Great Lakes Protection Initiative.

The LWBP funds projects and activities aimed at reducing excessive nutrients from entering and deteriorating water quality in Lake Winnipeg. Activities focused on the following areas:

- **Collaborative governance:** encourage and strengthen collaborative efforts to reduce nutrients throughout the Lake Winnipeg Basin
- **Indigenous engagement:** enhance opportunities, capacity and engagement of Indigenous governments, organizations and communities on Lake Winnipeg Basin nutrient issues
- **Nutrient reduction:** support stakeholders' projects in key geographic areas in the Lake Winnipeg basin that demonstrate effectiveness in reducing phosphorus loading and increasing public knowledge and engagement

Implementation of the LWBP, under the FAP, is the overall responsibility of ECCC's Strategic Policy Branch, West and North Region. A portion of the Lake Winnipeg Basin Program funding is provided to the Science and Technology Branch to deliver on ECCC's Lake Winnipeg Science Plan objectives related to excessive nutrient loading across the basin and in Lake Winnipeg.

This evaluation examined program effectiveness and efficiency for Lake Winnipeg Basin Program activities related to collaborative governance, Indigenous engagement and nutrient reductions. It covered the period between FY 2017 to 2018 to FY 2020 to 2021. The evaluation was conducted concurrently with an evaluation of the Great Lakes Protection Initiative, an initiative that was also funded under the FAP.

## Findings and conclusions

### Collaborative governance

This evaluation found that the presence of formal structures and agreements have helped to clarify relationships among the various water quality governance and stakeholder groups in the basin. The LWBP has undertaken initiatives to strengthen networks and capacity.

The relationship between ECCC and the Province of Manitoba is supported by a long-standing Memorandum of Understanding (MOU). The MOU Steering Committee functions within a broader water governance structure that includes interprovincial and international watershed boards. For example, inter-jurisdictional collaboration, facilitated by the International Red River Watershed Board, supported the development of nutrient loading targets and concentration objectives for the Red River at the international border in Emerson, Manitoba. While there is evidence of involvement of other federal government departments in the basin, there remain opportunities to further integrate efforts across departmental mandates (for example, Fisheries and Agriculture). There are also opportunities to increase linkages between federal and provincial partners involved in ecosystem reporting and indicator development work for Lake Winnipeg.

### Program efficiency and performance measures

Between FY 2017 to 2018 and FY 2019 to 2020, the variance between expenditures and budget was less than 2%. The administrative costs to manage the grants and contribution (G&C) component of the program was 11.5% of the total G&C budget, which is lower than the G&C administrative costs of 14% calculated in the 2017 evaluation of the previous and comparable Lake Winnipeg Basin Initiative (LWBI). G&C project selection was seen as efficient with good leveraging of resources. A performance management framework has been established and reporting is used to inform decisions.

The LWBP has a well-established performance management framework and performance indicators that are used to inform program decision making and contribute to reporting for the ECCC Water Quality and Ecosystem Partnerships Performance Information Profile (PIP). The LWBP also contributes to multiple departmental and federal reporting exercises. There was a perceived need to increase linkages across various federal and provincial government partners

involved in the State of Lake Winnipeg reporting and in the development of Lake Winnipeg indicators.

## Nutrient reductions

ECCC's Lake Winnipeg Science Plan seeks to advance knowledge on nutrient loading characterization, research and water quality monitoring. LWBP funding has enabled ECCC's Science and Technology Branch to enhance water quality monitoring and advance science to support nutrient reductions. As well, 66% of G&C funded projects included on-the-ground nutrient reducing actions.

The LWBP G&C funding contributes to the Lake Winnipeg Research Consortium (the Consortium) efforts to support implementation of ECCC's Lake Winnipeg Science Plan, including gathering offshore samples to support the development and verification of water quality indicators. The Consortium is a not for profit organization, founded in 1998 to facilitate scientific research on Lake Winnipeg following evidence of water quality deterioration related to the 1997 Red River "Flood of the Century". The Consortium owns and operates a marine vessel called the MV Namao that provides the sole full-lake science platform for sampling, monitoring and research on Lake Winnipeg. The MV Namao, a decommissioned Canadian Coast Guard vessel, is the only vessel capable of full-lake research surveys while other boats are limited to nearshore surveys.

ECCC also utilizes the MV Namao to support other departmental mandate priorities including deploying and retrieving weather buoys which are essential for gathering data to support the overall monitoring of Lake Winnipeg ecosystem health. The weather buoys also provide critical data for developing marine forecasts for Lake Winnipeg which enables recreational users, search and rescue teams, and commercial fishers to operate in a safe manner on the lake.

Additionally, the Department of Fisheries and Oceans (DFO) Canada, the Manitoba Government, Manitoba Hydro and the University of Manitoba are also key partners that depend on the services of the Consortium and its research vessel for research and monitoring. At this time, there is no cost-sharing agreement in place between the Consortium and its multiple funding partners. While the MV Namao is critical to ECCC's scientific and operational work on Lake Winnipeg, current ECCC funding is not sufficient to cover the operating costs associated with the department's needs for using the vessel.

There are multiple partners and stakeholders conducting research on Lake Winnipeg. The sharing of data and research results collected by the various partners of the Consortium occurs through a number of channels including publications, data portals and ad-hoc requests. Since there is no formal policy or protocol among partners to share, conserve or disseminate the data, there can be challenges with interoperability of systems and accessibility across sources.

At about one million square kilometres, the Lake Winnipeg Basin is the second-largest drainage basin in Canada second to the Mackenzie River Basin. The Lake Winnipeg Basin is comprised of several smaller watersheds that drain into Lake Winnipeg, including the Winnipeg River, the

Red River, the Assiniboine River and the Saskatchewan River. Lake Winnipeg's drainage basin is 40 times larger than the lake's surface area – the biggest drainage area to the lake surface ratio in the world. Nutrient loading to Lake Winnipeg from multiple domestic and international transboundary sources, such as agriculture, municipal wastewater and urban runoff, continues to exceed the lake's natural capacity to process them, resulting in more frequent and large algal blooms.

In the Lake Winnipeg Basin, projects funded by ECCC between 2010 and 2020 have reduced the amount of phosphorus reaching the lake from its watershed by an estimated total of 213,678 kilograms, or by an estimated 41,656 kilograms per year. This indicates that ECCC is on track to meet its program target of reducing nutrient loadings by 44,700 kilograms per year by 2022.

