



NWT Cumulative Impact Monitoring Program

2024-2025 ANNUAL REPORT

Programme de surveillance des effets cumulatifs des TNO

RAPPORT ANNUEL 2024-2025



Government of | Gouvernement des

Northwest Territories
Territoires du Nord-Ouest

Le présent document contient la traduction française du sommaire.

To watch and understand the land so that it can be used respectfully forever.

NWT CIMP vision

(developed by NWT CIMP Steering Committee)

Cumulative impacts are the combined effects that human activities and natural processes have on our environment.

Cumulative impact monitoring is a legislative requirement in the NWT. It is a key feature of the Gwich'in, Sahtú and Tłıchǵ land claim agreements, as well as Part 6 of the *Mackenzie Valley Resource Management Act* (MVRMA). Monitoring cumulative impacts is important because, over time, the results of many individual resource management decisions can lead to changes to environmental conditions.

*Cover Photo: Installation of a permafrost ground temperature station in the Ts'udé Niliné Tuyeta Protected Area west of Fort Good Hope with the K'ahsho Got'ine Guardians (CIMP233).
(Credit: D. Froese)*

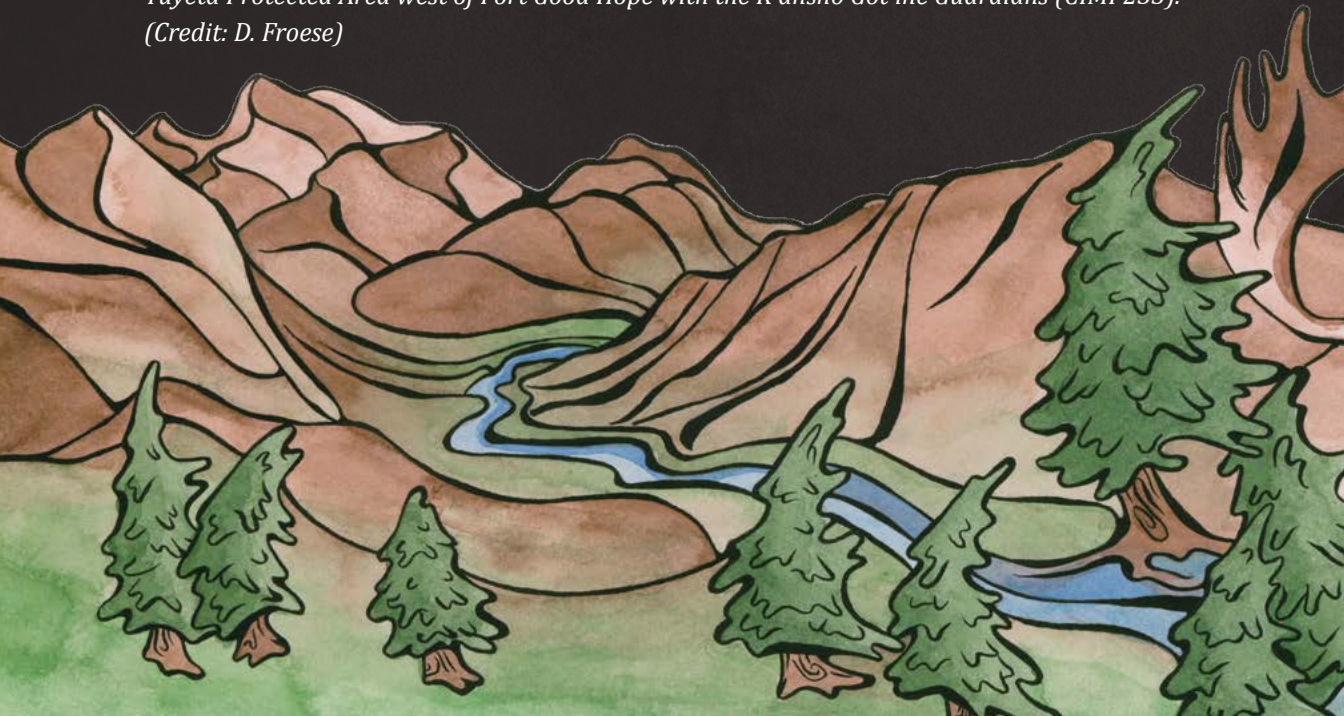


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SUMMARY

The Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) promotes and supports cumulative impact monitoring and research with an emphasis on community capacity-building in the NWT.

