



Agency report to the Mackenzie River Basin Board

Meeting #66
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1. Bilateral Water Management Agreements

British Columbia and Yukon

British Columbia and Yukon completed a Bilateral Water Management Agreement (BWMA) on March 30, 2017. The British Columbia/Yukon BWMA applies to all transboundary waters shared between British Columbia and Yukon in the Mackenzie River basin, primarily the Liard River sub-basin. For the past three years, the Governments of British Columbia and Yukon have worked together to implement the terms of the BWMA.

Recently, a Bilateral Management Committee (BMC) was established with First Nation governments and transboundary Indigenous organizations. In October 2019, the first face-to-face BMC meeting was held in Lower Post, BC. Since then, three teleconference calls have taken place, and, the BMC Terms of Reference have been finalized, a work plan has been drafted and a technical committee was established. Moving forward, the BMC will work to assess the classification processes, update their work plan and support the implementation of the BWMA.

Northwest Territories and Yukon

The Northwest Territories (NWT) and Yukon completed a BWMA in 2002, which applies to the Peel River sub-basin and the Mackenzie Delta sub-basin.

The Governments of Yukon and NWT are in the process of modernizing the current Transboundary Water Management Agreement with the template developed by the MRBB in 2009. Consultation and engagement are scheduled for the upcoming months to update the current agreement.

Additionally, the Governments of Yukon and NWT are currently working to draft a BWMA that covers 64 km² in the Liard sub-basin, which is not covered by either of the BC-Yukon or BC-NWT BWMA's. This agreement will mirror those currently in place. The BWMA and related appendices have been drafted, and consultation and engagement is expected to occur in the coming months.

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2. Water-related legislation / Policy / Regulations / Planning

Regional land use planning

The Peel Watershed Regional Land Use Plan was approved by the five parties in August 2019 and an implementation plan was approved this past August 2020. Approximately 55 per cent of the area, including four major tributaries to the Peel River, is now permanently protected from mineral staking and oil and gas activities. The highest level of protection is now applied to these Special Management Areas and implementation will also include the prevention of disposition of lands for other industrial purposes, legal designation as protected areas, and the development of management plans.

The Government of Yukon continues to work with First Nations on many important initiatives vital to Yukon's social and economic well-being. We value the Final Agreements, and are committed to upholding them.

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Yukon Water Strategy and Action Plan: Five Year Report

The Yukon Water Strategy and Action Plan was released in June 2014. The five-year plan set out six priorities and thirteen specific goals aimed at maintaining the quality, quantity and health of Yukon's ground and surface water, in order to support both people and nature in the territory. The Government of Yukon worked together with partners to implement the strategy, and shared many accomplishments, such as beginning water monitoring and research partnerships with First Nations, expanding water monitoring capabilities, establishing a permanent groundwater unit, delivering more than 200 outreach presentations for Canada Water Week, and launching a new Yukon Water Data



Catalogue. The Yukon Water Strategy: Final Report was shared at the Yukon Water Forum on November 27 and 28, 2019. This report provides a summary of the key achievements, outreach, and activities over the last five years. The report can be found here: <https://yukon.ca/en/yukon-water-strategy-five-year-report>.

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3. Science, Monitoring and Information

Monitoring update

Southeast Yukon

Environment and Climate Change Canada and the Government of Yukon signed the *Canada-Yukon Water Quality and Aquatic Ecosystems Agreement* in June 2019. Although we have monitored water quality collaboratively for many years, the agreement is supporting coordinated planning and implementation of water quality and aquatic biomonitoring activities in Yukon. The agreement also formalizes the ability to set up community monitoring arrangements and agreements with First Nations, which are already in place with Tr'ondëk Hwëch'in (Peel) and Daylu Dena Council (Liard).

A water quality monitoring station on the Liard River is located adjacent to the Alaska Highway near Watson Lake, Yukon, and serves as a reference site for the watershed. Sampling has been paused since March 2020 due to the COVID-19 pandemic however monitoring is expected to restart in November 2020. Since monitoring data has been collected for over a decade on the Liard River, Environment and Climate Change Canada is conducting a trend analysis to determine how water quality has changed over time. Results will be posted to the Yukon.ca website when available.

The Water Resources Branch (WRB) added two monitoring wells to the Yukon Observation Well Network (YOWN) in the Liard watershed in 2019 (YOWN-1923 at the Watson Lake solid waste disposal facility and YOWN-1927 at the Upper Liard solid waste disposal facility) and another in 2020 (YOWN-2001, also at the Upper Liard solid waste disposal facility).



