British Columbia
Ministry of Environment and Climate Change Strategy

Agency Report to the
Mackenzie River Basin Board

Meeting #59 of the
Mackenzie River Basin Board
November 21 to 22, 2018
Saskatoon, Saskatchewan

Table of Contents

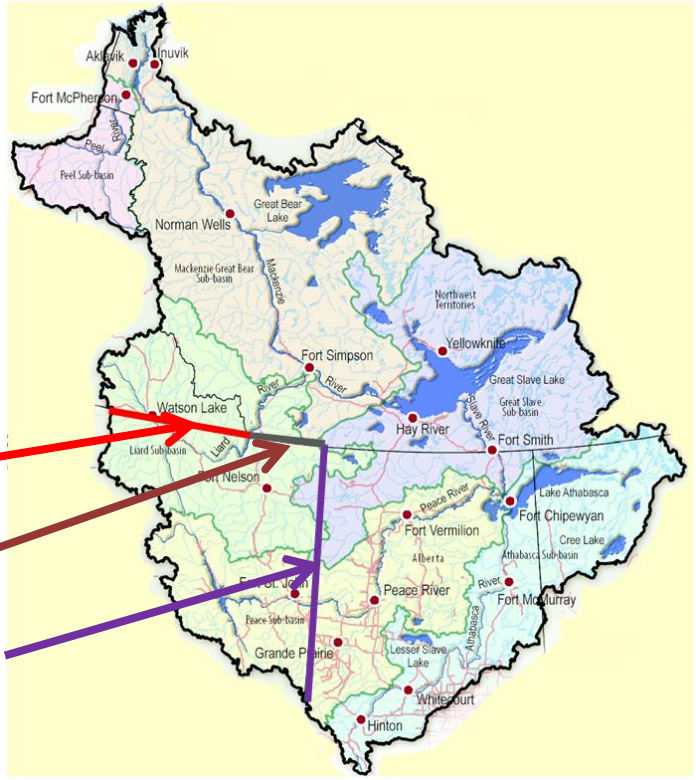
1 Bilateral Water Management Agreements

The *Mackenzie River Basin Transboundary Waters Master Agreement* provides for neighbouring jurisdictions to negotiate Bilateral Water Management Agreements (BWMAs) to address shared surface water quantity, quality and groundwater. Under the Master Agreement, British Columbia is required to negotiate three such agreements with the Northwest Territories, Yukon and Alberta.

BC/Yukon (Liard River)

BC/NWT (Liard & Petitot Rivers)

BC/Alberta (Peace, Hay & Liard Rivers)



British Columbia/Northwest Territories:

British Columbia and the Northwest Territories signed their BWMA in October 2015. The Agreement is posted on the MRBB website at: http://www.mrbb.ca/information/120/index.html The British Columbia/Northwest Territories BWMA applies to all transboundary waters shared between British Columbia and the Northwest Territories in the Mackenzie River Basin, primarily the Liard River Watershed. On August 31, 2017 the British Columbia Government approved implementation of the BC/NWT BWMA through an Order in Council.

Since then, British Columbia and the Northwest Territories have focused on advancing implementation of the BWMA. The Parties are establishing a Bilateral Management Committee to administer the Agreement, including Indigenous members, and will also establish technical committees to support implementation of the Agreement. The BMC members of the Committee are planning for the inaugural BMC meeting.

Technical work over 2017/2018 included several reports, such as a "Preliminary State of Groundwater Knowledge in the Transboundary Regions of the Mackenzie River Basin, NWT" and "The Liard and Petitot Sub-basins Transboundary Groundwater Resources Assessment." Each will inform learning plan development.

As part of implementation over 2018, the Fort Nelson First Nation, British Columbia and the Northwest Territories have coordinated efforts to move forward on establishing new groundwater monitoring wells on both sides of the border. The wells will contribute to improving understanding of the shared groundwater in the Liard Basin.

