


Lake Friendly
Stewards Alliance

Priorities For Action



December 2015

Lake Winnipeg and many other Manitoba lakes and watercourses are under threat. While initially the Lake Friendly Stewards Alliance was created to find collaborative avenues through which issues associated with excess inflows of nutrients into the province's watercourses from agricultural and municipal sources could be addressed, the problem has become far more complicated. Changing hydro-meteorological conditions have resulted in more frequent flooding which is mobilizing more nutrients, and the introduction of invasive species has complicated the eutrophication problem.

The fact is that the health of Lake Winnipeg and many other lakes and watercourses in Manitoba are under very real threat. That said, it is not the end of the world. There remains much that can be done to maintain and restore the health of lakes, rivers and streams in the Lake Winnipeg Basin and this document provides a blueprint for doing just that.

International example demonstrates that there are at least ten preconditions for managing, and then getting ahead of the kinds of problems Manitoba faces with respect to excess nutrient inflows into its watercourses, changing hydro-meteorological regimes and the harmful effects of invasive species introductions. While some of these preconditions exist in Manitoba, the Priorities for Action document seeks to ensure that all the necessary combined jurisdictional, corporate and civic capacity required to address these urgent problems can be fully and immediately orchestrated in service of coordinated action locally, provincially and regionally. It is important to note from the outset, however, that this is not solely an environmental issue. While environmental concerns are valid what is happening now to Manitoba's lakes and watercourses will in time affect every sector of the province's economy. One of the central goals of this Priorities for Action document is to address these problems in ways that will perpetuate and strengthen the social, economic and political stability upon which the current and future prosperity of Manitoba depends.

The ten preconditions the Lake Friendly Stewards Alliance will need to fully develop, in order to succeed in addressing the very complex issues it has been created to overcome, must begin with a clear vision of what needs to be done. There also needs to be a rallying cry for action. To be successful the Lake Friendly Stewards Alliance also needs a clear mandate authorized by the Government of Manitoba and appropriate avenues to power that will allow it to realize its vision by rallying action. No organization like the Lake Friendly Stewards Alliance can succeed without strong, on-going non-partisan political support and leadership at both the executive and administrative levels of government. Initiatives like this also need recognized champions at all levels inside and outside of government who are committed to keeping complicated processes like these going even in difficult times. Such initiatives also need fully committed, long-term institutional support from NGOs, universities, research institutes, foundations

and other funding sources as well as service clubs and other public institutions. In the Canadian context there is also a constitutional pre-condition that legally demands meaningful consultation with Manitoba's First Nations. Another critical pre-condition for success is an informed and fully engaged public. The success of organizations like the Lake Friendly Stewards Alliance is also predicated on the extent to which decisions are informed by careful, on-going monitoring of conditions supported fully by scientific research. Finally, no collaborative initiative of this kind will succeed over time without adequate, reliable on-going funding. This agenda aims to fully create all of these conditions.

Manitobans have a big challenge ahead of them. We have entered a very complicated – and some would say dangerous – period in human history. In such times it is important to clearly identify what needs to be done and then – difficult as it may be – to make those things happen. In that it outlines what needs to be done, this Priorities for Action document is a beginning. But now the hard part starts. It is far easier to outline a plan, than it is to have the courage to stand by that plan and undertake the hard and often thankless work necessary to make it happen. In the years it will take to turn these problems around, it will be easy at times for anyone involved in this process to become frustrated and walk away from the commitment that will be required to fulfill this agenda. Unfortunately, if Manitobans want to be truly Lake Friendly failing in this initiative is simply not an option. Success hinges on mutual trust.

Having been involved in the circumstances of Lake Winnipeg for more than ten years and having witnessed the way in which this plan was expertly crafted by a wide range of passionate province-wide interests, I believe that Manitobans have it in themselves to make their province the kind of place where people want to live, not leave, in a warming world. This document lays out the first steps of the path. The world will be watching to see to see if Manitobans will follow it.

Bob Sandford

EPCOR Chair, Water Security

United Nations University Institute for Water Environment & Health,

Ambassador to the Lake Friendly Stewards Alliance

The Water Quality Issue

Water quality in our lakes, rivers and streams has been deteriorating exponentially within the Lake Winnipeg watershed and additional actions need to be taken by all of us now to stop and reverse the trend. Waterways are being impacted by nutrients, primarily phosphorus and nitrogen, pollutants and invasive species. Excess nutrients, entering from a variety of sources, increase the frequency and severity of algal blooms. These blooms can spoil drinking water, make beaches unsuitable for recreational activities, harm fish and other aquatic species, and produce toxins that are dangerous to both humans and animals. Reversing this trend is therefore urgent and important for our health, our economy and the well-being of all Manitobans.