To address phosphorus in the Lake Winnipeg Basin, projects have received funding to restore wetlands, build retention ponds, stabilize riverbanks and lake shorelines, and implement management practices to prevent livestock from entering lakes and rivers. Along with the Manitoba government and other partners, ECCC is supporting nutrient reduction demonstration projects and research which will help Manitoba achieve its long-term goal of reducing phosphorus concentrations in the lake to pre-1990 levels of approximately 0.05 milligrams per litre.

The evaluation found that there is broad support for the department to identify and target actions in specific areas within the basin that contribute the greatest proportion of nutrients to Lake Winnipeg. This approach was viewed as having benefits in terms of more effective use of resources to target nutrient reduction and improved ability to understand impacts of nutrients on freshwater quality using a small study area. Continued focus is expected to positively support the program's overall objective of nutrient reductions.

In terms of achieving longer-term outcomes, progress has been made towards reducing nutrient loadings, as evidenced in some tributaries; however, it may take decades to improve water quality due to legacy phosphorus in the lake and the complex watershed and hydrological processes. It is beyond the scope of the current Lake Winnipeg Basin Program to compare nutrient reduction from funded projects to data measuring annual phosphorus loads or the overall land use and activity changes in the basin that might affect phosphorus loading.

### Engagement of Indigenous peoples

The previous evaluation of the Lake Winnipeg Basin Initiative (2017), the predecessor of the LWPB, identified the need to strengthen efforts to include Indigenous knowledge and the participation of Indigenous communities to address water quality in Lake Winnipeg. The LWPB is making progress on intended outcomes related to engagement of Indigenous peoples. Grants and Contributions (G&C) projects supported capacity building and collaboration as well as the development of foundational relationships between Indigenous and non-Indigenous partners to build on for future initiatives.

## Recommendations

**Recommendation 1: The Assistant Deputy Minister of the Strategic Policy Branch should work with the Lake Winnipeg Research Consortium (the Consortium) and funding partners to identify options to ensure the continuing operations of the Consortium research platform.**

The achievement of ECCC's Lake Winnipeg Science Plan objectives is dependent on the Consortium as a science platform, including the MV Namao. The contributions from most Consortium funding partners, (ECCC, Manitoba, Manitoba Hydro and others) are not adjusted for inflation and have not kept pace with overall operating costs. During the period under study, the Consortium required emergency funding for the operational and maintenance costs of the aging vessel.

**Recommendation 2: The Assistant Deputy Minister of the Strategic Policy Branch, jointly with the Assistant Deputy Minister of the Science and Technology Branch should continue to identify and target actions in portions of the basin that are considered priority watersheds.**

There is broad support from partners and stakeholders for the LWBP to identify and target actions in priority watersheds in the basin, to optimize the limited resources that are available through the program. Focusing on priority watersheds also lends itself to improving the understanding of impacts of nutrients on freshwater quality using a small study area that can be scaled up if effective. Additionally, this regionally focused approach ensures that practices that are implemented will be more effective in addressing local issues. The LWBP's use of technologies such as models and science-based decision-support tools can be used by the LWBP to identify nutrient hot spots and better target program actions and investments.

## 1. Context

Announced in Budget 2017, the Freshwater Action Plan (FAP) is a framework to advance Environment and Climate Change Canada's (ECCC) programming to protect and restore freshwater quality in the Great Lakes and the Lake Winnipeg basins. The FAP includes funding for both basins amounting to \$70.5 million from fiscal year (FY) 2017 to 2018 to FY 2021 to 2022, with \$25.7 million allocated to the Lake Winnipeg Basin Program (LWBP) and \$44.84 million allocated to the Great Lakes Protection Initiative.

This evaluation report presents findings related to ECCC activities supported by FAP funding to the LWBP. The study covered the period between April 2017 and March 2021 and was conducted concurrently with an evaluation of FAP funding to the Great Lakes Protection Initiative.

The evaluation examined two issues:

- Effectiveness – the extent to which the LWBP achieved objectives related to three funded program priorities: collaborative governance, Indigenous engagement and nutrient reductions
- Efficiency – the extent to which resources have been used efficiently and performance information used to inform decision making

For the purposes of this evaluation, different methodologies were applied, including a review of key documents, program files and financial and administrative data, as well as 14 interviews with ECCC program staff and departmental partners (n=11), other government departments (n=2) and a representative from the International Joint Commission (n=1) involved in the LWBP and two case studies on Indigenous engagement and nutrient reductions that included 13 interviews with external partners and stakeholders such as funding recipients and project partners.

[Appendix A](#) provides more details on the evaluation approach.

### 1.1 The Freshwater Action Plan

Since 2015, the mandate letters for the Minister of Environment and Climate Change have identified the protection and stewardship of freshwater resources, in collaboration with other levels of government, and the protection of the Great Lakes and the Lake Winnipeg basins as priorities. Budget 2017 announced funding for the FAP.<sup>1</sup>

This included funding for the Great Lakes Protection Initiative and the LWBP, amounting to \$70.5 million from FY 2017 to 2018 and FY 2021 to 2022 (five years), of which \$25.76 million was allocated to the LWBP to achieve progress based on the following three pillars:

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<sup>1</sup> [Minister of Environment and Climate Change Canada Mandate Letter](#), March 2015; [Minister of Environment and Climate Change Canada Mandate Letter](#), December 2019.

- Nutrient reduction: Furthering the reduction of the release of toxic chemicals and the reduction of excessive nutrient loading (leading to toxic and nuisance algae)
- Collaborative governance: Pursue cross-government collaboration on improving water quality, biodiversity conservation and sustainable use
- Indigenous engagement: Improve collaboration and engagement with Indigenous Peoples

The FAP is under ECCC's core responsibility Preventing and Managing Pollution, and contributes to the following departmental results:

- Canadians have clean water.
- The Canadian environment is protected from harmful substances.
- Canadian communities, economies and ecosystems are more resilient.

