TRANSCENDING BOUNDARIES

A GUIDEBOOK TO THE ALBERTA-NORTHWEST TERRITORIES MACKENZIE RIVER BASIN BILATERAL WATER MANAGEMENT AGREEMENT

THE GORDON FOUNDATION

FLOW
FORUM FOR LEADERSHIP ON WATER

GUIDEBOOK TO THE ALBERTA-NORTHWEST TERRITORIES MACKENZIE BASIN TRANSBOUNDARY WATER AGREEMENT

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MACKENZIE
RIVER BASIN
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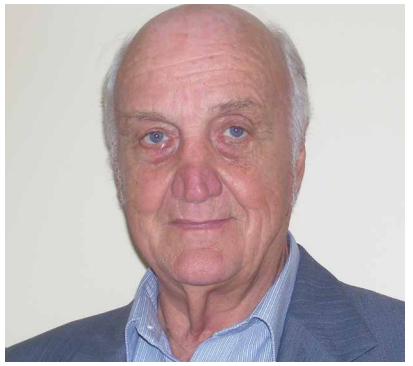

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PAT KANE is a photographer, writer and journalist. He has been travelling across the Northwest Territories over the last year capturing the lives of people and the importance that land and water have in their lives as part of a project entitled "On the Land". Pat is also a regular contributor on many projects for magazines, businesses, government departments, NGO's and marketing agencies nationwide. He is among the most experienced and reliable shooters working in Canada's Far North today.

PREFACE

THE GORDON FOUNDATION AND THE FORUM FOR LEADERSHIP ON WATER (FLOW) are pleased to bring you *Transcending Boundaries* A Guidebook to the Alberta-Northwest Territories Mackenzie Basin River Bilateral Water Management Agreement.

The Bilateral Agreement between Alberta and the Northwest Territories, signed on March 18, 2015, is one of the most comprehensive and progressive transboundary water agreements in the world. Through this Agreement, the two governments commit to cooperative, integrated watershed management in the Mackenzie River Basin, one of the most intact large-scale ecosystems in North America.

At the core of the Alberta-Northwest Territories Bilateral Agreement is the commitment to maintain the ecological integrity of shared aquatic ecosystems in the Mackenzie River Basin. This includes the ground and surface waters along with the organisms that live in and are dependent on these waters. The Agreement is evidence-based, using both western and Traditional Knowledge, proactive and forward-looking. It includes the concept of "joint learning" between the Parties to guide management actions. The Agreement will lead to improved environmental monitoring in the Basin and to the setting of targets to protect water quality, quantity and living organisms. It requires governments to share information, notify each other and address concerns before undertaking any new developments and activities that might affect ecological integrity. It further requires governments to consult each other and the public on an ongoing basis. Importantly, the Agreement engages Indigenous peoples in agreement implementation and provides opportunities for the public to get involved in decisions affecting their local watersheds.

Transcending Boundaries provides a detailed examination of the key elements of the Bilateral Agreement, what they will achieve and how they will be implemented. It also provides a broader understanding of the Mackenzie River Basin Transboundary Waters Master Agreement. The more citizens understand both the Bilateral Agreement and the Master Agreement, the more likely they will be to participate in their implementation. This is the key to success of the Agreements and ultimately the health of the Mackenzie River Basin. It is our hope that this guidebook will be used as a tool for citizens to make their voices heard while driving the implementation of the unique and historic Bilateral Agreement.

For those outside the Basin, we hope that *Transcending Boundaries* demonstrates what can be achieved through cooperative transboundary water management, identifies concepts that can be applied elsewhere, and provides a gentle nudge to begin to apply these concepts in other watersheds.

Sherry Campbell
PRESIDENT AND CEO,
THE GORDON FOUNDATION.

Oliver M Brandes
CO-CHAIR – FORUM
FOR LEADERSHIP
ON WATER (FLOW)

Boaters from Lutselk'e push off from shore in the East Arm of Great Slave Lake

Paul Mackenzie on
Blachford Lake

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INTRODUCTION

Soon 100% of the Mackenzie River Basin will be cooperatively managed under bilateral agreements.

The Mackenzie River Basin is one of Canada's great natural resources – mighty in scale covering 20% of Canada's land mass, rich in diversity and vital to the people and wildlife that live within it. While the Mackenzie is remote from the highly developed southern part of Canada and is considered one of the most intact, large-scale ecosystems in North America, it is not immune to the impacts of land use changes, industrial development and climate change. Wise management, sound decision-making based on both Traditional Knowledge and western science, and ongoing vigilance are needed to ensure future generations enjoy the same benefits the Mackenzie Basin offers today.

This guidebook, *Transcending Boundaries*, has been developed to showcase the ground-breaking, binding intergovernmental agreement between Alberta and the Northwest Territories. Other Basin jurisdictions – British Columbia, Yukon and Saskatchewan – have or will soon have very similar agreements resulting in 100% of the Mackenzie River Basin being cooperatively managed under bilateral agreements. They will all work together in a complementary way, and so this guidebook can help citizens understand those agreements as well. Part I will explain more about the Bilateral Agreements under the umbrella Mackenzie River Basin Transboundary Waters Master Agreement.

The *Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement* (the Alberta-NWT Bilateral Agreement) commits the Parties (the governments of Alberta and the Northwest Territories) to cooperative, integrated watershed management in the Mackenzie River Basin. What does this mean? How would it work? What will it achieve? That is what this guidebook is all about.

Transcending Boundaries was developed by The Gordon Foundation in partnership with the Forum for Leadership on Water (FLOW), an independent, non-partisan group of water policy experts from across Canada.

ABOUT THE GUIDEBOOK

- **Part I** describes the Mackenzie River Basin, and the 1997 umbrella *Mackenzie River Basin Transboundary Waters Master Agreement*. It explains how the bilateral agreements fit under the Master Agreement.
- **Part II** focuses on the key concepts of the Alberta-NWT Bilateral Agreement, including the Ecological Integrity of the Aquatic Ecosystem, Risk Informed Management, and the use of indicators to monitor ecosystem integrity.
- **Part III** provides a clause-by-clause examination of the Alberta-NWT Bilateral Agreement, describes what it contains and why it is important.
- **The conclusion** provides key elements of the Alberta-NWT Bilateral Agreement.
- To aid the reader, the guidebook contains a list of resources.

An aerial view of
Yellowknife Bay

PART I

WATER MANAGEMENT IN THE MACKENZIE RIVER BASIN

The Mackenzie and its many tributaries represent one of the largest and most intact ecosystems in North America.

The eastern part of the Basin includes three of Canada's largest lakes: the Athabasca, Great Slave and Great Bear lakes.

SPOTLIGHT ON THE MACKENZIE RIVER BASIN

The Mackenzie River Basin is the longest and largest river system in Canada, draining a vast area of 1.8 million square kilometers – nearly 20 per cent of Canada's landmass and an area three times the size of France. The main stem of the river rises in the shallow wetlands at the western end of Great Slave Lake and runs 1,738 kilometers to empty through a massive delta into the Arctic Ocean. The entire system flows 4,241 kilometers from tributary headwaters to the mouth. The Mackenzie's many tributaries include the Peace, Athabasca, Liard, Hay, Peel and Great Bear rivers. Most importantly, it is one of the largest and most intact ecosystems in North America. About 63 per cent of the Mackenzie River Basin is covered with temperate and boreal forest – much of it intact old growth – and about 18 per cent is covered with wetlands. The eastern part of the Basin includes three of Canada's largest lakes: the Athabasca, Great Slave and Great Bear lakes.

BIODIVERSITY

The waters of the Basin support 54 species of fish, some of which – like the Arctic cisco and Lake whitefish – migrate long distances inland to spawn. The Mackenzie Delta (where the Mackenzie River meets the Arctic Ocean) and the inland Peace-Athabasca Delta are important resting and breeding areas for migratory birds; as many as 215 species of birds have been identified in the Peace-Athabasca Delta alone. The terrestrial areas of the Basin support populations of caribou, moose, coyotes, wolves, bears and other mammals.

PEOPLE

The Mackenzie River Basin is sparsely populated, with most settlements located along the major rivers. The waters in the Basin supply drinking water, act as a highway for the transportation of goods and people, are harnessed to generate electricity, and are used for agriculture and industries. Jurisdiction over the Basin is shared among Canada, Indigenous governments, British Columbia, Alberta, Saskatchewan, the Yukon and the Northwest Territories.

STRESSES

Even though the Mackenzie River Basin is considered to be ecologically intact, it is affected by a number of stresses including the cumulative impacts of land cover changes from industrial development, pollution and the hydrological shifts of a changing climate. Increasing industrial development, including mining, oil and gas production and hydroelectric generation can pol-

Even though the Mackenzie River Basin is considered to be ecologically intact, it is affected by a number of stresses including the cumulative impacts of land cover changes from industrial development, pollution and the hydrological shifts of a changing climate.

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lute the Mackenzie's waters and alter flows. A wide range of contaminants, both natural and human-produced, enter the Basin through direct discharge into water bodies and also through long range atmospheric transport from sources within Canada and from distant places on the planet. The impacts of climate change include the degradation of permafrost and alterations to flows in rivers. Maintaining the Mackenzie – protecting the river itself and the resources it supports – requires active and ongoing management of our activities. That is precisely the intention behind the *Mackenzie River Basin Transboundary Waters Master Agreement*.

THE MACKENZIE RIVER BASIN AND TRANSBOUNDARY SUB-BASINS

LEGEND:

SUB-BASINS: PEEL, MACKENZIE MAIN STEM AND GREAT BEAR LAKE, GREAT SLAVE, ATHABASCA, PEACE, LIARD

In 1977, the governments established the Mackenzie River Basin Committee and initiated a three-year program of studies on the river.

THE MACKENZIE RIVER BASIN TRANSBOUNDARY WATERS MASTER AGREEMENT

BACKGROUND

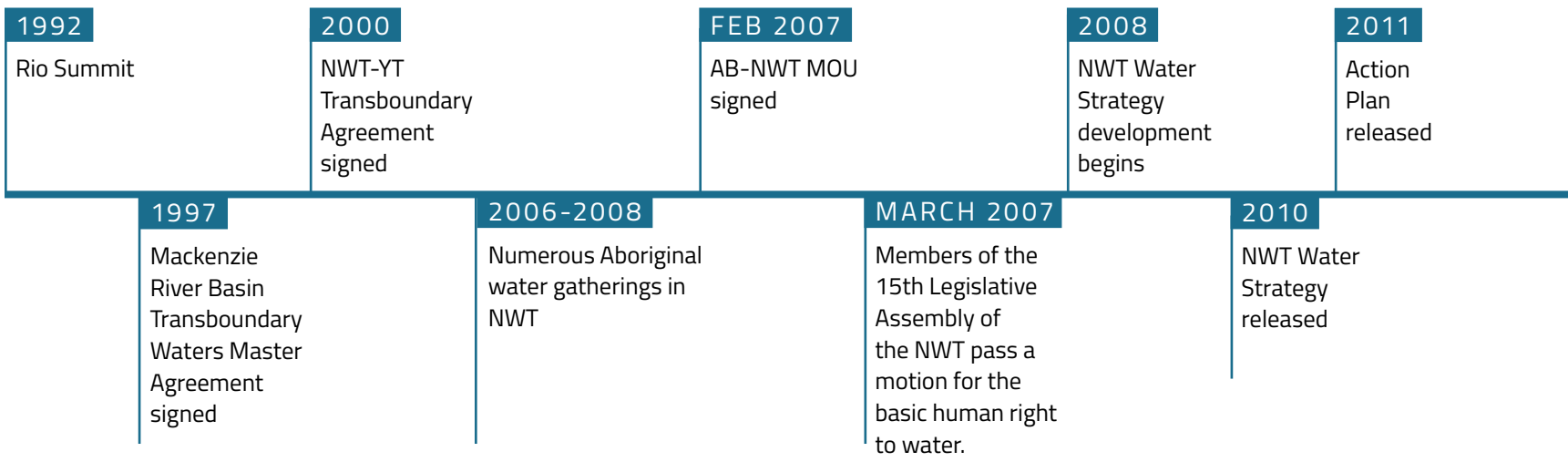
The seeds of the current transboundary water management in the Mackenzie River Basin were planted in the 1970s, when mounting public concern about the basin prompted the Governments of Canada, Yukon, Northwest Territories, British Columbia, Alberta and Saskatchewan to set up the Mackenzie River Basin Intergovernmental Liaison Committee in 1972. At that time, the public was concerned about aquatic ecosystems – specifically, how changes to water quality and quantity in the Basin affected fish, wildlife and people. In 1977, the governments established the Mackenzie River Basin Committee and initiated a three-year program of studies on the river. The final report, *the Mackenzie River Basin Study Report*, was completed in 1981. The authors of the report had the vision to note that:

> *"Water is the essential natural resource of the Mackenzie River Basin. It provides habitat for fish and wildlife, and for the food chains which support them. Other resources, such as coal, gas, oil, tar sands, and minerals requires large amounts of water for their development. Navigation and hydroelectric power production add to the growing competition for water. Development of any resource, be it in one jurisdiction or several, could affect the uses of water by altering flows, levels or water quality downstream. Hence, the need for cooperative management represents the greatest and most urgent challenge for the future."*

The report encouraged the governments to develop a transboundary water agreement that would address minimum water flows, the management of water and the quality of the water as it crossed borders. It also recommended the creation of a permanent board. In 1982, the nine recommendations from the report were endorsed by the ministers of the provincial/territorial and federal governments involved, and the Mackenzie River Basin Committee was asked to implement these recommendations.

