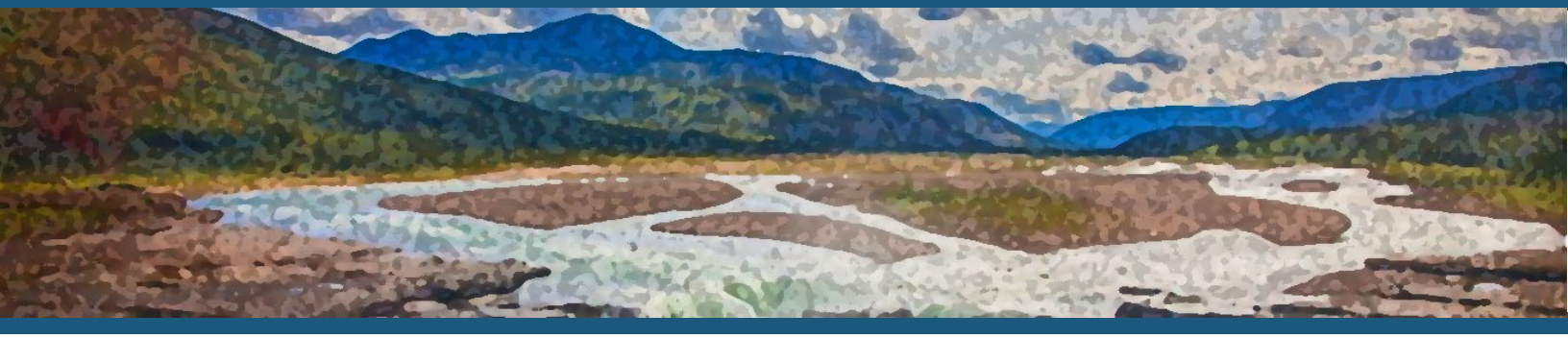
2020 Northwest Territories Environmental Audit

Technical Report

Rapport technique

de la Vérification environnementale des Territoires du Nord-Ouest 2020

Le présent document contient la traduction française du résumé.



2020 Northwest Territories **Environmental Audit**

TECHNICAL REPORT

DATE OF SUBMISSION:

March 10, 2020

SUBMITTED TO:

NWT Environmental Audit Secretariat
Environmental Stewardship and Climate Change Division
Environment and Natural Resources
Government of the Northwest Territories

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Executive Summary

The *Mackenzie Valley Resource Management Act* (MVRMA) sets out the legal requirement and framework for environmental audits to be conducted in the Mackenzie Valley at least every five years. The Audit is also an obligation of the Sahtú, Gwich'in, and Tłı̨chǫ Land Claim Agreements. Previous Environmental Audits have been conducted in 2005, 2010, and 2015.

The objective of the 2020 NWT Environmental Audit was to conduct a territory-wide environmental audit that includes both the Mackenzie Valley and the Inuvialuit Settlement Region (ISR), and to make suggestions for improvement in the areas of:

a) the availability and use of environmental trend information to make decisions (the 2020 Audit focused on water quality and quantity);
b) the effectiveness of cumulative impact monitoring (CIM);
c) the effectiveness of the regulatory system (this aspect only considers the Mackenzie Valley, not the ISR); and,
d) the adequacy of responses of parties to the previous Audit.

As the last NWT Audit was conducted in 2015, the review period for this audit covers 2015 to 2019.

The independent Audit Team developed a set of Audit criteria and lines of inquiry on which to focus the research and evidence collection. The Team was guided by the Audit Steering Committee (ASC), made up of representatives from First Nations and Métis in the Northwest Territories (NWT), the Inuvialuit, and the territorial and federal governments. The Audit Team received guidance from the ASC in the development of the Audit Plan and on public outreach approaches and materials. The Team conducted an extensive document review, a public survey, surveys of and interviews with regulators and other NWT representatives (boards, Government of the Northwest Territories [GNWT], industry, Government of Canada [GoC], Indigenous governments and organizations [IGOs] and non-governmental organizations [NGOs]), as well as public open houses in seven communities.

The Audit findings demonstrate that there continues to be progress in many areas, with some ongoing challenges and gaps. Additional details are provided below.

Effectiveness of Regulatory Regimes

By and large, the regulatory system is functioning as designed. There were no new *significant* issues identified in the 2020 Audit and there is evidence of progress across most regulatory components we examined; however, some persistent and new issues were identified. More specifically:

- Some progress has been made on addressing regulatory gaps identified in the 2015 Audit, but gaps remain; there is progress on climate change policy development; devolution has transferred some responsibility, but greater clarity is needed;
- Monitoring of community well-being requires a more structured approach;
- The Economic Development Strategy needs to be regularly examined to ensure it is achieving its stated objectives. In addition, the GNWT should refresh the Mineral Development Strategy with the goal of demonstrating broad cohesion between co-management partners in the NWT;
- There is encouraging progress in the advancement of land use planning in regions without settled land claims, but the absence of land claims hampers the development of land use plans;

- There is evidence of some progress related to Comprehensive Land Claims Agreement (CLCA) negotiations, however the lack of agreements in southeastern NWT continue to impact natural resource planning management; and
- The compliance and enforcement regime is largely working, with some areas for improvement related to resourcing and coordination.

Environmental Trends in Water Quality and Quantity

There are very good examples of well-designed and implemented water monitoring programs that allow the detection of trends for some rivers. For these systems, trends suggest no major concerns. However, by and large, water trend monitoring programs, especially for lakes, would not allow the responsible authority (RA) to detect trends, explain their significance, and determine causation. Traditional knowledge (TK)-based information describing water quality and quantity was not available for this Audit; more work is required to recognize and utilize TK-based information. In addition, a consistent methodological framework is needed to ensure greater consistency and quality of trend analyses performed on available water monitoring data.

Role of the Responsible Authority

Section 146 of the MVRMA requires the RA to analyze information and monitor the cumulative impacts of land and water use on the environment. The Audit Team found that:

- The RA has not delegated this responsibility to any one department/division;
- Best efforts and intentions have been made by many individuals and programs;
- There is no structure or common language that unites parties toward reaching the goals of Section 146; and,
- The RA is not meeting Section 146 obligations.

Effectiveness of Cumulative Impact Monitoring in the NWT

The NWT Cumulative Impact Monitoring Program (NWT CIMP) and its partners have continued to make improvements to the program; however, additional enhancements are recommended. A significant concern is that the RA is not employing cumulative impact monitoring (CIM) effectively. As a result, where we do see environmental trends, we believe the RA does not have the information needed to determine cause or to verify that management actions are effective.

Responses to Previous Audits

The Audit Team found that there was an adequate response to eleven (11) of twenty four (24) recommendations made in the 2015 Audit Report, with four (4) outstanding recommendations, one (1) unclear and the rest only partially implemented.

Résumé

La *Loi sur la gestion des ressources de la vallée du Mackenzie* (LGRVM) instaure l'obligation légale de réaliser une vérification environnementale dans la vallée du Mackenzie au moins tous les cinq ans, et définit le cadre juridique à l'intérieur duquel cette vérification doit être menée. La vérification constitue également une obligation en application des ententes sur les revendications territoriales du Sahtú, des Gwich'in et des Tłı̨chǫ. Des vérifications environnementales ont déjà été réalisées en 2005, 2010 et 2015.

La vérification environnementale des TNO de 2020 s'appliquait à l'échelle territoriale dans la vallée du Mackenzie et la région désignée des Inuvialuits (RDI) et visait à proposer des améliorations sur les points suivants:

a) la disponibilité et l'utilisation des données sur les tendances environnementales pour le processus décisionnel (la vérification de 2020 portait sur la qualité et la quantité des eaux);
b) l'efficacité de la surveillance des effets cumulatifs (SEC);
c) l'efficacité du cadre réglementaire (cet aspect concernait la vallée du Mackenzie, et non la RDI);
d) la pertinence des réponses des parties aux recommandations de la vérification précédente.

Étant donné que la dernière vérification a été réalisée en 2015, la période visée par la présente vérification s'étend de 2015 à 2019.

