

Alberta-Northwest Territories Bilateral Water Management Agreement

Implementation and management
2022-2023 update



SEPTEMBER 2026

Classification: Public



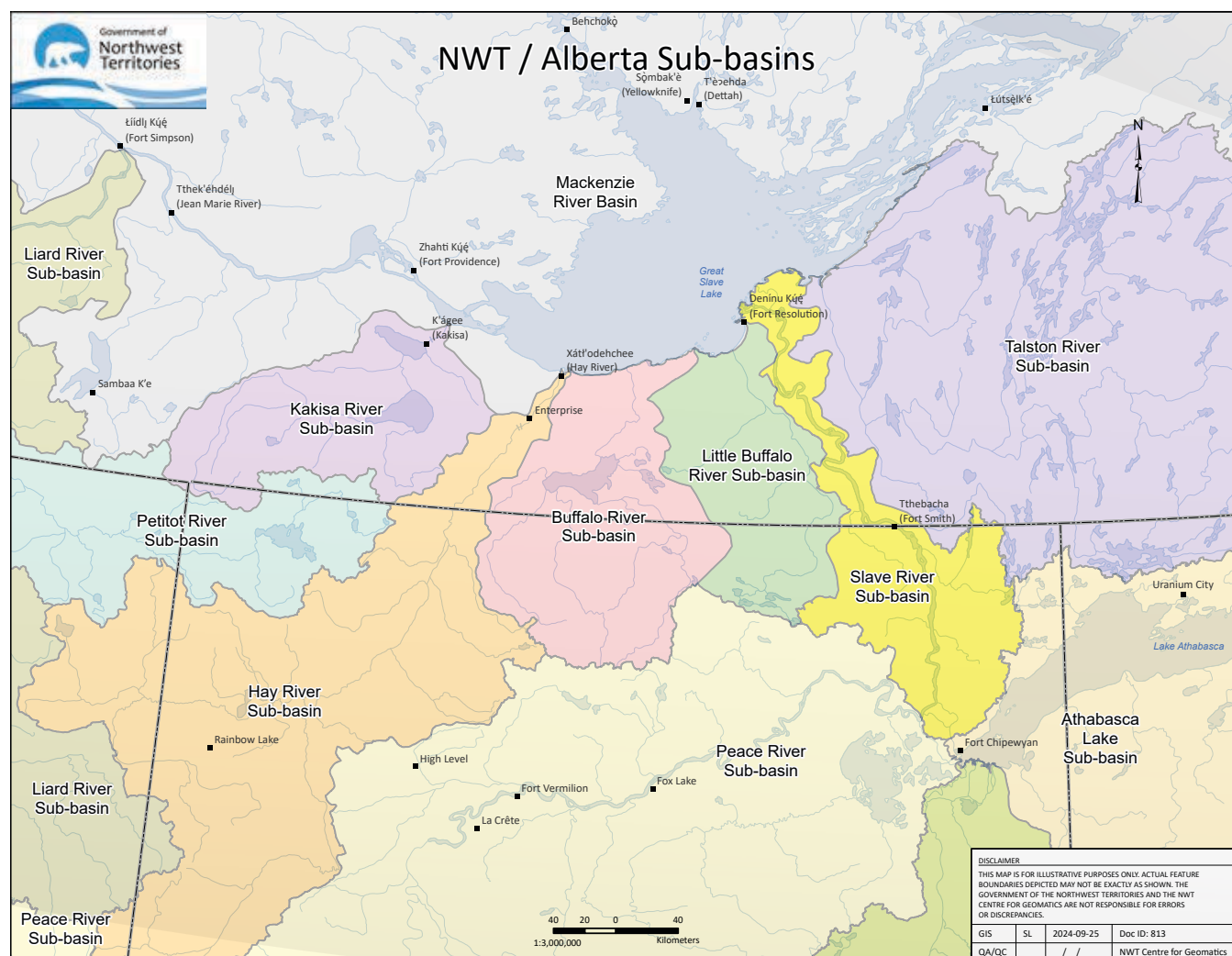


Contents

- Governance 1**
 - Classification of water bodies 1
 - Work planning..... 1
- Notification and Information Sharing 2**
 - Kearl Oil Sands Mine and dispute resolution..... 2
 - Oil Sands Mine Water Regulatory Guidance 2
- Public Engagement 3**
- Indigenous Knowledge 4**
 - Traditional Knowledge (Indigenous Knowledge) Framework 4
 - Kátl’odeh (Hay River) Indigenous Community-Based Monitoring Project 4
- Water Quality..... 5**
 - Development of standardized protocols for long-term trend assessment 5
- Water Quantity 6**
 - Streamflow gauging in the Hay River basin 6
- Biology 7**
 - Large-bodied Fish Monitoring 7
 - Small-bodied Fish Monitoring..... 7
 - Benthic Macroinvertebrates Monitoring 7
- Groundwater 8**
 - Identifying and mapping groundwater aquifers..... 8
- Collaborative Research and Studies 9**
 - Hay River Integrated Research 9
- Conclusion and Next Steps..... 10**

The governments of Alberta (GOA) and the Northwest Territories (GNWT) signed the Alberta-NWT Bilateral Water Management Agreement (the Agreement) in 2015 to cooperatively manage shared waters. A Bilateral Management Committee (the Committee) is responsible for implementing and reporting on the Agreement. The Committee, along with Indigenous communities, federal government, and research associates, continued to advance the work of protecting the aquatic ecosystem shared by Alberta and the NWT. This report provides an overview of the work completed between April 1, 2022, and March 31, 2023.

For additional reports and background information, please visit <https://mrbb.ca/bilateral-water-management-agreements/ab-nt/>.





Governance

Classification of water bodies

The Slave and Hay rivers are Class 3 water bodies, as per the Risk Informed Management approach of the Agreement. A Class 3 designation is for water bodies with current or planned development along with other factors, including known conditions or trends in water quality, water quantity or the aquatic ecosystem, significant traditional uses and other natural or human made stressors. The Agreement includes specific commitments for Class 3 rivers to assess and track the ecological integrity of the aquatic ecosystem, including setting triggers and objectives for water quality and water quantity. Interim triggers, objectives and/or thresholds have been developed for the Hay and Slave rivers. Other surface water bodies shared by Alberta and the NWT are Class 1, waterbodies with no or very low development or use.