With the report in hand, the governments began work to define the principles that might be included in a transboundary water agreement for the Mackenzie River, and carried out extensive consultations. The result was the development in 1997 of the *Mackenzie River Basin Transboundary Waters Master Agreement* (the

AB - NWT BWMA TIMELINE



Master Agreement), which was endorsed by the governments of the Northwest Territories, Yukon, British Columbia, Alberta, Saskatchewan and Canada. This is a cooperative, intergovernmental agreement.

PRINCIPLES OF THE MASTER AGREEMENT

At the core of the Master Agreement is the establishment of a set of common and far-reaching principles for the cooperative management of the aquatic ecosystem of the Mackenzie River Basin. These principles involve commitments by the governments with respect to:

1. **Ecological integrity**: Managing the water resources in a manner consistent with the maintenance of the *Ecological Integrity of the Aquatic Ecosystem*.
2. **Sustainability**: Managing the use of the water resources in a sustainable manner for present and future generations.
3. **Recognition of other jurisdictions' rights:** The right of each to use or manage the use of the water resources within its jurisdiction provided that use does not unreasonably harm the Ecological Integrity of the Aquatic Ecosystem in any other jurisdiction.
4. **Information sharing**: Providing for early and effective consultation, notification and sharing of information on developments and activities that might affect the Ecological Integrity of the Aquatic Ecosystem in another jurisdiction.
5. **Dispute resolution**: Resolving issues in a cooperative and harmonious manner.

The Master Agreement also included provisions for dispute resolution and established a governing Mack-

COMPOSITION OF THE MACKENZIE RIVER BASIN BOARD

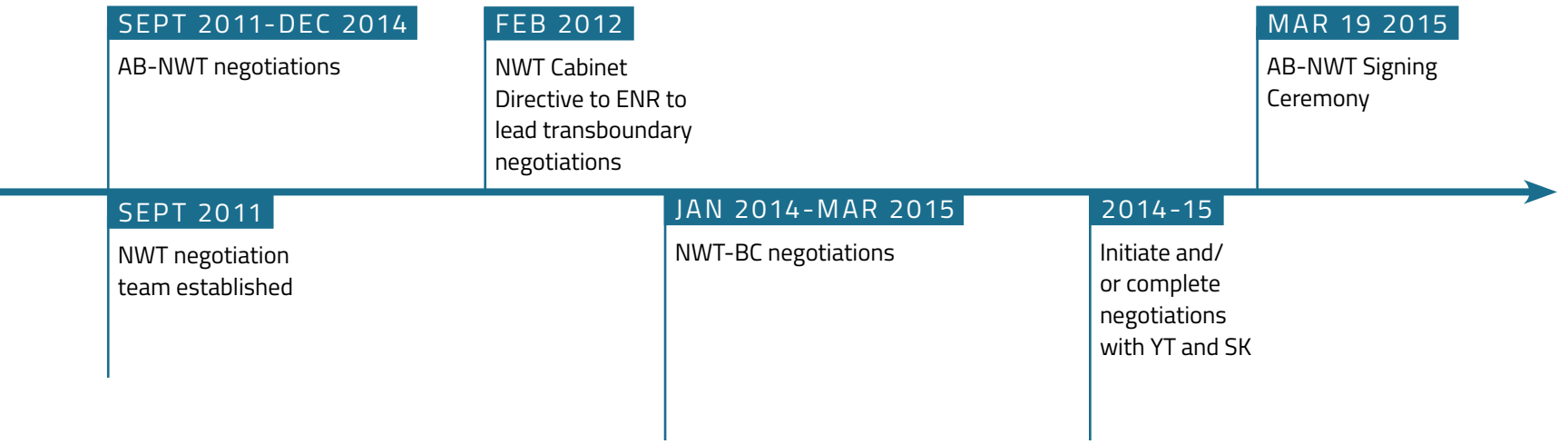
The Board is comprised of the following:

Three members from the **federal government** (usually Environment Canada, Indigenous and Northern Affairs Canada and Health Canada)

Five members from the **provinces and territories** (one from each) in the Basin.

Five members from **Indigenous organizations** (one appointed by each province and territory in the Basin)

At the core of the Master Agreement is the establishment of a set of common and far-reaching principles for the cooperative management of the aquatic ecosystem of the Mackenzie River Basin.



The Master Agreement is a framework agreement. Bilateral Agreements provide more details on objectives and the cooperative management of transboundary waters.

enzie River Basin Board to administer the Agreement. To the authors' knowledge, it is unique in Canada to have this level of representation of Indigenous membership on a transboundary management body.

Importantly, the Master Agreement also provided for the creation of Bilateral Water Management Agreements, which are covered in Part II of the guidebook.

BILATERAL AGREEMENTS UNDER THE MASTER AGREEMENT

The Master Agreement is a framework agreement, in that it provides principles and establishes a process for cooperation. However, water management in the Basin is complex; it involves multiple jurisdictions and there are great differences in climate, topography and water use in its many sub-basins. For example, the stresses on and concerns about water are heightened in the Slave River Basin because it is affected, through the Athabasca River, by the oil sands. Comparatively, the less-developed Peel River, or the downstream main stem of the Mackenzie River, require far less attention. In light of this diversity, it would be difficult, if not impossible, for a single agreement to adequately address water management issues Basin-wide, across all jurisdictions. Instead, the Master Agreement encourages neighbouring jurisdictions to enter into bilateral (or transboundary) agreements that deal specifically with the waters they share. While they are not contracts or treaties, these bilateral agreements provide specific binding commitments for "on the ground" implementation of the Master Agreement. They also include details on objectives and the cooperative water management of transboundary waters.

The objectives of the bilateral agreements are to:

- **Cooperation:** Effect cooperative watershed management among the jurisdictions which share the water resources of the Mackenzie River Basin;
- **Ecological integrity:** Maintain the ecological integrity of the aquatic ecosystems of the Mackenzie River Basin; and
- **Equitable and sustainable use:** Facilitate equitable and sustainable use of shared water resources by establishing criteria and desired outcomes that address water consumption, flows, quality, ground water management and aquatic ecosystem health commitments.

EVENTUALLY, THERE WILL BE SEVEN BILATERAL AGREEMENTS BETWEEN THE FOLLOWING JURISDICTIONS

Eventually, there will be seven bilateral agreements between the following jurisdictions:

- Alberta and British Columbia
- Alberta and the Northwest Territories (signed in 2015)
- Alberta and Saskatchewan

- British Columbia and the Northwest Territories (signed in 2015)
- British Columbia and Yukon
- Northwest Territories and Saskatchewan
- Northwest Territories and Yukon (signed in 2000)

As these bilateral agreements are signed they will be attached as schedules to the Master Agreement.

EXISTING BILATERAL AGREEMENTS

- **Northwest Territories-Yukon (2002)**: The first bilateral agreement was negotiated between Yukon and the Northwest Territories in 2002 and will be updated to be consistent with newer bilateral agreements.
- **Alberta-Northwest Territories (2015)**: The second bilateral agreement was signed on March 18, 2015, and is the subject of this guidebook.
- **British Columbia-Northwest Territories (2015)**: A third bilateral agreement – British Columbia-NWT Bilateral Water Management Agreement – is very similar to the Alberta-NWT Bilateral Agreement and was signed on Oct. 15, 2015.

The other agreements are under negotiation.

THE NORTHWEST TERRITORIES WATER STEWARDSHIP STRATEGY AND ACTION PLANS

The Northwest Territories negotiation team for the Alberta-NWT Bilateral Agreement was heavily informed by two important reports, *Northern Voices, Northern Waters: the NWT Water Stewardship Strategy*, which was released in 2010, and *NWT Water Stewardship: A Plan for Action 2011-2015*. Both of these documents were developed by the Government of the Northwest Territories in collaboration with Aboriginal groups, communities, regional organizations, environmental non-government organizations, co-management boards, industry, government and residents.

Extensive consultation occurred during the process to negotiate the Alberta-NWT Bilateral Agreement.[1]

**** It is important to note that although this guidebook focuses on the Alberta-Northwest Territories Bilateral Agreement similar provisions exist in the British Columbia-Northwest Territories Bilateral Agreement and will likely exist in the updated Northwest Territories-Yukon Bilateral Agreement and the other future agreements. Thus the analysis and interpretation that follows applies (or will apply) in the regions that are covered by those agreements.**

[1]For more information on this from the Northwest Territories perspective, see http://www.enr.gov.nt.ca/programs/water-management/nwt-alberta-mackenzie-river-basin-bilateral-water-management-agreement For information on this from the Alberta perspective, see http://esrd.alberta.ca/water/education-guidelines/mackenzie-river-basin-bilateral-water-management-agreements.aspx

Digging holes for ice fishing
on Great Bear Lake

PART II

THE ALBERTA-NWT BILATERAL WATER MANAGEMENT AGREEMENT

KEY ELEMENTS

Part II of the guidebook outlines the following key concepts of the Bilateral Agreement.

- Maintaining the Ecological Integrity of the Aquatic Ecosystem
- Using Risk Informed Management to guide management actions
- Using indicators to monitor Ecosystem Integrity
- Roles of the Parties, Indigenous peoples and the public

Note that terms that are defined in the Agreement are capitalized (e.g., Learning Plans and Transboundary Objectives).

MAINTAINING THE ECOLOGICAL INTEGRITY OF THE AQUATIC ECOSYSTEM

A fundamental feature of the Bilateral Agreement is the commitment to manage the water resources of the Mackenzie River Basin in "a manner consistent with the maintenance of the Ecological Integrity of the Aquatic Ecosystem."

The commitment to maintaining the ecological integrity of the aquatic ecosystem sets the Bilateral Agreement apart from all other Canadian transboundary water management agreements.

- What is the "**Aquatic Ecosystem**" of the Mackenzie River Basin? It is defined broadly as "the interacting components of air, land, water and living organisms, including humans, which relate to the Water Resources of the Mackenzie River Basin."
- What is "**Ecological Integrity**"? This refers to the conditions that the Parties determine to be necessary to maintain a healthy and diverse aquatic ecosystem.

A key determinant of aquatic ecosystem health is how much water a waterbody contains. Depending on the amount of precipitation, levels in lakes and flows in rivers and streams can vary seasonally and from year to year. Prolonged drought or overuse can reduce the amount of water within a waterbody. So can climate change. Reduced levels and flows can have profound effects on fish, plants and animals. They can also impact humans who rely on water for drinking, transportation, industrial and agricultural use and energy

The commitment to maintaining the ecological integrity of the aquatic ecosystem sets the Bilateral Agreement apart from all other Canadian transboundary water management agreements.

The Risk Informed Management approach is unique to the transboundary water management of the Mackenzie River Basin.

Many of the Basin's waterbodies have little or no development and it is not too late to "get it right" and avoid ecosystem damage.

generation. The environmental need for water is sometimes called "instream flow needs," and refers to the amount of water that the river itself requires. The Bilateral Agreement ensures that the environmental needs for water will be met before allocating water for other purposes such as municipal, agricultural and industrial uses. This is critically important for managing water resources in a sustainable manner for current and future generations. A more detailed examination of instream flow needs is provided in Section 6 (see page 34).

USING RISK INFORMED MANAGEMENT TO GUIDE MANAGEMENT ACTIONS

Another key element of the Bilateral Agreement is its use of "Risk Informed Management" to guide management actions. This approach is unique to the Mackenzie River Basin. It ensures government water managers understand the water uses and risks in the Mackenzie River Basin and manage the waters with a corresponding level of intensity. It is appropriate here because many of the Basin's waterbodies have little or no development and it is not too late to "get it right" and avoid ecosystem damage.

Risk Informed Management begins with the classification of transboundary waters at the border between Alberta and the Northwest Territories. Waters are assigned to Classes 1 to 4 based on factors such as development and use (including traditional use), water quality and stresses in the upstream basin, and needs in the downstream basin.

CLASSIFICATION OF WATER BODIES

- **Class 1 waterbodies** are those that have no or very little development and traditional use.
- **Class 2 and 3 waterbodies** are those that have some level of current or planned development and/or traditional use.
- **Class 4 waterbodies** are those that do not meet Transboundary Objectives (mutually agreed targets for water quality, water quantity and biology set upon Class 3 designation). Because Ecological Integrity of the Aquatic Ecosystem may not be being maintained in Class 4 waterbodies, the Parties have agreed that immediate action will be taken to restore the waters to Class 3.

As the figure on the next page illustrates, the type and intensity of management actions increases as one moves from Class 1 to Class 4 water bodies.