Nutrients and pollutants enter our waterways through a wide range of direct and indirect sources. Direct or point sources include industrial discharge and municipal wastewater. Indirect or non-point sources enter waterways overland from agricultural land, forests, parks, golf courses and urban areas. Extreme weather events and changes to the natural landscape have reduced the capacity of natural ecosystems to manage and filter nutrients from water.

Nutrient levels in Lake Winnipeg have doubled since the early 1990s due in large part to increases in flow and nutrient concentrations in the Red River watershed. The Red River watershed contributes the largest nutrient load to Lake Winnipeg. A fifty per cent reduction in nutrient runoff in the Red River and Lake Winnipeg is required to improve water quality in the Lake which will reduce the frequency and severity of algal blooms. Nutrient reductions are also required in other rivers such as the Winnipeg, Saskatchewan and Dauphin. These nutrient reductions will improve local water quality in smaller but important water bodies throughout the watershed and help Lake Winnipeg.

Deteriorating water quality and the acceleration of the global hydrological cycle have significant social, environmental, and economic impacts that will be compounded unless the root causes are addressed. These very serious problems threaten not only our economy and quality of life, but pose costly threats to the critical and very expensive infrastructure of the province upon which future social and economic development depends. Lake Winnipeg has been identified as one of the world's most threatened freshwater systems. Nutrient loading, deteriorating water quality and aquatic invasive species in Lake Winnipeg could negatively impact the province's lucrative fishery, diminish the value of lakeside properties and experiences, significantly impact tourism and increase the challenge in attracting and keeping business in Manitoba.

Based on the ten preconditions for success presented in the foreword, there is a need for a clear vision to guide all of the actions taking place in the watershed. Based on current scientific knowledge, commitments and consensus, the goal for Lake Winnipeg watershed management

The Water Quality Issue

should be: *“To Reverse the trends in water quality and related issues; to retain a fifty per cent reduction in phosphorus concentrations in the south basin of Lake Winnipeg from different sources; and through a variety of means, establish pre-1990 nutrient levels.”*

The Lake Friendly Priorities for Action document constitutes the beginning of a concerted effort across sectors to reduce nutrient runoff and pollutants, manage invasive species and improve water quality in a way that helps our communities and our economy remain resilient in the face of changing hydro-climatic conditions. Our urgent response and prioritized actions will position Manitoba in a place that allows us to move from the “Most Threatened Lake in the World” to a jurisdiction that is creating positive, tangible change for generations today and for the future.



“A river is the report card
for its watershed.”

— ALAN LEVERE

Working Together through the Lake Friendly Accord

It has become increasingly clear that managing water effectively is one of the single most critical elements of sustainable development globally. Protecting our water resources is a challenging and complex endeavor. Streams, rivers, wetlands and lakes form immense, interconnected systems into which nutrients enter from a wide range of sources. Achieving sustainable management of our water in Manitoba is only possible with the full support and engagement of stakeholders from across all sectors of society, and integration throughout our planning, infrastructure investment and economic processes.

While many stakeholders are working toward improving the state of our waterways, these efforts must be coordinated and the overall impact must be monitored and improved. The Lake Friendly Accord and the Lake Friendly Stewards Alliance constitute leadership, coordination and integration of these attempts to ensure that the whole is more than the sum of its parts.

Everyone has a role to play. Individuals, industry, businesses and governments are key players and will achieve the greatest results by working together with a common vision of reducing nutrient loads to Lake Winnipeg. The Lake Friendly Accord (Accord) and Lake Friendly Stewards Alliance (Alliance), created in 2013 as a partnership between the Government of Manitoba and the South Basin Mayors and Reeves, provides a platform for collaboration and effective information sharing.

The Accord is a pledge to work together to improve water quality through the engagement of stakeholders in shared solutions. Signatories to the Accord define their participation by developing an Annex – a document that details their commitment to specific actions that align with their specific sector and expertise. The Alliance, a multi-stakeholder implementation forum, provides clarity for priority actions and promotes both collaboration and action through the Accord.

While the Accord and the Alliance objectives, and the priorities identified in the Lake Friendly Priorities for Action document, focus on and relate to the Lake Winnipeg basin, they are intended to be useful to other watersheds and jurisdictions. Keeping aquatic invasive species and pollutants out of waterways is important to achieving the eight main objectives of the Accord:

- Reduce nutrients to waterways
- Reduce the frequency and severity of algal blooms in waterways
- Improve aquatic ecosystem health
- Recycle and reuse nutrients with innovative technologies
- Develop and share innovative ways to improve water quality with other stakeholders
- Enhance environmental, community and economic benefits from water
- Enhance collaboration between those working to reduce nutrient loading to waterways
- Increase awareness of the need and ways to reduce nutrients in waterways

The Lake Friendly Stewards Alliance Structure

The Lake Friendly Stewards Alliance is co-chaired by the Minister of Conservation and Water Stewardship and the Chair of the South Basin Mayors and Reeves.



