Yukon

Agency Report to the Mackenzie River Basin Board

Meeting #70

November 3-4, 2021

Location: Online meeting

Table of Contents

1. Bilateral Water Management Agreements

British Columbia and the Yukon

British Columbia and the 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 the Yukon in the Mackenzie River basin, primarily the Liard River sub-basin. A Bilateral Management Committee (BMC) was established in 2019 including the Governments of British Columbia and Yukon, and representatives from First Nation governments and transboundary Indigenous organizations. This October the BMC will be having its eighth meeting. The BMC's latest work has included developing a new classification process to better include Indigenous and local knowledge, and initiating discussions to develop a learning plan for the Upper Liard. Moving forward the BMC will also be developing a framework for including Indigenous and local knowledge in BMC decision-making.

Northwest Territories and the 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 on the revised agreement took place in early 2021, and proposed changes are being finalized. Once signed, implementation of the agreement will begin with the formation of a BMC.

Additionally, the Governments of Yukon and NWT are currently working to draft a BWMA that covers 64 km^2 in the Liard sub-basin, which is not covered by either of the BC-Yukon or BC-NWT BWMAs. Consultation on the draft agreement took place in early 2021 and the parties are now working to incorporate feedback into the agreement. The agreement will be signed in the coming months.

Contact: Heather Jirousek – Director
Water Resources Branch, Department of Environment
Tel: 867-667-3145 / Email: heather.jirousek@yukon.ca

New Guidelines: Adaptive Management Plans for Quartz Mining

In January of 2021, the Government of Yukon released guidelines to help industry improve water management at quartz mining projects. In order to get a water licence, quartz mining proponents must submit an adaptive management plan, outlining how they will manage water at their site. Until now, there have not been Yukon-specific guidance on what should be included in adaptive management plans. These guidelines will fill that gap and make these plans more consistent, clear and efficient across the Yukon. The guide details expectations and 12 key components that should be considered when proponents develop and submit their adaptive management plans. The full guide can be accessed here.

New Guidelines: Water Quality Objectives and Water Effluent Standards

In October 2021, the Government of Yukon released guidelines to help the quartz mining industry address and reduce potential impacts on water in the Yukon. The guide provides quartz mining proponents with methods for determining water quality objectives and effluent quality standards for their particular projects. The Guide also formalizes the requirement that quartz mining project proposals identify and address the project's potential impacts on water quality and propose standards to reduce any impacts to Yukon waters. The guide requires proponents to gather baseline data for three years in order to develop adequate water quality objectives and effluent quality standards. The full guide can be accessed here.

Contact: Heather Jirousek – Director
Water Resources Branch, Department of Environment
Tel: 867-667-3145 / Email: heather.jirousek@yukon.ca

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 in 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 off road vehicle use is now regulated in specific areas in order to protect both wetlands and alpine habitat. More than a quarter of the existing mineral claims in the conservation areas of the region have been relinquished, ensuring protection for those lands and waters. Current implementation work includes the legal designation and the development of management plans for protected areas,

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

Contact: Jerome McIntyre – Director, Land Planning Branch
Department of Energy, Mines & Resources
Tel: 867-667-3530 / Email: jerome.mcintyre@yukon.ca

3. Science, Monitoring and Information

Monitoring update

Southeast Yukon

Environment and Climate Change Canada and the Government of Yukon, through a formal agreement signed in 2019, supports a coordinated approach to planning and implementation of water quality and aquatic biomonitoring activities in the Yukon. The agreement also formalizes the ability to set up community monitoring arrangements and agreements with First Nations such as Tr'ondëk Hwëch'in (Peel) and the 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. 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).

A baseline water quality characterization report for the Kotaneelee area in southeast Yukon was completed in October 2019. The study characterized baseline conditions of groundwater and surface water using data collected by the Government of Yukon from July 2014 to September 2018. The final "Kotaneelee Baseline Water Quality Characterization Report" is available on Yukon.ca at: https://yukon.ca/en/kotaneelee-baseline-water-quality-characterization-report.

Aquifer mapping in the Watson Lake area

This project is a collaboration between the Government of Yukon (Water Resources Branch, and Yukon Geological Survey), Liard First Nation, Dena Kayeh Institute, the Town of Watson Lake, the Geological Survey of Canada, Yukon University, and an environmental consultant (Golder Associates). The purpose of the project is to identify, delineate, and classify aquifers in the Watson Lake area (including Upper Liard and Lower Post) and build a foundation for the development of a conceptual hydrogeological model for the area. The project involves compiling, preprocessing, standardizing, and importing subsurface geological and hydrogeological data into a commercially-available 3D subsurface modelling software package for interpretation and aquifer delineation. The project also involves drilling new boreholes to generate stratigraphic information in key locations and the installation of new monitoring wells that form part of the Yukon Observation Well Network. This work builds on the Liard River Basin Transboundary Aquifer Assessment (described below), which concluded that the most vulnerable aquifers in the portions of the Liard River basin in the Yukon and NWT are in the Watson Lake area.