L'équipe de vérification indépendante a défini une série de critères de vérification et de champs d'enquête servant de base aux recherches et à la collecte d'éléments probants. L'équipe a été guidée par le Comité directeur de vérification (CDV), une instance constituée de représentants des Premières Nations et des Métis des Territoires du Nord-Ouest (TNO), des Inuvialuits et des gouvernements territorial et fédéral. Elle a été conseillée par le CDV dans l'élaboration de la stratégie de vérification ainsi que sur les approches et les documents à privilégier pour la mobilisation du public. L'équipe a effectué une revue documentaire exhaustive, mené une enquête publique, réalisé des sondages et des entrevues auprès des organismes de réglementation et des autres représentants des TNO (comités, gouvernement des Territoires du Nord-Ouest [GTNO], industrie, gouvernement du Canada, gouvernements et organisations autochtones et organisations non gouvernementales [ONG]) et organisé des séances d'information publique dans sept collectivités.

D'après les constatations de la vérification, des progrès continuent à être enregistrés dans de nombreux domaines, même si des difficultés et des lacunes persistent. Des détails complémentaires sont donnés ci-dessous.

Efficacité du cadre réglementaire
Dans l'ensemble, le cadre réglementaire « fonctionne » comme prévu. Aucun nouveau problème substantiel n'a été mis en évidence dans la vérification de 2020 et des progrès ont été réalisés dans la plupart des composantes réglementaires que nous avons examinées; certains problèmes persistants et nouveaux ont néanmoins été constatés. Plus précisément:

- Des progrès ont été accomplis dans le comblement des lacunes réglementaires constatées lors de la vérification de 2015, mais des lacunes demeurent; des progrès ont également été accomplis dans l'élaboration des politiques sur les changements climatiques; la décentralisation a permis de transférer certaines responsabilités, mais une plus grande clarté est nécessaire;
- La surveillance du mieux-être communautaire doit se fonder sur une approche plus structurée;
- La Stratégie de développement économique doit être régulièrement examinée pour que ses objectifs soient atteints; par ailleurs, le GTNO devrait actualiser la Stratégie d'exploitation des minéraux pour raffermir la cohésion entre les partenaires en cogestion aux TNO;

- Des progrès encourageants ont été enregistrés dans la promotion de l'aménagement du territoire dans les régions dont les revendications territoriales ne sont pas réglées, mais l'absence de règlement entrave l'élaboration de plans d'aménagement;
- Des progrès ont été enregistrés dans les négociations visant des ententes sur les revendications territoriales globales (ERTG), mais l'absence d'ententes dans le sud-est des TNO continue à se répercuter sur la gestion de la planification des ressources naturelles;
- Le régime de conformité et d'exécution fonctionne parfaitement, même si des améliorations pourraient être apportées en ce qui concerne le ressourcement et la coordination.

Tendances dans la qualité et la quantité des eaux

Il existe de très bons exemples de programmes de surveillance des eaux efficaces aussi bien dans leur conception que dans leur mise en œuvre, et qui permettent de détecter des tendances pour certains cours d'eau. Dans leur cas, les tendances décelées ne suscitent aucune préoccupation majeure. Cependant, de manière générale, les programmes de surveillance des tendances pour les ressources en eau, en particulier les lacs, ne permettent pas à l'autorité responsable de déceler les tendances, d'expliquer leur importance et de déterminer leurs causes. Les renseignements fondés sur le savoir traditionnel (ST) décrivant la qualité et la quantité des eaux n'étaient pas disponibles pour cette vérification; des travaux supplémentaires sont nécessaires pour prendre en compte et mettre à profit ces renseignements. Par ailleurs, nous devons élaborer un cadre méthodologique cohérent pour uniformiser les analyses de tendances effectuées à partir des données de surveillance des eaux disponibles et pour améliorer leur qualité.

Rôle de l'autorité responsable

En vertu de l'article 416 de la LGRVM, l'autorité responsable est tenue d'analyser les renseignements et de surveiller les effets cumulatifs de l'utilisation des terres et des eaux sur l'environnement. L'équipe de vérification a dressé les constatations suivantes:

- L'autorité responsable n'a pas délégué cette responsabilité à un service ou à une division en particulier;
- De nombreux particuliers et de nombreux groupes affectés à des programmes ont affiché leur bonne volonté et livré des efforts considérables;
- Il n'existe aucune structure ni aucun langage commun qui permette de réunir les parties pour atteindre les objectifs visés à l'article 146;
- L'autorité responsable ne satisfait pas aux obligations visées à l'article 146.

Efficacité de la surveillance des effets cumulatifs aux TNO

Le personnel affecté au Programme de surveillance des effets cumulatifs (PSEC) des TNO et ses partenaires ont continué à apporter des améliorations au programme; d'autres améliorations sont néanmoins nécessaires. Le fait que l'autorité responsable n'utilise pas efficacement la surveillance des effets cumulatifs constitue une source majeure de préoccupation. Par conséquent, là où nous observons effectivement des tendances environnementales, nous croyons que l'autorité responsable ne dispose pas des renseignements nécessaires pour déterminer leur cause ou vérifier l'efficacité des mesures de gestion.

Réponses aux recommandations issues des vérifications précédentes

L'équipe de vérification a constaté que sur les vingt-quatre (24) recommandations que contenait le rapport de vérification de 2015, onze (11) avaient fait l'objet d'une réponse pertinente, quatre (4) étaient en suspens, une (1) n'était pas claire et le reste n'avait été que partiellement mis en œuvre.

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List of Acronyms

Acronym	Long Form
ADFN	Akaitcho Dene First Nations
AEMP	Aquatic Effects Monitoring Program
AIP	agreement-in-principle
ASC	Audit Steering Committee
CBM	Community-Based Monitoring
CCME	Canadian Council of Ministers of the Environment
CIM	cumulative impact monitoring
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CLCA	Comprehensive Land Claims Agreement
CLDF	Cumulative Land Disturbance Framework
CWB	Community Well-Being Index
DFO	Department of Fisheries and Oceans Canada
EA	environmental assessment
ECCC	Environment and Climate Change Canada
ENR	Department of Environment and Natural Resources
EPA	*Environmental Protection Act*
GHG	greenhouse gas
GLUPB	Gwich'in Land Use Planning Board
GLWB	Gwich'in Land and Water Board
GNWT	Government of the Northwest Territories
GoC	Government of Canada
IGC	Intergovernmental Council
IGOs	Indigenous governments and organizations
INAC	Indigenous and Northern Affairs Canada (formally known as Indian and Northern Affairs Canada)
IRMA	Interim Resource Management Assistance
ISR	Inuvialuit Settlement Region
ITI	Department of Industry, Tourism and Investment

Acronym	Long Form
Lands	Department of Lands
LUP	Land Use Plan
LWBs	Land and Water Boards
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVFL	Mackenzie Valley Fibre Link
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	*Mackenzie Valley Resource Management Act*
NEB	National Energy Board (now known as Canada Energy Regulator)
NGOs	non-governmental organizations
NPFP	Northern Participant Funding Program
NRCan	Natural Resources Canada
NWT	Northwest Territories
NWT CIMP	Northwest Territories Cumulative Impact Monitoring Program
NWT-EOS	Northwest Territories Economic Opportunities Strategy
NWTMN	Northwest Territory Métis Nation
RA	responsible authority
SEAs	Socio-Economic Agreements
SGA	Self-government Agreements
SLUPB	Sahtu Land Use Planning Board
SLWB	Sahtu Land and Water Board
SNP	Surveillance Network Program
SOE	State of the Environment
TDS	total dissolved solids
TK	traditional knowledge
VECs	valued ecosystem components
WLWB	Wek'èezhìı Land and Water Board
WRRB	Wek'èezhìı Renewable Resources Board

Introduction

Context

Legal Basis for the NWT Environmental Audit

The Gwich'in, Sahtú and Tłı̨chǫ Agreements[1] set out provisions that together create an integrated system of land and water co-management in the Mackenzie Valley. These Agreements also provide for independent, periodic environmental audits to be conducted in the Mackenzie Valley. The provisions of these Agreements are legislated through the *Mackenzie Valley Resource Management Act* (MVRMA), which applies to all areas within the Northwest Territories (NWT), except the Inuvialuit Settlement Region (ISR) and Wood Buffalo National Park.