## 1.2 The Lake Winnipeg Basin Program

The 2017 FAP funding for the LWBP builds on two previous rounds of ECCC program funding for the basin that was allocated through budgets in FY 2007 to 2008 for five years and FY 2012 to 2013 for five years. Nutrients and other contaminants from various sources contribute to deteriorating the water quality in Lake Winnipeg. Within this context, funding for the Lake Winnipeg Basin aimed to advance activities in the following areas:

- **Collaborative governance:** encourage and strengthen collaborative efforts to reduce nutrients throughout the Lake Winnipeg Basin
- **Indigenous engagement:** enhance opportunities, capacity and engagement of Indigenous governments, organizations and communities on Lake Winnipeg Basin nutrient issues
- **Nutrient reduction:** support stakeholders' projects in key geographic areas in the Lake Winnipeg Basin that demonstrate an effective means to reduce phosphorus loading and increase public knowledge and engagement

Implementation of the LWBP, under the FAP, is the overall responsibility of ECCC's Strategic Policy Branch, West and North Region. A portion of the LWBP funding is provided to the Science and Technology Branch to deliver on ECCC's Lake Winnipeg Science Plan objectives related to excessive nutrient loading in the basin.

There are a variety of collaborators involved in water quality issues in the Lake Winnipeg Basin. Given the size of the basin, stakeholders include multiple provinces, the United States (US) and state jurisdictions. The Canada-Manitoba Memorandum of Understanding (MOU) Respecting Lake Winnipeg and the Lake Winnipeg Basin facilitates a cooperative and coordinated approach between Canada and Manitoba in addressing challenges facing Lake Winnipeg. Originally signed in 2010, this MOU was extended in 2015 for an additional five-year period, ending in 2020. A renewed MOU has been negotiated and was signed on August 12, 2021. Other

partners in the Lake Winnipeg Basin include Indigenous peoples, transboundary groups, academics, communities and non-government organizations (for example, watershed districts and authorities, watershed management agencies).

## 2. Findings

### 2.1 Achievements related to collaborative governance

#### Enhanced collaborative governance

**Findings:** While governance across the basin is complex, the presence of formal structures and agreements, and the continuity of the partners have helped ensure that relationships between the various entities are clearly documented and understood. Within this context, the evaluation found that the LWBP has implemented initiatives to enhance linkages across the various governance bodies and to increase understanding of actions implemented by partners across the basin. The Lake Winnipeg Basin Adaptive Management Framework has not yet been implemented, but an approach had been developed at the time of the evaluation. There are opportunities for greater collaboration with other federal government departments with shared interests in the basin beyond collaborative governance participation.

Governance across the basin is complex due to its geographic size and multiple jurisdictions. Stakeholders and partners include multiple provinces in Canada and states of the United States of America, the cross-border International Joint Commission, regional water boards, as well as Indigenous governments, organizations and communities. Each organization has a distinct mandate. All key informants who spoke to the issue perceived the roles of the various organizations involved in water governance in the basin to be clear.

The relationship between ECCC and the Province of Manitoba is supported by a long-standing MOU, which facilitates a cooperative and coordinated approach between the two levels of government. ECCC and Manitoba co-chair the MOU Steering Committee. Committee membership was stable during the evaluation period. Members of the committee who were interviewed were generally satisfied with information-sharing and the collegiality of the group. A new MOU was signed on August 12, 2021 and will be in place until 2026. The Terms of Reference for the committee were being revised, with the intent of establishing annual priorities to facilitate more timely actions and increase effectiveness.

The Lake Winnipeg Basin Adaptive Management Sub-committee has a mandate to provide advice and make recommendations to the Canada-Manitoba MOU Steering Committee on an approach to develop and implement a Lake Winnipeg Basin Adaptive Management Framework. An Adaptive Management Framework is like a continual business improvement model where timely analysis and results support more effective decision making. Development of the framework is a program deliverable. An approach to develop the framework was completed at the time of the evaluation. An integrated capacity inventory was commissioned to better understand the key partners and stakeholders throughout the basin, as well as the kinds of actions taking place, when and how. The inventory provides a foundation for future coordination

of efforts on adaptive management. This approach was reinforced in the 2020 State of Lake Winnipeg report which stated that “achieving the goal of a healthy aquatic ecosystem in Lake Winnipeg might include consideration of an adaptive management approach”.<sup>2</sup>

The Canada-Manitoba MOU Steering Committee and sub-committee are situated within a broader water governance ecosystem that includes interprovincial and international bodies (that is, the Prairie Provinces Water Board and the relevant boards of the International Joint Commission). A number of other important collaborations among partners and stakeholders in the basin are taking place, including:

- Collaborations within ECCC include Science and Technology Branch, Ontario Region, Strategic Policy Branch in the National Capital Region and Indigenous Affairs and Reconciliation Directorate.
- Points of collaboration with other government departments, specifically Fisheries and Oceans Canada (DFO), Agriculture and Agri-food Canada (AAFC) and Natural Resources Canada (NRCan) which have formal agreements with ECCC to complete projects in relation to the Lake Winnipeg Basin. NRCan and DFO received LWBP funding to update the National Hydrographic network in relevant watershed, and for substrate mapping and a bathymetric survey of Lake Winnipeg, respectively. These departments also share common interests related to the environmental sustainability of fisheries, agriculture and natural resource sectors. AAFC’s Living Laboratories is a new program within AAFC that focuses on agri-environmental issues and is a partner with the LWBP. Despite these common interests, there was a perception among some key informants that siloes among federal departments remain.

The evaluation found that various factors have supported the integration and coordination of activities across the basin. These included cross membership among the boards and the MOU Steering Committee, as well as dedicated and stable members at the governance tables with deep expertise and commitment. As the representative of federal interests, the LWBP has acted as a bridge across basin organizations to support a “network of networks”. For instance, in 2019, the program hosted a symposium with over 100 stakeholders and partners from multiple sectors (that is, governments, non-governmental organizations, scientists, Indigenous governments, organizations and communities and regional conservation districts) participating to share new knowledge and learning about on-the-ground actions on nutrient reduction. The symposium also highlighted the collaborative partnerships required to address Lake Winnipeg basin water quality issues.

A key achievement of partner and stakeholder collaboration across the Red River Basin during the evaluation period was the recommendation of nutrient loading targets (nitrogen and phosphorus) and concentration objectives at the international boundary by the International Red River Watershed Board to the International Joint Commission. At the time of the evaluation, these targets and objectives were under consideration by US and Canadian governments.

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<sup>2</sup> [State of Lake Winnipeg](#). 2<sup>nd</sup> edition. March 2020. Government of Manitoba.