MANAGEMENT ACTIONS BY CLASSIFICATION

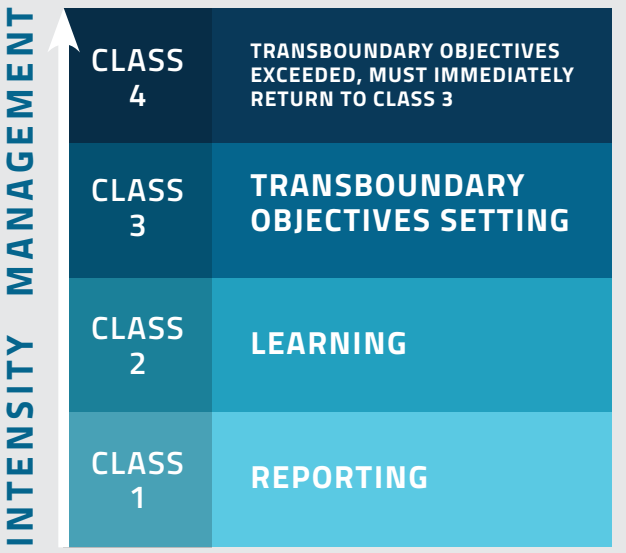
- **Class 1 waterbodies** require only reporting on environmental conditions, where that information is available..
- **Class 2 waterbodies** require the development of a Learning Plan to improve the understanding of the actions that are required to maintain the Ecological Integrity of the Aquatic Ecosystem.[3]
- **Class 3 waterbodies** require the Parties to set objectives or firm conditions to be met, carry out site-specific analyses where needed, establish joint monitoring programs, and prepare Action Plans to outline how Transboundary Objectives will be met.
- **Class 4** is a state to be avoided. If a waterbody is identified as Class 4, the Parties will take immediate action to address the situation and restore the waters to Class 3.

Currently, all transboundary waters between Alberta and the Northwest Territories are Class 1, except for the Slave and Hay Rivers (which are Class 3). These are designated Class 3 because of upstream industrial development and a high level of traditional use. There are no Class 4 waters. More information on Risk Informed Management is provided in Part III (Section 4, page 27).

RISK INFORMED MANAGEMENT CLASSIFICATION

The nature and intensity of Bilateral Management and Jurisdictional Water Management increase from Class 1 to Class 3 (varying levels of learning, Transboundary Objective-setting, Monitoring, etc.).

Class 4 occurs when Transboundary Objectives are not met, indicating that the Ecological Integrity of the Aquatic Ecosystem is not be being maintaned.



USING INDICATORS TO MONITOR ECOSYSTEM INTEGRITY

Long-term monitoring is critical to understanding whether significant changes are taking place over time in streams, rivers and lakes and in the fish, plants and animals that live in and depend on these waterbodies. Typically, monitoring programs assess parameters such as water quality and water quantity (flows and levels). How the governments will address monitoring is covered in Section 10 of the Agreement (see page 48).

The Alberta-NWT Bilateral Agreement moves beyond typical long-term monitoring to include indicators of the Ecological Integrity of the Aquatic Ecosystem. Just as body temperature and blood pressure are indicators of human health, there are environmental indicators that are used to assess ecological integrity. These can be qualitative or quantitative measures, and may include measures of water quality and quantity and water-related elements such as fish, invertebrates, birds, wildlife, humans and air.

In the Bilateral Agreement, indicators are used in Risk Informed Management (Section 4, page 27) and the protection of biota – fish, invertebrates, birds and other wildlife (Section 9, page 45).

ROLES OF THE PARTIES, INDIGENOUS PEOPLES AND THE PUBLIC

BILATERAL WATER MANAGEMENT COMMITTEE

As signatories to the Bilateral Agreement, the governments of Alberta and the Northwest Territories have a legal responsibility to cooperate in good faith and take "reasonable actions towards commitments to achieve the principles" of the Master Agreement. The central mechanism for administering the Bilateral Agreement is the Bilateral Management Committee (Section 13, page 55). The primary functions of this committee are listed below.

- Classify transboundary waters;
- Establish Learning Plans;
- Assess how Transboundary Objectives are being met; and,

Just as body temperature and blood pressure are indicators of human health, there are environmental indicators that are used to assess ecological integrity.

[3]Appendix H to the Agreement sets out the content for Learning Plans.

Under several land claim agreements in the Mackenzie River Basin, Indigenous signatories have the right to have waters -that are on or flow through their settlement lands- "remain substantially unaltered as to quality, quantity and rate of flow".

- Provide a mechanism for information sharing, notification and consultation.

The Bilateral Management Committee will also develop work plans to help guide the implementation of the Agreement.

The Agreement specifies government roles in: consultation information-sharing and notification; Risk Informed Management; classification of waterbodies and groundwater; monitoring; research; and other matters. These are discussed in part of the guidebook.

INDIGENOUS PEOPLES

Ongoing collaboration with Indigenous organization was instrumental to the success of the negotiations that led to the Bilateral Agreement. Maintaining this involvement will be critical for its successful implementation.

Indigenous governments see authority over water as a shared jurisdiction requiring their direct participation. This view reflects legitimate rights and authorities that have been formally recognized in land claims agreements, such as Treaty 8 and Treaty 11, and in numerous court cases. For example, under several land claim agreements in the Mackenzie River Basin, Indigenous signatories have the right to have waters -that are on or flow through their settlement lands- "remain substantially unaltered as to quality, quantity and rate of flow. It is important to recognize that some Indigenous territories span both Alberta and the Northwest Territories.

The Government of the Northwest Territories formally recognizes that:

> *"the aboriginal peoples of the Northwest Territories have acquired a vast store of traditional knowledge through their experience of centuries of living in close harmony with the land and that aboriginal traditional knowledge is a valid and essential source of information about the natural environment and its resources, the use of natural resources and the relationship of people to the land and each other".*

In addition, Northwest Territories' government policy is to "incorporate traditional knowledge into government decisions and actions where appropriate." This is reflected in the Bilateral Agreement through the recognition that Traditional Knowledge, along with western science, will be used to set Transboundary Objectives, monitor the Ecological Integrity of the Aquatic Ecosystem and resolve disputes. The Government of the Northwest Territories also has an Aboriginal Steering Committee that advises the government on water issues.

PUBLIC

The public can be involved in the implementation of the Bilateral Agreement in many ways. Both Alberta and the Northwest Territories have built-in processes for public participation within their respective water and lands management systems. Alberta has multi-stakeholder Watershed Public Advisory Councils that provide ongoing advice to the provincial government on water matters in various river basins throughout the province. The Government of the Northwest Territories provides opportunities for public involvement on a regular basis through a range of processes.

Both governments agree that they are responsible for consulting with their publics as the Bilateral Agreement is implemented (Section 5, page 31). The governments will solicit input from the public relating to the Mackenzie River Basin annually and will bring it forward to the Bilateral Management Committee.

Deline, NWT

George Simba sits by a fire at a hunting camp at Tathlina Lake

PART III

THE ALBERTA-NWT BILATERAL WATER MANAGEMENT AGREEMENT

A CLAUSE-BY-CLAUSE EXAMINATION

Part III of the guidebook provides details of the major clauses in the Bilateral Agreement. The clauses are numbered as they appear in the Agreement and each clause is analyzed through the four following aspects (where appropriate):

1. **What does the clause mean?**
2. **Why is it important for protecting aquatic ecosystems?**
3. **Why is it important for climate change?**
4. **Why is it important for Indigenous peoples and the public?**

The relevant text from the Agreement is provided at the beginning of each of the following sections. The reader should consult the Agreement in its entirety for the complete text under each clause.

SECTION 1 AND SECTION 2

PURPOSE AND CONTEXT

These two sections of the Agreement cover its purpose and context. This includes reaffirming commitment to the Master Agreement, a general commitment to cooperation, and the list of definitions used in the Agreement. Other parts of this guidebook discuss these elements and therefore will not be addressed here.

Once all seven bilateral agreements are in place, there will be a consistent cooperative water management approach at the transboundary level pursuant to the Basin-level approach of the Master Agreement.

SECTION 3

JURISDICTIONAL WATER MANAGEMENT

- *Each Party is responsible for decision making related to Developments and Activities in its jurisdiction, subject to specific limitations in this Agreement.*
- *Each Party will undertake its Jurisdictional Water Management in a manner that accords with the purpose and principles of the Master Agreement.*

WHAT DOES THIS MEAN?

"**Jurisdictional Water Management**" means that within their borders, Alberta and the Northwest Territories will each manage their waters according to their own internal laws, regulations, policies, plans and programs. But it also states that the water management decisions in Alberta and the Northwest Territories must meet the obligations of the Bilateral Agreement. In addition, both Alberta and the Northwest Territories have agreed to undertake their jurisdictional water management in a way that is consistent with the purpose and principles of the Bilateral Agreement and the Master Agreement.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

The best way to look after and protect aquatic ecosystems is to use a basin-wide approach. This can be difficult when there are multiple jurisdictions with multiple interests. Through the Bilateral Agreement, Alberta and the Northwest Territories have agreed on how to implement the basic principles set out in the Master Agreement for protecting aquatic ecosystems. Once all seven bilateral agreements are in place, there will be a consistent cooperative water management approach at the transboundary level pursuant to the Basin-level approach of the Master Agreement.

THE DEVOLUTION OF AUTHORITY OVER WATER IN THE NORTHWEST TERRITORIES

In Canada, most provinces and territories have the same basic constitutional authority when it comes to water. Their ability to pass laws relating to water stems from their jurisdiction over public lands, property, civil rights and other matters.

At the start of the negotiations for the Alberta-NWT Bilateral Agreement, within the Northwest Territories most of these powers still rested with the federal government. Part way through the process, most of the powers moved to the Government of the Northwest Territories through a separate process called devolution. As the Agreement negotiations neared the end, both Alberta and the Northwest Territories had similar authorities related to jurisdictional water management, despite very different population sizes.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change may affect all elements of agreement implementation. The Bilateral Agreement provides mechanisms for exchanging information, monitoring, decision-making through Risk Informed Management, research and the setting of Transboundary Objectives that allow Parties to integrate climate change considerations and adaptively manage to meet the terms of the Agreement as climate impacts are felt.

SECTION 4

RISK INFORMED MANAGEMENT

4.1 GENERAL COMMITMENT

- *The Parties agree to implement a Risk Informed Management (RIM) approach for Transboundary Waters in accordance with Appendix A.*

A) THE OBJECTIVES OF THE RIM APPROACH ARE:

- *To support the achievement of the Principles of the Master Agreement;*
- *To facilitate joint learning, and proactive and adaptive actions;*
- *To inform the allocation of human and financial resources in an efficient and effect manner.*

B) KEY PRINCIPLES INCLUDE:

- *The nature and intensity of Bilateral Water Management is commensurate with the nature and intensity of the risks to and uses of Transboundary Waters;*
- *Bilateral Water Management is based on a mutual understanding of the ecological Integrity of the Aquatic Ecosystem;*
- *Bilateral Water Management builds on the Jurisdictional Water Management actions of each Party as required to achieve the commitments of this Agreement.*

WHAT DOES THIS MEAN?

Parties agree to use a Risk Informed Management approach for all transboundary waters that are shared between Alberta and the Northwest Territories. As described in Part II of the guidebook (page 20), this approach ensures that government water managers understand the uses of and risks to the waters of the Mackenzie River Basin and manage the waters with a level of intensity that reflects those uses and risks. This approach is unique to the Mackenzie River Basin and is appropriate here because many waterbodies have little or no development, and proactive actions can avoid ecosystem damage.

The Risk Informed Management approach includes the following.

- **Classification:** Classification of transboundary rivers to reflect the risks to and uses of the water.
- **Learning Plans:** Development of Learning Plans for Class 2 rivers, in which there is some level of current or planned development and use.
- **Indicators of Ecological Integrity:** Identification of Indicators of Ecological Integrity to inform the setting of Transboundary Objectives.
- **Objectives:** Establishment and assessment of Transboundary Objectives for Class 3 rivers which may include, but are not limited to: measures of water quality, water quantity, groundwater and biological systems.
- **Information use:** Consideration of available information including ecological science, social science and traditional and local knowledge.
- **Actions:** Actions to achieve the commitments of the Agreement.

The Risk Informed Management approach provides the opportunity to avoid stresses on the aquatic ecosystems in the Mackenzie River Basin or to reduce their impact as much as possible.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

The first principle of the Master Agreement is to protect the health of the aquatic ecosystem. This is also the foundation of the bilateral agreements. Potential stresses on the aquatic ecosystem can be many and can contain influences from both inside and outside the Mackenzie River Basin including the following.

- **Climate change**;
- **Long-distance transport** of airborne pollutants such as PCBs that are emitted far away but are carried through the air and deposited in the Basin.
- **Reduced flows** in surface waters or depleted groundwater caused by overuse or diversions.
- **Pollution** of both surface water and groundwater by municipal and industrial users.

Many of these stresses are linked, making an integrated approach to risk assessment and management necessary.

The Risk Informed Management approach provides the opportunity to avoid stresses on the aquatic ecosystems in the Mackenzie River Basin or to reduce their impact as much as possible. The type and intensity of management actions increases as one moves from Class 1 to Class 3 water bodies. At the time the Alberta-NWT Bilateral Agreement was signed, the Slave and Hay Rivers were set at Class 3 and all other transboundary waters were set at Class 1.

For **Class 2** waterbodies, the Parties will develop Learning Plans to address important water quality, water quantity, groundwater and biological factors in an integrated manner. Triggers may be established at that stage to support learning and to prepare for the setting of Transboundary Objectives.

- **"Triggers"** are specific conditions defined by the Parties that require a Jurisdictional or Bilateral Water Management response.
- **"Transboundary Objectives"** are conditions established under the Risk Informed Management approach that the responsible Party or Parties will meet, and which may include but are not limited to water quality, water quantity, groundwater, or biological objectives.