Part 6 of the MVRMA sets out the legal requirements and framework for the environmental audits. Environmental audits are to be: initiated by the responsible authority (RA) (delegated to the Government of the Northwest Territories' [GNWT] Department of Environment and Natural Resources [ENR]) at least every five years; completed by an independent body; based on terms of reference developed in consultation with the Gwich'in and Sahtú First Nations, the Tłı̨chǫ Government and the Government of Canada (GoC); and made publicly available. The terms of reference are based on Section 148(3) of the MVRMA, which requires environmental audits to include:

a) an evaluation of information, including information collected or analyzed under section 146, in order to determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends;
b) a review of the effectiveness of methods used for carrying out the functions referred to in section 146;
c) a review of the effectiveness of the regulation of uses of land and water and deposits of waste on the protection of the key components of the environment from significant adverse impact; and,
d) a review of the response to any recommendations of previous environmental audits.

The audit of the ISR is focused exclusively on Section 148(3) (a), (b) and (d) only.

Under Section 149 of the MVRMA, subject to any other federal or territorial law, the Audit Team had the authority to obtain from any board established by the MVRMA or from any department or agency of the federal or territorial government, any information in the possession of the board, department or agency that is required for the performance of the functions of the RA or person under this Part.

[1] Unless indicated otherwise, the term "Agreements" refers collectively to the settled Land Claims within the NWT outside of the ISR, including the Gwich'in Comprehensive Land Claim, the Sahtú Dene and Métis Comprehensive Land Claim Agreement and the Tłı̨chǫ Land Claims and Self-Government Agreement.

Objectives of the 2020 Environmental Audit

The objective of the 2020 NWT Environmental Audit (the Audit) was to conduct a territory-wide environmental audit that includes both the Mackenzie Valley and the ISR, and to make suggestions for improvement in the areas of:

a) the availability and use of environmental trend information to make decisions (the 2020 Audit focused on water quality and quantity);
b) the effectiveness of cumulative impact monitoring (CIM);
c) the effectiveness of the regulatory system (this aspect only considers the Mackenzie Valley, not the ISR); and,
d) the adequacy of responses of parties to the previous Audit.

As the last NWT Audit was conducted in 2015, the review period for this Audit covers 2015 to 2019.[2]

The term "environment" is defined in Section 2 of the MVRMA as "The components of the Earth and includes:

a) land, water and air, including all layers of the atmosphere;
b) all organic and inorganic matter and living organisms; and
c) the interacting natural systems that include components referred to in paragraphs (a) and (b)."

Audit Scope

Geographic Boundary

The Audit covered the geography of the NWT (Figure 1). While the majority of the aspects examined as a part of the Audit will be applicable to the entire NWT, the Mackenzie Valley and the ISR, the regulatory regimes aspect only considers the Mackenzie Valley.

[2] While the review period of the Audit is 2015-2019, the evidence collection stage was completed by mid-August, with the report review and revision period held during the fall of 2019 and early 2020; this timing impacted the Audit Team's ability to collect, review, and synthesize new information post mid-August 2019.

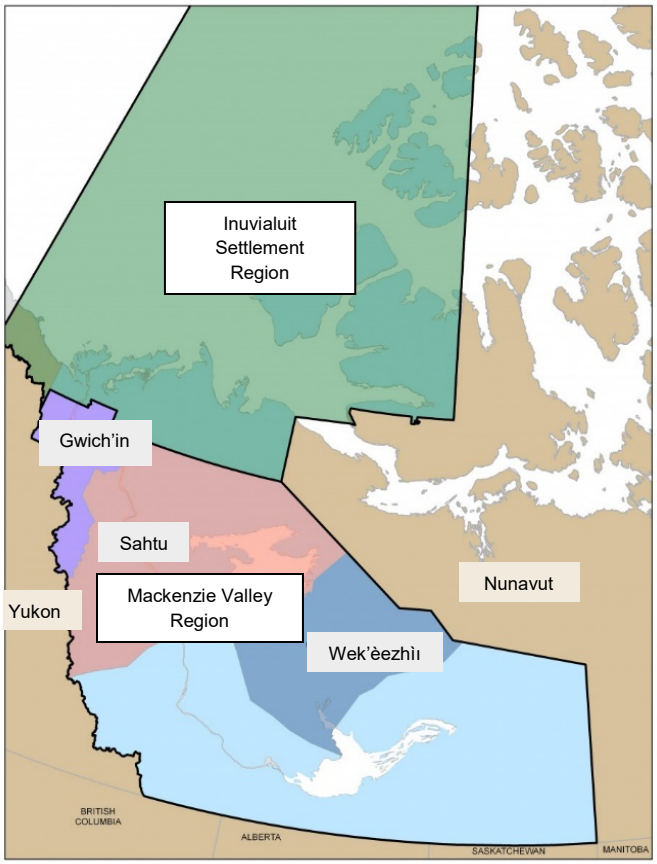

Figure 1: Regions of the NWT

Audit Criteria, Process and Methodologies

The NWT environment is influenced by economic development projects both within the NWT and from nearby jurisdictions, and increasingly influenced from large scale phenomena such as climate change. The fourth NWT Environmental Audit focuses on:

a) the effectiveness of the regulatory system (MVRMA Section 148 (3)(c));
b) the availability and use of environmental trend information to make decisions (MVRMA Section 148 (3)(a));
c) the effectiveness of CIM (MVRMA Section 148 (3)(b)); and,
d) the adequacy of responses of parties to the previous Audit (MVRMA Section 148 (3)(d)).

The Audit Team developed a set of Audit criteria and lines of inquiry on which to focus the research and evidence collection. The definitions of each are described below.

Criteria	Line of Inquiry	Potential Key Sources
The "activity" or "output" that the Audit Team collected evidence to compare against.	The questions the Audit Team sought to answer under each of the criteria.	Sources of information from which to draw conclusions, such as documents, records, interviews and questionnaires.

The Audit Plan was reviewed and approved by the Audit Steering Committee (ASC) and the Audit Secretariat.

Regulatory Regimes

The Audit considered the effectiveness of the regulatory regime in protecting components of the environment from significant adverse impacts, including impacts to: a) land, water, air, and the biological environment, b) heritage resources, c) wildlife harvesting, and d) social, cultural, and economic well-being.[3]

The review of the regulatory regime focused on the following sub-components:

- Regulatory scope, including transboundary regulation
- Socio-economic and community well-being
- Outcomes of regulatory processes and decisions, including the integration of traditional knowledge (TK) in decision-making
- Engagement and consultation
- Land use planning
- Comprehensive Land Claims Agreements (CLCA)
- Adequacy of resources
- Compliance and enforcement

To address the criteria under this component of the Audit, the Audit Team used a variety of approaches to gather evidence, including document review, a public survey, open houses, and surveys and/or interviews of relevant boards, GNWT departments, federal departments, Indigenous governments and organizations (IGOs), industry, and non-governmental organizations (NGOs). The Audit Team also conducted an analysis of three case studies, which provided an opportunity to do a deeper examination of decisions made by regulatory agencies in the past five years.

Environmental Trends

The Audit Team conducted an enhanced audit of the availability of information about water in the NWT by compiling an inventory of completed trends on water quality and quantity for thirteen watersheds. For each of the audited watersheds, we explored the availability of water quality data (both scientific and TK-based), assessed if the government had used the data to perform trend analysis, and determined what parameters showed trends. We then assessed the statistically significant trends in water quality to gauge their environmental importance based on several key parameter-specific criteria.

In addition to evaluating the trend data itself, we also sought to understand how well the available information is addressing the water-related concerns of communities and other decision-makers (e.g., co-management boards, governments). The primary sources of information for this component of the Audit were trend inventory reports, which were supplemented by survey and interview responses of relevant boards, GNWT departments, federal departments, IGOs, industry, and NGOs, the public survey, and the public open houses.

[3] The Audit did not consider the ISR within this aspect.