British Columbia/Yukon:

British Columbia and the Yukon completed signing of their BWMA on March 30, 2017. The Agreement is posted on the MRBB website at: http://www.mrbb.ca/information/126/index.html

On August 31, 2017 the British Columbia Government approved implementation of the BC/Yukon BWMA through an Order in Council. 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 Watershed. Transboundary waters shared between the jurisdictions outside the Mackenzie River Basin, such as the headwaters of the Yukon River, are not included in the BWMA.

British Columbia and the Yukon Territories are now starting to focus on implementing the terms of the BWMA. The Parties will seek to establish a Bilateral Management Committee with Indigenous Members to administer the agreement and will also establish technical committees to support implementation of the agreement.

British Columbia/Alberta:

Alberta and British Columbia have shared information, discussed their respective interests, discussed and drafted a number of the components of the BWMA, but the agreement is not yet completed. The British Columbia/Alberta BWMA will apply to all transboundary waters shared between British Columbia and Alberta in the Mackenzie River Basin, with a significant focus on the Peace River Watershed.

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2 Water-Related Legislation / Policy / Regulations / Planning

United Nations Declaration on the Rights of Indigenous Peoples:

In September, 2017, in a gathering of the BC Cabinet and First Nations leaders, Premier Horgan highlighted the Province's strong cross-government commitments to work in partnership with Indigenous peoples to adopt and implement the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the Truth and Reconciliation Commission Calls to Action and the Tsilhqot'in Supreme Court decision.

In May 2018, the Province published the "Draft Principles that Guide the Province of British Columbia's Relationship with Indigenous Peoples" (Draft 10 Principles). The Draft 10 Principles were shared as a resource to help guide all BC public servants in efforts to strengthen relationships with Indigenous Peoples based on respect and recognition of inherent rights.

The Ministry of Environment and Climate Change Strategy, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development, and other provincial agencies are responsible for moving forward on the calls to action and reviewing policies, programs, and legislation to determine how to bring the Draft 10 Principles and UNDRIP into action in British Columbia.

Water Sustainability Act Implementation Continues

Work to implement the 2016 *Water Sustainability Act* (WSA) continues. Implementation has focused on updating operational policies to align with the new legislation, developing regulations related to enabling provisions under the WSA and bringing groundwater users into the water licensing system.

Further to the implementation of the priority regulations accompanying the WSA (Water Sustainability, Groundwater Protection, Dam Safety, Water Sustainability Fees, Rentals and Charges Tariff, Water District), current policy work is focused on the developing a Mineral Exploration and Placer Mining Regulation, a Livestock Watering Regulation, researching concepts for a Measuring and Reporting Regulation, establishing Water Objectives, and developing policy regarding Water Sustainability Plans and Governance.

For more information about the WSA and regulations, visit Water Sustainability Act or Water Licensing and Rights.

Nicola Watershed Governance Project

British Columbia also continues work to pilot some of the new provisions of the *Water Sustainability Act*. The Nicola Watershed Governance Project Memorandum of Understanding (MOU) between the Province and five Nicola First Nations was officially signed on March 23,

2018. The MOU strongly aligns with the Province's commitments to reconciliation and UNDRIP.

The Nicola Project is an innovative project promoting co-leadership of water resources by the Province and the Nicola First Nations with a goal of sustainable management and improved health of the Nicola watershed. The project is an opportunity to test and implement some of the new *Water Sustainability Act* tools and address environmental, economic and social risks and resiliency, build relationships, capacity and knowledge, and manage the watershed in a collaborative manner.

Since the signing of the MOU, the work of the Nicola Forum has included relationship building between Forum members, establishing consensus on governance processes, and jointly mapping out work planning and engagement of communities and stakeholders.

As of September 2018, the Nicola Forum has been reaching out to Indigenous communities and governments, key stakeholders and organizations in the Nicola Watershed, initiating work to build the collective understanding of water management issues in the watershed, and start a project to explore integration of western science and Indigenous knowledge and laws.

Managing Dugouts and Water Storage Structures in Northeast B.C.

Work initiated in 2017 continues by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development and Ministry of Environment and Climate Change Strategy to respond to concerns about potential unauthorized water use and constructed water storage structures in Northeast B.C. This work involves analysis of satellite imagery to identify constructed water storage structures, field work to identify and manage high risk facilities, and consideration of policy options to improve the regulatory oversight of water storage structures in Northeast B.C.