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 the Yukon and NWT.

Prior to this study (completed June 2020), 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. The key findings of the assessment were:

- Relatively little direct transboundary groundwater flow likely occurs between the Yukon and NWT due to our shared territorial border that largely follows 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; and
- 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 on Yukon.ca 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.

Water quality monitoring at the Ogilvie River station continues and is monitored by Tr'ondëk Hwëch'in and is part of the water quality monitoring network between the Yukon and Canada. This station is road-accessible and is a reference site for the upper portion of the watershed.

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 two groundwater wells in the Eagle Plains 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.

A baseline water quality characterization report for the Eagle Plains region was completed in October 2018. The study characterized baseline conditions of groundwater and surface water using data collected by the Government of Yukon

from July 2014 to September 2018. 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.

Contact: Brendan Mulligan, Senior Scientist – Groundwater
Nicole Novodvorsky, A/Operations Manager
Water Resources Branch, Department of Environment
Tel: (Brendan) 867-667-3217 / (Nicole) 867-456-6538
Email: brendan.mulligan@yukon.ca / nicole.novodvorsky@yukon.ca

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 also operate one meteorological station in the Liard Basin; this includes a snow scale that measures snowpack evolution over the winter. 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.

Hydrometric network

The Government of Yukon’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.

The Yukon government also maintains a cost-sharing agreement with Environment and Climate Change Canada to operate seven hydrometric stations within the Peel Basin and eight hydrometric stations within the Liard Basin. Three of the Peel Basin stations were newly installed this year on the Wind, Hart and Snake Rivers as part of the Peel Watershed Regional Land Use Planning Implementation. Real-time and historical water levels and discharge data from this network are available online at https://wateroffice.ec.gc.ca/.

Contact: Holly Goulding – Senior Scientist, Hydrology
Water Resources Branch, Department of Environment
Tel: 867-667-3223 / Email: holly.goulding@yukon.ca

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, an interactive map that provides metadata of water monitoring stations throughout the Yukon (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 2,400 water monitoring locations, 58 of which are in the Peel watershed and 273 in the Liard watershed. They include snowpack, surface water, groundwater and meteorological observations from 23 networks. 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 the Yukon.

Access to water data: the Yukon recently launched an open data portal as a single access point to all public water 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 WRB is currently mapping aquifers underlying the Watson lake area. This work builds on the Liard River Basin Transboundary Aquifer Assessment, which concluded that the most vulnerable aquifers in the portions of the Liard River basin in the Yukon and NWT are in the Watson Lake area. The areal extents of the mapped aquifers will be shown on the YWWR. Factsheets and reports describing the aquifers and the processes used to map them will also be available on the YWWR. All 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 the 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.

Contact: Marie Ducharme – Water Information Specialist
Water Resources Branch, Department of Environment
Tel: 867-667-3411 / Email: marie.ducharme@yukon.ca

4. Major Projects

Regulatory update

Mineral exploration

No mineral exploration programs have been proposed in the Peel watershed in 2021. There is one active Class 3 (exploration) Mining Land Use Approval in the watershed; This authorization slightly overlaps the Peel watershed at its southeastern-most boundary. There are two active Class 1 Notifications (low level exploration programs) in the Peel Watershed for 2021; Class 1 Notifications are only valid for one year.
There are nine active Class 3 Mining Land Use Approvals, and two active Class 4 Approvals in the Liard watershed; only one of these (a Class 4) was issued in 2021. There is one project currently undergoing an environmental assessment; however, this project already has a licence and would not be a new exploration project. The Mining Land Use Approvals in the Liard watershed are dispersed throughout the watershed's territory in the Yukon.

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 the 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 Mineral's proposed open pit mine, and the Government of Yukon and Government of Canada (jointly, the "Decision Bodies") remain in the decision-making phase. Should a Decision Document be issued by the Decision Bodies indicating that the project can proceed, BMC can proceed through licensing (quartz mine and water licensing).

Contact: Sarah Chan – A/Manager, Environmental Affairs

Environmental Protection and Assessment, Department of Environment
Tel: 867-667-5409 / Email: sarah.chan@yukon.ca