The Role of the Responsible Authority in Coordinating Data Collection and Analysis for Environmental Trend and/or Cumulative Impact Monitoring

There are many entities in the NWT that conduct monitoring of all aspects of the environment. The Audit Team looked for evidence of a monitoring structure (e.g., policies, strategies, guidelines or regulations) that would ensure that data from individual monitoring programs could contribute to environmental trends analyses and CIM efforts by the RA (GNWT ENR). The sources of information for this component of the Audit included academic research, the Ekati Jay Project Case Study, survey and interview responses of relevant boards, GNWT departments, federal departments, IGOs, industry, and NGOs, the public survey, and the public open houses.

Effectiveness of Cumulative Impact Monitoring

Our evaluation of the effectiveness of CIM methods extended beyond the GNWT's NWT Cumulative Impact Monitoring Program (NWT CIMP) to the GNWT as a whole. The data needed to understand and act on cumulative impacts is being collected independently by many parties, including multiple GNWT departments. The Audit Team sought to understand if methods used by the RA and others to monitor cumulative impacts are used in a targeted manner, are effective at detecting impacts, and if results are communicated broadly. The sources of information for this component of the Audit included academic research, State of the Environment (SOE) and Bathurst Caribou monitoring, the Ekati Jay Project Case Study, survey and interview responses of relevant boards, GNWT departments, federal departments, IGOs, industry, and NGOs, the public survey, and the public open houses.

Audit Team

The Audit Team is a Joint Venture of practitioners who either live or have worked extensively in the NWT. Their names, organizations, and team roles are summarized below:

Stratos Inc. Julie Pezzack (Project Director) Carolyn Hedley (Project Manager, Team Member) Kathryn Lupton (Team Member)	**NorthbyNorth Consulting** Marc Lange (Lead, Cumulative Impact Monitoring and Regulatory Regimes Audit Aspects; Yellowknife Resident)
Hutchinson Environmental Services Ltd. Neil Hutchinson (Lead, Environmental Trends Audit Aspect) Kris Hadley (Team Member)	**K. Racher Consulting** Kathy Racher (Team Member; Lead, Plain Language Summary; Yellowknife Resident)
Envision Strategic Environmental Consulting Tony Brown (Strategic Advisor)	

Report Structure

In addition to this introduction, the Audit Report is separated into five parts:

- Part 1: Effectiveness of Regulatory Regimes
- Part 2: Evaluation of Environmental Trends in Water Quality and Quantity
- Part 3: Monitoring Structure for Collection and Analysis of Scientific Data and TK for Environmental Trend and/or Cumulative Impact Monitoring
- Part 4: Effectiveness of Cumulative Impact Monitoring
- Part 5: Adequacy of Responses of Parties to the Previous Audit

Each part and/or sub-part of this Audit Report describes what the Audit Team examined, why it is important, and what was discovered during the Audit. All recommendations are included within the "What We Found" sections of the Audit Report.
The Appendices include:

- **Appendix A**: Summary of public engagement results, including the public survey and open houses in seven NWT communities (Inuvik, Yellowknife, Behchokǫ̀, Hay River, Fort Smith, Fort Simpson, and Norman Wells)
- **Appendix B**: Case studies
- **Appendix C**: Additional information pertaining to water trends and monitoring

Note on Previous Recommendations

More than half of the recommendations from the previous Audit (2015)[4] are either outstanding or have only been partially implemented. The Audit Team strongly recommends that the 2015 recommendations outlined in the table below (Table 1) continue to be advanced to ensure that the audit process is effective, as intended in the MVRMA.

Table 1: Outstanding/partially implemented recommendations from the 2015 Audit

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
1	Given the importance of CLCA/Self-Government Agreements (SGA) within the MVRMA framework, Indian and Northern Affairs Canada (INAC) and the GNWT should continue to negotiate these agreements in good faith. Timelines should be established, published and monitored.	Partially implemented	Comprehensive Land Claims Agreements (Section 1.6)
2	INAC and GNWT should work together in good faith with Indigenous governments and other interested parties to develop enforceable land use plans in the absence of settled land claims. Timelines should be established, published and monitored.	Partially implemented	Land Use Planning (Section 1.5)
3	GNWT and INAC should establish and publish formal plans/commitments, including timelines, for the development, implementation and enforcement of regulations and guidelines to address the identified regulatory gaps.	Partially implemented	Regulatory Scope (Section 1.1)

[4] (Arcadis, 2016)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
4	GNWT should work with Mackenzie Valley Environmental Impact Review Board (MVEIRB) and communities to identify indicators of community wellness and to develop monitoring programs for these indicators that can support the regulatory decision-making process.	Partially implemented	Socio-Economic and Community Well-being (Section 1.2)
9	Working with affected parties, INAC's Resource Policy and Program Directorate, in association with the Board Relations Secretariat, the Corporate Secretariat and the Treaties and Indigenous Government Sector-Implementation Branch, should facilitate discussions for a more efficient and effective processes to ensure board nominations are made and approved in a timely manner.	Partially implemented	Adequacy of Resources (Section 1.7)
11	INAC and GNWT need to enhance tools for the enforcement of the MVRMA and *Territorial Lands Act* through the introduction of Administrative Monetary Penalties regulations as planned. INAC also needs to formally resolve administrative matters in initiating prosecutorial actions at the territorial level.	Partially implemented	Responses to Previous Audits (Part 5)
13	*The Waters Act and Regulations* should be amended to allow the land and water boards (LWBs) to request final plans, issue letters of clearance, reconciliation of water use fees, and request the appropriate government and department to return the appropriate securities deposits to the licencee for water licences, similar to existing regulatory requirements for land use permits. The Boards should revise their procedure guidelines and licences to reflect the prescribed regulatory requirements.	Outstanding	Responses to Previous Audits (Part 5)
15	GNWT Department of Lands (Lands) should develop policy documents outlining its approach to and timeline for establishing a structured approach to securities management within the NWT.	Outstanding	Responses to Previous Audits (Part 5)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
16	LWBs and MVEIRB should work with interested parties to identify approaches to better utilize and integrate TK information into the decision-making processes.	Partially implemented	Outcomes of Regulatory Processes and Decisions (Section 1.3)
17	The GNWT should develop a clear policy and program to address and communicate its responsibilities for consultation and public engagement.	Outstanding	Engagement and Consultation (Section 1.4)
18	INAC should make the development of regulations on consultation a priority to add further clarity and certainty to the regulatory process.	Outstanding	Engagement and Consultation (Section 1.4)
23	NWT CIMP should engage partners of the NWT Water Stewardship Strategy to facilitate the collection of TK to complement the sound scientific analysis of water quality and quantity trends completed to date.	Partially implemented	Responses to Previous Audit (Part 5)

Part 1: Effectiveness of Regulatory Regimes

The MVRMA sets out an integrated system of land and water management that is meant to fulfill several principles including the protection of the environment from significant adverse impacts. Importantly, the MVRMA defines “environment” in a very broad manner and the Terms of Reference for this Audit asked us to consider impacts on:

- land, water, air, and any component of the biophysical environment,
- heritage resources,
- wildlife harvesting, and
- social, cultural and economic well-being.

The Audit Team reviewed whether the current regimes are adequately regulating all aspects of the environment or whether further improvements in the system are needed.

There are several main components that make up the regulatory regimes in the Mackenzie Valley including land use planning, environmental assessment (EA), renewable resource management, and land/water regulation. The Audit Team performed a cursory review of all regulatory components, and then focused on topics that were either the subject of recommendations from the previous Audit and/or that arose frequently or as issues of concern in interviews, surveys and open houses.

Topics covered in this part of the Audit include:

- Regulatory scope, including transboundary regulation
- Socio-Economic and community well-being
- Outcomes of regulatory processes and decisions, including the integration of TK in decision-making
- Engagement and consultation
- Land use planning
- CLCAs
- Adequacy of resources
- Compliance and enforcement

In addition, the Audit Team developed three case studies to supplement the Audit with a more in-depth review of decisions made by regulatory agencies in the last five years. Appendix B provides the full case studies, and relevant findings are highlighted throughout Part 1 of the Audit.