While not attributable directly to the LWBP, ECCC was an active participant in their development. As well, the targets reflect the success of collaborative mechanisms. Ultimately, the targets, if adopted, are expected to have benefits for Lake Winnipeg.

## Enhanced partnerships across the Lake Winnipeg Basin

**Findings:** Through the LWBP, new partnerships were formed with various organizations. As well, collaborative governance and Indigenous engagement were often addressed simultaneously. Since 2017, the program has increased its focus on engaging partners and stakeholders across the basin.

Over the evaluation period, engagement with various organizations across the Lake Winnipeg Basin has increased through promotion of the G&Cs program to community-based organizations and the increased use of social media to broaden the reach to new organizations.

Many partnerships have been formed through projects such as:

- The Collaborative Leadership Initiative, facilitated by the Centre for Indigenous Environmental Resources, involving 16 municipal leaders and 12 First Nation Chiefs who have built relationships and established trust to work together on water issues. A MOU was signed under this initiative which has 28 signatories on water quality-related opportunities.
- One Basin, One Governance, led by the Red River Basin Commission in partnership with the Southern Chiefs' Organization to facilitate a dialogue amongst Indigenous and non-Indigenous representatives from across the Lake Winnipeg Basin, with a view to sharing knowledge, creating and strengthening partnerships and discussing opportunities for collaboration on freshwater initiatives.

### Collaborative governance achievements over the evaluation period

**106** partnerships/ collaborative opportunities created

**130,961** people engaged in projects

**2,366** participants in monitoring activities undertaken in 15 completed G&Cs projects

Five of the completed G&C projects resulted in inter-provincial and regional collaboration involving Indigenous communities and non-government organizations. Some collaborative governance and Indigenous engagement projects have been basin-wide (for example, One Basin, One Governance).

## 2.2 Use of performance information

**Findings:** The LWBP has a well-established performance management framework and performance indicators that are used to inform program decision-making and contribute to reporting for the ECCC Water Quality and Ecosystem Partnerships Performance Information Profile (PIP). The program also contributes to multiple departmental and federal reporting exercises. There was a perceived need to increase linkages across various federal and provincial government partners involved in the State of Lake Winnipeg reporting and in the development of Lake Winnipeg indicators.

The LWBP has the key components of a performance measurement strategy, including a logic model, performance indicators and reporting. Results and indicators for the program are housed within ECCC's broader Water Quality and Ecosystem Partnerships Program. Each of the Freshwater Action Plan (FAP) streams has specific performance measures that contribute to the ECCC Water Quality and Ecosystem Partnerships PIP under which FAP was situated. Performance indicators for the LWBP reflect key performance areas related to the reduction (in tonnes) of phosphorus, habitat restoration and the participation of Indigenous governments, organizations and communities, among others.

Program performance management indicators have been long-standing, but have also evolved with program priorities in each of the successive funding commitments. Many results indicators are based on monitoring of performance of funded projects and their impacts on nutrient reductions and habitat restoration (see text box). The program responded to the 2017 evaluation report which recommended that intended program outcomes better reflect achievable outcomes with the available funding envelope in relation to the scope and magnitude of issues in the basin and various authorities.

### Examples of Performance Indicator

**494,707 m<sup>3</sup>** of surface water run-off from land retained (1 project)

**484 ha** of wetlands/ aquatic habitat created, conserved or restored (2 projects)

**300 m** of Stream/lake bank protected or stabilized (1 project)

The evaluation found that performance information was updated regularly and used for departmental reporting (for example, Departmental Results Report) and contributed to tracking Canada's performance on key environmental sustainability issues, specifically the reporting for the Canadian Environmental Sustainability Indicators and Federal Sustainable Development Strategy.

In addition to program performance reporting, the LWBP contributed to regular reporting efforts to describe the state of Lake Winnipeg. The most recent State of Lake Winnipeg Report was published in April 2020. The program is also working with the Manitoba government to develop and adopt State of the Lake Indicators which will allow for the assessment of the status and trends in the ecosystem health of Lake Winnipeg. Given these related initiatives, some internal key informants noted an opportunity to increase linkages across efforts and groups that are

involved within ECCC and ministries within the Manitoba government (for example, with community-based monitoring, Ecosystem Health Indicators and State of Lake Winnipeg Report).

## 2.3 Efficient use of program resources

**Findings:** The evaluation found that efficient project selection processes were in place, and there is good leveraging of external resources and sustainability of most projects. Administrative processes related to program renewal and hiring, and the impacts of COVID-19 created challenges for the program over the evaluation period.

As shown in Table 1, between FY 2017 to 2018 and FY 2019 to 2020, the variance between expenditures and budget was less than 2%. Most of the underspending was related to lower than anticipated salary costs.

**Table 1 : budget and expenditures of the Lake Winnipeg Basin Program (in \$000s)**

Budget category			FY 2017 to 2018	FY 2018 to 2019	FY 2019 to 2020	Total
Number of FTE	Planned		13.5	15.0	15.0	N/A
	Actual		17.7	22.2	19.3	N/A
Salaries	Budget		\$1,207	\$1,339	\$1,358	<b>\$3,903</b>
	Expenditure		\$1,099	\$1,246	\$1,232	<b>\$3,578</b>
	Variance	Diff.	N/A	N/A	N/A	\$325
		%	N/A	N/A	N/A	8.4%
O&M	Budget		\$1,143	\$1,258	\$1,153	<b>\$3,554</b>
	Expenditure		\$1,152	\$1,208	\$1,116	<b>\$3,476</b>
	Variance	Diff.	N/A	N/A	N/A	\$78
		%	N/A	N/A	N/A	2.2%
Capital	Budget		\$38	\$36	\$0	<b>\$74</b>
	Expenditure		\$32	\$36	\$0	<b>\$68</b>
	Variance	Diff.	N/A	N/A	N/A	\$6
		%	N/A	N/A	N/A	8.7%
G&Cs	Budget		\$338	\$2,157	\$2,257	<b>\$4,752</b>
	Expenditure		\$387	\$2,157	\$2,257	<b>4,802</b>
	Variance	Diff.	N/A	N/A	N/A	\$-50
		%	N/A	N/A	N/A	-1.0%
Total	Budget		<b>\$2,725</b>	<b>\$4,790</b>	<b>\$4,768</b>	<b>\$12,283</b>
	Expenditure		<b>\$2,670</b>	<b>\$4,647</b>	<b>\$4,606</b>	<b>\$11,923</b>
	Variance	Diff.	N/A	N/A	N/A	<b>\$360</b>
		%	N/A	N/A	N/A	<b>1.7%</b>

The administrative costs to manage the G&C component of the program was 11.5% of the total G&C budget, which is lower than the administrative costs calculated in the 2017 evaluation for the previous comparable Lake Winnipeg Basin Initiative (14%).