Kotaneelee baseline water quality characterization

A baseline water quality characterization report for the Kotaneelee area in southeast Yukon was completed in October 2019. The project began several years ago in response to calls for an increased understanding of water resources in the area, before further oil and gas exploration. Providing water monitoring information relative to transboundary water management agreements between Yukon and NWT was another reason for the study.

The report documented the current baseline conditions of groundwater and surface water in the Kotaneelee area. Data were collected by Government of Yukon from July 2014 to September 2018. Ninety-four surface water samples were collected from eight locations along the Beaver River and the La Biche River, and eighteen groundwater samples were taken from one groundwater monitoring well, two drive point piezometers, one water supply well and two groundwater seeps. All monitoring wells and mini-piezometers were shallow, and currently there are no monitoring wells installed in bedrock.

Surface water in the area had a high concentration of total suspended solids and metal. These conditions often occur in areas with natural oil and gas deposits.

A key recommendation from the report is to install a hydrometric station in the Beaver River and La Biche River to gain more accurate discharge and water level information within the watershed. There is currently limited available hydrometric data, which limits understanding of seasonal influences on surface water chemistry within the study area. The surface and shallow groundwater quality data collected to date provides basic spatial and temporal information on existing conditions. Based on future resource development and future management plans, additional data collection programs may be required.

The final Kotaneelee Baseline Water Quality Characterization Report is available online at: <https://yukon.ca/en/science-and-natural-resources/research-and-monitoring/water-research-and-assessments#regional-water-resources-characterization>.

Liard River basin transboundary aquifer assessment

This work involved a desktop-based transboundary assessment of potential aquifers in the portions of the Liard River basin in Yukon and NWT.



Prior to this study, there was little information on the types, distribution and characteristics of aquifers within the region. Palmer Environmental Consulting Group completed the project in association with Aurora Geosciences through a partnership between the Governments of Yukon and NWT. The approach aligns with a similar assessment of the portion of the Liard River basin in British Columbia, which was completed in 2018. Key findings of the assessment:

- Relatively little direct transboundary groundwater flow likely occurs between Yukon and NWT due to our shared territorial border that largely follows following the topographic and rough groundwater divide between the Liard River and South Nahanni River watersheds.
- The most vulnerable aquifers are in the sub-basin that contains the community of Watson Lake.
- Most groundwater recharge appears to occur in the southern half of the study area, where permeable materials are more widespread, slopes are gentler, and permafrost is less likely to occur.
- There remain key data gaps in the study area. In particular, mapping of surficial geology and permafrost is limited.

The Liard River Basin Transboundary Aquifer Assessment: final report is available online at: <https://yukon.ca/en/science-and-natural-resources/research-and-monitoring/water-research-and-assessments#regional-water-resources-characterization>.

Peel watershed

Discussions around long-term water monitoring needs in the Peel watershed, with respect to informing Peel regional land use plan implementation activities, is underway. Key topics include monitoring major rivers in the watershed to inform territorial park planning, and to inform recreational paddlers of real-time water flow conditions. New hydrometric stations will be installed by Water Survey of Canada next year.

Water quality monitoring at the Ogilvie River station was also temporarily paused since March 2020 but is restarting in November 2020. The station is monitored by Tr'ondëk Hwëch'in and is part of the water quality monitoring network between Yukon and Canada. This station is road-accessible and is a reference site for the upper portion of



the watershed. Cross-basin (synoptic) monitoring will occur as opportunities arise and basin activities dictate.

Within the adjacent Eagle Plains area, a baseline water quality characterization report was recently completed. The Government of Yukon collected baseline data in the area from 2013 to 2018, and worked with the University of Calgary on a Natural Sciences and Engineering Research Council (NSERC) project to collect groundwater and surface water samples for the analysis of isotopes and dissolved gases. One of the sample sites is located in the Peel watershed and includes a stream gauging station. A final report titled Eagle Plains Baseline Water and Sediment Quality Report is available upon request.

With respect to groundwater monitoring, one groundwater well was added to the Yukon Observation Well Network (YOWN) in 2019 (YOWN-1918). The well is located near the Eagle Plains solid waste disposal facility. There are only two groundwater wells in this area (the other one is YOWN-1401, near the Eagle Plains Camp). WRB added another monitoring well to the YOWN in 2020 in the Peel watershed: YOWN-2002, which is at the Ogilvie Highway Camp.