Dugouts and artificial ponds are a common water containment and supply method on agricultural lands across Canada. In northeast B.C., dugouts have been used for decades, primarily as a water source for livestock, and in recent years, for oil and gas activities.

Major Wildlife Management and Habitat Conservation Projects

The Government of British Columbia is undertaking work on four key initiatives related to wildlife management and habitat conservation in the Province. These initiatives are:

1. Wildlife management and habitat conservation improvements;
2. Species at risk legislation
3. Provincial caribou recovery; and
4. Professional reliance review.

As part of its process to develop these initiatives, and consistent with its commitment to implement UNDRIP, the Truth and Reconciliation Commission's 94 Calls to Action, and the Draft 10 Principles, over the summer of 2018 the Province met extensively with Indigenous communities and organizations across BC to discuss the initiatives. Twenty-three sessions were

held from June to August 2018, and approximately 122 Indigenous communities and organizations participated.

Wildlife Management and Habitat Conservation Improvements: The Province is reviewing current practices, regulations, and legislation related to wildlife in order to enhance protection and improve sustainability of wildlife populations and their habitat. This may mean making changes to the *Wildlife Act*, improving sources and management of data, increasing coordination within government, and/or updating land use plans.

Species at Risk Legislation: BC has more species at risk than any other province in Canada (231 under the federal *Species at Risk Act*, more than 800 endangered or threatened). Species at Risk are currently protected through a patchwork of inconsistent rules and regulations – federal legislation protects species at risk on federal land, and provincial legislation (e.g. the *Wildlife Act*, *Forest and Range Practices Act*, *Land Act*) provides protection relative to certain resource activities. A comprehensive provincial Species at Risk Act will harmonize existing legislation and provide more certainty for how and when species at risk will be protected.

Caribou Recovery Program: Caribou are in decline in BC – over the last century, population of the province's 54 herds has dwindled from 40,000 to less than 19,000, and the caribou population continues to face challenges (climate change, increased access, habitat changes). The federal government has initiated conservation efforts under its *Species at Risk Act* to address the issue, and the Caribou Recovery Program will develop long-term, comprehensive, science-based solutions to the recovery of caribou.

Professional Reliance Review: On October 3, 2017, the BC Government announced a review of the Province's professional reliance model to ensure the highest professional, technical and ethical standards are being applied to resource management in BC. The Province relies on qualified professionals (biologists, engineers, foresters, etc.) to implement objectives related to natural resource management. The professional reliance review will ensure that this approach is working and creating the highest professional, technical, and ethical standards possible.

On Oct 22, 2018 *Bill 49 - Professional Governance Act* (PGA) was introduced into the BC legislature and if passed will change how professionals operating in the natural resource sector are governed by increasing government oversight and ensuring professional regulatory bodies implement best practices for professional governance.

The Act will also establish an Office of the Superintendent of Professional Governance (Office) in the Ministry of Attorney General to administer the PGA. The Office will be responsible for oversight of the five regulated professions; as the act is implemented, their statutes will be repealed and replaced as regulations under the PGA.

Environmental Assessment Revitalization

Over 2018, the Environmental Assessment Office (EAO) has been revitalizing the Environmental Assessment (EA) process to ensure the legal rights of First Nations are respected, and that the public's expectation of a strong, transparent environmental assessment process is met. Proposed changes focus on:

- Enhancing public confidence by ensuring impacted First Nations, local communities and government and the broader public can meaningfully participate in all stages of environmental assessment through a robust, transparent, timely, and predictable process;
- Advancing reconciliation with First Nations; and
- Protecting the environment while offering clear pathways to sustainable project approvals.

A discussion paper outlining proposed changes to the provincial EA process was released in June 2018, and a "What we Heard" report is now available, summarizing feedback gathered during engagement. Legislation was tabled for first reading in November 2018.