For transboundary groundwater areas, the Hay River and Slave River groundwater areas were re-classified by the Committee as Class 2 water bodies in 2019 and 2020 respectively. No changes to classification took place in 2022-23.

Work planning

The Committee maintains an annual work plan to set priorities and guide the Alberta and NWT teams' ongoing work. The Committee reviews, approves and updates the plan each year, as needed. The technical staff meet regularly to ensure coordination and partnership.

Notification and Information Sharing

The Committee and its support teams regularly share information with each other. This includes information related to regulatory activities such as existing or proposed development and research and monitoring results. The following is a summary of events when information and notification took place in 2022-23.

Kearl Oil Sands Mine and dispute resolution

On March 1, 2023, an Indigenous government from the NWT notified the GNWT about two incidents from the Imperial Oil Kearl Oil Sands Mine Site:

- A seepage of tailings water first reported to the Alberta Energy Regulator in May 2022, and
- A spill of approximately 5.3 million litres of industrial wastewater from an overflow storage pond on January 31, 2023.

The Government of Alberta (GOA) provided public notification of these incidents through an Alberta Energy Regulator website. The GNWT was of the view that Alberta was required under the Agreement to notify the GNWT, through the Committee, as early as practicable. As a result, the GNWT initiated a formal dispute resolution process.

Following these incidents, senior officials from the Alberta Energy Regulator, GOA, and Imperial Oil provided updates to the GNWT (and others) regularly. The GNWT and GOA are collaboratively working to improve notification by establishing clear criteria that would trigger notification in the event of an incident that could potentially affect the ecological integrity of the aquatic ecosystem of the other jurisdiction or for events that may gain cross-border media coverage.

During the 2022-23 reporting period, GOA notified the GNWT of one incident, which was a coal wash release near Grande Cache and where no downstream impacts were observed.

Oil Sands Mine Water Regulatory Guidance

GOA is considering the development of regulatory guidance for the safe discharge of treated oil sands tailings water into surface water, including the Athabasca River. Alberta established an Oil Sands Mine Water Science Team, which includes technical experts from academia, industry, provincial and federal governments, and Indigenous communities in the region, to inform development of regulatory science documents.