At the project level, the G&C program requires a matching requirement of one third to two thirds of total project costs. This requirement was consistently met by funded projects. Based on projects completed to date, for every \$1 invested by the program, \$2.3 in cash and in-kind funding is leveraged. The program investment in the Lake Winnipeg Research Consortium achieves a higher leveraging ratio (1:4.7), although as mentioned in section 2.3, concerns have been raised with the sustainability of the Consortium due to increases in operation and maintenance costs.

The project selection process is viewed as efficient. Project recipients interviewed for the case studies viewed the process as satisfactory. However, some recipients noted that capacity issues can limit organizations' ability to respond to calls for proposals.

Program officials identified the benefits of using directed funding, to better target projects in hot spots. The review of completed G&C projects suggested that most projects have completed their activities as planned. Program's internal performance reports noted that 100% of projects were on time, on scope, and on budget.<sup>3</sup> Based on the review of project files, sustainability of the project activities is being achieved in some manner (for example, continuing monitoring programs, signed agreements for continued collaboration or ongoing use of project resources).

The evaluation did not find significant challenges to the efficient use of program resources. To some degree, the global COVID-19 pandemic has impacted G&C projects and scientific and monitoring activities. G&C engagement and consultation activities have been delayed or conducted virtually where possible and federal water quality monitoring and some scientific activities were suspended during 2020. A few internal key informants noted that federal bureaucratic processes, particularly related to lengthy recruitment and staffing processes, and securing funding have impacted the efficiency of the program. For instance, securing program funding on a five-year cycle was noted to be time-consuming (that is, preparation of funding submission), impacting the selection of projects in the final year of the program, pending funding renewal, and created uncertainty for staffing the program.

#### Use of Program Resources

**11.5%** of total G&C cost used for administration (2019)

**90%** of G&Cs projects reported that activities are sustainable in some manner (15 projects)

**\$1:\$2.3** financial leveraging ratio for G&C funding (cash and in-kind) (13 projects)

**1:4.7** financial leveraging ratio for funding directed to the Consortium (from 2017 to 2019 and in 2020 to 2021)

<sup>3</sup> "On time" means ECCC program officers receive interim and final project reports from funding recipients in accordance with the reporting timelines specified in the corresponding Contribution Agreement. "On scope" means that the activities delivered through project funding are relevant to the funding program goals and objectives and are in accordance with the corresponding Contribution Agreement. "On budget" means that the project was successfully completed within the budget parameters specified in the Contribution Agreement.

## 2.4 Achievements related to nutrient reductions

**Findings:** LWBP funding has led to improvements in water quality monitoring and advancements in science to support nutrient reductions. At the time of the evaluation, the LWBP was approaching its program-based phosphorous reduction target related to G&C funded projects. However, some challenges remain in other areas. In particular, although the Lake Winnipeg Research Consortium plays an important role in achieving ECCC science objectives, it does not have a sustainable funding model. ECCC disseminates data through a number of channels. The evaluation found that there is a lack of a cohesive strategy to manage data collected on Lake Winnipeg across research entities with an interest in the lake. Finally, while progress is being made towards reduced nutrient loadings, improving the water quality and ecological integrity of the lake are achievable only in the longer term.

### Nutrient reductions

At approximately one million square kilometres, the Lake Winnipeg Basin is the second-largest drainage basin in Canada second to the Mackenzie River Basin. The Lake Winnipeg Basin is comprised of several smaller watersheds that drain into Lake Winnipeg, including the Winnipeg River, the Red River, the Assiniboine River, and the Saskatchewan River. Lake Winnipeg's drainage basin is 40 times larger than the lake's surface area – the biggest drainage area to the lake surface in the world. Nutrient loading to Lake Winnipeg from multiple domestic and international transboundary sources, such as agriculture, municipal wastewater and urban runoff, continues to exceed the lake's natural capacity to process them, resulting in more frequent and large algal blooms.

In the Lake Winnipeg Basin, projects funded by ECCC between 2010 and 2020 have reduced the amount of phosphorus reaching the lake from its watershed by an estimated 213,678 kilograms, or by an estimated 41,656 kilograms per year. This indicates that the department is on track to meet its program target of reducing nutrient loadings by 44,700 kilograms per year by 2022.

To address phosphorus in the Lake Winnipeg Basin, projects have received funding to restore wetlands, build retention ponds, stabilize riverbanks and lake shorelines, and implement management practices to prevent livestock from entering lakes and rivers. Along with the Manitoba government and other partners, ECCC is supporting nutrient reduction demonstration projects and research which will help Manitoba achieve its long-term goal of reducing phosphorus concentrations in the lake to pre-1990 levels of approximately 0.05 milligrams per litre.

LWBP funding through G&C projects has helped to stimulate action on nutrient reductions. LWBP's Performance Measurement Framework identified that 66% of G&C funded projects included on-the-ground nutrient reducing actions. This is higher than the target of 50%. The file review found that almost all projects targeting nutrient reductions report were on time, on scope, and on budget although there were some implementation delays due to COVID-19 restrictions.

The LWBP has made progress on the program's intended outcome of reducing loadings of nutrients to priority water bodies. Documentation shows that the technical review and project selection process ensure that higher ranked projects in targeted sub-watersheds are funded. The targeted cumulative reduction in tonnes of phosphorous loads is 44.7 tonnes (metric) by March 2022. The most recent measurement in FY 2019 to 2020 was slightly below at 41.7 tonnes, with additional phosphorus reductions expected to be reported by funded projects in FY 2020 to 2021 and FY 2021 to 2022. Note that historical cumulative values reported in the Performance Measurement Framework were unchanged during the early years of the LWBP at 29.7 tonnes in each of FY 2016 to 2017, FY 2017 to 2018 and FY 2018 to 2019 due to program renewal and implementation during which no projects were implemented or completed.