Before developing the discussion paper, the EAO, in collaboration with the First Nations Leadership Council, undertook an engagement phase with Indigenous groups and stakeholders. In addition to receiving recommendations from a multi-interest advisory committee, the EAO had direct engagement with 67 Indigenous groups; seven industry associations and held two workshops with 44 EA practitioners and 33 environmental NGO representatives.

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3 Science, Monitoring and Information

Groundwater Science Program:

BC's Groundwater Science Program exists to continuously improve the level of scientific knowledge on provincial groundwater, aquifers and the interactions between surface water and groundwater in order to support the sustainable management of groundwater. Science and research is often conducted collaboratively with leading experts, stakeholders, and, increasingly in partnership with local communities and Indigenous groups. These activities support the implementation of the *Water Sustainability Act* and Groundwater Protection Regulation.

The following key projects were completed in 2017/18:

- Aquifer classification and mapping in North Okanagan, Lower Mainland, Southern Vancouver Island, Nicola Valley
- Water budgets (Salt Spring Island water budget)
- Groundwater-Surface water interactions (Study of pumping effects near hydraulically connected stream in Langley)
- Numerical modeling (Vanderhoof watershed modeling)
- Water resources assessment (Liard-Petitot sub-basin assessment)
- Data access and interpretation (aquifer stress mapping tool, aquifer factsheets)
- Ongoing expansion of provincial groundwater observation wells monitoring network

Looking forward, the workplan to support WSA implementation for 2018/19 includes:

- Provincial aquifer mapping in several locations across the Province
- Phase 2 of a surface water/groundwater interaction study in the Fraser Valley (in collaboration with Simon Fraser University)
- A stream depletion and lag time study (in collaboration with the University of Victoria)
- Mapping and mitigation of artesian risk (in collaboration with Simon Fraser University)
- Numerical modeling in the Nicola Valley Watershed
- Water budget refinement in the Mill Bay area (in collaboration with Simon Fraser University)
- Development of an Aquifer Dashboard
- Ongoing expansion of provincial groundwater observation wells monitoring network
- Salt Dosing Guidance for discharge measurements in turbulent watercourses and related update to Salt Dilution Gauging in Provincial 2019 Hydrometric Standards RISC manual

The Northeast Regional Strategic Environmental Assessment

The Northeast Regional Strategic Environmental Assessment is a collaborative approach between seven Treaty 8 First Nations and the Province to assess the cumulative effects of natural resource development activities on Treaty 8 Rights and to develop joint management recommendations.

The RSEA Water Working Group is focused on completing an assessment of the current condition of watersheds (surface and groundwater) within the study area (approximately, Northeast BC) as a means to assess aquatic ecosystem health, as well as opportunities to understand the state and trends of traditional uses and the ability for meaningful practice of Treaty Rights.

Northeast Water Strategy

The Northeast Water Strategy has recently published a Surface Water Quality Data Summary for Northeast British Columbia. The Summary Report began with a 2016 project to inventory the available water quality data in the 69 NEWS watersheds and identify gaps to inform future monitoring opportunities in Northeast B.C.

The final report is available online at:
https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/northeast-water-strategy/news_ne_wq_summary_2018.pdf

Geoscience BC Water Monitoring and Data Collection in Northeast B.C.

Geoscience BC has recently reinvigorated its research agenda focusing on Northeast BC. Major projects are designed and managed by Geoscience BC technical consultants and staff, and include projects such as:

- Horn River Basin Aquifer Project - Aquifer study of the Horn River Basin. This project is a partnership project with the Horn River Basin Producers Group. Project started in 2009.
- Montney Water Project - Database compilation of surface water, ground water and deep saline aquifers in the Montney Shale Gas Play area. Project started in 2010.
- PEACE Project - Regional geophysics (airborne electromagnetics) and data compilation in the Peace District, Northeastern B.C. Information to contribute to the understanding of shallow groundwater aquifers in the project area. Conducted in partnership with NDIT, BC OGRIS, ConocoPhillips, Progress Energy. Project started in spring 2015.

More information of major projects of Geoscience BC can be found online:
http://www.geosciencebc.com/s/MajorProjects.asp

Canadian Aquatic Biomonitoring Network in B.C.