LAKE FRIENDLY STEWARDS ALLIANCE

The Lake Friendly Stewards Alliance includes a broad spectrum of stakeholders who have an interest in improving water quality. Alliance membership is comprised of both signatories to the Accord and non-signatory stakeholders. The Alliance is co-chaired by the Minister of Manitoba Conservation and Water Stewardship and the Chair of the South Basin Mayors and Reeves providing provincial and municipal government leadership to the initiative. The Alliance was established to support the goals and objectives of the Lake Friendly Accord by providing a forum to encourage collaboration among stakeholders across the watershed. Alliance members use this forum to share information, build partnerships, transfer knowledge and technology, monitor results and acknowledge successes.

LAKE FRIENDLY STEWARDS ALLIANCE STEERING COMMITTEE

The Lake Friendly Stewards Alliance Steering Committee (Steering Committee) is the coordinating body that provides overall direction to achieve the Accord and the Alliance objectives. The Steering Committee was tasked with developing a vision, identifying priorities, building synergies between complementary existing and proposed areas of work and ensuring the sharing of information. The Steering Committee includes an ambassador, two co-chairs, Working Group chairs, advisors and the technical secretariat. Members of the Steering Committee provide the requisite breadth of scope and non-partisan commitment that complex sustainable development issues demand. The main goal of the Steering Committee is to provide leadership, coordination, monitoring and an overall management structure to this initiative.

WORKING GROUP AREAS OF FOCUS

Based on the understanding and perspectives from key stakeholders, the Alliance and the Steering Committee have identified seven focus areas to achieve the objectives of the Lake Friendly Accord. Working Groups meet as required and coordinate with other relevant stakeholders to address on-going challenges and emerging opportunities and/or research that can support solutions. Together, the Accord, the Alliance, its Steering Committee and Working Groups will coordinate disparate but important work being undertaken across the basin by government, academics, economic sectors, communities, non-government organizations and the public. This information is shared with the Steering Committee through the chairs of the Working Groups, and supplements the expertise and traditional knowledge that is reflected in the overall strategy toward action.

Working Group Areas of Focus

SCIENCE AND RESEARCH

There is significant scientific knowledge on what is causing water quality deterioration in the Lake Winnipeg watershed and the vision of fifty per cent reduction of nutrient loads is based on scientific analyses of historical conditions and trends (State of Lake Winnipeg Report – Province of Manitoba). Scientific analyses are also providing signals on where our efforts should be targeted for maximum benefit. A precondition for success in achieving the vision is that actions are based on a dynamic evidence base. Ensuring a scientific basis for action coupled with systemic monitoring, helps ensure that we move in the right direction avoiding unintended consequences. Fulfilling the precondition on monitoring and a strong scientific basis, the Science and Research Working Group reviews and provides input to other areas of focus on appropriate data collection and analysis to input on action and monitor impact.

EDUCATION AND AWARENESS

A number of preconditions of success require effective education and awareness including an engaged public and fully committed long-term institutional support. A priority of this Working Group is to ensure the key messages of the Accord objectives, priorities and actions and achievements and outcomes are aligned across focus areas and effectively communicated. The Working Group provides a coordinating function for communication across stakeholder groups and promotes consistent sector-specific and public messaging on impacts and solutions across the watershed.

URBAN LANDSCAPES

Non-point nutrient loads make the Lake Winnipeg basin challenge more complex, requiring a host of actions, including the management of point source loads from municipalities, industry and other sources that must be tackled using cost-effective means. Land use strategies, infrastructure planning and municipal planning can play a significant role in improving water quality from urban areas. The Working Group is examining strategies across the urban landscape to improve urban water management infrastructure and landowner practices. The group is also exploring enhanced water management policies and technical applications aimed at protecting and restoring water quality, while building urban resilience.

RURAL LANDSCAPES

Much of the massive Lake Winnipeg watershed is rural. Consequently, these landscapes are important in protecting water quality through non-point source nutrient management. Farmers, fishers and ranchers also have local knowledge and incorporating their perspectives will strengthen the initiative. The Working Group is exploring policies and practices in agriculture and land development to restore and protect our waterways including: Beneficial Management Practices related to responsible livestock and crop management, development and implementation of Environmental Farm Plans, and other tools for agricultural producers to enhance resiliency in the face of hydrological change. Rural residential land use strategies in this area also include municipal and provincial drainage, and wastewater management policies and practices that can play a significant role in the protection of our waters. Together, the rural and urban landscape provides a framework for broad inclusion of committed champions inside and outside of government.