With a Learning Plan, Triggers and Transboundary Objectives in place (if needed), the Parties can begin to manage the effects of stresses on the waterbody.

For **Class 3** waterbodies – such as the Slave and Hay Rivers which have upstream industrial development and a high level of traditional use – the Parties will develop Learning Plans and set Triggers and Transboundary Objectives on a case-by-case basis. Trends resulting in poorer health of the aquatic ecosystem (for example declines in water quality or reduced water quantity) will be addressed through management actions.

Class 4 waterbodies are those that do not meet Transboundary Objectives, and where the Ecological Integrity of the Aquatic Ecosystem is not being maintained. In such cases, immediate action is required to move the waters back into a Class 3 state.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change impacts are already being experienced in the Mackenzie River Basin. There are indications that water flows are decreasing in the southern parts of the Basin and may be increasing in the north. Trends appear to be showing higher flows in winter, an earlier start to spring melting and lower flows during late summer and early fall[4]. The magnitude and frequency of storms is increasing, surface water temperatures are warming and the health of the land is changing, including the melting of permafrost and increased frequency of forest fires.

[4]Personal communication; information on file with the authors.

A bison on Highway 3 near Fort Providence, NWT

Public involvement will be critical to the success of the Risk Informed Management approach.

What is unknown is the exact timing and magnitude of the changes that will be experienced as a result of climate change. There is also uncertainty about future population growth, economic development in the Basin, expectations and approaches to climate change-related governance and decision-making and future scientific understanding of key ecological processes. Given all these uncertainties, the Bilateral Agreement contains strong rules to protect aquatic ecosystems while still being able to adapt to a changing climate. The Risk Informed Management approach provides an adaptive management mechanism to respond to future impacts of climate change. The use of Transboundary Objectives that will be monitored over time and adjusted if necessary allows the Parties to take more aggressive action as required.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

A key element of the Risk Informed Management approach is the development of Learning Plans to address important water quality, water quantity, groundwater and biological factors in an integrated manner within a Class 2 or 3 waterbody. Traditional Knowledge and information on the health of the aquatic ecosystems of the Mackenzie River Basin and how they are being used will be considered in every aspect of the Learning Plan, along with western science. The understanding of ecosystem health generated through a Learning Plan will allow for the establishment of site-specific Triggers for action and Transboundary Objectives.

Similarly, public involvement will be critical to the success of the Risk Informed Management approach. The users of the land and water are often best positioned to identify water-related problems and opportunities. At least once a year, the Parties will share information about the conditions of, and trends in, the health of the aquatic ecosystem. This will include but not be limited to water, weather information, ecological information, and information gathered from Traditional Knowledge and the general public of either Party. This public input will ensure that the concerns, interests and preferred options of citizens are accurately reflected in the Risk Informed Management process.

Non-governmental, academic and industrial interests played key advisory and educational roles during the negotiations for the Bilateral Agreement and the Parties can continue to call upon them during implementation. The media will also be important for providing information to the public, stoking public interest and building support for water management actions.

SECTION 5

INFORMATION SHARING, NOTIFICATION AND CONSULTATION

5.1 INFORMATION SHARING

- *The Parties shall, as early as practicable and on a regular basis, exchange sufficient available information that will support the informed Bilateral Water Management of the Transboundary Water including:*
  - *Information about the Ecological Integrity of the Aquatic Ecosystem, including but not limited to hydrological, meteorological, hydrogeological, and ecological science, traditional knowledge, and input from the public in either jurisdiction;*
  - *Information about current and future Developments and Activities that might affect the Ecological Integrity of the Aquatic Ecosystem of the other Party.*

5.2 NOTIFICATION

- *The Parties agree to provide, as early as practicable, prior notification of Developments and Activities that might affect the Ecological Integrity of the Aquatic Ecosystem of the other Party.*

5.3 CONSULTATION

- *The Parties will consult each other about, and consider and reasonably address in their decision-making, concerns related to Development and Activities that might affect the Ecological Integrity of the Aquatic Ecosystem of the other Party.*

WHAT DOES THIS MEAN?

The Parties agree to exchange information on a regular basis to support informed bilateral water management of all transboundary waters that are shared by Alberta and the Northwest Territories.

Both Parties will notify each other about, share information on and discuss future "Developments and Activities" that might harm the health of the other Party's aquatic ecosystem.

- **"Developments and Activities"** are broadly defined to include "all phases of a project, initiative or activity from pre-feasibility through to final closure and all changes to or new laws, regulations, policies, plans and programs that might affect the Ecological Integrity of the Aquatic Ecosystem of the other Party."

Under the Bilateral Agreement, notification about a possible development or activity must be done as early as possible.

The Parties will consult each other about and reasonably address concerns relating to developments and activities that may affect the ecological integrity of the other Party's aquatic ecosystem. Once notified, the Parties will discuss the development to ensure that aquatic health can be protected. At some point, if a project goes through a Party's legislated environmental assessment process, that process must consider the requirements of the Bilateral Agreement and formal consultation will take place as part of that process. The Bilateral Management Committee is obligated to address any concerns of the other Party that were not addressed in the environmental assessment process.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

Effective information sharing, notification and consultation are at the heart of cooperative transboundary water management and are critical for protecting the aquatic

Early and full sharing of information between the Parties is required and this will feed into the Risk Informed Management approach

Bruce Townsen stands in his boat at Ekali Lake, NWT

ecosystem. Effective information-sharing ensures that decision-makers have access to high quality, up-to-date data and information on ecosystem health. It also ensures that decision-makers have access to basin-level data and information, which is vital for understanding differences between sub-basins and impacts on downstream water bodies.

Before the Bilateral Agreement was signed, there were occasions where the downstream jurisdiction heard about spills that might harm aquatic ecosystems through the media or informal contacts. In such cases, the opportunities to cooperate and reduce impacts on the health of waterbodies were missed. With the Agreement, early and full sharing of information between the Parties is required, and this will feed into the Risk Informed Management approach. This information-sharing may take place through the Bilateral Management Committee or through public environmental review processes.

Information will be shared on all Developments and Activities that may affect the health of the aquatic ecosystem of the other Party. In addition to information about a Development or Activity, this information exchange will include all related scientific and Traditional Knowledge. Furthermore, each Party will make every reasonable effort to provide any requested information in a user-friendly form. Early notification and discussion will provide the opportunity for the two Parties to proactively protect the shared aquatic ecosystems of the Mackenzie River Basin.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

The many and varied impacts of climate change and the uncertainty around how these changes will manifest in the Mackenzie River Basin increase the need for better information-sharing between jurisdictions. In light of this uncertainty, water management approaches need to be able to respond and adapt to new and sometimes unforeseen conditions. An *adaptive management* approach, which is part of Risk Informed Management, provides a framework for timely information-sharing, notification and consultation. This can help Parties plan and address the impacts of climate change in an uncertain environment.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

The Parties are required to exchange Traditional Knowledge and input from the public to support informed bilateral water management. This provides an avenue for Indigenous peoples and the public to bring concerns relating to environmental health or proposed developments. If a proposed Development or Activity triggers a public environmental review process, the respective Party will carry out required formal consultation with Indigenous peoples, stakeholders and the public.

Indigenous peoples should be informed about and have the chance to discuss developments and activities that could impact their way of life. Governments have a legal duty to consult and, where necessary, accommodate the concerns of Indigenous peoples before they take actions or make decisions that may affect Aboriginal or treaty rights. The Bilateral Management Committee can also engage with Indigenous peoples early on, before projects reach the environmental assessment and/or consultation and accommodation stages. Fully engaging Indigenous peoples in information sharing and collaboration is not only an obligation, it is also an opportunity for their concerns, values, ideas, and Traditional Knowledge to improve bilateral water management in the Mackenzie River Basin.

Fully engaging Indigenous peoples in information sharing and collaboration is not only an obligation, it is also an opportunity for their concerns, values, ideas, and Traditional Knowledge to improve bilateral water management in the Mackenzie River Basin.

The Federal Department of Fisheries and Oceans recommends that to be healthy, at least 90 per cent of a river's flow should be allocated to ecosystem use (FAO, 2013).

SECTION 6

PROTECTING THE QUANTITY OF SURFACE WATERS

6.1 GENERAL QUANTITY COMMITMENTS

- *The Parties will establish and implement RIM classification, Learning Plans, Transboundary Water Quantity Objectives and monitoring in accordance with the RIM approach.*
- *Transboundary Water Objectives will be based on a seasonal, or otherwise agreed, assessment of the needs for the Ecological Integrity of the Aquatic Ecosystem and a commitment to share surface water equitably.*
- *The upstream Party will pass an amount of water equal to the sum of needs for the Ecological Integrity of the Aquatic Ecosystem plus 50% or more of the Available Water to the downstream Party, calculated at the border for each transboundary surface water body, unless otherwise agreed to by the Parties.*
- *The responsible Party or Parties will meet Transboundary Water Quantity Objectives as calculated or measured at the border or designated monitoring station.*
- *The Parties will track and annually report Consumptive Use or its surrogate on Transboundary Waters and the achievement of Transboundary Water Quantity Objectives.*

6.2 NO TRANSFERS BETWEEN BASINS

- *The Parties agree that a license to transfer water into or out of the Mackenzie River Basin will not be issued in Alberta, unless the license is specifically authorized by a special act of the legislature in Alberta.*

WHAT DOES THIS MEAN?

The Parties agree to classify transboundary waters, develop Learning Plans, set Transboundary Objectives for water quantity and carry out monitoring as part of the Risk Informed Management approach.

The Parties will share water while at the same time ensuring there is enough water to maintain the health, or ecological integrity, of the aquatic ecosystem. In general, the upstream party (in this case, Alberta) must leave enough water in the waterbody to ensure its ecological integrity. After this is done, the rest of the water may be shared equally between the two jurisdictions for human and industrial use.

The Federal Department of Fisheries and Oceans recommends that to be healthy, at least 90 per cent of a river's flow should be allocated to ecosystem use.[5] This leaves about 10 per cent for equal sharing between the Parties (i.e., five per cent each). This is a conservative and highly protective approach.

This approach for addressing the Ecological Integrity of Aquatic Ecosystems is practical and acceptable to both Parties because at present only extremely small amounts of water are consumed from the transboundary waters that are shared between Alberta and the Northwest Territories. Water use is expected to remain small into the foreseeable future. For example, consumptive use in the entire Peace-Athabasca-Slave system is much less than one per cent of the natural amount of water that flows across the Alberta-NWT border.

- **"Consumptive Use"** is water withdrawn from the Basin that is lost or otherwise not returned to the Basin. This does not include water stored in hydroelectric projects that is later returned to the Basin.

However, the amount of water in a river can vary according to season, so this clause sets out further details on how to address this.

The Parties agree to meet Transboundary Water

Quantity Objectives and annually report on consumptive use and the achievement of these objectives.

WATER QUANTITY AND THE SLAVE RIVER (CLASS 3)

The Slave River (Class 3) is a very large river with a complex ecosystem. The Parties have decided that for now, Alberta will not consume more than 1.9 per cent of the average annual flow of the Slave River, and will begin to discuss and determine next steps regarding this threshold before they get close to it. Both Parties consider this amount to be appropriate given the very low current consumptive use, but if Alberta's consumption reaches 1.9 per cent of the average annual flow, a full scale ecosystem needs study will be done to determine exactly how much water can safely be taken from the Slave River without putting ecological integrity at risk. These kinds of studies are very expensive and time-consuming, and are not yet needed.

Inter-basin water diversions

A further important aspect of the Surface Water Quantity clause concerns the potential for diversions of water out of the Mackenzie River Basin. The Bilateral Agreement handles this issue in a very protective way: diversions out of the Mackenzie River Basin are prohibited. An act of the Alberta legislature may make an exception and license a diversion but it is anticipated that this will be a rare exception. A further safeguard will ensure that, even if approved, diversions cannot exceed the total consumptive use within the Mackenzie River Basin. As noted above, the Parties expect these uses to remain very small.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

Alberta and the Northwest Territories favour keeping water within the Mackenzie River Basin in order to protect the Ecological Integrity of their shared Aquatic Ecosystems. This view recognises aquatic ecosystem health as the foundation that supports human life.

Because water flows in different amounts during the year, rivers, especially smaller ones, can have quite a bit of seasonal variation in water flows. Therefore, it can matter greatly when water is withdrawn from a waterbody. The Bilateral Agreement provides an opportunity to protect waterbodies by allowing for agreement on when water may be withdrawn. For example, the Parties may agree to amounts based on instantaneous, daily, weekly, monthly, seasonal or annual measurements in order to protect the various needs of aquatic ecosystems as flows change. The Parties have also agreed that they will avoid withdrawals from waterbodies during extreme low flow conditions.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change poses additional challenges for protecting the quantity of surface waters. For example, it causes changes in the magnitude and timing of stream flows. As temperatures continue to rise, the impacts of climate change on surface water will be much larger in Canada's North than in the rest of the country.

The generally low level of development and low amount of water use in the North offers the opportunity to adopt exceptionally protective approaches to managing water quantity. This allows the Parties much more

Diversions out of the Mackenzie River Basin are prohibited, with strict exceptions allowed only by special legislation.

[5]Fisheries and Oceans Canada. 2013. Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada. 017. https://www.watershed-watch.org/CSAS_Flow_Report-2013.pdf

Alberta and the Northwest Territories favour keeping water within the Mackenzie River Basin in order to protect the Ecological Integrity of their shared Aquatic Ecosystems.