While many organizations monitor the NWT environment, NWT CIMP is mandated to understand cumulative impacts and environmental trends. We achieve this by conducting, coordinating, and funding environmental monitoring and research projects. Funding is available through an annual call for project proposals.

NWT CIMP is focused on cumulative impacts related to three valued components that key decision-makers agree are of critical importance to the people of the NWT: **caribou, water, and fish.**

The goal of the program is to support resource management decision-making and sustainable development by improving our understanding of cumulative impacts. NWT CIMP considers all sources of knowledge, including Traditional Knowledge¹ and scientific information.

Monitoring results and information are available on the NWT Discovery Portal.



¹ NWT CIMP defines Traditional Knowledge as: facts, information, skills, values, and beliefs which have been acquired through experience, observations or by oral means from the land or from spiritual teachings and handed down through generations. Where possible, knowledge will be referred to using the preferred terminology of the knowledge holder or community.' Our Steering Committee prefers to use this term instead of Indigenous Knowledge.

SOMMAIRE

Le Programme de surveillance des effets cumulatifs des Territoires du Nord-Ouest (PSECTNO) promeut et appuie la surveillance et la recherche sur les effets cumulatifs, en mettant l'accent sur le renforcement des capacités des collectivités ténaises.

Plusieurs organismes surveillent l'environnement ténais, mais le PSECTNO se distingue par le mandat qui l'oriente : comprendre les effets cumulatifs et les tendances environnementales.

Pour y parvenir, l'équipe effectue, coordonne et finance les projets de surveillance et de recherche dans le domaine de l'environnement. Le financement est accessible à partir d'un appel de propositions de projets annuel.

Le PSECTNO porte sur les effets cumulatifs liés à trois composantes valorisées (CV) qui, de l'avis des décideurs, sont d'une importance cruciale pour les Ténais : **le caribou, l'eau et le poisson.**

Le Programme vise à faciliter la prise de décisions relatives à la gestion des ressources et au développement durable grâce à une meilleure compréhension des effets cumulatifs. Les responsables du PSECTNO considèrent toutes les sources de connaissances, y compris les connaissances traditionnelles¹ et les données scientifiques.

Nous publions les résultats et les renseignements sur le Portail Découverte des TNO.