Program and other key informants broadly supported a targeted approach to funding projects in priority watersheds or hot spots in the basin. The targeted regionally focused approach was viewed as having benefits in terms of more effective use of resources and improved ability to understand impacts on nutrients using a small study area. A few respondents noted that technology has a role to play to further identify point and non-point sources of nutrients and to better target projects.

The LWBP priority to reduce nutrient loading in the Lake Winnipeg Basin supports ECCC's Departmental Results Framework under the Core Responsibility of "Preventing and Managing Pollution" and the Departmental Results and Results Indicators under "Canadians have Clean Water". The LWBP performance indicators for this outcome suggest that progress was made during the period under study:

- The most recent Canadian Environmental Sustainability Indicator (2018) for Phosphorus and Nitrogen Level in Lake Winnipeg measures the status of total phosphorous and nitrogen levels in Lake Winnipeg and its three largest tributaries: the Red, Saskatchewan and Winnipeg rivers compared to water quality objectives. For this measure, 40% of monitoring sites were rated as "fair" or "good", with the remainder rated as "poor". This is well below the long-term LWBP goal of 90% of water quality monitoring sites rated as "fair", "good" or "excellent".
- The Lake Winnipeg algal bloom severity index for FY 2019 to 2020 showed a lower level of bloom intensity than the average for previous years but the number of days blooms were present on the lake was consistent with the average for previous years.

In April 2020, the governments of Canada and Manitoba released the second edition of the State of Lake Winnipeg Report, which assessed the ecosystem health of Lake Winnipeg as stable compared to the previous report released in 2011. However, the broader ecosystem health has deteriorated due to the introduction of invasive species such as zebra mussels and changes in fish populations.

Most key informants noted that reducing nutrient loading to Lake Winnipeg is a complex and long-term challenge. Legacy phosphorus in the lake and watershed, hydrological processes, climate change and weather events can impact overall levels of nutrients and their effects. Some interviewees maintained that societal level actions, including the efforts of grassroots

watershed and conservation organizations, are required over decades to improve water quality in Lake Winnipeg.

### Nutrient monitoring and modelling

The evaluation found that LWBP funding has enabled ECCC's Science and Technology Branch to enhance their water quality monitoring activities in the Lake Winnipeg Basin. Funding also increased capacity in areas such as continuous measures of oxygen dynamics in the lake. During the period under study, nearshore monitoring was conducted on the Red River and minor tributaries on the eastern side of Lake Winnipeg, as well as offshore monitoring. Monitoring has been further enhanced through partnered efforts with the Province of Manitoba and with Fisheries and Oceans Canada (DFO), which also rely on the Lake Winnipeg Research Consortium (the Consortium). Finally, LWBP G&C funding supported a variety of community-based monitoring projects, including non-governmental organizations. For example, the Lake Winnipeg Foundation's Lake Winnipeg Community-Based Monitoring Network undertook water sample collection in 2018 at over 100 sites by regional conservation organizations and citizen volunteers. All these monitoring data are publicly available and document phosphorus concentration and the amount of phosphorus from landscapes in order to inform nutrient reduction actions.

ECCC's Lake Winnipeg Science Plan seeks to advance nutrient loading characterization, sources and monitoring.<sup>4</sup> Models have been developed, calibrated, and validated to help establish nutrient targets and indicators for the State of Lake Winnipeg report. These models also aim to improve knowledge of nutrient export and impacts of climate variability and invasive species. The goal is to increase understanding of best practices including beneficial management practices. The 2020 State of Lake Winnipeg Report notes that although many gaps in knowledge about the lake have been addressed and identified, more work is required to understand gaps related to internal loading, atmospheric loading, and a nutrient balance for Lake Winnipeg. Another gap is knowledge related to the biogeochemical factors that influence concentrations.

**Figure 1: Motor Vessel Namao**



Source: Lake Winnipeg Research Consortium

The LWBP G&C program included a contribution of just over \$1M to the Consortium for offshore monitoring and to support reporting on State of Lake Winnipeg Indicators and the implementation of ECCC's Lake Winnipeg Science Plan 2017 to 2022. According to many

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<sup>4</sup> Four priority areas include: Reporting on progress towards restoring a healthy lake, monitoring to assess status and track change, research on nutrient sources and transport pathways to the lake, and research on Lake Ecosystem components to achieve a sustainable nutrient balance.

internal and external key informants, the Consortium's Motor Vessel (MV) Namao is critical to facilitate offshore measurements on Lake Winnipeg for ECCC's scientific research. There are no alternatives with the same capabilities as those provided by the MV Namao for offshore waters and on-site instrumentation. Documents and interview findings confirmed that ECCC and partner funding has enabled the Consortium to host a forum to identify research priorities for Lake Winnipeg, share results and support networks among partners. It also helped advance other scientific projects with relevance to ECCC.

A case study of aquatic science suggested that resourcing of the Consortium is precarious. The Consortium's contribution agreement with ECCC was amended twice during the evaluation period to increase funding for unanticipated repairs to the MV Namao. In FY 2019 to 2020, funding was increased by \$51,650, while in FY 2020 to 2021, two amendments were completed totalling \$214,486 to help cover costs associated with the replacement of the engines and maintenance of the aging vessel, in addition to other funder's contributions to overall operating shortfalls. As noted in project amendment documentation at the time, "ECCC's Lake Winnipeg Science Plan and the Meteorological Services of Canada rely on the use of this research platform to conduct in-lake monitoring and research" and many internal and external key informants confirmed that this work could not take place without the MV Namao.

Internal and many external key informants who spoke to the issue agreed that the Consortium's funding structure is not sustainable given increases in operations and maintenance costs, while partner contributions (with the exception of one partner) have remained fixed (not reflecting inflation). The Consortium is exploring options to secure a longer-term commitment from all the partners to create an endowment to generate sufficient funds for operational and maintenance costs.

In terms of data dissemination during the evaluation period, there have been a number of successes. Research partners contributed to a special issue of the *Journal of Great Lakes Research* in 2021 which was dedicated to Lake Winnipeg research. ECCC data such as nutrient concentrations and satellite remote sensing are available regularly through the federal open data catalogue (following laboratory analysis and quality assurance) and may also be accessed directly from the principal investigator. The most recent data available on the Canada Government Portal is dated from September 25, 2020.