INDIGENOUS LEADERSHIP AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Indigenous communities and holders of traditional ecological knowledge and expertise have specific priorities and perspectives. Indigenous Leaders can provide insight to the work of the Alliance and the Steering Committee. The Alliance and Steering Committee will seek opportunities to ensure Indigenous perspectives are incorporated into plans and actions on an ongoing basis.

GOVERNANCE

Waterways and watersheds cross jurisdictions. Governments and decision makers at all levels must see value in protecting water quality and will benefit from a clear vision, priorities and actions. As fifty per cent of the nutrient loading to Lake Winnipeg comes from upstream of Manitoba, this Working Group is pursuing trans-boundary jurisdictions as signatories to the Accord. They are exploring the development and implementation of governance models that integrate water quality into planning processes, outcome based regulatory mechanisms, fiscal incentives, as well as government programming, to achieve the overall vision.

INNOVATION AND TECHNOLOGY

The Working Group is exploring innovative technology and relevant cost-effective natural and engineered solutions to improve water quality. Their work includes identifying ways to improve clean technology development and uptake through an enabling policy environment and removal of regulatory barriers to the adoption of new and innovative practices. Incorporating perspectives and encouraging the participation of industry will be a key component of the Working Group, goal.

The Process

Coordinating action across a broad and diverse range of stakeholders requires thinking about where we are going and how we get there. The Steering Committee has led this coordination over the past year and, in consultation with the Working Groups, they have created the Lake Friendly Priorities for Action document that identifies top priorities and outlines broad actions that Working Groups will further elaborate on, to achieve the priorities and the overall vision.

The priority areas identified in this document are intended to be adaptive to changing circumstances and scientific understanding of underlying issues. Additional goals and strategies will be added to the Priorities for Action document as the process unfolds, and as new research outcomes arise. This Priorities for Action document provides guidance for dynamic actions.

THE STEERING COMMITTEE UNDERTOOK THE FOLLOWING STEPS TO DETERMINE THE PRIORITIES FOR ACTION:

1. Create an Inventory

The Steering Committee consulted the Working Groups and others to undertake a scan of relevant activities currently underway in the Lake Winnipeg Basin. The scan identified the general range of activity and allowed the Steering Committee to create an inventory of over 200 activities currently underway related to land and water management in the basin. The activities were then categorized into the Alliance's seven focus areas.

2. Identify Gaps

The Steering Committee compared this inventory with recommendations from two key sources: Reducing Nutrient Loading to Lake Winnipeg and its Watershed: Our Collective Responsibility and Commitment to Action (Lake Winnipeg Stewardship Board, 2006); and, Manitoba's Surface Water Management Strategy (2014). This comparative analysis helped identify priorities, gaps and general actions necessary to achieve the overall vision.

3. Define Priorities

The chairperson of each working group drew on the expertise of their members and other experts to prioritize sector-specific actions that would have the greatest impact toward achieving the Accord objectives.

4. Determine Priorities for Action

The Steering Committee used a facilitated strategic planning process to identify the priorities of the Working Groups. This ensured consensus and buy-in from a broad range of committed stakeholders involved in the planning and implementation of Lake Winnipeg management. This also ensured alignment across all focus areas. Each identified priority is accompanied by broad action items that will be further articulated for achieving the overall vision.

Key Priorities

1. **Develop a long-term science plan for understanding nutrients, pollutants and invasive species, including their impacts and options for reductions in Lake Winnipeg and its watershed.**

Despite efforts, the level of scientific understanding of Lake Winnipeg and its watershed is severely lacking compared to level of research and scientific understanding in comparable basins globally. Similar large trans-boundary basins undertake systematic diagnostic studies to understand the nature of the basin, its hydrology, soils, land use as well as trends over time and linkages with human uses.

- ACTIONS

- Evaluate and prioritize research needs to respond to the other priority areas.
- Coordinate research priorities across funders, researchers and agencies.
- Develop a collaborative network for data collection and sharing.
- Improve and support monitoring of Lake Winnipeg and its basin to ensure effectiveness of actions and inform adaptive management.
- Develop indicators and a reporting structure for monitoring Lake Winnipeg and its basin and work with the communications Working Group to ensure popular understanding of such a report card.

2. **Create a supportive regulatory environment that enables the implementation of new and adapted technologies for improved nutrient management, water quality and to foster resiliency.**

Outcome-based regulations aimed at specific changes that allow flexibility in actions enable innovation and can overcome the traditional resistance that comes with prescriptive regulations.