CLIMATE CHANGE AND FLOW: WHAT WE KNOW

The technical information presented in negotiations indicated that there are important seasonal trends in how much water flows through some of the Alberta - NWT transboundary water bodies. More recent analysis suggests that there is also now a statistically significant downward trend in annual Slave River flows at the border.[6] These trends are not yet large enough to affect management actions, but if they continue they will have to be taken into account in defining future courses of action.

leeway to adapt to the changes in the aquatic ecosystem. Risk Informed Management is an essential process for adapting to climate change impacts on the quantity of surface waters. A specific example is the determination of the exact quantity of water than can be taken from the Slave River. The Parties will monitor the quantity of water that passes by the Fitzgerald monitoring station near the Alberta-NWT border. If climate change changes the average annual flow, the Parties will discuss it and take appropriate action relating to the flow threshold. For more information on Risk Informed Management, see Section 4 (see page 27).

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

As water management decisions can impact their ecological, historical, spiritual, legal and traditional interests, Indigenous peoples and their knowledge must play a central role in identifying changes in aquatic ecosystems associated with changes in water quantity. A striking example of this was the construction of the W.A.C. Bennett Dam on the Peace River in British Columbia in the 1960s. The effects of the dam and subsequent changes in flows in the Peace River had an adverse effect on downstream waters and the health of the Peace-Athabasca Delta, an area that is relied upon by Indigenous peoples for hunting, fishing, trapping and harvesting. Indigenous peoples felt – and have articulated - dramatic impacts from the resulting changes to the river.

[6] Personal communications between Derek Faria (Government of the Northwest Territories) and Ralph Pentland.

Blachford Lake, NWT

The Slave and Hay Rivers either have a lot of upstream development, a lot of traditional use in their watersheds, or both. They provide a source of drinking water to communities and/ or show decreasing water quality for some parameters. Both have been designated Class 3.

SECTION 7

PROTECTING THE QUALITY OF SURFACE WATERS

- *The Parties will establish and implement RIM classification, Learning Plans, Transboundary Water Quality Objectives and monitoring in accordance with the RIM approach.*
- *Transboundary Water Quality Objectives, for substances other than those addressed below will:*
  - *Be based on an assessment of the needs for the Ecological Integrity of the Aquatic Ecosystem;*
  - *Be sufficiently precautionary in order to provide an early warning signal that prompts action appropriate for site-specific conditions;*
  - *Consider natural variability, typical conditions, and unacceptable change;*
  - *Be intended to protect all uses, including traditional uses; and*
  - *Be designed to address seasonal, site specific needs of the Aquatic Ecosystem.*
- *The Parties will avoid water quality degradation that may result from their addition of toxic, bioaccumulative, or persistent substances, as listed in Appendix E. (see chart on page 39)*
- *The Parties are committed to pollution prevention and sustainable development to meet the objective of the virtual elimination of substances that are human-made, toxic, bioaccumulative and persistent, as listed in Appendix E. (see chart on page 39)*
- *The responsible Party or Parties will meet Transboundary Water Quality Objectives as measured at the designated transboundary monitoring station(s).*
- *The Parties will track and annually report on monitoring results for Transboundary Water Quality Objectives.*

WHAT DOES THIS MEAN?

The purpose of the surface water quality clause is to ensure that the quality of water in transboundary waters remains sufficient to protect all uses of the water. This includes uses by biota (fish, invertebrates, birds and other wildlife) and by humans (drinking water, traditional use, recreation, agriculture and other uses). The Agreement addresses all forms of pollution to surface waters, regardless of the source. Transboundary Water Quality Objectives will be designed to protect all uses (including the most sensitive use or user). The Parties agree to track and annually report on these Objectives and they will not be exceeded.

Some waterbodies may be designated Class 3 waterbodies because there is a lot of upstream development or a lot of traditional use in their watersheds (or both). For Class 3 rivers, the Parties will develop Learning Plans, set Transboundary Water Quality Objectives and prepare Action Plans where necessary to achieve these objectives.

Simply developing and meeting the water quality objectives may not be sufficient to avoid water quality issues in the future. For that reason, the Parties have also agreed to set lower level Triggers (or early warning signals) to identify and, if needed, begin to address water quality concerns well before Transboundary Water Quality Objectives are exceeded. The Triggers will reflect the unique specifics of each water body.

In addition to naturally occurring substances such as phosphorus, nitrogen and common metals, the Alberta-NWT Bilateral Agreement also addresses toxic, bioaccumulative and persistent substances that may be present at low levels in transboundary waters. For these substances, the Parties are committed to meeting the objective of virtual elimination in the medium- to long-

SUBSTANCES THAT HAVE BEEN LISTED AS PERSISTENT, BIOACCUMULATIVE AND TOXIC

SUBSTANCE	MONITORED AT SLAVE/FITZGERALD	MONITORED AT SLAVE/SMITH	MONITORED AT HAY/BOUNDARY	NOT MONITORED
Aldrin	✓	✓	✓	
Chlordane	✓	✓	✓	
Dieldrin	✓	✓	✓	
Endosulfan	✓	✓	✓	
Endrin	✓	✓	✓	
Heptachlor	✓	✓	✓	
Hexachlorobenzene	✓	✓	✓	
Hexachlorobutadiene	✓		✓	
Hexachlorcyclohexane (HCH; alpha, beta,)	✓	✓	✓	
Mirex	✓	✓	✓	
DDD, DDE, DDT	✓	✓	✓	
Toxaphene		✓		
PCBs	✓	✓	✓	
Pentachlorobenzene	✓	✓	✓	
Dioxins and Furans				X
Chlordecone				X
Heptabromodiphenyl ether (Hepta-BDE)				X
Hexabromobiphenyl (HBB)				X
Hexabromobiphenyl ether (Hexa BDE)				X
Octachlorostyrene				X
Pentabromodiphenyl ether (Penta-BDE)				X
Perfluorooctane sulfonate				X
Tetrabromodiphenyl ether (Tetra-BDE)				X

term, which means implementing actions to ensure that concentrations are at or below the limits of detection in transboundary waters. The Parties have agreed on an initial list of such substances. They have also committed to periodically reviewing and updating that list.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

The aquatic ecosystems shared by Alberta and the Northwest Territories in the Mackenzie will be protected as long as all Transboundary Water Quality Objectives are met. This is because the Objectives will be set to protect the most sensitive use (or user) of the water body.

The Parties have already agreed on Triggers for a number of substances. This gives the Parties the chance to initiate water management actions as soon as those Triggers are exceeded, instead of waiting until Transboundary Water Quality Objectives are not met. At the first level of Triggers, the Parties will review data to confirm that changes in concentrations of a substance are in fact occurring. The cause of any changes can then be investigated and the risks identified. At a second level of Trigger, a more detailed investigation may result in further changes to monitoring and other programs.

Mackenzie River Basin residents are concerned about pollutants that are transported long-range through the air, and how they may harm aquatic plants and animals. The research and monitoring provisions in the

The Agreement provides a framework to understand and integrate considerations regarding climate change-related thresholds so as to avoid crossing them.

Students from Kakisa, Fort Providence and Fort Simpson do water monitoring at Ekali Lake, near Jean Marie River

Agreement could help to better understand the sources and influences of airborne pollutants. When warranted, further assessments and options can be considered in the Learning Plan process.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change can affect water quality and quantity through lake level reductions, alterations in river flow and rates and extent of groundwater recharge, increases in overland flow of storm water, and loss of wetlands. The risk of serious or permanent damage to ecosystems is greatest in areas where waters are already stressed due to high use, competition among water users, and impaired water quality. As climate change impacts accumulate, a tipping point may be reached where aquatic ecosystems are seriously or permanently damaged.

Climate change has led to many surprises that were virtually impossible to predict ahead of time. One example is the discovery of extremely high levels of banned substances like PCBs and DDT along with mercury in some fish in Northern Canada. Although the exact cause is uncertain, one possible explanation is that these substances have been lying dormant in the soil and sediment for decades, and are now being disturbed by climate change-induced heavy rains and snowmelt episodes which lead to more frequent and intense surface run-off events.

There is no question that the impact of climate change on aquatic ecosystems will become more profound as climate changes increase in rate and magnitude. As that happens it will be important to avoid situations where the waters are seriously or permanently damaged. The provisions of the Agreement dealing with surface water quality, research and adaptive management approaches embedded in Risk Informed Management provide a framework to understand and integrate climate change-related thresholds to avoid crossing them.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

The involvement of Indigenous peoples in both knowledge generation and decision-making is especially relevant for water quality. Northern rivers are a source of drinking water both within communities and for those who live off the land. Many Indigenous peoples in both jurisdictions are subsistence hunters and fishers. Pollution related to oil and gas development, agriculture, uranium mining and pulp mills is of particular concern with regard to the quality of surface waters. The effects of low water levels on water quality and on fish, wildlife and human health are also important issues.

As noted in Part II of the guidebook (page 22), land claims in the Northwest Territories include the provision that Indigenous signatories have the right to waters entering settlement lands that are "substantially unaltered as to quality, quantity and rate of flow." The ability of the Parties to ensure the quality of water in aquatic ecosystems will also protect the rights of Indigenous peoples. The provisions in this clause of the Agreement help the Northwest Territories ensure that this requirement will be met as water crosses into its jurisdiction.

The public will also play an important role when it comes to surface water quality. There was a lot of public interest and feedback on water quality during the negotiations that led to the Bilateral Agreement. It is important that this continue as the Agreement is implemented. Both Parties have agreed to engage their respective citizens on matters relating to the Agreement and have committed to providing feedback from the public at Bilateral Management Committee meetings.

The involvement of Indigenous peoples in both knowledge generation and decision-making is especially relevant for water quality.

Relatively little is known about the location of major transboundary aquifers along the Alberta-NWT border, the quantity of groundwater contained in them or its quality.

SECTION 8

PROTECTING THE QUANTITY AND QUALITY OF GROUNDWATER

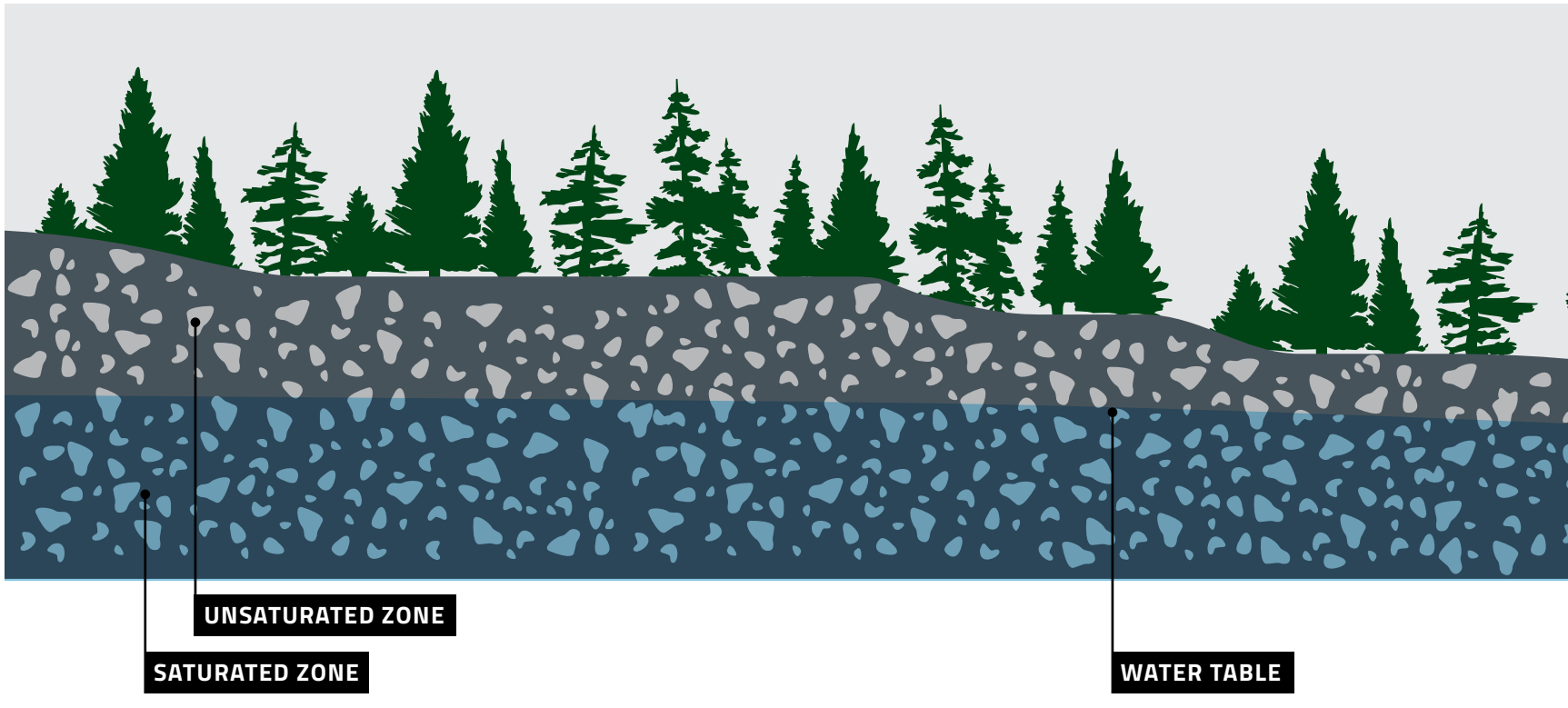
- *The Parties will establish and implement RIM classifications, Learning Plans, Transboundary Groundwater Objectives and monitoring in accordance with the RIM approach.*
- *The Parties will manage Transboundary Groundwater, including the water quantity, water quality, physical structure and transboundary surface water systems supported by Transboundary Groundwater in a manner that is protective and that maintains the Ecological Integrity of the Aquatic Ecosystem.*
- *The Parties will use and share Transboundary Groundwater reasonably and equitably, as determined on a case-by-case basis.*

WHAT DOES THIS MEAN?