In the sections below, we discuss our main findings for each topic but provide recommendations only where specific issues or concerns were identified during our evaluation of the evidence. Where appropriate, we also comment on whether recommendations from the 2015 Audit have been fully or partially addressed.

1.1 Regulatory Scope

What We Examined

As noted in the Introduction, the MVRMA sets out a very broad definition for the environment. For this section of the Audit, we looked for evidence that all aspects of the environment are adequately and appropriately regulated. Our review began with an evaluation of any progress made on filling the regulatory gaps identified in the 2015 Audit as well as on the adequacy of transboundary regulation. In general, we looked for evidence that regulatory gaps have been addressed, that any outstanding regulatory gaps have associated mitigations to address those gaps going forward, and that transboundary issues are adequately addressed. The timing of this Audit made it possible to also consider any impacts of the devolution of land and resource management responsibilities from the federal to the territorial government that occurred in 2014.

We gathered information through public open houses, the public survey, surveys to the GNWT, industry, IGOs, NGOs, federal government and boards, and reviewed available documentary evidence. The evidence from the three case studies, in particular the GNWT Mackenzie Valley Fibre Link (MVFL) project, also helped inform our conclusions.

Why It's Important

Industrial developments, like mining projects for example, can affect all components of the environment, from the biophysical (land, water, air, wildlife) to the cultural, social and economic well-being of NWT residents. Ideally, the regulatory system ensures that negative effects of a project are minimized (e.g., by limiting the amount of waste that can be discharged) and potential positive effects are maximized (e.g., by ensuring economic benefits to residents).

What We Found

1.1.1 Since devolution, the GNWT has undertaken several legislative initiatives related to land and resource management

On April 1, 2014, the Northwest Territories Land and Resources Devolution Agreement came into effect. The Devolution Agreement, which was signed by the GNWT as well as several IGOs, sets out terms for the transfer of administration and control of public lands, resources, and rights in respect of water from the federal government to the Commissioner of the NWT. Following devolution, the 18th Legislative Assembly of the GNWT set out a mandate that included several initiatives meant to amend or create legislation as necessary to reflect the GNWT's new responsibilities with respect to land and resource management.

In accordance with the NWT Intergovernmental Agreement,[5] GNWT Lands, GNWT ENR, and GNWT Industry, Tourism and Investment (ITI) worked on legislative initiatives related to land and resource management with the Intergovernmental Council (IGC), a body consisting of representatives of the GNWT and the IGOs who signed the Devolution Agreement. The involvement of the IGC in the development of GNWT land and resource legislation is, of course, new and we understand that the process for

[5] See Schedule 5 of the Northwest Territories Land and Resources Devolution Agreement: (INAC, 2013)

collaboration is still being refined. Nonetheless, as summarized in the text box below, it appears that substantial progress was made on several pieces of legislation between 2016 and 2019.

Summary of legislative initiatives related to land and resource management since 2016:

1. *Protected Areas Act* (passed)
2. *Environmental Rights Act (*passed)
3. *Forest Act* (pushed to next Legislative Assembly)
4. *Mineral Resources Act* (passed)
5. Act to Amend the *Petroleum Resources Act* (passed)
6. Act to Amend the *Oil and Gas Operation Act* (passed)
7. *Public Land Act* (passed)
8. *Waters Act* (amendments still under discussion, not introduced in the 18th Assembly)
9. *Environmental Protection Act* (amendments still under discussion, not introduced in the 18th Assembly)

Although we wished to highlight the work done on these new and amended acts since devolution, we are not able to evaluate legislation that is so new or that, in some cases, has still not been passed by legislators. Instead, it will be up to the 2025 Audit to review how well these pieces of legislation contribute to the effectiveness of the regulatory regime.

1.1.2 Progress has been made on addressing regulatory gaps identified in the 2015 Audit, but gaps still persist

The previous Audit identified regulatory gaps with respect to wildlife, air, groundwater, and socio-economics. This resulted in an Audit 2015 recommendation:

> ***Recommendation 2015-3****: GNWT and INAC should establish and publish formal plans/commitments, including timelines, for the development, implementation and enforcement of regulations and guidelines to address the identified regulatory gaps.*

The GNWT did not establish or publish formal plans/commitments with timelines for the development, implementation and enforcement of regulations and guidelines; however, we note that some progress has been made on the establishment of regulations, specifically related to wildlife. For example, with respect to wildlife, "Phase 2" Wildlife regulations came into effect on July 1, 2019[6] and guidelines[7] for the development of Wildlife Management and Monitoring Plans were released in June 2019 that included both guidance and a template for the required plans.

With respect to air quality, the GNWT began a process[8] with the intent to regulate air quality under the *Environmental Protection Act* (EPA). This work is ongoing.

Although the GNWT has not created groundwater regulations, based on the number of legislative initiatives already underway (see Section 1.1.1) and the lack of comments on groundwater in our survey

[6] (GNWT, 2019a)
[7] (GNWT ENR, n.d. c)
[8] (GNWT ENR, n.d. a)

results, we find that the lack of groundwater regulations to be a gap of relatively low priority for the territory at this time. As well, it is possible that the regulation of groundwater will be addressed as part of the proposed amendments to the *Waters Act.* We suggest that the next Audit should review progress on groundwater regulations.

The GNWT has not updated or amended the *Archaeological Sites Act*, but states that it continues to administer the Act and is "researching potential legislation around the protection and preservation as well as research associated with paleontological resources."[9]

Partially Implemented 2015 Audit Recommendation

We find that GNWT has made progress but has not fully satisfied the recommendation from the 2015 Audit, particularly with respect to groundwater, air regulations, or archeological resources. The GNWT should continue their work toward meeting **Recommendation 2015-3** (*"GNWT and INAC should establish and publish formal plans/commitments, including timelines, for the development, implementation and enforcement of regulations and guidelines to address the identified regulatory gaps."*)

1.1.3 The GNWT has made progress on climate change policy and action planning, but it is too early to assess the effectiveness of the implemented measures

Climate change is a core issue underlying all environment and natural resources management considerations in the NWT. The biophysical, economic, and social impacts of climate change are not fully understood, but governments and other organizations are planning for necessary adaptation to the challenges this change presents, now and into the future.

Since the previous NWT Environmental Audit, and in response to the Auditor General of Canada's 2017 report *Climate Change in the Northwest Territories,*[10] the GNWT has developed the *2030 NWT Climate Change Strategic Framework*[11] and related *2019-2023 Action Plan,*[12] which aim to provide the territory with long-term comprehensive and coordinated direction to act locally to fulfill national and international commitments. The three goals of the Framework are:

1. Transition to a strong, healthy economy that uses less fossil fuel, thereby reducing greenhouse gas emissions by 30% below 2005 levels by 2030;
2. Increasing understanding of climate change impacts occurring in the NWT; and
3. Building resilience and adapting to a changing climate.

The Action Plan is also connected with the territory's *Energy Action Plan 2018-2021*, which sets out the GNWT's "long-term approach to supporting secure, affordable and sustainable energy supply and use in the NWT."[13]

According to a GNWT representative, the GNWT is developing an evaluation framework to evaluate the effectiveness of the Strategic Framework and Action Plan, set to be finalized in 2019. The territorial

[9] (GNWT, 2019b)
[10] (Auditor General of Canada, 2017)
[11] (GNWT, 2018a)
[12] (GNWT, 2019c)
[13] (GNWT, 2018b)

government will also conduct a five-year review, in 2024, to review the work completed under the Action Plan.

The territory also introduced a carbon tax[14] - the new carbon tax on fuels came into effect September 1, 2019 ($20/tonne of greenhouse gas [GHG] emissions, increasing annually to $50/tonne by 2022). The GNWT will rebate 100% of the carbon tax for heating fuel for most residents, businesses, and governments.[15]

Based on the engagement conducted throughout this Audit, including open houses and a survey, climate change is a major issue of concern for the NWT public. Over 40% of the public survey respondents selected "regional changes to the environment due to climate change" as the most important component for the government to monitor over the next five years. Additional comments in the survey state that comprehensive climate change monitoring should be conducted, and that further analysis of monitoring results is required. At the open houses, climate change was also an issue of concern as related to wildlife, the environment, and community well-being. NWT residents are noticing the effects of climate change and are keen to reduce GHG emissions and improve community self-reliance.