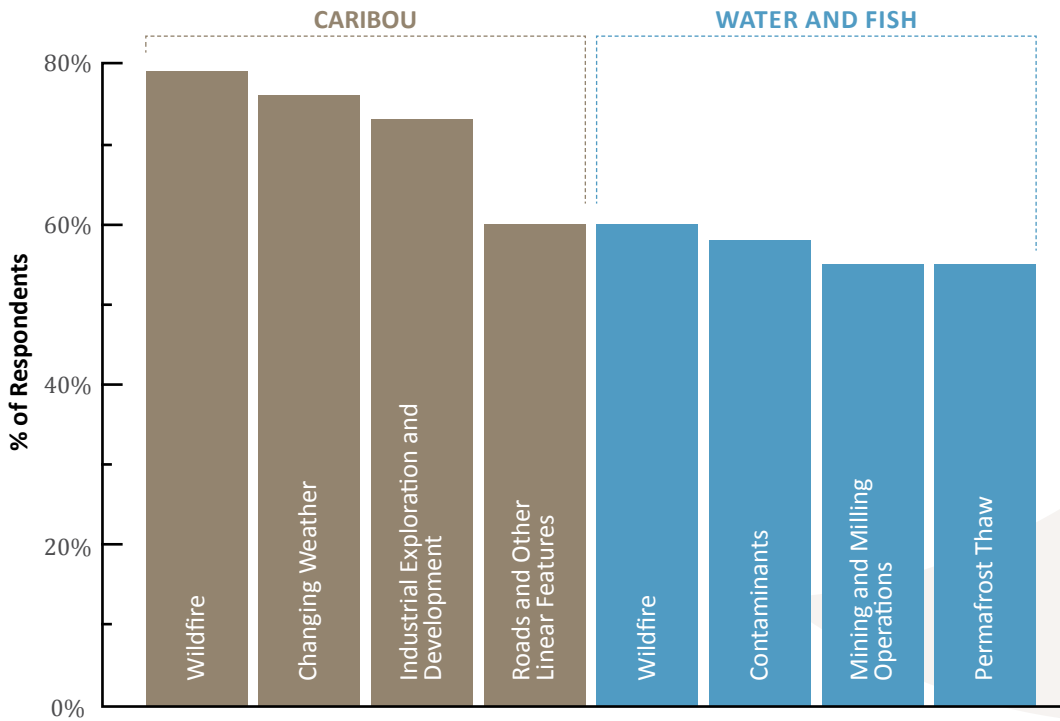


¹ Le PSECTNO définit les connaissances traditionnelles de la façon suivante : les faits, les informations, les compétences, les valeurs et les croyances qui ont été acquis par l'expérience, les observations ou par voie orale à partir de la nature ou des enseignements spirituels et qui ont été transmis de génération en génération. Dans la mesure du possible, les connaissances seront désignées en utilisant la terminologie privilégiée du détenteur des connaissances ou de la collectivité. Notre comité directeur préfère utiliser ce terme plutôt que celui de connaissances autochtones.

1. WORKING WITH PARTNERS TO UNDERSTAND KEY MONITORING AND RESEARCH PRIORITIES

MONITORING PRIORITIES

Our monitoring and research priorities (**Blueprints**) for caribou, water and fish and guidance on **Traditional Knowledge Monitoring Ideas** align with the 2021-2025 NWT CIMP Action Plan. These help to ensure that northern regulatory decision-makers' needs are met.



The top four (4) most important environmental stressors for decision-making processes affecting caribou, water, and fish based on a survey of NWT CIMP partners are displayed above.

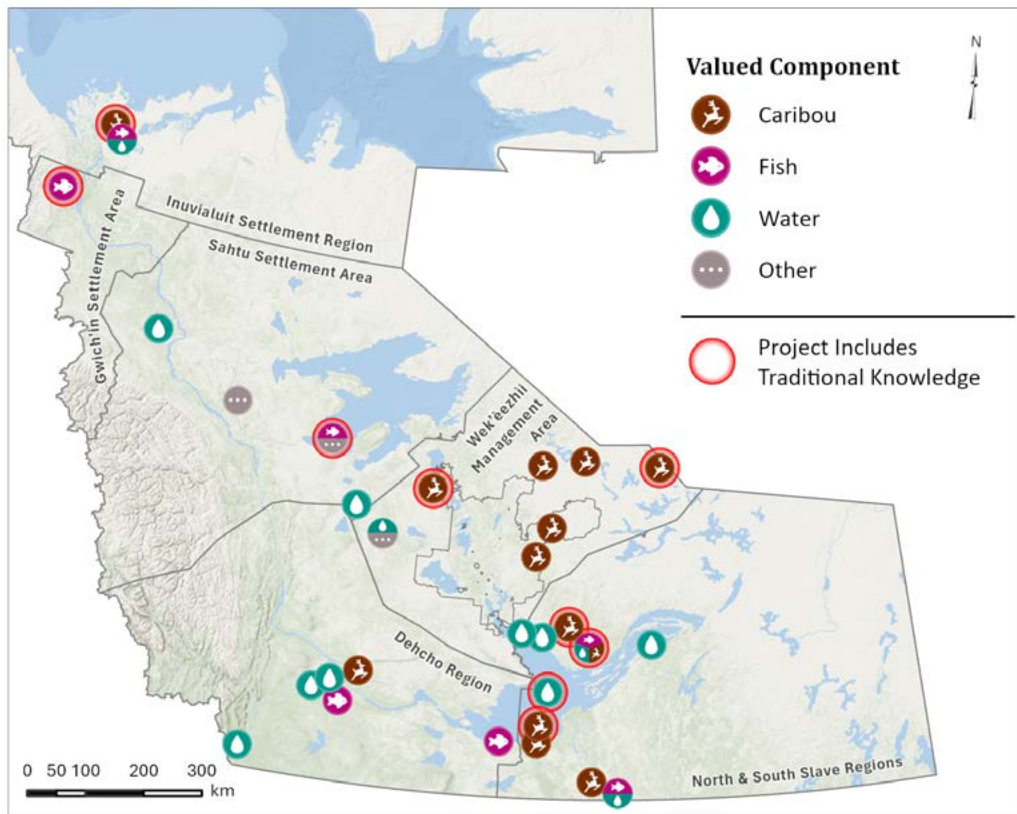
NWT CIMP STEERING COMMITTEE

NWT CIMP continued to engage and support its Steering Committee, which is made up of representatives from Indigenous, territorial and federal governments, and co-management boards. The Steering Committee met four times in 2024-25 to provide guidance on the overall program and review project funding proposals.