There are two other on-line platforms that hold data related to the lake from multiple contributors 1) the Lake Winnipeg Basin Information Network Data Hub on the Canadian Watershed Information Network managed by the University of Manitoba with a focus on science users, and 2) the Lake Winnipeg DataStream for sharing community-based data with a focus on public users. There is no overarching or formal policy or protocol for data sharing across research entities or for those who use the Consortium. As a result, the organizations have different practices regarding the dissemination and, according to a few interviewees, there can be challenges with standardization, interoperability and timeliness across the contributors. In this regard, at the time of preparing the evaluation report, the most recent data available on the Lake Winnipeg Basin Information Network Data Hub was dated from April 4, 2016.

## 2.5 Achievements related to engagement of Indigenous peoples

**Findings:** The LWBP is achieving objectives related to engagement of Indigenous peoples and capacity building. G&C projects under the Indigenous engagement pillar have fostered partnerships and productive relationships. Overall, there has been progress on implementation of projects, despite some delays related to the COVID-19 pandemic. Future opportunities for collaboration were also identified.

The Lake Winnipeg Basin lies within First Nation Treaty lands (Treaties 1 to 7 and 10) and the homeland of the Métis Nation. Twenty Indigenous communities located along the shores of Lake Winnipeg. There is a traditional and sacred relationship between Indigenous peoples and water. The basin is important for traditional livelihoods of many Indigenous peoples. Historically, federal and provincial efforts to address water quality in Lake Winnipeg have not included Indigenous knowledge together with western science<sup>5</sup> or secured the full participation of Indigenous communities. The previous evaluation of the Lake Winnipeg Basin Initiative (2017) recommended strengthening this effort.<sup>6</sup>

Established as a pillar of the current program, Indigenous engagement, capacity building and collaboration have been enhanced through LWBP G&C projects. According to the file review, 17 projects have been funded under the LWBP to contribute to Indigenous engagement. These projects involved Indigenous governments, organizations and communities interested in improving Lake Winnipeg water quality. They supported opportunities to build relationships, and foundational work to identify common priorities.

The review of project reports found broad satisfaction of funding recipients and partners with the progress made toward the achievement of their expected results. Most often, any challenges in meeting project outcomes were attributed to delays stemming from COVID-19 pandemic restrictions and the inability to conduct engagement activities in person. According to many funding recipients interviewed, LWBP funding was well aligned with the goals of their organization and filled a gap in support for Indigenous engagement around water issues.

Project reports, many funding recipients, and internal interviewees reported a marked increase in Indigenous representation on various levels that fostered relationship building and identified opportunities for collaboration. Examples from G&C funded activities include the Lake Winnipeg Foundation's community-based monitoring program which has collaborated with Indigenous partners on citizen-science-based efforts. Initiatives like these have increased Indigenous participation and included Indigenous perspectives to help guide projects and regional freshwater priorities. Additionally, local watersheds have collaborated with Indigenous communities in advancing watershed planning efforts and implementing joint projects with the assistance of the LWBP.

<sup>5</sup> [State of Lake Winnipeg](#), 2<sup>nd</sup> edition, March 2020. Government of Manitoba.

<sup>6</sup> [Evaluation of the Lake Winnipeg Basin Initiative](#), June 2017. Environment and Climate Change Canada.

Funded projects have also made progress in increasing Indigenous participation in nutrient reduction activities. Many funding recipients interviewed and project reports stated that there has been increased Indigenous participation in identifying needs (in terms of both capacity and actions on the basin), creating resources (such as fact sheets) and conducting wetland enhancement and renewal. Other examples of Indigenous engagement activities contributing to nutrient reductions in Lake Winnipeg include:

- training for water quality monitoring work
- decommissioning or restoration projects in watersheds located on First Nations lands
- incorporation of Indigenous traditional knowledge
- review of technical documents
- phosphorus reduction plans to support future nutrient reduction activities

In addition to G&C projects, the LWBP has supported Indigenous engagement through an Indigenous Student Work Experience program. Seven Indigenous students have gained work experience in water quality and quantity monitoring, data analytics, and program delivery. Several students completed multiple terms and one student has been bridged to a full-time indeterminate employee.

Both the previous and the new Canada-Manitoba Memorandum of Understanding (MOU) on Lake Winnipeg and its basin (2010 to 2020 and 2021 to 2026) were signed pursuant to [Canada Water Act](#) s. 4. In the new MOU (2021-2026), efforts will include working with Indigenous Peoples to increase their inclusion and participation in the work of the Steering Committee and its sub-committees. Some funding recipients and internal key informants suggested including Indigenous knowledge in State of Lake Winnipeg reporting.

### 3. Conclusions, recommendations and management response

#### 3.1 Conclusions

The evaluation found that the LWBP is making progress in achieving intended outcomes in its three program areas of collaborative governance, nutrient reductions and engagement with Indigenous peoples.

Attention on collaborative governance has continued with a federal presence in key governance bodies. The LWBP facilitated connections among the many governance bodies that have interests in the vast Lake Winnipeg Basin. G&C projects have led to the creation of new and creative multi-sectoral partnerships, some of which stretch across the basin. A deliverable for the LWBP, namely the implementation of the Lake Winnipeg Basin Adaptive Management Framework, has not yet been achieved, although an approach has been established at the time of the evaluation.

The LWBP role in reducing nutrients in Lake Winnipeg included expanded water quality monitoring and targeted projects with a focus on learning more about effective practices to reduce nutrients. There is progress in advancing science in the lake through implementation of ECCC's Lake Winnipeg Science Plan. However, there are many entities conducting scientific research throughout the Lake Winnipeg Basin and sharing and curation of data are not guided by a common policy or protocol. The evaluation also noted that ECCC's Lake Winnipeg Science Plan has a critical dependency on the Consortium's marine vessel functioning as a research platform, but concerns were raised that funding level has not kept pace with increases in operations and maintenance costs.

The LWBP has made progress on the intended outcome of reduced loadings of nutrients to priority water bodies. Recent G&C projects are also expected to contribute to reductions. There was broad support for an approach to target actions in sub-watersheds to maximize learning and maximize the impact of the funding. While some indicators of water quality in the lake are improving or stable, improving water quality in Lake Winnipeg and the basin was viewed as a long-term goal which will require broad societal involvement and changes in agricultural practices.