This clause was written to ensure there is clean and abundant groundwater on both sides of the Alberta-NWT border now and in the future. While little groundwater is currently used in the Mackenzie River Basin, pressures are increasing due to climate change as well as gas and oil production, including hydraulic fracturing, and other types of industrial development that can affect the quality and quantity of groundwater.

Relatively little is known about the location of major transboundary aquifers along the Alberta-NWT border, the quantity of groundwater contained in them or its quality. Given these aquifers are not subject to high levels of development pressure, the Parties have agreed that all transboundary groundwater should be

GROUNDWATER DIAGRAM



assigned to Class 1 under the Risk Informed Management approach. As implementation of the Bilateral Agreement begins, the Bilateral Management Committee will design a way to classify and share transboundary groundwater that is similar to the way surface water is classified and shared.

If development pressures increase, or concerns are raised about groundwater quality or quantity in a certain area, it will be moved from a Class 1 designation to Class 2. For Class 2 groundwater, the Parties will develop Learning Plans to better understand the resource and the pressures on it. For Class 3 groundwater, the Parties would develop Triggers and Transboundary Groundwater Objectives.

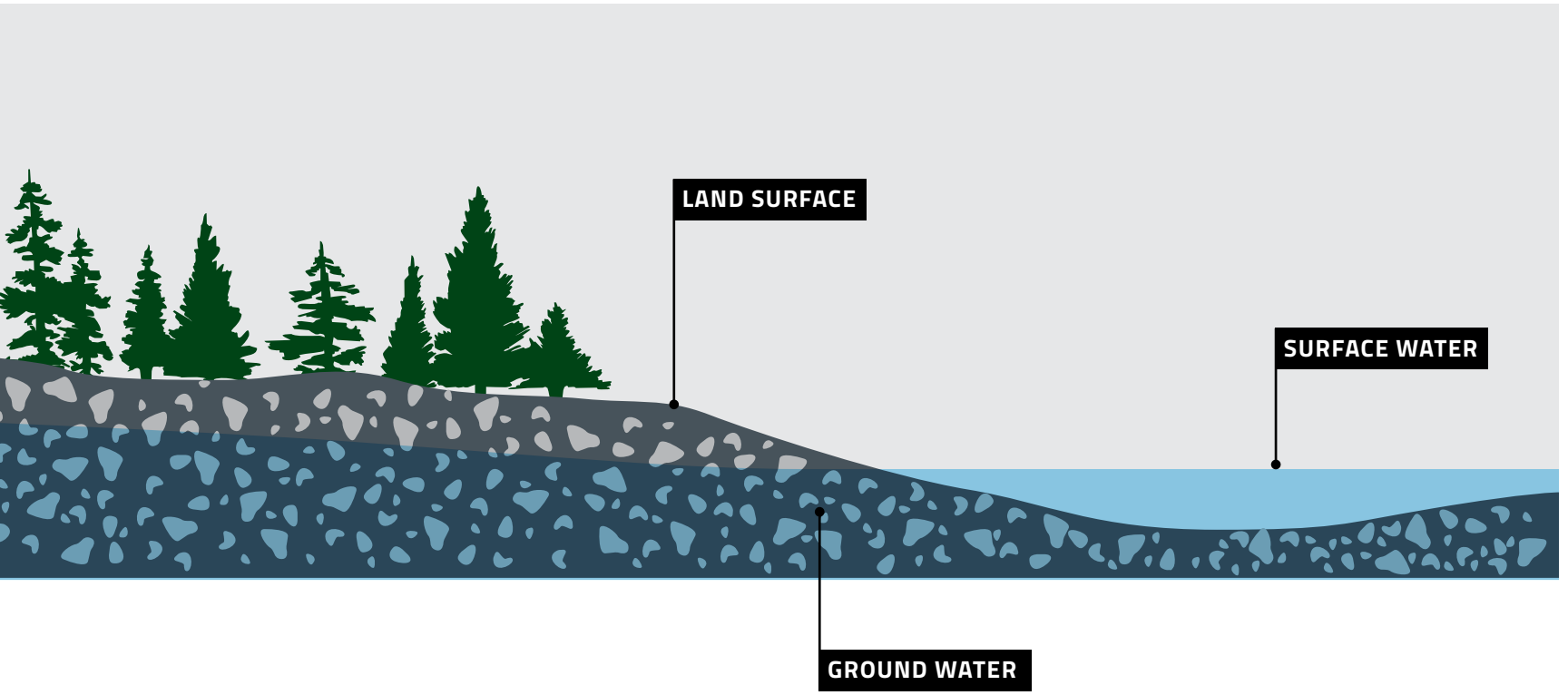
The groundwater clause also commits the Parties to use and share transboundary groundwater "reasonably and equitably," taking into consideration factors such as social and economic needs (including human health), and existing and potential uses.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

It is crucial that groundwater not be polluted or depleted because of its importance, not only because people use it for domestic use, agriculture and industry, but also because it sustains wetlands, streams, lakes and other surface waters. Because groundwater moves so slowly, it may take a very long time for polluted groundwater to appear. In addition, it is very expensive, and sometimes impossible to clean up groundwater once it has been polluted. The best strategy for protecting groundwater is to ensure that it does not become polluted in the first place and that it is used sustainably .

The Bilateral Agreement uses a Risk Informed Management approach for transboundary groundwater, similar to that used for surface water quantity and quality. This includes the use of a classification system, along with Learning Plans, Triggers, Transboundary Groundwater Objectives and monitoring programs as needed. Until the Risk Informed Management framework is in

As implementation of the Bilateral Agreement begins, the Bilateral Management Committee will design a way to classify and share transboundary groundwater that is similar to the way surface water is classified and shared.



One of the most sensitive, but poorly understood parts of the environment in the Mackenzie River Basin is it's groundwater.

place for groundwater, decision-making on these issues will be dealt with on a case-by-case basis.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

How climate change affects groundwater, especially in Canada's North, is poorly understood. It is predicted that groundwater recharge will be reduced as a result of increased evaporation and an escalation in the number and intensity of rainfall events which will lead to more overland runoff. This will lead to dropping levels in aquifers. Hotter temperatures will also increase evaporation, which will in turn mean less soil moisture and less groundwater recharge. The Risk Informed Management approach will both improve our knowledge of the impacts of climate change on groundwater and provide a potential framework for addressing it.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

The Mackenzie River Basin connects distinct cultures, those of Indigenous peoples – with strong links to the land supporting traditional ways of life – and non-Indigenous peoples. While all rely on the non-renewable resource sectors, this connection is perhaps most striking when it comes to the impact of large-scale energy projects and other industrial projects that can have an adverse effect on groundwater. Indigenous governments and organizations are understandably seeking a more meaningful role in research, outreach, and negotiations relating to such developments. The Learning Plans for groundwater will specifically include Traditional Knowledge and uses and provide a mechanism for information exchange as well as the involvement of Indigenous peoples.

One of the most sensitive, but poorly understood parts of the environment in the Mackenzie River Basin is it's groundwater. The public and the private sector are also important in providing information on groundwater, including how it is used, its quality and its quantity. Regulatory agencies now want privately-funded science to support licensing applications for developments such as oil and gas development. This kind of project-specific science – some of which, like community based well monitoring – can support case-by-case decision-making by governments. It helps to build a broader information base on groundwater that will eventually be invaluable in Risk Informed Management.

SECTION 9

PROTECTING BIOLOGY

9.1 GENERAL BIOLOGICAL COMMITMENTS

- *The Parties will establish and implement RIM classification, Learning Plans, Transboundary Biological Objectives and monitoring in accordance with the RIM approach.*
- *The Parties will establish and monitor biological indicators of the Ecological Integrity of the Aquatic Ecosystem in accordance with the RIM approach.*
- *Biological Indicators of the Ecological Integrity of the Aquatic Ecosystem will be used as required to inform the setting and monitoring of Transboundary Objectives, and the revision of Transboundary Objectives over time.*
- *The Parties will establish Triggers and associated management actions in accordance with the RIM approach.*

9.2 INVASIVE SPECIES

- *The Parties will make Jurisdictional Water Management decisions in a manner that is intended to prevent the movement of invasive species into, within, or out of the Mackenzie River basin.*

WHAT DOES THIS MEAN?

A Risk Informed Management approach will be used to guide management actions relating to aquatic biota (living things including plants, invertebrates, fish and animals). Specifically, the Parties agree to establish and monitor biological Indicators for Class 3 Transboundary Waters (the Slave and Hay Rivers). The rationale for biological monitoring is:

- Biota are sensitive indicators of environmental stresses. Biological monitoring can be used as an early warning system of environmental change, which allows for an adaptive response.
- Biota can be affected by factors other than water quality and water quantity such as cumulative effects, climate change and loss of habitat.
- Contaminants can cause harm to aquatic life or pose a health hazard to people who eat fish well before contaminant concentrations in water indicate there is a problem.
- The presence of invasive species cannot be detected by monitoring water quality and quantity.

The Parties will identify interim biological Indicators. Using the Risk Informed Management approach, the Parties will develop Learning Plans for Class 2 rivers. These will then inform the selection of permanent biological Indicators and Triggers for management actions. Transboundary Biological Objectives may be established in the future as deemed necessary.

Also in this clause, the Parties agree to make management decisions that are intended to prevent the movement of invasive species into, within or out of the Basin.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

Aquatic plants, invertebrates, fish and animals are key parts of an aquatic ecosystem. The use of the Risk Informed Management approach and biological indicators ensures water managers can identify problems early on, gain a good understanding of the problem, monitor appropriate indicators and take appropriate actions to remedy problems as needed.

Invasive species can be very disruptive in plant and animal communities and it can be difficult, if not impossible, to remove them once they enter a waterbody. The Agreement`s emphasis on preventing invasive species from travelling into, within or out of the Basin is a sound one.

Biota (plants, invertebrates, fish and animals) are sensitive indicators of environmental stresses. Biological monitoring can be used as an "early warning system" of environmental change, which allows for an adaptive response.

Morris Neyelle holds up a lake trout
near the shore of Deline

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change leads to changes in hydrology – how water moves and circulates through the air, ground and waterbodies – which in turn can affect water quality and quantity and therefore the plants and animals that use the water. Dramatically increased flows from intensive rainfall events can damage fish habitat. Dropping levels of groundwater can harm wetland plants and the fish, birds and mammals that depend on wetlands.

Climate change is also changing plants and animals in other direct and indirect ways. For example, as climate change progresses, the range of some species is expanding to the north. Some polar species may disappear as ice cover is reduced or habitats are altered. Melting permafrost, more frequent forest fires and more intense storms can result in landslides and other harmful impacts to fish and wildlife.

To address these challenges, the Bilateral Agreement is built around the Risk Informed Management approach which requires rigorous management actions when Triggers are reached or Transboundary Objectives are exceeded. The Parties have taken a protective approach to setting Indicators, Triggers and Transboundary Objectives, which allow as much flexibility as possible to deal with the uncertainties facing the Mackenzie River Basin.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

The cumulative effects of development and climate change are already beginning to affect Indigenous cultures in several ways in the Mackenzie River Basin. In some areas Indigenous peoples are changing how they fish and hunt. This is due to changes in the habitat of water mammals in the Peace-Athabasca and other deltas, changes in the taste and texture of fish caught in the Slave River and other rivers, and concerns about the quality of drinking water downstream of some energy and industrial developments. Indigenous participation in both the negotiation of the Bilateral Agreement and its implementation is aimed at making sure that Indigenous peoples are collaborators in decision-making.

Use of Traditional ecological knowledge

Direct observation by Indigenous peoples is adding to the understanding of biological and other environmental effects in the Mackenzie Basin. Elders have been observing and reporting significant changes in fish and wildlife populations for some time. Traditional Ecological Knowledge (TEK) offers keen insights into animal behaviour, ecological relationships and environmental health. It is an accurate and useful source of information in support of Risk Informed Management, which is why it occupies a clear role in the Agreement. Traditional Ecological Knowledge will be used in the development of Learning Plans and the selection of biological indicators, Transboundary Objectives and Triggers associated with biological systems. Appendix C to the Alberta-NWT Bilateral Agreement lays out the practices for the use of Traditional and local knowledge in bilateral water management. The approach set out in Appendix C will work with Indigenous peoples to develop a framework for meaningful inclusion of Traditional and local knowledge in bilateral water management.

Citizens in both Alberta and the Northwest Territories have identified a number of common interests relating to ecosystem health: healthy aquatic ecosystems for their food and drink; travel; economic growth; culture; and spirituality. Accordingly, they are potential sources of useful information for the development of Learning Plans and the identification of biological indicators, Transboundary Objectives and Triggers associated with biological systems.