NWT CIMP Steering Committee, January 2025 L-R: Simon Toogood (MVEIRB), Orna Phelan (NSMA), Sally Wong (DFO), Dakota Erutse (SSI), Lorne Napier (NWTMN), Mike Low (DFN), Tyanna Steinwand (TG), Lorraine Brekke (GNWT).

MAP OF 2024/25 NWT CIMP PROJECTS

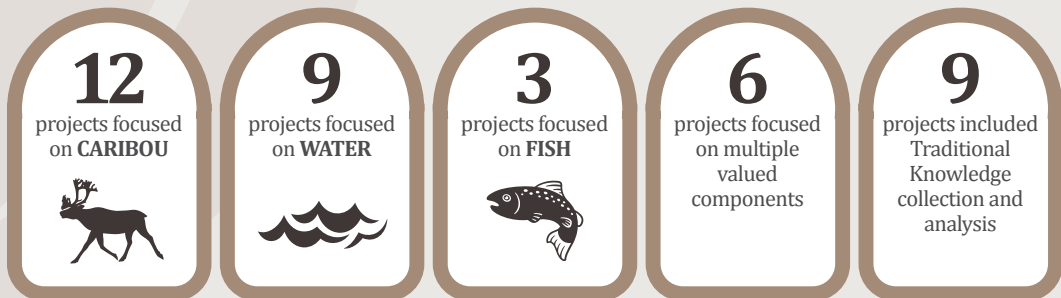


2. CONDUCTING, COORDINATING AND FUNDING MONITORING, RESEARCH AND ANALYSIS

NWT CIMP conducts, coordinates and funds the collection, analysis and reporting of information related to environmental conditions. In addition to completing our funding process:

- We completed a survey and results workshop to receive feedback and input to improve our next five-year Action Plan.
- We published a Cumulative Impact Monitoring Framework to help better predict cumulative impacts and support resource management decision making. The Framework is available under “About Us/Strategic Direction” on our website.

30 Projects were supported across the NWT



\$2.3M in funding distributed by NWT CIMP, leveraged \$3.7M in partner funding.

See Section 5 for some highlighted projects that finished in 2024-25.

SUPPORTING INDIGENOUS COMMUNITIES

Twenty-one (21) funded projects were developed directly in response to community concerns, with five of these projects being completed this year. Below are some of the projects, on-going and completed, that helped address community concerns (CIMP226, CIMP229 and CIMP234 are highlighted in Section 5).

CIMP #	Main Topic	Community Concern
CIMP154	Water, Fish	How changes on the land could affect mercury in fish in the Dehcho
CIMP226	Water	Changing water levels and stream flow in the Taiga Plains
CIMP229	Fish	Potential cumulative impacts from sport fishing lodge activities on Great Bear Lake
CIMP232	Water, Fish	Water quality in the Slave River at Fort Smith
CIMP234	Caribou	Successful return of wildlife habitat in Pine Point mine area
CIMP238	Water	Ice thickness monitoring related to public safety and ice road infrastructure
CIMP240-BG	Caribou	Impacts of contaminants on caribou genetics near communities of Wekweètì, Délı̨nę and Kugluktuk
CIMP243-BG	Caribou	Impacts from the ice road on caribou in North Slave Métis Alliance’s traditional territory
CIMP247	Caribou	Assessing use of national model to define Critical Habitat for boreal caribou in the NWT
CIMP251	Water	Impacts of cyanobacteria (blue-green algae) blooms in Sambaa K’e (Trout Lake)

“BG” at the end of the CIMP number indicates a *Collaborative Barren-ground Caribou Initiative* project jointly funded with Polar Knowledge Canada.



3. COMMUNICATING RESULTS

NWT CIMP provides environmental monitoring information, including NWT CIMP-funded project results, to key decision-makers and the public in easily accessible formats. All project leads must engage with local communities or Indigenous governments and Indigenous organizations prior to and during their project, and to report the results directly to them.

We published 11 NWT Environmental Research Bulletins (NERBs) that highlight research findings and key information. You can let us know if you want to be added to our distribution list by emailing us at nwtcimp@gov.nt.ca or find them on our website.