The Province has worked closely with Environment and Climate Change Canada (ECCC) over the past 15 – 20 years to promote the nationally standardized Canadian Aquatic Biomonitoring Network (CABIN) program across B.C., which uses benthic invertebrates as indicators of ecological condition. CABIN is based on the reference condition approach (RCA), which uses data from a wide range of reference sites to build predictive models. Reference sites represent habitats that are minimally impacted by human activities.

These data are used to create reference models that are used to evaluate the condition of test sites where there are concerns about the aquatic ecosystem. The differences between the invertebrate communities at the test and reference sites provides an estimate of the severity of impacts. There are over 1,000 reference sites in B.C., including over 400 sites established by the Province. These data support 6 CABIN models that cover watersheds across the entire province, apart from the Peace. The Province is currently working with ECCC to develop a model for this area.

In Northeast B.C., The Province and ECCC have completed a considerable amount of work on watersheds that drain to watersheds of interest to the MRBB. B.C. is currently working with a contractor to update the preliminary CABIN for the Fort Nelson/Petitot and Central Liard River Basins. This model contains data from 120 reference sites located in these transboundary rivers. For the Peace River Basin, ENV and ECCC completed intensive sampling in August to fill spatial gaps, while ensuring reference sites covered a wide range of habitat types. There are now approximately 110 reference sites within this basin, and work on a new predictive model for this transboundary watershed is expected to begin in 2019.

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4 Major Projects

Since the last agency report in November 2017, there are currently eight major projects in the Mackenzie River Basin listed by the BC Environmental Assessment Office as being in the scoping phase. A total of 48 projects are listed as being certified / complete. Two projects, the Echo Hill Coal Project and Wildmare Wind Energy Project have withdrawn from the environmental assessment process, and one, the Heritage Secure Landfill Project has been terminated. One project, the Sukunka Coal Mine Project, remains under review.

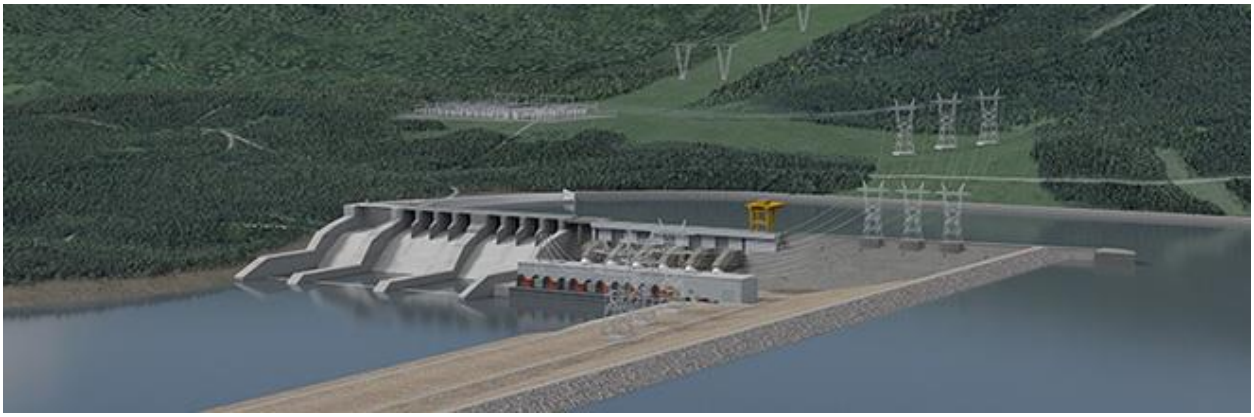
TITLE	CATEGORY and LOCATION	PHASE	COMMENTS
Red Willow Wind Project	Energy Approximately 40 km southeast ofthe District of Tumbler Ridge	Scoping	Red Willow Wind Limited Partnership is proposing to construct and operate a 200 megawatt wind energy facility in the Peace River region in BC. The Project is located southeast of the District of Tumbler Ridge and within the traditional territory of Treaty 8 First Nations.
Aley Mine Project	Mining 140 km N of Mackenzie, 118 km NE of Hudson's Hope	Scoping	10,000 tonne per day open-pit niobium mine situated approximately 20 km northeast of the head of the Ospika Arm of Williston Reservoir.
Pacific Northern Gas Looping Project	Energy Summit Lake to Kitimat	Scoping	The Pacific Northern Gas Looping Project would supply natural gas, via a 525 km long pipeline, from Summit Lake to proposed liquefied natural gas (LNG) export facilities in Kitimat, BC.It would have an initial capacity of 600 million standard cubic feet per day
Taylor Wind Project	Energy 10 km south of the District of Taylor	Scoping	Taylor Wind Project would be located on private land and have a nominal power production capacity of up to 400 MW.
Sundance Wind Project	Energy 20km north of Tumbler Ridge	Scoping	The Sundance Wind Project would have a nominal power production capacity of up to 250 MW.
Carbon Creek Coal Mine Project	Mining Approximately 40 km west of Hudson's Hope	Scoping	Cardero Coal Ltd. proposes to develop a new open-pit surface and underground metallurgical coal mine with an average annual production rate of 2.9 million metric tonnes of clean coal.
Gething Coal Project	Mining 25 km Northwest of Hudson Hope	Scoping	Proposed new underground coal mine with an onsite coal preparation plant. The production rate is 2 million tonnes per year with a mine life estimated at 40 years.
Hackney Hills Wind Project	Energy 100 km West of Fort St. John	Scoping	Aeolis Wind Power Corporation (the proponent) proposes to develop a wind farm east of Fort St. John. The wind park has an estimated generating capacity of 1000 MW.
Sukunka Coal Mine Project	Mining 55km south of Chetwynd 40km west of Tumbler Ridge	Under Review	Xstrata Coal Canada (Proponent) proposes to develop and operate an integrated surface and underground mining operation and coal handling and processing plant to produce hard coking coal for export to overseas steel manufacturers. The Sukunka Project will initially produce 1.5 to 2.5 million tons per year (Mt/y) of washed coal, increasing to approximately 6 Mt/y when underground mining