A focus on Indigenous engagement addressed a gap in the inclusiveness of environmental initiatives around the lake. First Nations and Metis governments, organizations and communities have led or partnered in projects to increase relationship-building and on-the-ground restoration work. Capacity development has been enhanced by an Indigenous Student Work Experience program. While a lack of Indigenous participation as a signatory to the Canada-Manitoba Memorandum of Understanding (MOU) Steering Committee is a gap, there are many good practices and lessons learned from LWBP funded Indigenous engagement activities to further advance this work.

Administrative costs of the program have decreased since the last evaluation. As well, funded projects leverage \$2.3 in cash or in-kind contribution for every \$1 spent by ECCC. The LWBP has implemented a performance measurement strategy and defined indicators drawn from project results.

### **3.2 Recommendations and management response**

## Recommendation 1

**Recommendation 1: The Assistant Deputy Minister of the Strategic Policy Branch should work with the Lake Winnipeg Research Consortium (the Consortium) and funding partners to identify options to ensure the continuing operations of the Consortium research platform.**

The achievement of ECCC's Lake Winnipeg Science Plan objectives is dependent on the Consortium as a science platform, including the MV Namao. The contributions from most Consortium's funding partners, (ECCC, Manitoba, Manitoba Hydro and others) are not adjusted for inflation and have not kept pace with overall operating costs. During the period under study, the Consortium required emergency funding for the operational and maintenance costs of the aging vessel.

### Statement of agreement or disagreement

Strategic Policy Branch agrees with the recommendation.

### Management response

ECCC will work with Manitoba, other partners, and the Lake Winnipeg Research Consortium to identify options to support the continuing operations including a vessel to service a whole-lake research platform.

Deliverable(s)	Timeline	Responsible party
A sustainable funding model for the in-lake science platform is developed together with partners.	March 31, 2027	ARDG West and North Region

## Recommendation 2

**Recommendation 2: The Assistant Deputy Minister of the Strategic Policy Branch, jointly with the Assistant Deputy Minister of the Science and Technology Branch, should continue to identify and target actions in portions of the basin that are considered priority watersheds.**

There is broad support from partners and stakeholders for the LWBP to identify and take a targeted approach to nutrient reducing actions in priority watersheds in the basin, to optimize the limited resources that are available through the program. Focusing on priority watersheds also lends itself to improving the understanding of impacts of nutrients on freshwater quality using a small study area that can be scaled up if effective. Additionally, this regionally focused approach ensures that practices that are implemented will be more effective in addressing local issues. The LWBP's use of technologies such as models and

science-based decision-support tools can be used by the LWBP to identify nutrient hot spots and better target program actions and investments.		
<b>Statement of agreement or disagreement</b>		
Strategic Policy Branch and Science and Technology Branch agree with the recommendation.		
<b>Management response</b>		
ECCC will apply a targeted approach in future programming that directs stakeholder-driven actions to focus on those practices known to be effective and in parts of the basin that contribute the greatest portion of nutrients to Lake Winnipeg. Together with partners and stakeholders, ECCC will identify effective beneficial management practices (BMP) and use scientific information, geospatial and resource data and precision-based decision-support tools to implement a targeted approach for nutrient-reducing actions.		
<b>Deliverable(s)</b>	<b>Timeline</b>	<b>Responsible party</b>
Implement a targeted approach for nutrient-reducing actions using precision-based tools and models, and approaches to maximize the benefits and the effectiveness of these actions.	March 31, 2027	ARDG West and North and Science and Technology Branch
Improve and expand watershed-based modelling to assess BMP effectiveness including the use of higher-resolution data and a focus on additional sub-watersheds with established nutrient load reduction targets.	March 31, 2027	Science and Technology Branch

## Appendix A: Evaluation scope, methodology and limitations

### Scope

The evaluation focused on Lake Winnipeg activities funded under the Freshwater Action Plan (FAP). This work took place concurrently with an evaluation of the FAP investment in the Great Lakes Protection Initiative. The evaluation examined the extent to which planned objectives were achieved in the period between FY 2017 to 2018 and FY 2020 to 2021.

Key questions addressed by this evaluation were as follows:

- To what extent have FAP resources been used efficiently?
- To what extent are Lake Winnipeg freshwater activities governed collaboratively with the support of the LWBP?
- To what extent has the program monitored nutrient loads and supported reductions in nutrient loading?
- To what extent are Lake Winnipeg freshwater activities under the FAP supporting the engagement of Indigenous peoples?
- To what extent is performance information being used to inform decision-making?

### Approach and methodology

The evaluation used multiple lines of evidence for data collection:

**Document review:** review of internal documents from ECCC on program management and results; external sources on results, collaborators' activities and projects; and 2017 evaluation and update on management response

**File Review:** A review of 15 G&C project final reports and other program documents

**Financial data analysis:** review of departmental reporting documents

**Key informant interviews:** 14 interviews were conducted with ECCC program staff and departmental partners (n=11), other government departments (n=2) and a representative from the International Joint Commission (n=1).

In the report, the proportion of respondents is indicated using two qualifiers: some (less than majority of respondents) and most (majority of respondents).

**Case Studies:** Two case studies were conducted, examining Indigenous Engagement and support of the Lake Winnipeg Research Consortium for aquatic ecosystem science. Each case study involved a document and file review as well as key informant interviews (6 and 7 respectively). The Indigenous Engagement case study included 6 interviews with

representatives from Indigenous organizations/government and community-based organizations that received funding from the LWBP. The Lake Winnipeg Research Consortium/aquatic ecosystem science case study included interviews with representatives from the Consortium, as well as Consortium funding partners and research platform users (ECCC, DFO, Hydro Manitoba and University of Manitoba).

### Limitations and mitigation strategies

The evaluation encountered some limitations in relation to data availability and quality, which are common challenges when conducting evaluations.

Limitations	Mitigation strategies
Of 60 G&C projects funded by the LWBP, only 15 projects were completed as of March 2020.	The evaluation team mitigated this challenge by incorporating qualitative evidence from interviews and case studies to supplement limited project reports.
Limited interviews were conducted with external interviewees related to collaborative governance in the basin (for example, from provincial jurisdictions).	This limitation should be considered in interpreting study findings. However, evidence from documents related to collaborative governance (for example, project reports) was reviewed to supplement interview data.