The Science Team identified six key information gaps and hired consultants to fill in those gaps. GOA shared the final drafts of the technical reports in confidence with the GNWT for critical review from an NWT perspective prior to a decision being made by Alberta on proceeding to develop regulatory guidance. The lead of the Science Team provided status updates to the GNWT and the Committee through regular information sharing meetings. GOA's consultants also met with the GNWT to provide an overview of their work and answer questions on the six technical reports. The GNWT reviewed the reports with support of external expertise and shared its comments with GOA.

Public Engagement

Reports completed as part of the implementation of the Agreement are published [online](#). Both jurisdictions have general email addresses for the public to ask questions or provide information. The email address for the GNWT is nwtwaterstrategy@gov.nt.ca, and for the GOA, TransboundaryWaters@gov.ab.ca.

The GNWT regularly informs the NWT Water Strategy Indigenous Steering Committee about Agreement implementation activities through regular meetings. The committee consists of up to 12 representatives from NWT Indigenous governments and Indigenous organizations and provides guidance on the implementation of the NWT Water Stewardship Strategy and the NWT's transboundary water agreements. The GNWT also shares information related to the Agreement implementation with NWT water partners at the annual NWT Water Stewardship Strategy Workshop.

In August 2022, the GNWT provided information related to the oil sands mine water regulatory guidance to NWT Secretariat to the Intergovernmental Council on Lands and Resource Management. The Intergovernmental Council includes senior officials from Indigenous governments and Indigenous organizations in the NWT in addition to GNWT representation.

On November 29-30, 2022, the GNWT held a workshop in Fort Smith with the Slave River and Delta Partnership. The main objective of the gathering was to report back to Indigenous communities on transboundary and water management-related programs in the Slave River basin. At the workshop, Slave River and Delta Partnership members shared and discussed their work to monitor and manage the health of the Slave River and Delta aquatic ecosystem and consider future coordination and collaboration opportunities. Additional public open houses were held in Fort Smith and Fort Resolution to share information about the transboundary agreements and relevant monitoring.

In Alberta, the public, stakeholders and Indigenous communities are engaged through land-use and water management planning processes. Indigenous Working Groups are engaged throughout the development, implementation, review and potential amendment of land-use plans.

GOA and GNWT representatives provide [annual updates](#) to the Mackenzie River Basin Board.

Indigenous Knowledge

The Committee acknowledges the sacredness of water for Indigenous peoples and its importance in sustaining diverse traditional values, practices, and treaty rights. The Alberta-NWT transboundary water basins have connected Indigenous communities for thousands of years. The Committee recognizes the importance of ongoing dialogue and collaboration with Indigenous communities in implementing the Agreement. Along with Indigenous communities, the Committee continues to explore how to support meaningful inclusion and application of Indigenous knowledge in the implementation of the Agreement. Activities undertaken to advance this work include:

Traditional Knowledge (Indigenous Knowledge) Framework

Under the Agreement (Appendix C2), a commitment was made to create a Traditional Knowledge Framework to enhance respectful relationships and support meaningful inclusion of traditional knowledge in the implementation of the Agreement.

In 2022-23, the Committee endorsed the creation of an Indigenous Knowledge Advisory Circle to guide the development of a Traditional Knowledge Framework. Membership of the Advisory Circle consists of Indigenous participants, Indigenous scholars, and experienced allies. A kick-off workshop was held in the fall of 2022 followed by four virtual meetings.

The Advisory Circle drafted a Declaration as a statement of intention towards developing the Traditional Knowledge Framework.

Kátt'odeh (Hay River) Indigenous Community-Based Monitoring Project

Since 2020, the Committee has supported an Indigenous Community-based Monitoring (ICBM) Pilot Project for the Hay River Basin (the ICBM Project). The purpose of the ICBM Project is to explore Indigenous community interests and concerns and to collaborate to address questions about aquatic ecosystem health in the Hay River basin.

In support of continued knowledge exchange and relationship building, the ICBM partners (Dene Tha First Nation, Kátt'odeeche First Nation, West Point First Nation, Northwest Territory Métis Nation and Hay River Métis Government Council) meet regularly. A three-year summary report (2020-2023) was completed to highlight accomplishments and opportunities as well as challenges. Challenges included flooding events in Spring 2022 which had an impact on both individuals and communities in the Hay River Basin. This reduced the communities' capacities to participate in planned ICBM Project activities.

Water Quality

Ongoing water quality monitoring is integral to the implementation of the Agreement.