			begins. The mine life is expected to exceed 20 years.
Echo Hill Coal Project	Mining 44 km north of Tumbler Ridge	Withdrawn	The proposed Project will involve the development and operation of a thermal coal mine with a planned production of one million tonnes per year of coal over an estimated mine life of 10-14 years. The main components of the proposed Project include access roads, contour highwall-auger mining with progressive reclamation, coal crushing and screening on-site with raw coal stockpile, water management structures and on-site shop, warehouse, office and support facilities.
Wildmare Wind Energy Project	Energy Northwest of Chetwynd	Withdrawn	Finavera Renewables Inc. proposes to construct and operate 37 wind turbines with an installed capacity of 74 MW. The purpose is to provide clean energy for BC and has a life span of at least 25 years.
Heritage Secure Landfill	Waste Disposal Approximately five kilometres south of Tupper, BC.	Terminated	Secure Energy Services Inc. is proposing to develop the Heritage Secure Landfill Project approximately five kilometres south of Tupper, BC. The Project would provide long-term containment of upstream oil and gas and other industrial waste streams.

Important Links:

- BC Environmental Assessment Office: http://www.eao.gov.bc.ca/
- Frequently asked questions: http://www.eao.gov.bc.ca/FAQ.html
- EAO Fairness and Service Code: http://www.eao.gov.bc.ca/pdf/EAO_Service_Code_20090115.pdf
- Project Information Centre (e-Registry or ePIC) including links to projects: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_home.html
- List of projects: https://projects.eao.gov.bc.ca/
- Map of projects: http://maps.gov.bc.ca/ess/sv/epic/

BC Hydro Site "C" Clean Energy Project:



Source: http://www.bchydro.com/energy-in-bc/projects/site_c.html

Site C will be the third dam and hydroelectric generating station on the Peace River in northeast B.C. The project will provide 1,100 megawatts of capacity and about 5,100 gigawatt hours of energy each year to the Province's integrated electricity system.

In December 2014, after a three year long independent environmental assessment by the federal and provincial governments, the Project received approval from the provincial government to proceed. Construction on the Project began in July 2015. The project is on track for overall in-service date of 2024. The project budge (10.7 billion including Treasury Board Reserve) was approved by the BC Hydro Board of Directors in February 2018.