- ACTIONS

- Develop criteria to evaluate pilot projects to determine effectiveness based on measurable outcomes.
- Provide recommendations to create a supportive regulatory environment for new technology, pilot projects and full scale implementation.
- Explore and encourage market and incentive opportunities and partnerships with business and industry.

3. Facilitate the adoption of nutrient management actions that improve water quality and support agricultural production.

As stewards of the largest areas of private land, working in partnership with farmers will ensure change is achieved through landscape management. While Environmental Farm Plans and established Beneficial Management Practices for agriculture are in use, monitoring and communicating impacts of these actions, as well as collaborating across Working Groups, will improve overall benefits.

- ACTIONS

- Encourage the adoption of Beneficial Management Practices in Environmental Farm Plans.
- Explore incentives to support agricultural producers in the adoption of Beneficial Management Practices that reduce nutrient runoff, maintain and enhance soil health, restore and protect natural habitats and improve water quality.
- Work with partners to promote responsible drainage practices and fertilizer and manure application.

4. Improve municipal wastewater, storm water and drainage management to reduce nutrient loading and improve water quality.

While most of the land base in the Lake Winnipeg watershed is rural, the majority of the population lives in urban settings. Ensuring that our cities use the best technology and means to control point and non-point source nutrient loads from urban areas will impact water quality significantly. This also facilitates change in industry, education and other related sectors as well as broad-based behaviour change in the most populated areas in the watershed.

- ACTIONS

- Identify nutrient reduction Beneficial Management Practices related to municipal planning and provide recommendations for integration of planning and incentives.
- Develop a strategy for integrating Beneficial Management Practices into municipal planning, secondary planning, bylaws and regulations and other infrastructure processes.
- Work with municipalities to identify infrastructure improvements and to seek innovative solutions that enhance water quality.

5. Incorporate Indigenous perspectives and knowledge.

Indigenous communities represent a unique set of rights and priorities in the context of land and water management in the watershed. Ensuring that Indigenous perspectives are incorporated and adequately addressed is key to a robust plan, and broad-based buy-in and support, which is a necessary precondition for success.

- ACTIONS

- Attend Indigenous-led gatherings to share and receive feedback on the efforts of the Alliance.
- Incorporate Indigenous knowledge and ensure Indigenous perspectives are incorporated into plans and actions.

6. Create a consistent and coordinated messaging strategy to encourage individual and sector-based behaviour change.

Broad-based behaviour change starts with a clear understanding of the problem and specific actions toward proposed solutions. The key priorities identified in this document will assist in determining messaging priorities to residents within the watershed who care about water for a variety of reasons.

- ACTIONS

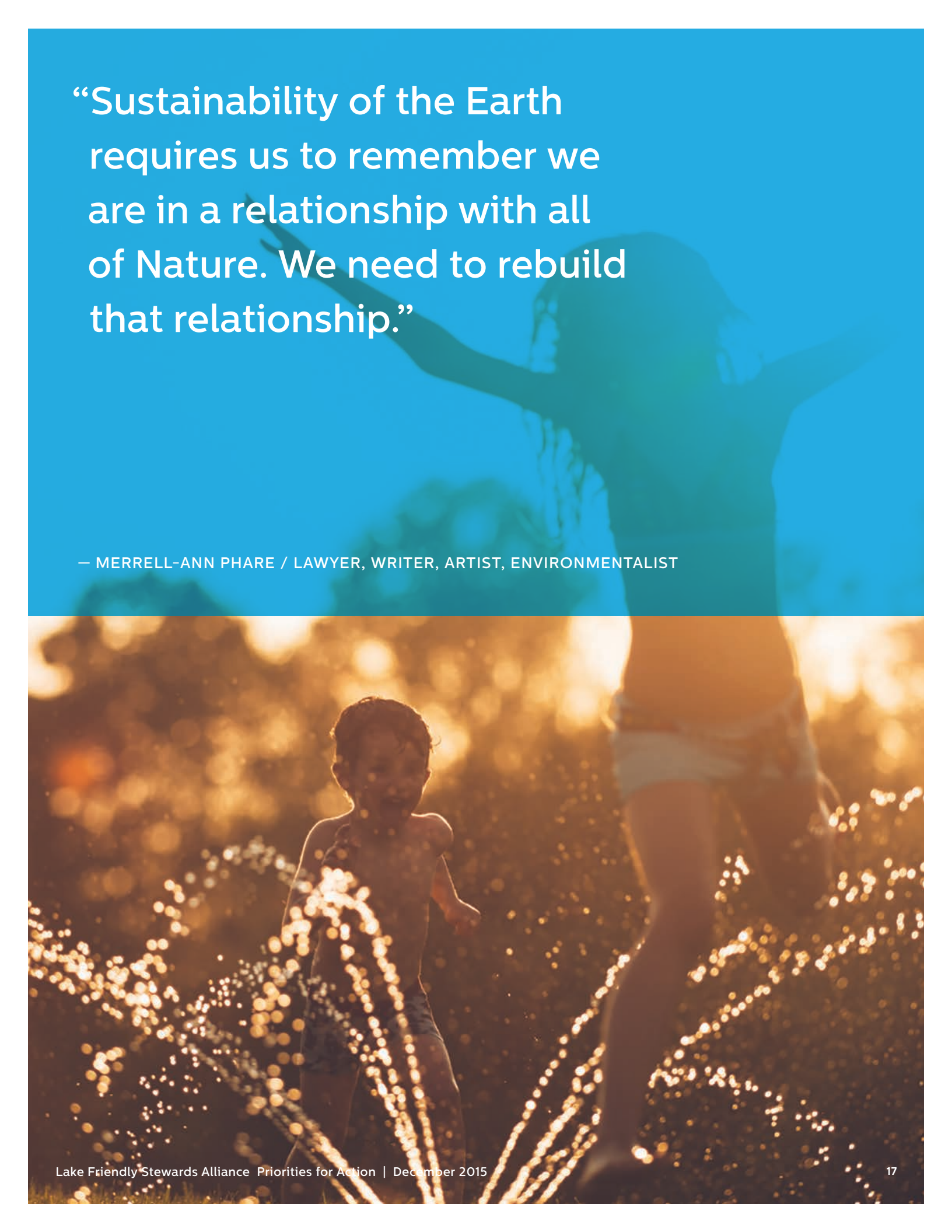
- Include the perspectives of traditional Indigenous ecological knowledge and all traditional ecological knowledge holders (ranchers, fishers, farmers) from across the watershed.
- Develop a strategy to align communications with the identified key priorities in a coordinated public campaign.
- Coordinate Alliance stakeholders through information sharing and technical capacity building.
- Strategically align public and sector specific messaging across all stakeholders.
- Ensure education and awareness objectives complement and align with Manitoba Education.