A territorial respondent commented that, "there is no legislation in place on emissions, and LWBs historically have avoided[16] addressing any type of air quality issue." This point raises concerns about the ability of the regulatory system to effectively mitigate GHG emissions expected from development projects. There is evidence that the MVEIRB considers the contribution a project will have on climate change as well as how the project itself will be impacted by climate change;[17] however, its role is limited to determining the significance of GHG emissions and cannot regulate those GHG emissions in the NWT.

Recommendation 1-1: The GNWT and ASC consider a focus on climate change for the 2025 NWT Environmental Audit to test whether the Strategic Framework and Action Plan are effective and whether additional tools (regulatory or policy) need to be developed. *The outcome we expect is that climate change is recognized as a core issue underlying environmental/resource management and impacts/considerations are being adequately regulated.*

> ***GNWT's response:*** *The GNWT and the Audit Steering Committee (ASC) agree with the intent of this recommendation and the GNWT has planned for a full independent review of the 2030 NWT Climate Change Strategic Framework and the 2019-2023 Action Plan in 2024, one year before the 2025 Audit. The GNWT will conduct a formal review of the Framework and Action Plan, including the incorporation of climate change considerations in decision-making. The findings from the review, along with emerging issues, new technologies and new opportunities, will be used to consider potential revisions to the Framework and support the development of a subsequent 2025-2029 Action Plan. To avoid duplication of effort, the GNWT and the Audit Steering Committee will not include a test of the Framework and the Action Plan as part of the terms of reference for the 2025 NWT Environmental Audit.*

[14] (GNWT Finance, 2019)
[15] (GNWT, n.d. g)
[16] Note that the LWBs do regulate air particulates when they become or have a potential to become a waste that is deposited into water (e.g., dust).
[17] (MVEIRB, 2018)

1.1.4 Devolution has transferred some responsibilities, but this has not resulted in greater clarity in co-management at this time

With respect to responsibilities under the MVRMA and its associated regulations, devolution has brought increased control and decision-making to northerners via the GNWT for projects that are on non-federal areas. Several new responsibilities have been delegated to the GNWT including, but not limited to, the responsibility for approving EAs, Type "A" water licence recommendations made by the boards, and Type B water licences where a public hearing has been held. The GNWT now administers and controls public lands, and has become the RA under Part 6 of the MVRMA.

Nonetheless, the federal government remains the master of the governing act, the MVRMA. As well, although the Intergovernmental Agreement requires the GNWT to work collaboratively with Indigenous governments on land and resource management, it is still the federal government that has long-standing relationships with and accountability to Indigenous peoples through the CLCAs. In a way, therefore, devolution has added a new "cook" into the "kitchen" that is the integrated system of land and water management in the Mackenzie Valley, thereby increasing at least the perception of co-management complexity.

Various interviews also revealed that the GNWT finds it a challenge to carry out some of its new responsibilities under legislation that it does not control and cannot change. The Audit Team heard several concerns from the GNWT about wishing to make changes to or creating regulations, such as preliminary screening and administrative monetary penalties regulations. While the GNWT is working on amendments to the *Waters Act* for territorial lands, it does not have the ability to change mirrored provisions in the MVRMA governing water licensing on federal lands. Concern was also raised about compliance and enforcement. For example, inspectors from the GNWT Lands can enforce provisions under the MVRMA and the territorial Department of Justice can be involved in compliance, but if prosecution is required, the federal Department of Justice would be required to lead.

We heard from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) that requests for changes to regulations and the Act are coming from multiple directions (e.g., industry, Indigenous governments, different GNWT departments) but that the needs of all parties do not necessarily align well. Engagement on these changes is therefore very challenging for CIRNAC.

We find the topic of integrating the regulatory system of the MVRMA post-devolution rich with many different and, at times, conflicting concepts that requires the co-management parties, at a working and senior management level, to discuss and resolve to mutual satisfaction. We find the current approach has left the dialogue incomplete and the solutions unsatisfactory to most players.

GNWT noted that Section 3.18 of the NWT Devolution Agreement identifies that, as soon as practicable following the fifth anniversary of the Agreement, the Parties to the Agreement will "conduct a review of the provisions of this Agreement respecting the *Mackenzie Valley Resource Management Act* (Canada)."[18] The fifth anniversary of the NWT Devolution Agreement was April 1, 2019.

Recommendation 1-2: The GNWT and CIRNAC establish a process for parties to meet on a regular basis and discuss implementation opportunities and challenges with respect to the integrated system of land and water management in the Mackenzie Valley. At times, this process will need to

[18] (INAC, 2013)

include IGOs and industry as appropriate. We further recommend CIRNAC ensure a record of findings, actions, and outcomes are published to ensure transparency and to facilitate monitoring and auditing of progress. ***The outcome we expect is for a process to be established for frequent dialogue between relevant parties in order to discuss issues as they arise with the goal of fostering an integrated system of land and water management.***

Joint GNWT-CIRNAC response: *In responding to this recommendation, the GNWT and CIRNAC have engaged with officials of the Land and Water Boards of the Mackenzie Valley, the Mackenzie Valley Environmental Impact Review Board, and the Canadian Northern Economic Development Agency's Northern Projects Management Office.*

There are several processes currently in place for parties to meet on a regular basis and discuss implementation opportunities and challenges with respect to the integrated system of land and water management in the Mackenzie Valley. These processes include the annual Mackenzie Valley resource co-management workshops; regular process discussions among federal, territorial, and resource management board staff; the recently launched Mackenzie Valley Regulatory Dialogue; and other processes as requested or required.

Final reports for some of these initiatives are already, or will be, prepared and shared with participants in resource management processes. Resource management boards often make final reports publicly available on their websites. GNWT and CIRNAC commit to exploring, with boards, Indigenous governments, proponents, and others, how the findings, actions and outcomes of existing dialogue processes can be more effectively shared to facilitate transparency and monitoring and auditing of progress.

GNWT and CIRNAC also commit to exploring, with other parties, if any new dialogue processes should be established in response to this recommendation.

1.1.5 The regulation of transboundary issues is currently adequate

The survey results from regulators and other organizations (boards, GNWT, industry, IGOs, NGOs) suggest that transboundary issues are adequately regulated both within the NWT (across regional boundaries) and between the NWT and other jurisdictions. Our own case study findings on the GNWT MVFL project (see summary in text box below and details in Appendix B) corroborates this evidence with respect to the regulation of projects that cross regional boundaries within the NWT.
While survey respondents expressed greater concern with respect to projects/issues that cross boundaries between the NWT and other jurisdictions, most respondents still believed that there are appropriate regulatory tools to address transboundary issues. Only 15% of public survey respondents identified transboundary environmental effects as the most important component of the environment to monitor in the next five years (versus 40% for "regional changes to the environment due to climate change", 25% for "current industrial developments", and 17% for "future industrial development areas"). However, in the open houses, the public expressed concern over transboundary water pollution, particularly organic contaminants from oil sands-related operations.

When asked to give specific examples of transboundary issues of concern, climate change was raised as well as the potential cumulative environmental effects of the two new proposed roads in Nunavut and NWT (Grays Bay Port and Road Project and the Slave Geological Province All-season Road). Respondents also cited upstream projects (e.g., Site C Dam, oil sands projects) as projects of concern, as

well as adjacent development areas (e.g., oil and gas leasing program in Alaska National Wildlife Refuge). Follow-up interviews revealed an underlying fear that decisions would be made in other jurisdictions without adequate consideration of the impacts on the NWT.