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Snow survey network survey bulletin and water supply forecast

The Department of Environment operates ten snow survey stations within the Yukon portion of the Mackenzie River Basin, with three stations in the Peel Basin and seven stations in the Liard Basin. The snowpack at these stations is sampled three times annually for depth, density and snow water equivalent (SWE). We publish results in the [Yukon Snow Survey & Water Supply Forecast](#) at the beginning of March, April and May each year. Past editions of the bulletin can also be viewed on Yukon.ca. The information presented in the snow bulletin continues to be used to identify any potential spring and early summer flood threat for those basins as well as for some sub-basins.



Hydrometric network

Environment's small stream hydrometric network includes one station in the Liard Basin and one station in the Peel Basin. Continuous water level measurements are recorded at each station using electronic data loggers. The station in the Liard basin is also equipped with real-time data transmitters, so water levels can be tracked remotely. Regular discharge measurements are taken during the open water season so that flow records can be produced, with a particular emphasis on capturing discharge during spring peak flow. Winter flow estimates may become available at those stations in the near future.

Environment also maintains a cost-sharing agreement with Environment and Climate Change Canada to operate four hydrometric stations within the Peel Basin and eight hydrometric stations within the Liard Basin. Real-time and historical water levels and discharge data from this network are available on line at <https://wateroffice.ec.gc.ca/>.

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Yukon water online information

Water Monitoring: The Government of Yukon has an online water information portal (Yukon.ca), which is the main source for information about water monitoring in Yukon. The website houses the [Water Data Catalogue](#), a centralized database that provides water monitoring information through an interactive map (e.g., site location, period of record, type of data collected, etc.).

We continue to add additional monitoring locations to the water data catalogue. The catalogue contains over 2,267 water monitoring locations from 20 networks, including snowpack, surface water, groundwater and meteorological observations. In addition to the metadata provided through the catalogue, many monitoring stations link to the associated water data, and the long-term goal is to provide direct access to water data for additional networks.

Yukon.ca also provides educational material and information about Yukon's water resources including:



- Water facts and information (e.g., water cycle, water use, etc.);
- Water management;
- Legislation that guides interactions with water; and
- News and updates related to water in Yukon.

Access to water data: Yukon recently launched an open data portal as a single point of access to publically accessible data. All historical [snow survey data](#) collected as part of the government network is now accessible through the platform. Currently, work is underway to share annual monitoring results from the Yukon Observational Well Network (YOWN).

WRB launched the [Yukon Water Well Registry](#) (YWWR) in 2020. The YWWR is a web-based interactive map, where users can find water well records for various well types (private domestic, public supply, environmental monitoring, etc.) across the territory. The spatial layers in the YWWR are available on the Government of Yukon's Corporate Spatial Warehouse and can be viewed along with other spatial data via [GeoYukon](#).

Regulatory data: The Yukon Water Board maintains an online public registry called [Waterline](#) that stores and shares information related to water licensing processes in Yukon. The system allows licence holders to submit reports and data as required by water licences and allows for public access to this information. Significant improvements to the registry's notification process allows regulators to track reports that are late or have not been submitted.

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4. Major Projects

Regulatory update

Mineral exploration

No mineral exploration programs have been proposed in the Peel watershed in 2020. There is one active Class 3 (exploration) Mining Land Use Approvals in the watershed;



this authorization slightly overlaps the Peel watershed at its southeastern-most boundary.

There are 13 active Class 3 or 4 Mining Land Use Approvals in the Liard watershed, none of which were issued in 2020. Four properties are located along the northern portion of the Nahanni Range Road, four in the northwest portion of the basin and the remaining four in the southern half. There are two quartz exploration projects proposed in the northeast portion of the Liard watershed that lies within Yukon; however, these are both in the early stages of environmental assessment.

Major mines

Liard watershed

Wolverine Mine: Yukon Zinc Corporation put the Wolverine Mine, located 180 km southeast of Ross River, into temporary closure on January 27, 2015. In September 2019, the owner of the site was put into receivership, and Government of Yukon continues to work with the receiver to ensure ongoing monitoring of the site continues.

Sä Dena Hes Mine: Permanent closure and decommissioning activities of this former lead-zinc mine were completed in 2015; the site is now in post-closure monitoring.

Kudz Ze Kayah Mine: Yukon Environmental and Socio-economic Assessment Board (YESAB) issued a Screening Report in October, 2020 for BMC's proposed open pit mine, and Yukon government (and other decision bodies) are now in the decision-making phase. Licensing (quartz mine licensing and water licensing) could occur in 2021, should the project be allowed to proceed.

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