7. Engage and seek commitments from trans-boundary stakeholders towards the objectives of the Accord.

This is a complex, inter-jurisdictional watershed and fifty per cent of the nutrient loads come from outside Manitoba. This means that we need to work proactively with other jurisdictions and reconcile governance, legislation, research and messaging across jurisdictions in Canada and the US to reduce nutrient loads. The Lake Friendly Priorities for Action document provides coordination to move decisively towards achieving the vision and priorities.

- ACTIONS

- Work with the International Joint Commission and its relevant boards and other intra-jurisdictional boards, commissions and committees to support and enhance the objectives of the Accord.
- Facilitate connections to trans-boundary stakeholders groups.
- Identify stakeholders, their scope of influence and actions to be undertaken that could be included in an annex to the Accord.
- Seek strategic partnerships with key stakeholders and increase the number of signatories to the Accord.

A woman with her arms raised in a field of flowers, with a child in the foreground. The scene is bathed in warm, golden light, likely from a low sun, creating a bokeh effect in the background.

“Sustainability of the Earth
requires us to remember we
are in a relationship with all
of Nature. We need to rebuild
that relationship.”

— MERRELL-ANN PHARE / LAWYER, WRITER, ARTIST, ENVIRONMENTALIST

The Lake Friendly Accord and the Lake Friendly Priorities for Action document created by the Steering Committee provides guidance with clear, prioritized direction for addressing the water quality challenges in the Lake Winnipeg basin. The broad actions identified within the seven priority areas will be used by the Working Groups to create specific actions to achieve the overall vision and objectives of the Accord and the Alliance.

The Steering Committee will continue to align the actions across various sectors and government departments, to ensure that Working Groups are complementing and supporting each other and when there is a conflict, resolving it in the best interest for sustainable development in the Lake Winnipeg basin.

It is understood that the identified priorities for action will be iterative and adaptive to ensure that we learn and incorporate lessons from what is working and what is not. For this purpose, the Steering Committee will continue to seek input and work to define best practices and identify innovative opportunities, to enhance the Lake Friendly Priorities for Action document.

The Steering Committee will ensure that progress in the priority areas toward the vision is documented and all stakeholders in the process are informed and updated toward achieving the objectives of this Lake Friendly Priorities for Action document.

The avenues of communication opened up by the Accord and the Alliance will ensure that the impacts of action can be shared and built across sectors to achieve maximum benefit. By working together under a common framework toward priorities and actions as identified in this document, governments, education, non-government organizations, industry, business and the public can shape their participation to ensure we are putting our best foot forward in our collective efforts to protect and preserve one of our most valuable resources, water.