With respect to concerns over how decisions or processes in other jurisdictions may affect the NWT, we note the following progress since the last Audit:

- The NWT has entered into bilateral water management agreements with Alberta and British Columbia.[19,20] Each of these agreements contain provisions for sharing information, providing notifications and ensuring consultation on any future developments that could affect the ecological integrity of waters that flow downstream into the NWT from those two provinces. In addition, Bilateral Management Committees have been set up to administer the agreement and regularly report on shared activities; we see evidence that these Committees have been active since the signing of the agreements in 2015.[21] These bilateral agreements complement activities and commitments made under the Mackenzie River Basin Transboundary Waters Master Agreement and an existing bilateral agreement with the Yukon. With respect to transboundary water issues, we find that the GNWT has enhanced relationships with upstream jurisdictions and has adequate mechanisms to provide early input into upstream development decisions.
- For the past four years, the EA and regulatory boards from the three northern territories have been holding annual meetings to discuss common issues and identify opportunities to work together.[22] In our opinion, these types of meetings will help ensure that transboundary assessment and regulatory processes are as consistent across the territories as possible.

Overall, we find that there are adequate tools and processes in place to regulate transboundary issues both within the NWT and with neighbouring jurisdictions. One area of improvement to address the concerns that did emerge during our Audit, would be to define a lead GNWT division to make a list of future developments in other jurisdictions that may impact the NWT and then develop, with input from other divisions and IGOs, a strategy of how and when the GNWT will engage in EA processes to ensure NWT concerns are adequately considered.

GNWT's Mackenzie Valley Fiber Link Project–Transboundary Regulation Within the NWT

We examined one project case study in more detail, the GNWT's MVFL (see Appendix B). The extent of the project crossed multiple regulatory jurisdictions and spanned private and public lands. The filing of water licence and land use permit applications by the project proponent caused the Mackenzie Land and Water Board (MVLWB) to make a transboundary determination some 45 days later, triggering a joint review process with the Sahtu Land and Water Board (SLWB), the Gwich'in Land and Water Board (GLWB) and MVLWB. No transboundary concerns emerged from our review.

[19] (Government of Alberta & GNWT, 2015)
[20] (BC Government & GNWT, 2015)
[21] (GNWT, 2017a)
[22] The Pan-Territorial Environmental Assessment and Regulatory Board Forum has been held annually over the last several years, all hosted by the Canadian Northern Economic Development Agency. Reports from these meetings are not publicly available.

1.2 Socio-Economic and Community Well-being

What We Examined

The Audit Team collected information from the public, the GNWT, boards, IGOs, and industry through surveys, public open houses, interviews, and document review. We sought to look at the issue from all perspectives - community, regulator, government and industry - with the goal of understanding the progress made since the last Audit, as well as persistent or new challenges and potential solutions.

We reviewed government policies and strategies related to socio-economic and community well-being, including the Northwest Territories Economic Opportunities Strategy, the Mineral Development Strategy, and Community Wellness Plans. Building on the previous Audit, we examined the status of indicators of community well-being.

We also reviewed evidence from the case studies, in particular the Ekati Jay Project, to review regulatory decision-making and GNWT's follow-through on measures.

Why It's Important

A Guiding Principle of the MVRMA is the "protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley" (Section 115(1)(b)). While most resource development projects are likely to lead to some degree of degradation of the biophysical environment (if only temporarily), it is clear that the MVRMA seeks to establish a system in which socio-economic and community well-being is maintained or improved. Economic benefits may come in the form of direct employment or spending in communities. Social benefits are typically measured in terms of greater levels of education and training of individuals, improved living conditions, improved health outcomes, retainment of culture and language, and reduction in crime and violence.

What We Found

1.2.1 The GNWT is monitoring indicators of community well-being, but it is not evident how effectively the information is being used to inform regulatory decision-making

The 2015 Audit made a recommendation meant to address an identified gap in the regulation of socio-economic and community well-being:

> ***Recommendation 2015-4:*** *GNWT should work with the MVEIRB and communities to identify indicators of community wellness and to develop monitoring programs for these indicators that can support the regulatory decision-making process.*

In the GNWT's updated response to the 2015 Audit recommendation,[23] it points to the following monitoring and reporting of community well-being:

- Annual Communities and Diamonds Reports, which include a "comprehensive set of socio-economic indicators aimed at measuring community, family and individual well-being;"
- Measures related to community well-being through CIRNAC's Community Well-being (CWB) Index (updated every five years);

[23] (GNWT, 2019b)

- Numerous social determinants of health indicators collected by multiple departments. For example, income, education, employment, and health information; and,
- Indicators to track project-specific impacts, developed by working collaboratively with Indigenous governments and communities to identify potential impacts. For example, the identification, selection, and development of indicators for the Tłı̨chǫ All-season Road project are currently underway.

As indicated in the GNWT's response and based on our own review, we can see that socio-economic and community well-being information is being collected and is available in the NWT in various locations, at various scales, and with a range of comprehensiveness.

- The annual Communities and Diamonds Reports cover a subset of well-being indicators on eight communities in the NWT (those impacted by diamond mines), as committed to in Socio-Economic Agreements (SEAs) signed by GNWT and mining companies operating in the NWT. Several indicators compare the small local community data with the City of Yellowknife, other NWT communities and the NWT as a whole to provide a comparative picture. In 2018, the GNWT released the first report that provided a summary of the cumulative contributions to economic well-being by the diamond mines. These reports tell an important, but partial, story of well-being for a portion of the NWT.
- The CWB Index monitors levels of income, housing, education and labour activity but has limitations, namely that indicators pertain mainly to socio-economic well-being while other aspects of well-being are not addressed, such as culture, language, environment and health.[24] Also, it is not possible to differentiate between Indigenous and non-Indigenous residents within an Indigenous community. The CWB Index appears to be best used as a general tool to track community well-being trends.
- While the GNWT's Department of Health and Social Services monitors and reports on indicators that inform program and service provision at local and regional levels, it only publicly reports on a broader range of health and well-being indicators on a regular basis (every 1-2 years) at the territorial level.[25,26] These indicators are therefore useful to determine the status and trends for the whole NWT population.

When we look at the indicators measured by the initiatives above, what we do not see is a set of common indicators to determine socio-economic and community well-being of communities impacted by decisions made under the MVRMA. Each agency appears to collect data on different indicators which, in our opinion, leads to duplication of effort and an inability to pool information. We also do not see a mechanism that would allow the GNWT (or regulators) to parse out those indicators that are being affected by decisions made under the MVRMA versus effects from a range of other social and political issues like, for example, the legacy of residential schools, the settling of land claims, or even non-project related environmental/social impacts from climate change. Although we acknowledge that social, cultural, economic, and environmental conditions interact in complex ways, we believe it is important for the GNWT to develop more structured ways[27] to describe and monitor these interactive effects, test approaches to mitigate such effects, and deploy mitigation to regulatory decisions made under the MVRMA.

[24] (CIRNAC, 2019)
[25] (GNWT, 2016c)
[26] (GNWT, 2018c)
[27] An example of a structured method to collectively address monitoring and action relating to social issues is described by (Hanleybrown, Kania, & Kramer, 2012)

Additionally, the public survey results and the survey results from regulators and other organizations (boards, GNWT, industry, Indigenous organizations, NGOs) reveal a strong perception that community well-being is not well addressed in regulatory decision-making (see text box below).

For these reasons, we do not believe Recommendation 2015-4 has been fully addressed with respect to how existing monitoring is able to support regulatory decision-making.

Summary of survey results regarding the consideration of community well-being in regulatory decision-making

The public survey results and the survey results from regulators and other organizations (boards, GNWT, industry, Indigenous organizations, NGOs) suggest that community wellness issues are not well addressed in regulatory decisions. Over half of public survey respondents indicated that insufficient progress has been made in the consideration of community wellness when making decisions about land and resource management or development (while 20% of respondents were unaware). The majority of respondents from organizations (boards, GNWT, Indigenous organizations, NGOs) did not know how community wellness is addressed, with most of the remaining respondents indicating that it needs improvement.

With respect to the protection of the social, cultural and economic well-being of NWT residents, public survey results suggest some level of satisfaction or neutrality, with 28% indicating satisfaction and 38% indicating neither satisfaction nor dissatisfaction (30% were dissatisfied). Appendix A provides a full summary of public survey results, including comments on what is working well and what could be improved. Note that Table AX-5 in Appendix A also summarizes comments from open house participants on their experiences of the social impacts of mining.