SUPPORTING DECISIONS ABOUT THE ENVIRONMENT

Several examples of projects, on-going and completed this year, that contribute to northern environmental decision-making are highlighted below.

CIMP #	Main Topic	Informing Environmental Decisions
CIMP207-BG	Caribou	Exploring possible future impacts of development within the annual Bathurst caribou range.
CIMP235	Fish	Building community-valued reference points and objectives to inform fisheries and harvest levels in future years.
CIMP242-BG	Caribou	Impacts of insect harassment and sound disturbances on caribou to inform environmental assessment processes in the Slave Geological Province.
CIMP243-BG	Caribou	Insights to patterns and drivers of adult mortality to help understand population declines of barren-ground caribou.
CIMP249	Water	Impacts of wildfire and permafrost thaw on water quality and land management decisions.
CIMP250	Water	Management of impacts from wildfires in the Yellowknife area to minimize arsenic contaminated surface water and soils.

“BG” at the end of the CIMP number indicates a *Collaborative Barren-ground Caribou Initiative* project jointly funded with Polar Knowledge Canada.



Participants at the NWT Environmental Monitoring Results Workshop in Yellowknife, January 2025. A workshop summary report, including links to presentations, is available under the Resources tab on our website.

RESULTS WORKSHOP

NWT CIMP hosts an annual, regional workshop to share project results and ideas. These workshops bring together community members, regulators, government and researchers to discuss results, provide feedback, and to develop partnerships.

ONLINE INFORMATION SOURCES

Information and knowledge generated by NWT CIMP is publicly available on our website and on the NWT Discovery Portal. The NWT Discovery Portal has a wide range of information to meet the needs of various audiences. It includes scientific journal articles, plain language presentations, raw data and maps related to environmental monitoring and research in the NWT. We encourage other NWT monitoring and research information that is available outside of NWT CIMP to be posted to the Portal. Please contact us if you are interested in posting your information.

4. FACILITATING THE NWT ENVIRONMENTAL AUDIT

Required by the *Mackenzie Valley Resource Management Act* every 5 years, the NWT Environmental Audit (the Audit) is an independent review of the effectiveness of the regulatory regime and monitoring of cumulative impacts. It checks how well our regulatory system is working to protect the environment and makes recommendations to improve it. The last Audit was released in the fall of 2020.

The next Audit will be released in late 2025.

For more information about the Audit, please visit www.gov.nt.ca/ecc/en/services/nwt-environmental-audit.

5. HIGHLIGHTED PROJECT SUMMARIES

Eight (8) projects were completed in 2024-25; the results of four of these projects are highlighted below. Detailed project results can be found by searching for the NWT CIMP project number (e.g. CIMP234) on the NWT Discovery Portal.



Whati community members and research team prepare for site visit (CIMP226). (Credit: M. Zoe)



Explaining the lichen collection techniques. L-R: Bridgette McKay (DKFN), Roxanne Edjericon (DKFN), Raymond Sayine (DKFN), Preston Lafferty (DKFN), Marc d'Entremont (LGL), Keegan Meyers (LGL), Ried Lukaitus (LGL), Krysia Tuttle (LGL). (Credit: B. McKinnon)

Boreal caribou habitat enhancement – lichen habitat restoration on disturbed sites (CIMP234)

Marc d'Entremont, LGL Limited for Deninu K'ųé First Nation (mdentremont@lgl.com)

The Boreal Caribou Habitat Enhancement Project aimed to understand how to restore lichen habitat on South Slave sites disturbed by the Pine Point mine in the winter range of boreal caribou. The project also developed progressive reclamation methods to support future land uses on disturbed lands in a way that aligns with DKFN stewardship goals.

In 2024, terrestrial lichen species were successfully transplanted at 18 sites. In total, 648 litres of lichen were transplanted. All quadrats were wetted down and photographed.

- For each 1 m by 1 m quadrat, except for the sites with no transplants, lichen coverage represented only 10% of the total quadrat area.
- *C. mitis* (5.1%) and *C. stellaris* (4.2%) were the two predominant species included on the transplant sites.

DKFN will continue to measure the speed of habitat recovery by monitoring the persistence and growth of transplanted lichen over a 10-year period. Monitoring is planned in years 1, 3, 6, and 10 post-treatment. If successful, lichen transplant methods could be used by DKFN to remediate previous cumulative impacts, specifically those from mining, in their traditional territory.