Each quarter and annually, BC Hydro voluntarily files reports with the BC Utilities Commission on the Site C Project, which includes information on construction progress, project milestones, project costs and financing and material project risks. For more information, please see https://www.sitecproject.com/news-and-information/progress-reports-to-the-bcuc.

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5. Events, Conferences and Seminars

Canadian Water Resources Association National Conference 2018

May 28 to June 1, 2018 saw water specialists, researchers, consultants and others from public, private, and academic sectors meet in Victoria, B.C. for the Canadian Water Resources Association's National Conference. The conference brings together organization and individuals that are committed to raising awareness about the value of water and to promoting responsible and effective water resource management in Canada.

This year's theme "Our Common Water Future: Building Resilience Through Innovation" brought water resource professionals and other together to be part of conversations about the safe, sustainable and resilient water future.

Presenters from the BC Ministry of Environment and Climate Change spoke on various themes, including planning, policy and governance, transboundary water management, watershed management, First Nations and water, climate chance impacts and adaptation, flood and drought hazards and management, hydrology, hydraulics and hydrotechnical engineering, science, technology and infrastructure, ecosystems, agriculture, and international case studies.

6. Other

BC maintains several transboundary water agreements with US states. Two that may be of interest to the MRBB are shared below.

BC Alaska Transboundary Water Agreement

In 2015, then Premier Christy Clark and Alaska Governor Bill Walker signed the *Memorandum of Understanding and Cooperation between the State of Alaska and the Province of British Columbia* (MOU). The first part of the MOU is being implemented through a Statement of Cooperation on the Protection of Transboundary Waters (SOC).

The SOC was signed by BC and Alaska on October 6th, 2016 to formalize, build upon and improve the cooperative relationship that currently exists between the two jurisdictions. Key elements of the SOC are:

1) establishing a bilateral Technical Working Group on (water) Monitoring;
2) formalizing cross-jurisdictional participation in environmental assessments and permitting; and,
3) reporting on mine permitting, discharges, operations and closures.

The SOC is overseen by a Bilateral Working Group of commissioners from the Alaska Departments of Environmental Conservation, Fish and Game and Natural Resources, and deputy ministers from the British Columbia Ministries of Energy, Mines, and Petroleum Resources, and Environment and Climate Change Strategy (ENV). ENV is BC's lead agency to deliver the two-year water quality monitoring program, in collaboration with Alaska Department of Environmental Conservation.

The Bilateral Working Group meets annually at a minimum and last met in August 2018. The next meeting of the Bilateral Working Group is expected to take place in early 2019. Chairs from each jurisdiction are planning the first meeting and finalizing the membership list.

Columbia River Treaty Negotiations

In May, 2018, negotiations began between the governments of Canada (including British Columbia) and the United States, regarding the future of the Columbia River Treaty.

The Columbia River Treaty (ratified in 1964) came together after the flood in 1948 that devastated Vanport, the second largest city in Oregon, along with growing U.S. power demand after World War II and a desire for industrialization in B.C.

Several key treaty provisions were developed to address power production and water storage. Canada was to construct three dams to significantly increase water storage capacity. In British

Columbia, the Duncan Dam was built in 1967, the Hugh Keenleyside Dam was built in 1968, and the Mica Dam was built in 1973 to fulfill this provision, and on the U.S. side of the border, the Libby Dam was built in Montana, which extended 42 kilometers into B.C.

The Treaty continues indefinitely but many provisions could have been terminated as soon as 2024, with 10 years notice. In March, 2014 the Province decided to continue the Treaty and to seek improvements within the existing framework. A treaty review process was initiated, and feedback from engagement and consultation informs 14 principles to guide the Province in discussions of potential Treaty changes, followed by more recent engagement undertaken in early 2018.

Treaty negotiations are actively underway. Four sessions were scheduled in May, August, October and December 2018. Numerous Treaty issues are being discussed, including flood risk management, power operations, adaptive management approaches to enhance ecosystems, and others.