Indigenous participation in both the negotiation of the Bilateral Agreement and its implementation is aimed at making sure that Indigenous peoples are collaborators in decision-making.

The monitoring clause in the Bilateral Agreement is aimed at ensuring that sufficient information gathered at the right time and place using existing monitoring stations will be used to inform decision-making so the Parties meet the commitments in the Agreement.

SECTION 10

MONITORING ENVIRONMENTAL INTEGRITY OVER TIME

10.1 MONITORING UNDER THE RIM APPROACH

- *The Parties agree to establish and implement monitoring as needed to satisfy the commitments as defined in Appendix I of this Agreement.*

10.2 REGIONAL AND BASIN-LEVEL MONITORING

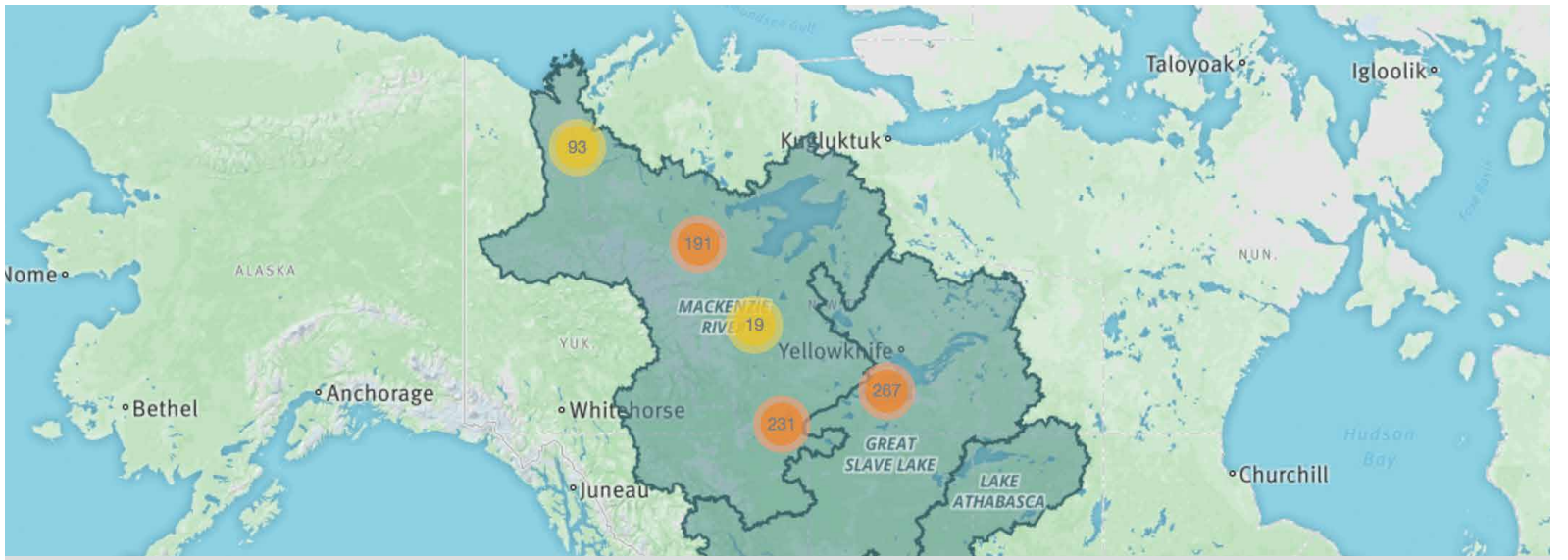
- *The Parties recognize the importance of long-term data to support the commitments under this Agreement and to provide an early warning of potential changes.*
- *The Parties will identify, through scientific and traditional knowledge assessment and Learning Plans, priority long-term monitoring stations and data that can be used to support implementation of this Agreement and as part of a regional and/or Basin-level monitoring network.*

WHAT DOES THIS MEAN?

It is often said that "we cannot manage what we do not measure." Long-term monitoring is critical to understanding whether significant changes are taking place in the natural environment. Long-term datasets reveal important patterns that allow trends, cycles, and rare events to be identified. This is particularly important for complex, large systems where signals may be subtle and slow to emerge. The monitoring clause in the Bilateral Agreement is aimed at ensuring that sufficient amounts of the right information gathered at the right place and at the right time using existing monitoring stations will be used to inform decision-making so that the Parties meet the commitments in the Agreement.

Cooperative transboundary water management requires information to determine whether Transboundary Objectives are being met as water crosses the border from one jurisdiction into another. This is built into the Risk Informed Management approach. Information is also needed at a regional and basin level to better understand the health of the aquatic ecosystem at that scale. Appendix I to the Agreement lists 393 sites within the transboundary waters in which water quantity is currently measured. Of these, there are 275 sites in which water quality is measured, and several sites in which biological aspects of the aquatic ecosystem are measured. Some monitoring sites are operated by Alberta or the Northwest Territories. Many others are operated under partnership arrangements including the Canada-Alberta Hydrometric Agreement, the Canada-NWT Hydrometric Agreement and the Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring.

Unfortunately, there was a reduction in monitoring networks in the North during the 1990s. Since that time the need for monitoring has intensified because of climate change and increasing development pressures, resulting in pollutants being discharged directly and indirectly into water through land and air. Recently, there have been promising signs of a renewed emphasis on monitoring. One has been the establishment of very successful community-based water monitoring programs in the Northwest Territories and Alberta. Another is the enactment of new legislation in Alberta creating an independent monitoring approach, a chief scientist, and an Indigenous wisdom panel. However, in order to monitor the Ecological Integrity of the Aquatic Ecosystem of the Mackenzie River Basin, much more is needed, particularly for biological monitoring.



MACKENZIE DATASTREAM

www.MackenzieDataStream.ca

Community-based monitoring programs are generating critical data for understanding the Mackenzie Basin's waters. In order to amplify the impacts of this work, there is growing recognition that water data needs to be made more widely available to the public and decision-makers. This is precisely what community-based monitors are doing online.

Mackenzie DataStream is an online open-access platform for sharing water data. This new tool aims to promote knowledge sharing and advance collaborative, evidence-based decision-making Basin-wide. One of the ways it does this is by minimizing or eliminating barriers to data access.

At the time of writing, Mackenzie DataStream users can access, visualize and download full water datasets collected by 22 communities. This includes data from 21 communities involved in the NWT-wide community-based water monitoring program and Fort Nelson First Nation from Northern BC. It's longer-term vision is to include data from communities and other sources from throughout the Basin.

* Map from Mackenzie DataStream showing locations of available data as of November 2016

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

Monitoring is fundamental to Risk Informed Management. It is needed to define risk to the aquatic ecosystem and to classify water bodies. It is also needed to assess whether Triggers have been reached or Transboundary Objectives exceeded. Regular reporting of monitoring results allows the Parties, Indigenous peoples and the public to see if ecological integrity is at risk.

The Parties understand that ongoing monitoring over long periods of time is required for effective management of transboundary waters. At any given moment, a water quality sample could be evidence that water quality is decreasing, or it could be a unique measurement that is just a "blip" or an outlier. Long-term monitoring is required to determine whether there is a trend.

Because of the need for long-term data sets, the Parties have agreed to keep monitoring sites operational

The Parties understand that ongoing monitoring over long periods of time is required for effective management of transboundary waters.

Comprehensive water monitoring programs produce benefits for society many times greater than their costs.

for as long as possible. They will also communicate with each other about any changes to the aquatic ecosystem, and will encourage monitoring partners to do the same. It is expected that the Mackenzie River Basin Board will play an important role in urging the relevant jurisdictions to maintain monitoring sites. All Mackenzie River Basin provinces and territories, and Environment Canada (which also operates many monitoring stations in the Mackenzie River Basin) participate on the Board.

No clear definition of ecosystem health or ecological integrity exists in the Bilateral Agreement; it is left up to the Parties to define this based on their specific context. After the Parties have learned about the waterbody through Learning Plans, Class 3 waterbodies will have Transboundary Objectives that are aimed at maintaining their levels of ecosystem health. Collecting monitoring data over time in a robust monitoring network will help the Parties better understand the state of the aquatic ecosystem and how it is changing over time, and will allow them to identify appropriate management actions.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

As noted earlier in the guidebook, climate change can affect groundwater and the quality and quantity of surface water. Until recently, government water managers relied on historical water quantity averages and assumed that stream flows would be the same in the future as they were in the past. With climate change, this assumption is no longer valid. In some parts of Canada, average flows are changing; in others, the seasonal pattern of flow is changing. In some places, annual rainfall has been reduced; in others there are increasing numbers of very intense rainfall events.

These changes mean that it is ever more important to have ongoing, reliable information from monitoring networks. When it comes to transboundary water, having access to high-quality, reliable, multi-year data is vital to understanding trends and risk, to setting targets and objectives and to making required changes in management actions.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

According to the most recent RBC Canadian Water Attitudes Survey (2016), non-governmental organizations are among the most trusted to provide information to Canadians about water quality and safety. Governments are among the least trusted.

Some of this mistrust, at least in the Mackenzie River Basin, might be traced back to Indigenous concerns downstream of major energy and other industrial developments. These concerns can be addressed in part through community-based monitoring where citizens are directly involved in testing and understanding the health of their waters. This engagement builds new skills, public confidence and increased engagement among participants that can lead to increased dialogue and growing trust among Indigenous governments, citizens, industry and governments as they work together.

The Parties recognize the value of traditional and local knowledge. As implementation of the Bilateral Agreement begins, there is an opportunity to link traditional and local knowledge and governmental, non-governmental and community-based water monitoring in Risk Informed Management decision-making. At the same time, it is important to respect the ownership and control of Traditional and local knowledge.

Long-term, high quality records of key parameters such as river flow and water quality are essential in today's world for managing waters and understanding the impacts of climate change. Comprehensive water monitoring programs produce benefits for society many times greater than their costs. The value of evidence-based decision-making and water monitoring needs to be more broadly understood.

Clayton and Chris Baton dig
ice fishing holes in Deline

The Parties agree to proactively work together to identify opportunities to carry out research in support of bilateral water management.

SECTION 11

SUPPORTING BILATERAL WATER MANAGEMENT THROUGH RESEARCH AND STUDIES

RESEARCH AND STUDIES

The Parties, through the Bilateral Management Committee will:

- *Proactively identify research needs in support of Bilateral Water Management, including but not limited to research on climate change and other anthropogenic influences that could affect Bilateral Water Management.*
- *Explore opportunities to conduct research jointly, and/or in collaboration with others, on a case-by-case basis and identify Basin-level research priorities for consideration by the Board.*
- *Consider the results of relevant research and studies in Bilateral Water Management.*

WHAT DOES THIS MEAN?

Many uncertainties exist associated with transboundary water management in the Mackenzie River Basin, and a number of data gaps, such as the lack of basic information on transboundary groundwater. Through the research clause, the Parties agree to proactively work together to identify opportunities to carry out research in support of bilateral water management. Since the release of the Mackenzie River Basin Impact Study in 1996, the extent and pace of research being conducted in the North by governments, academic institutions, industry and the non-government organizations has increased considerably, mainly because of the rapid pace of climate change.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

The beneficial uses of some parts of the Basin are, or will be, threatened by many factors including: the discharge of pollutants to water, long-range transport of air pollutants, the introduction of invasive species, changes in land use and changes in climate. To protect water systems, we need a sound understanding of how these stresses affect ecosystems, and how the function of aquatic ecosystems changes in response to these cumulative and often interrelated factors. Through the Learning Plan process, the Parties intend to gradually improve their understanding of these complexities, and to use that knowledge to set objectives and design management actions to protect ecological integrity.

Cooperative research aimed at predicting and adapting to climate impacts and identifying change at a regional and Basin-wide level is also critical to making good decisions at a local level. Without it, changes that are being observed could be misinterpreted, resulting in poor management actions that do not protect aquatic ecosystem health. Extensive, multi-jurisdictional cooperation and pooling of resources over long periods of time are needed to implement effective research.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

We know that climate change can affect ecosystem integrity, but in many cases the specific nature, timing and magnitude of effects are not well understood. The Parties have an opportunity to carry out research, either separately or together to address these gaps in knowledge. In some cases, it may make more sense for the Parties to identify Basin-level research priorities for consideration by the Mackenzie River Basin Board. In other cases, it may make sense to address climate change through continent-wide and even global-scale science.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

Much research underway in the Mackenzie River Basin is led by or done cooperatively with communities living in the Basin. Community-based monitoring (explained in Section 10, page 48) is one example of this. Traditional Knowledge of Indigenous peoples plays an invaluable role in gaining a comprehensive, historical view of the current and future state of the Mackenzie River Basin. There is an opportunity for Indigenous people and the public to work with the Parties, the Bilateral Management Committee and the Mackenzie River Basin Board to develop and implement research agendas that are responsive to local, regional, and basin needs and priorities.

SECTION 12

EMERGENCY RESPONSE

- *Each Party will ensure that emergency response protocols are in place to address, mitigate, and where possible prevent, adverse effects of emergencies on the Ecological Integrity of the Aquatic Ecosystem of the other Party.*
- *The protocols will ensure that the Party within whose jurisdiction of the Emergency originates will, without delay, notify the other Party.*

WHAT DOES THIS MEAN?