Each year, the Committee's water quality team reviews the water quality data collected from the Slave and Hay rivers by Environment and Climate Change Canada. These publicly available data are used to conduct annual bilateral assessments. First, the data are compared to seasonal site-specific thresholds, called triggers. Triggers help to understand ambient water quality conditions, identify changes in water quality conditions, and enable the Committee to identify potential interprovincial/territorial water quality issues. Since triggers are derived from the historical data of each river, they are highly sensitive and effective at flagging unusual results. Any unusual results are examined further to assess possible sources of change and whether there is risk to downstream water uses. Additional steps may include:

- reviewing historical data to determine if those levels have occurred before,
- examining the flow, weather and sediment load at the time of sampling,
- reviewing water quality data from nearby sampling sites, and
- making comparisons to aquatic life guidelines.

This analysis informs our overall assessment of water quality in the border regions of the Slave and Hay rivers and includes recommended next steps. Assessment of the data are reported annually and can be found here: <https://mrbb.ca/category/bwma-reports/ab-nt>.

To build upon our approach to assess water quality, staff advanced the following project in 2022-23:

Development of standardized protocols for long-term trend assessment

The Committee agreed to fund a two-year contract in 2021-22 to explore standardized methods to assess trends in water quality in transboundary waters. To leverage expertise and ensure consistency, this work took place with the assistance of water quality scientists from other jurisdictions of the Mackenzie River Basin. This work continued during 2022-23, and a report entitled *Methods to Assess Trends in Water Quality* (HDR, 2022) was completed and will be available online.

Water Quantity

Water flow and climate variables, such as precipitation and temperature, are monitored by Environment and Climate Change Canada, the GOA and the GNWT. Flow data are integral to the implementation of the bilateral agreement, and each year the Committee's water quantity support staff ensure awareness of key transboundary flow monitoring stations through the GOA and GNWT's hydrometric agreements with Environment and Climate Change Canada.

The GOA and GNWT have committed to developing site-specific transboundary objectives, for Class 3 waterbodies that ensure that the needs of the aquatic ecosystem are met before any water is taken for human use. The amount remaining for human use is referred to as "available water" and is shared equally between Alberta and the NWT. The available water includes water that may be withdrawn under existing licences.

Setting of the aquatic ecosystem needs, available water and the corresponding transboundary objective for the Slave River was deferred in the Agreement. If specific conditions change in the flow and water use, it triggers further action or decision of the Committee. These condition triggers are tracked and reported on annually.

An interim amount of ecosystem water, available water and the corresponding interim transboundary objective were set for the Hay River. The interim amount of ecosystem water was based on a desk-top method and is more than is anticipated necessary for ecosystem needs. If specific conditions are reached, it triggers further action or decision of the Committee. These triggers are tracked and reported on annually.

Water quantity assessment requires two types of data: water allocation and use data from GOA's regulatory program; and environmental flow data. Once Environment and Climate Change Canada reviews the relevant data for quality assurance purposes, and once water use data are available from the GOA's regulatory reporting programs, the Committee's water quantity support staff completes the assessment of conditions and interim triggers.

Assessments are released as soon as they are completed and can be found here:

Streamflow gauging in the Hay River basin

The Committee initiated a multi-year project in collaboration with Wilfrid Laurier University to establish streamflow gauges in the Hay River basin at locations that drain permafrost peatland terrain. The intent of this project is to explore links between permafrost thaw and changing streamflow, provide additional knowledge of peatland hydrology, and advance hydrological modeling in the Hay River basin.

Biology

Changes in water quality and water quantity can affect living things that depend on a healthy aquatic environment. For Class 3 rivers such as the Slave River and the Hay River, the Agreement provides direction to monitor biological indicators such as benthic macroinvertebrates and small and large-bodied fish. Information and monitoring results from those biological monitoring programs are reported annually and can be found online at <https://mrbb.ca/category/bwma-reports/ab-nt/>.

Large-bodied Fish Monitoring

Following the large-bodied fish monitoring program that took place on the Slave and Peace rivers in 2021-22, the Committee's biology team used some of the samples collected to do further analysis and perform an inter-lab comparison for the analysis of certain chemicals including polycyclic aromatic hydrocarbons samples. The University of Saskatchewan processed the samples collected in 2021-22 to determine the level of metals and other chemicals in fish tissue.

The biology team also collected benthic invertebrates in the Salt River to analyze for stable isotopes. Stable isotopes analysis is helpful to better understand where the fish near the border are feeding and spending time.