View a project video under "Projects and Results" at our website.

Recovery of the mine-impacted landscape in the Yellowknife region (CIMP227)

Heather Jamieson, Queen's University (jamieson@queensu.ca)

This project studied what natural processes help the land recover from pollution caused by legacy stack emissions from the Giant Mine roaster near Yellowknife. It also looks at how this recovery will be affected by climate change and unusual or severe weather events.

Soil and water samples were collected from three areas near the Ingraham Trail, located 1km to 4km away from the former ore roaster. These samples were analyzed for total arsenic and the mineral form of arsenic.

The project found that:

- Arsenic is still far above guidelines in both soil and water in publicly accessible areas and is not recovering.
- Arsenic is mobile. It is easily released from soil which can lead to runoff in local lakes. Weather conditions like sudden rainfall or snowmelt affect this.
- The landscape has not recovered from airborne pollution from ore roasting in the 1940s and 1950s. Recovery will take hundreds, possibly thousands of years.

Other results are still being analyzed but are expected to help us understand how climate change is going to affect the way arsenic moves within soil and from soil to lakes. This will provide information to residents of Yellowknife, N'dilo and Dettah about the health of their environment and how this may change over time.



Stanley Mackenzie of the Yellowknives Dene First Nation, is sampling snow chemistry near Pocket Lake. (Credit: M. Palmer)

Social-ecological change in the Sahtú (Great Bear Lake) watershed: Cumulative impacts on Dene ts'ìlì (knowledge and cultural identity) and relationships to fish (CIMP229)

Walter Bezha, Délìnę Got'ine Government (Drrc.manager@gov.deline.ca)

This project documented cumulative impacts from social-ecological changes in the Sahtú (Great Bear Lake) watershed on Sahtúgot'ìnę (Dene of Great Bear Lake) relationships with fish and fishing over the past two centuries. The project also created ideas for community-led models that could help support the resurgence of Dene ts'ìlì (knowledge and cultural identity) and Sahtúgot'ìnę-fish relationships in the future, as well as a community-owned atlas to hold and display project findings and other relevant information.

The project found that:

- Since the early 19th century, Sahtúgot'ìnę relationships with fish and fishing have changed due to combined impacts from European trade, exploration and settlement; settler-owned mining developments and fishing businesses; industrialization and modernization; settler fisheries management; and climate change.
- Cumulative impacts are interconnected and intergenerational, affecting cultural identity and spirituality; health and wellbeing; food sovereignty; environmental governance; and local economy.

Project outcomes can inform community decisions to revitalize Sahtúgot'ìnę relationships with fish and protect the watershed from human and environmental pressures. It will also help ensure the teachings of Elders—including the Délìnę ɛɛɛa (harvesting principles)—are put in place to support the community's long-term aspiration of food sovereignty and address uncertainties around climate change.

View a project video under “Projects and Results” at our website.



Délìnę Elder George Kenny harvests Sahba (Lake Trout) from Sahtú (Great Bear Lake) (Credit: J. Strube).

NWT Streams and Rivers of the future: How permafrost thaw and groundwater activation are changing water resources (CIMP226)

William Quinton, Wilfrid Laurier University (wquinton@wlu.ca) and Stephanie Wright, Queen's University (stephanie.wright@queensu.ca)

Streamflow has increased across Taiga Plains catchments over the last 50 years, but these changes vary across ecoregions. This project collected surface water and groundwater data from the Scotty Creek Research Station located near the Trout River. It established a new groundwater and surface water monitoring program in the La Martre River catchment for comparison.

The project found that:

- Permafrost thaw in the Taiga Plains allows more groundwater to reach streams and rivers, which increases baseflow and dissolved minerals in streams/rivers over time.
- In Scotty Creek in the southern Dehcho, groundwater makes up to 80% of flow during dry periods and has increased by 10-25% since 2001 due to permafrost thaw.
- In the La Martre River catchment in Wek'eezi, streamflow has significantly increased since the 1980s due to the cumulative effects of increasing precipitation, permafrost thaw, and wildfire, but primarily due to rainfall. However, recent drought might reverse this trend.
- Permafrost thaw, wildfires, and rainfall together drive greater changes in streamflow, rather than one factor alone.

The project team is currently building a hydrologic model of the La Martre River catchment using field data to understand which factors are most important to driving this change.