The purpose of the Emergency Response clause is to deal with "a sudden, urgent occurrence or occasion beyond the effective control of a Party, requiring immediate action." This could include, for example, the accidental release of a harmful pollutant or a sudden flooding situation. The goal of this clause is to ensure that emergency response protocols (formal systems of rules) are in place and are followed. These protocols will ensure that the Party where the emergency is located notifies the other Party without delay. They are also designed to address, mitigate and, where possible, prevent negative effects on the health of waterbodies in the neighbouring jurisdiction.

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

Emergency response protocols are important tools for protecting waterbodies. An accidental spill of chemicals, for example, can affect downstream fish or municipalities that draw drinking water from the river. Flooding can put downstream people, buildings and infrastructure at risk. The requirement to have an emergency protocol in place means that the upstream Party can move quickly

The purpose of the Emergency Response clause is to deal with "a sudden, urgent occurrence or occasion beyond the effective control of a Party, requiring immediate action".

Float planes dock on the South Nahanni River in Nahanni National Park

to address the emergency. The requirement for immediate notification of the downstream Party helps to protect downstream users from harm.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

There is now little doubt that climate change will lead to more extreme weather events that will result in more unexpected emergencies, such as more frequent and more intense flooding. Climate change may also increase the probability of related events such as accidental pollutant releases through related flooding, land instability and other causes. Similarly, increasing numbers of forest fires may lead to more environmental emergencies.

SECTION 13

ADMINISTERING THE BILATERAL AGREEMENT

- *The Parties will establish a Bilateral Management Committee that will be responsible for administering this Agreement and reporting on its achievement.*
- *The Parties agree that the costs to administer and implement this Agreement are subject to each Party's appropriation, allocation of resources, and the 3-5 year work plan approved in the Agreement*

WHAT DOES THIS MEAN?

The Administration clause sets out how the Agreement is to work, including financial and other logistical matters. It confirms the establishment of a Bilateral Management Committee, which is responsible for administering the Agreement and reporting on it.

The duties of the Bilateral Management Committee include:

- classifying transboundary waters;
- developing Learning Plans,
- setting, monitoring and assessing Transboundary Objectives;
- providing mechanisms for information, notification and consultation (as outlined in Section 5 and 12 of the Agreement);
- developing three- to five-year work plans; and,
- submitting annual progress reports to ministers.

As work plans are developed, the committee will implement a review process to continually improve bilateral water management.

Furthermore, the Bilateral Management Committee develops annual budgets, the funding of which is critical to the implementation of the Bilateral Agreement. It will be up to each Party as to how they will ensure that sufficient funding is provided for implementation.

The Bilateral Management Committee will meet at least once a year and may invite other participants, including representatives of Indigenous governments and organizations, senior officials, advisors and technical staff to inform their decision-making. It has the ability to establish subcommittees to carry out work such as the application of the Risk Informed Management approach.

The Agreement specifies that decision-making will be done by consensus. When consensus cannot be reached, other dispute resolving options are laid out. (These are addressed in Section 14, page 57).

WHY IS IT IMPORTANT FOR PROTECTING AQUATIC ECOSYSTEMS?

The Bilateral Management Committee is responsible for implementing the Bilateral Agreement, which is designed to ensure the maintenance of aquatic ecosystem health.

WHY IS IT IMPORTANT FOR CLIMATE CHANGE?

Climate change is so important that it is considered throughout the Agreement. Addressing climate impacts on water through cooperative water management will be a big challenge for the Bilateral Management Committee. Balancing ecological integrity and economic opportunity in an uncertain future will not be easy. It will require a respect for principles and rules and continuous adaptation as things change. In seeking this balance, the Bilateral Management Committee will have to work together, have meaningful public dialogue, and ensure efficient dispute resolution processes.

WHY IS IT IMPORTANT FOR INDIGENOUS PEOPLES AND THE PUBLIC?

The Agreement requires the Parties to work closely with Indigenous people and governments. These governments can be consulted ahead of Bilateral Management Committee meetings and can be asked to attend committee meetings. Most importantly, a representative of Indigenous governments can sit on the Bilateral Management Committee. The hope is that each jurisdiction will take full advantage of these provisions in the Agreement. As the Bilateral Management Committee makes decisions, it will use information from many different sources, including Traditional and local Knowledge. This will allow for more cooperative water management decisions.

The Bilateral Management Committee is an avenue for the public to provide input as the Committee addresses issues related to the cooperative management of transboundary waters. The public can play an important role in the work of this Committee in the following ways.

- The Agreement specifically contemplates public access to the Committee, which plays a key role in assigning resources for research and ensuring proper implementation of the Agreement.
- The public can also bring relevant information to the Bilateral Management Committee via their government representatives.

The Committee is responsible for implementation of the Agreement and will need to be made aware of public interests, capabilities and concerns. The Agreement provides plenty of opportunities for a two-way dialogue to take place on an ongoing basis.

SECTION 14

RESOLVING DISPUTES AND QUESTIONS

14.1 RESOLVING DISPUTES AND QUESTIONS AT THE BILATERAL MANAGEMENT COMMITTEE

- *In the event of a dispute of question, the BMC may, where appropriate, undertake one or more of the following actions:*
  - *Resolve the dispute by consensus;*
  - *Conduct studies and investigations, using scientific and/or traditional knowledge;*
  - *Discuss the dispute or question with the Board and its committees,*
  - *Prepare a report on the facts and circumstances of the dispute or questions;*
  - *Establish and instruct a panel, consisting of at least one person designated by each Party, to prepare a report, and/or to recommend terms of settlement of the dispute of questions;*
  - *Undertake any other activities as required.*

14.2 REFERRAL OF DISPUTES TO MINISTERS

- *Disputes or questions that cannot be resolved in accordance with section 14.1 may be referred to the responsible Ministers.*

WHAT DOES THIS MEAN?

A number of options exist to settle disputes or questions in the Bilateral Management Committee. They start by trying for consensus, and also include carrying out studies or investigations, taking the dispute to the Mackenzie River Basin Board, or setting up a panel to recommend a solution. If all else fails, the matter may be sent to the responsible ministers for a decision.

SECTION 15

KEY PROCESS ELEMENTS

15.2 CONTINUATION IN THE EVENT OF MASTER AGREEMENT TERMINATION

- *In the event of termination of the Master Agreement…this Agreement may continue with the consent of both Parties.*

15.3 AMENDMENT PROVISIONS

- *This Agreement may be reviewed and amended by the consent of both Parties.*
- *Appendices of this Agreement may be amended by the Bilateral Management Committee.*

15.4 TERMINATION

- *This Agreement may be terminated by either Party upon one year's written notice to the other Party, where upon expiry of the notice period, this Agreement shall terminate.*

15.5 ABORIGINAL AND TREATY RIGHTS

- *Nothing in this Agreement shall be interpreted in a manner inconsistent with the exercise of any existing Aboriginal and treaty rights as recognized and affirmed in Section 35 of the Constitution Act, 1982, which include rights now existing by way of land claims agreements or which may be acquired either under land claims agreements or otherwise.*

15.6 PUBLIC ENGAGEMENT OR CONSULTATION

- *Each Party is responsible for engaging or consulting with their public, including Aboriginal peoples, regarding matters pertaining to this Agreement and may bring relevant input for consideration in Bilateral Water Management.*

Overlooking Sambaa Deh Falls

WHAT DOES THIS MEAN?

The main process provisions indicate that there is no end point to the Agreement, although the Parties may withdraw with one year's notice. They may also amend the Agreement, if both Parties agree. The Bilateral Management Committee has the ability to amend the Agreement's appendices. In the event of a termination of the umbrella Mackenzie River Basin Master Agreement, the Parties can elect to continue with the Alberta-NWT Bilateral Agreement.

Another important process provision is the clause relating to Aboriginal and treaty rights. Indigenous rights are intimately linked to, and benefit from, healthy aquatic ecosystems. The Parties agree that they will not interpret the Agreement in any way that might impact any Aboriginal or treaty right recognized under Section 35 of Canada's Constitution. This clause is similar to the wording found in the Master Agreement, but has been slightly modified to ensure that it also protects all rights acquired.

A final important process provision is the clause that states that each Party is responsible for engaging or consulting with their public, including Indigenous peoples, on matters that relate to the health of the Mackenzie River Basin, and to bring that feedback forward for consideration by the Bilateral Management Committee. Working together and involving everyone are keys to the success of the Bilateral Management Committee and the Bilateral Agreement. History has shown that working together towards a common cause is powerful. This clause suggests that the Parties are both committed to engaging with their citizens, which will build citizen interest in the Agreement and help ensure its implementation and its continuing existence.

The Parties agree that they will not interpret the Agreement in any way that might impact any Aboriginal or treaty right recognized under Section 35 of Canada's Constitution.

CONCLUSIONS

The *Alberta-NorthwestTerritories Mackenzie River Basin Bilateral Water Management Agreement* is a binding intergovernmental agreement that commits the Parties (the governments of Alberta and the Northwest Territories) to cooperative, integrated watershed management in the shared waters of the Mackenzie River Basin. The aim of the Agreement is a far-reaching and comprehensive one: to manage the water resources of the Mackenzie River Basin in "a manner consistent with the maintenance of the Ecological Integrity of the Aquatic Ecosystem." It is one of the most comprehensive agreements of its kind anywhere in the world.

A view of the Hay River, near Alexandra Falls

Key elements of the Agreement include the following:

ECOLOGICAL INTEGRITY OF AQUATIC ECOSYSTEMS

- A unique aspect of the Agreement is its emphasis on putting aquatic ecosystem needs before allowing water to be withdrawn for other purposes with the intention of keeping at least 90 per cent of a river's flow in the river.
- The Parties will ensure that emergency protocols are in place to address, mitigate, and, where possible, prevent the adverse effects of emergencies on the Ecological Integrity of the other Party's Aquatic Ecosystem.
- The Parties will strive for virtual elimination of toxic, bioaccumulative and persistent substances.

RISK INFORMED MANAGEMENT

- Risk Informed Management will be used to guide management actions for all waterbodies including groundwater, and associated aquatic plants, animals, fish and invertebrates. It includes: the issuing of status reports, the development of Learning Plans, the establishment of Triggers for early detection of environmental change, the establishment of Transboundary Indicators for water quantity, water quality and groundwater, the establishment of biological indicators and the initiation of Action Plans.

MONITORING AND INFORMATION SHARING

- The Parties commit to establish, implement and continue to support long-term monitoring that is needed to satisfy the commitments outlined in the Agreement.
- The Parties commit to the use of Traditional Knowledge and input from the public along with western science.
- The Parties commit to exchanging information about the Ecological Integrity of the Aquatic Ecosystem and current and future developments that might affect the Ecological Integrity of the other Party's Aquatic Ecosystem.
- The Parties agree to work together on research to support bilateral water management.

ROLES FOR THE PARTIES, INDIGENOUS PEOPLES AND THE PUBLIC

- Alberta and the Northwest Territories will each manage their waters according to their own internal laws, regulations, policies, plans and programs, but water management decisions in across both jurisdictions will be subject to the obligations of the Alberta-NWT Bilateral Agreement.
- The administration of the Agreement will be carried out through a Bilateral Management Committee.
- The Agreement provides extensive opportunities for involvement by Indigenous governments and organizations.
- There are also many opportunities for the public (citizens, government agencies, non-governmental organizations, academics and the private sector) to be involved in the Agreement's implementation.

The signing of the Alberta-NWT Bilateral Agreement was a major historical achievement and a landmark in the journey to protect the Mackenzie River Basin from the impacts of climate change, as well as municipal and industrial use and activities. In signing the Agreement, the Parties have committed to cooperate in good faith to achieve the principles of the Mackenzie River Basin Transboundary Waters Master Agreement. Successful implementation will depend in large part on the engagement of citizens and communities across the Basin and the fundamental willingness of participants to work together to achieve the common goal of maintaining the Mackenzie for current and future generations.

LINKS AND RESOURCES

Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement
http://www.enr.gov.nt.ca/sites/default/files/ab-nwt_water_management_agreement_final_signed_2.pdf

Consultation process to negotiate the Alberta-Northwest Territories Bilateral Agreement (from the Northwest Territories perspective)
http://www.enr.gov.nt.ca/programs/water-management/nwt-alberta-mackenzie-river-basin-bilateral-water-management-agreement

Consultation process to negotiate the Alberta-Northwest Territories Bilateral Agreement (from the Alberta perspective)
http://esrd.alberta.ca/water/education-guidelines/mackenzie-river-basin-bilateral-water-management-agreements.aspx

Forum for Leadership on Water (FLOW)
http://www.flowcanada.org/

Government of Northwest Territories webpage on the Alberta-Northwest Territories Mackenzie River Basin Bilateral Water Management Agreement
http://www.enr.gov.nt.ca/programs/water-management/nwt-alberta-mackenzie-river-basin-bilateral-water-management-agreement

Mackenzie DataStream
http://www.MackenzieDataStream.ca

Mackenzie River Basin Board
http://www.mrbb.ca/

Mackenzie River Basin Transboundary Waters Master Agreement
http://www.mrbb.ca/uploads/files/general/19/mackenzie-river-basin-transboundary-waters-master-agreement.pdf

The Gordon Foundation
http://www.gordonfoundation.ca/

Ducks fly over Tathlina Lake, NWT

Lloyd and Anita Chicot boat to camp on Tathlina Lake, NWT