In April 2022, the biology team worked with community members from Fort Smith and Fort Resolution to dissect burbot that were collected over the winter as part of the transboundary fish monitoring program.

Small-bodied Fish Monitoring

The Committee approved a three-year project to monitor small-bodied fish in the Slave River. Small-bodied fish sampling took place on the river at three locations in September 2022: near Fort Fitzgerald in northern Alberta; in Fort Smith; and in the Slave River Delta. The purpose of the monitoring is to establish baseline conditions for small-bodied fish, specifically trout-perch. Fish were analyzed for metals and polycyclic aromatic hydrocarbons and the team took body condition measurements to assess fish health.

Benthic Macroinvertebrates Monitoring

In the fall 2022, benthic macroinvertebrates were sampled from the Slave and Hay rivers near the Alberta-NWT border. Benthic macroinvertebrates collected in 2022 were sent to a taxonomist for identification and water quality and sediment quality samples were sent to a lab for analysis.

A technical report on data collected from 2017 to 2020 was completed and is available online on the [MRBB website](#).

Groundwater

The Agreement states that transboundary groundwater between Alberta and the NWT will be protected from pollution and shared equitably. The Committee, supported by hydrogeologists from the Alberta Geological Survey (AGS), GOA and GNWT, is working to learn more about the location, quality, and quantity of shared groundwater.

Identifying and mapping groundwater aquifers

The Committee, in collaboration with the AGS, is working to identify and map the aquifers of the Alberta-NWT transboundary region. The objectives of the project are to:

- improve our understanding of the geology and the hydrogeology of the region,
- develop a geological and hydrogeological conceptual model, and
- identify regions that require new subsurface data.

In 2022-2023, the AGS completed the data discovery and compilation of hydrogeology, geology and surficial deposit information of the Kakisa, Hay, Wood Buffalo and Slave river basins. The AGS developed models of updated bedrock topography and sediment thickness for these basins and initiated building geological cross sections in key regions to visualize the geometry and extent of surficial materials and bedrock formations.

A uniform characterization of the geology and sediment thickness in the transboundary area will allow the GOA and GNWT to target locations where transboundary aquifers may be present. The conceptual models will be used to identify and begin mapping potential aquifer systems, while the acquisition of new subsurface data will help delineate these aquifer systems.

Collaborative Research and Studies

Learning about the aquatic ecosystem of the shared waters and impacts of climate change support implementing the commitments of the Agreement. Collaborative research projects under the Agreement may include reviewing and assessing existing data and information or collecting new data when necessary to support implementation.

Hay River Integrated Research

In partnership with the University of Alberta, the Committee initiated a multi-year project to assess and understand the movement of organic matter, nutrients, and mercury from terrestrial ecosystems into aquatic environments within the Hay River watershed. Gained knowledge will be useful for anticipating and detecting changes associated with climate change and human land use, including climate warming, permafrost thaw, wildfire, forest harvesting, and oil and gas activities.

The project team, with the assistance of Dene Tha First Nation and Kátl'odeeche First Nation, sampled approximately 45 creeks and rivers within the Hay River watershed between 2021 and 2023. Monthly sampling also took place at 11 key sites within the Hay River watershed. Dene Tha First Nation and Kátl'odeeche First Nation identified five locations along the Hay-Chinchaga river system and six smaller tributaries.

Conclusion and Next Steps

Considerable collaborative work took place between the GOA and GNWT in 2022-2023 to improve knowledge about the aquatic ecosystem, monitor interim triggers and objectives, and work towards setting transboundary objectives. Information about monitoring results is included in separate reports and is available online on the Mackenzie River Basin Board website and the governments' respective websites.

To further pursue the commitments in the Agreement, the Committee plans to:

- continue the biological monitoring on the Slave and Hay rivers.
- continue characterizing hydrogeology of the transboundary region and the geological modelling of bedrock topography to support aquifer mapping.
- gain additional knowledge about water quality in the Hay River basin to help detect change associated with human land use and climate change.
- initiate work towards the development of a hydrological model for the Hay River.
- support the work of the Kátt'odeh/Hay River Indigenous Community-Based Monitoring Project and the development of a traditional knowledge framework to enhance respectful relationships and support meaningful inclusion of traditional knowledge in decision making related to the Agreement.

The Committee looks forward to continued cooperation and collaboration and take actions to meet the commitments of the Agreement and sustain the spirit under which it was signed.



Alberta