The model aims to make projections of streamflow into the future to support responsible use of surface water and groundwater, and for habitat management and protection.

View a project video under "Projects and Results" on our website.



Whati community members and research team discussing local groundwater use and concerns at a groundwater workshop in Whati. (Credit: M. Zoe)

6. LIST OF 2024/25 NWT CIMP FUNDED PROJECTS

CIMP #	Project Type	VC	Project Title
CIMP94-BG	TK	Caribou	Tłıchq Ekwò Nàxoèhdee K'e: "Boots on the Ground" Bathurst Caribou monitoring program
CIMP132	Science	Water and Fish	Integrated Eco-monitoring and assessment of cumulative impacts of Great Slave Lake fisheries
CIMP154	Science	Water and Fish	Understanding fish mercury concentrations in Dehcho lakes
CIMP207-BG	Science	Caribou	Cumulative Effects Assessment of Four Barren-ground Caribou Herds in the NWT
CIMP215	Science	Water	Aquatic ecosystems in the Fort Good Hope area as indicators of environmental change
CIMP226	Science	Water	NWT Streams and Rivers of the future: How permafrost thaw and groundwater activation are changing water resources
CIMP227	Science	Water	Recovery of the mine-impacted landscape in the Yellowknife region
CIMP229	TK	Fish	Social-ecological change in the Sahtú (Great Bear Lake) watershed: Cumulative impacts on Dene ts'ı́ı (knowledge and cultural identity) and relationships to fish
CIMP230	Science and TK	Water	Monitoring good water for First Nation water governance in Akaitcho
CIMP231	Science	Water	Understanding the cumulative impacts of beaver activity on stream health in the Inuvialuit Settlement Region
CIMP232	Science	Water and Fish	Fort Smith Métis Council Ecotoxicology and Monitoring of Cumulative Effects on the Slave River
CIMP233	Science	Other	Mapping and Monitoring Permafrost with Sahtú Communities
CIMP234	Science	Caribou	Boreal caribou habitat enhancement – lichen habitat restoration on disturbed sites
CIMP235	TK	Fish	Documenting Gwich'in and Inuvialuit Dolly Varden management history and contemporary fisheries objectives
CIMP236	Science	Water	Cumulative effects assessment in the Liard and Petitot River Basins

"BG" at the end of the CIMP number indicates a *Collaborative Barren-ground Caribou Initiative* project jointly funded with Polar Knowledge Canada.

CIMP #	Project Type	VC	Project Title
CIMP237	Science	Water	Assessing the impact of aerator installation on the chemical and biological recovery of Frame Lake
CIMP238	Science	Water	Lake ice processes – fundamental for assessing ice road climate risks and vulnerability under current and future warming
CIMP239-BG	TK and Science	Caribou	Community-defined and monitored indicators of recovery in barren-ground caribou
CIMP240-BG	Science	Caribou	Contaminants, caribou epigenetics and genomic health
CIMP241-BG	Science	Caribou	Comparative analysis of factors affecting caribou survival patterns
CIMP242-BG	Science	Caribou	Using animal-borne sensors and acoustic recording units to monitor caribou behaviour, insect harassment and sound disturbance
CIMP243-BG	TK	Caribou	North Slave Métis Alliance Winter Road Monitoring Program
CIMP244	TK	Caribou	Documenting Traditional Knowledge on Boreal Caribou in the Inuvialuit Settlement Region
CIMP245	TK	Caribou	Using Traditional Knowledge and camera-trapping to understand the relationship between boreal caribou and Deninu K'ue First Nation in response to a changing environment
CIMP246	Science	Caribou	Participatory monitoring of wildlife community responses to landscape change in the South Slave
CIMP247	Science	Caribou	Environmental and human factors that best predict boreal caribou survival and population trends in the NWT
CIMP248	TK	Other	North Slave Métis: Understanding the Past and Planning for the Future
CIMP249	Science	Water	Impacts of wildfire on runoff response and downstream water chemistry in a region with rapid permafrost loss.
CIMP250	Science	Water	Wildfires and contaminated landscapes: The impact of wildfire on the mobility, transport and fate of metal(loids) in a subarctic shield landscape
CIMP251	Science	Water	Science and management of blue-green algal (cyanobacteria) blooms in Sambaa K'e

“BG” at the end of the CIMP number indicates a *Collaborative Barren-ground Caribou Initiative* project jointly funded with Polar Knowledge Canada.