Afterword

I am a newcomer to this Steering Committee, appointed by the Manitoba government in October 2015. Like most of us, I have a deep connection to Manitoba lakes, in particular Lake Winnipeg, the perceived “ocean” of my childhood. I left Winnipeg in the 1980s to study lakes in other parts in Canada, and as I was researching blue-green algal blooms and lake nutrient dynamics, my own lake’s eutrophication journey accelerated. After obtaining my PhD in aquatic ecology, over time, I shifted my emphasis from science to public policy. I am grateful for the opportunity to return full circle to my home city and be part of an Alliance dedicated to securing a better future for Manitoba’s lakes. I applaud the many hours of hard work that has resulted in this document.

This document began with a foreword by Bob Sandford, Ambassador to the Lake Friendly Stewards Alliance. He outlines ten preconditions for managing, and getting ahead of the problems Manitoba faces with respect to excess nutrient inflows into its waterways, changing hydro-meteorological regimes and invasive species. It ends with optimism based on his years of experience working with Manitobans who are passionate about a better future for our lakes.

I share his optimism and offer the following assessment of where we are at with respect to the preconditions for success that Bob has outlined.

We have a vision that is both far reaching and science based. There has been a rallying cry for action for some time. We have champions everywhere. We have a large tent and the tent is getting bigger. The public is engaged and efforts are being made to coordinate funding and actions. The Steering Committee has a mandate and access to decision-makers.

So far so good, but now I have a few questions. There is a lot of activity, but are the activities designed to work together? Are the decisions integrated and based on science? What do we need to focus on first to accelerate progress?

I believe there are three things that would make a huge difference. First, we need to design, fund and implement a world class monitoring and modelling system (what to measure, where and at what frequency), share the data, learn and adapt. Second, we require a solid governance structure with built-in accountability back to Manitobans, so collectively we can see what is being achieved to tangibly improve the health of Lake Winnipeg. Third, we require ongoing and sustained funding and need to identify who can and should contribute in the short and longer-term.

The Lake Friendly Stewards Alliance is collaborative and interdisciplinary. With a clear focus, leadership and dedicated resources, we can tackle this challenge together.

Dr. Annette Trimbee

President and Vice-Chancellor, University of Winnipeg
Co-Chair, Lake Friendly Stewards Alliance Steering Committee

Lake Friendly Stewards Alliance Steering Committee: Member Bios

AMBASSADOR

Bob Sandford is the EPCOR Chair for Water and Climate Security at the United Nations University Institute for Water, Environment and Health. He also holds fellowship positions at the University of Saskatchewan and University of Calgary, participates in several water-related organizations, and is a senior advisor to more than thirty former Heads of State on the Interaction Council. Bob has published many books, including *Cold Matters: The State and Fate of Canada's Snow and Ice* and *Saving Lake Winnipeg*.

CO-CHAIRS

Dr. Annette Trimbee is the President and Vice-Chancellor of the University of Winnipeg. Dr. Trimbee assumed the role of co-chair of the Lake Friendly Alliance Steering Committee in October 2015. She is a respected public policy leader with a strong background in ecology and environmental science. Dr. Trimbee provides strategic advice on long-term management of Manitoba's water systems related to trans-boundary issues.

Colleen Sklar is the Executive Director of the Lake Friendly Initiative and the Partnership of the Manitoba Capital Region. Her education is in the fields of conflict resolution and international development. Colleen has expertise in private consulting, with a focus on creating effective organizational structures through enhanced communication and meaningful stakeholder engagement. Colleen also chairs the Education and Awareness Working Group.

Lake Friendly Stewards Alliance Steering Committee: Member Bios

WORKING GROUP CHAIRS

John Fjeldsted was the Executive Director of the Manitoba Environmental Industries Association (MEIA) from July 2007 until his retirement in January 2014, as well he was the past Chair of the Steering Committee's Innovation, and Technology Working Group. John worked for over 35 years for Manitoba Hydro as the Manager of Corporate Planning and Environment and has participated on numerous committees related to environmental protection, standards and technology including the committee responsible for ISO 19011, the Guideline for Quality and/or Environmental Management Systems Auditing.

Alanna Gray is a policy analyst with Keystone Agricultural Producers (KAP), and has been involved with the Lake Friendly Initiative for a number of years. Alanna worked on Lake Friendly Practices and Lake Friendly Certification for Municipalities and most recently has been involved as member of the Steering Committee representing the Rural Landscapes Working Group. Alanna has been involved in other environmental programs with KAP, including working as a member of the 4R implementation committee, the Climate Change Connection advisory committee and Tire Stewardship committee, as well as administering the Environmental Farm Plan program.

Alexis Knispel Kanu is the Executive Director of the Lake Winnipeg Foundation and Chair of the Steering Committee's Science and Research Working Group. She has extensive experience working in the non-profit and community development sectors. Alexis holds a PhD in environmental science from the University of Manitoba.

Jeff Lewis is the Executive Director of the Red River Basin Commission (RRBC) and Chair of the Steering Committee's Governance Working Group. Prior to joining the RRBC, he worked for the State of Minnesota for 34 years with the Minnesota Pollution Control Agency and the Minnesota Department of Natural Resources. Jeff holds a master's degree in hydrology from the University of Minnesota.

Lake Friendly Stewards Alliance Steering Committee: Member Bios

WORKING GROUP CHAIRS *(continued)*

Curtis McRae is the owner and operator of a 5,000 acre grain and cattle farm in St. Andrews, Manitoba. He is chair of Keystone Agricultural Producers' Environment and Land Use committee as well as chair of the Steering Committee's Rural Landscapes Working Group. He has worked extensively with Agriculture in the Classroom and Agriculture in the City and sits on the board of the East Interlake Conservation District. Curtis holds a degree in agricultural engineering from the University of Manitoba.

Mike Scatliff is a founding partner of the landscape architecture firm Scatliff + Murray + Miller and Chair of the Steering Committee's Urban Landscapes Working Group. He has been involved in designing many major urban landscaping projects in Winnipeg, including the award-winning Assiniboine Riverwalk and the development of Waterfront Drive. Mike holds a master's degree in landscape architecture from the University of Manitoba.

Margo Shaw is the Executive Director of the Manitoba Environmental Industries Association and Chair of the Steering Committee's Innovation and Technology Working Group. Her past experience includes working as a Senior Biologist with Golder Associates, Executive Director of the Upper Lakes Environmental Research Network, and Aquatic Biologist with Fisheries and Oceans Canada. Margo holds a master's degree in biology from the University of Guelph.

ADVISORS

Nicole Armstrong is the Director of the Water Science and Management Branch of Manitoba Conservation and Water Stewardship. She has worked for the province of Manitoba for the past 15 years, and represents the department on the International Joint Commission's International Red and Souris River Boards, the Red River Basin Commission, and the Committee on Water Quality for the Prairie Provinces Water Board. Nicole holds a master's degree in aquatic ecology from the University of Alberta.

Bruce Gray is the Assistant Deputy Minister of the Water Stewardship and Biodiversity Division of Manitoba Conservation and Water Stewardship. He holds a master's degree in public administration from the University of Winnipeg, as well as a certificate in public sector management from Queen's University.

Dimple Roy is the Director of the Water program at the International Institute for Sustainable Development (IISD). She brings experience and expertise from research on Lake Winnipeg management and policy, international research on basin management and governance and adaptive policy-making.

Lake Friendly Stewards Alliance Steering Committee: Member Bios

ADVISORS *(continued)*

Les Rutherford is the Manager of the Lake Winnipeg Basin Initiative (LWBI) at Environment Canada. Les is responsible for the overall coordination and delivery of the stewardship and trans-boundary components of the LWBI. Prior to 2012, he served for 24 years in various positions at Environment Canada in Dartmouth, Nova Scotia, mostly involving the environmental protection of aquatic species. Les holds a master's degree in environmental studies from Dalhousie University.

Hank Venema is a professional engineer and the Vice-President of Science & Innovation at the International Institute for Sustainable Development (IISD). He has led IISD's research on water and agricultural issues since 2004, and in 2009 he led the creation of IISD's Water Innovation Centre, which focuses on Lake Winnipeg Basin management. Hank has produced numerous publications and has collaborated with many organizations, including the United Nations Environment Programme and the Global Water Systems Project.

TECHNICAL SECRETARIAT

Colleen Andreychuk is a Policy Analyst in the Water Science and Management Branch of Manitoba Conservation and Water Stewardship. As an analyst with the department for 20 years, she has worked in the areas of legislation, program development, and strategic planning. She currently works with groundwater, surface water, and water quality and is the Co-Secretariat for the Steering Committee overseeing the implementation of the Canada-Manitoba Memorandum of Understanding on Lake Winnipeg and its basin. Colleen completed her studies at the University of Manitoba.

Iris Griffin is the Senior Advisor on the Lake Winnipeg Basin Initiative for Environment Canada where she focuses on policy and trans-boundary aspects of the Lake Winnipeg water quality issue. She represents Environment Canada on the Water Quality Committee of the International Red River Board, and is the Co-Secretariat for the Steering Committee which oversees the implementation of the Canada-Manitoba Memorandum of Understanding on Lake Winnipeg and its basin. Iris holds a master's degree in social work from the University of Manitoba, and a joint master's degree in public administration from the University of Manitoba and the University of Winnipeg.