Partially Implemented 2015 Audit Recommendation

GNWT should fully address the recommendation from the 2015 Audit (**Recommendation 2015-4** *"GNWT should work with MVEIRB and communities to identify indicators of community wellness and to develop monitoring programs for these indicators that can support the regulatory decision-making process").*

Recommendation 1-3: Organizations/departments with a mandate for monitoring and mitigating community well-being work together to make their efforts complementary by developing a common agenda for their goals with a set of shared measures or indicators, and a plan for making results available to decision-makers during the EA and regulatory phases of projects. ***The outcome we expect is that community well-being is monitored consistently, and the results are used to inform and improve regulatory decision-making.***

GNWT's response: *The GNWT agrees with this recommendation. The GNWT recognizes the importance of monitoring and mitigating community well-being and making results available to decision-makers during the environmental assessment (EA) and regulatory phases of projects. There are several GNWT departments who have a role in monitoring community well-being and mitigating*

impacts, and agree that opportunities exist to improve how data is collected by the GNWT. Building on this recommendation and those from previous environmental audits, a socio-economic forum is scheduled for the fall of 2022, which will host representatives from the mining industry, Indigenous governments, and the GNWT to identify ways to work together to increase the socio-economic benefits from resource development, focusing on accountability for both the GNWT and industry. The GNWT will continue to look for opportunities to work with communities in order to develop appropriate monitoring programs.

1.2.2 At the project level, the MVEIRB is leading the way on the development of community-centric adaptive management programs

In the previous section, we discussed the issues we saw with respect to translating the monitoring of community well-being into improvements in regulatory decision-making. In this section, we ask whether the current monitoring is directed at indicators that are truly meaningful to communities, and whether there are programs in place to adapt to declining or worsening trends.

The EA process is providing an evolving and useful mechanism to ensure well-being impacts are monitored and reported at the project level. MVEIRB's Socio-Economic Impact Assessment Guidelines[28] have been in place since 2007, and it more recently introduced Cultural Impact Technical Sessions. In addition, by including measures and suggestions in the Reports of EA [Jay (Measure 8-1) and Tłı̨chǫ All-Season Road (Measures 5-1 and 5-2, Suggestion 5-1)[29]], the MVEIRB is helping to ensure that responsible parties develop and implement comprehensive community well-being monitoring programs. Once a project is approved, proponents must implement the measures outlined in the Report of EA. We found evidence that measures are monitored and reported with some diligence.[30,31]

Ekati Jay Project EA - Socio-Economic Considerations

The proponent concluded that its project would have a net-positive effect on the socio-economic environment.[32] The GNWT concurred with the proponent's assessment and found that existing measures, such as its SEAs with the proponent, GNWT's own monitoring of diamond-communities, and its existing health and social services and programming can mitigate impacts. Intervenors stated that, while the monitoring did present trends in the socio-economic indicators there was no follow-up to identified trends - no causal links identified that would inform mitigation. The MVEIRB concluded that there were significant cumulative social impacts from diamond mining on communities, that "*It is evident … that the GNWT has not successfully addressed deteriorating socio-economic conditions caused by mining in Aboriginal communities"* and recommended Measure 8.1 requiring "an improved engagement and adaptive management process by the GNWT to measure and respond to adverse health and well-being impacts from the Jay Project."

This case study demonstrates that the MVEIRB plays an important function in the development and oversight of community well-being monitoring through, for example, EA measures.

[28] (MVEIRB, 2007)
[29] (MVEIRB, 2018)
[30] (GNWT, 2019d)
[31] (Dominion Diamond Mines, 2019)
[32] (Dominion Diamond Mines, 2014a)

Tłı̨chǫ All-season Road

The MVEIRB included Measures 5-1 and 5-2, as well as Suggestion 5-1 in its Report of EA to "strengthen the adaptive management system...and provide more confidence that the road will not cause significant impacts to the community of Whati."[33] According to a representative of GNWT Health and Social Services, the GNWT and Tłı̨chǫ Government met in January 2019 to discuss all measures in the report, and spent time discussing well-being; a Health and Well-being Working Group was created to develop a monitoring program. As of August 2019, the Working Group has met twice and has drafted a Terms of Reference. Health and Social Services is the lead department for the GNWT, with the participation of other departments, including Justice, and Education, Culture and Employment. The monitoring program will build off the EA process and will include indicators as well as potential mitigations should community well-being indicators worsen. The Working Group had not established a timeline to develop the monitoring program by mid-2019.

The GNWT (led by ITI) requires proponents of major projects to sign SEAs with the GNWT, as a "follow-up program" to the EA process.[34] These SEAs outline the commitments and obligations of proponents. The GNWT reports on the SEAs on an annual basis, but only for the eight communities (i.e. the Communities and Diamonds SEA reports, noted above; the eight communities are included because they are within close proximity to the three diamond mines operating in the NWT or within the boundaries of the Wek'èezhìı Resource Management Area). It is not clear from these reports whether a consistent adaptive management approach is taken; i.e., should indicators show a worsening trend, what actions or programming are taken by GNWT ITI and other responsible departments or agencies to mitigate the impacts?

The MVEIRB indicated in an interview that it has met with several departments within the GNWT to ensure there is tailored programming developed with impacted communities to respond to specific community issues, and to ensure that the resulting programming is adaptive (e.g. through annual meetings with communities to address worsening trends; or responding to improving trends). A GNWT representative noted a joint MVEIRB-GNWT research project that was under external funding review at the time of this Audit - the project would focus on Indigenous and community-driven indicators of well-being, and community-centric mitigations. The research presents an opportunity to advance the community-centric and adaptive management concepts advocated for by the MVEIRB.

In regard to community-driven programming, the Department of Health and Social Services allocates federal funding for the development of Community Wellness Plans, which were updated in 2018 (and are developed by communities). The five-year plans range in comprehensiveness, but each describes focus areas or priorities for community wellness.[35] It is not clear whether these wellness plans are monitored, or whether adaptive management is used to address gaps in community programs and services. In this regard, several open house participants noted that regions or communities are best placed to improve socio-economic and community well-being conditions. For example, one participant noted that "sometimes a complex problem can have a simple solution when implemented locally."

[33] (MVEIRB, 2018), p. 109
[34] (GNWT, n.d. f)
[35] (GNWT, n.d. b)

The above information and evidence suggest that the NWT is moving toward more community-centric monitoring, programming and adaptive management for some communities, led by the MVEIRB and through increased collaboration with the GNWT. However, it is not clear whether an adaptive management model is being fully executed more broadly. The scope of this Audit does not include all well-being-related regulations, policies, strategies and programs, so there are likely gaps in the evidence collected.

Overall, the outcome we are seeking is that regulators and government monitor and respond to negative trends in community well-being indicators using a consistently applied adaptive management approach. As noted above, some progress is already being made on this front. As well, we believe that implementation of the recommendation given in Section 1.2.2 will help achieve this outcome. Given these factors, we have no further recommendations at this time.

1.2.3 The Mineral Development Strategy needs improvements to meet the needs of industry

The GNWT released its Mineral Development Strategy in 2013, with the aim "to realize, responsibly and sustainably, the full potential of the NWT's rich mineral resources and use it to ensure lasting prosperity for NWT residents and communities."[36] GNWT ITI releases an annual report on its activities and performance in meeting Strategy commitments.

Through our interviews and survey, the mining industry reported a tangible disconnect between the marketing messages from ITI, that the NWT is "Open for Business,"[37] and industry's experience on the ground in the NWT.

- Industry cites a discrepancy between GNWT departments on their level of support toward industry. For example, they interpreted some departments' advice as placing regulatory roadblocks on their activities rather than working with industry to find a mutually acceptable solution.
- Industry noted a discrepancy with the level of support between regions and Indigenous governments, and that a substantial portion of the NWT is closed or effectively closed to exploration (e.g., when protected areas are established without the context of a larger scale land use planning exercise).[38]
- Finally, industry cites a discrepancy between the GNWT ITI's messaging and industry's stated experience of the regulatory system. For example, industry representatives believe that the regulatory boards are incrementally tightening regulations and increasing regulatory requirements[39] in the absence of evidence that additional requirements are truly needed to protect the environment (e.g., there are seen to be an inordinate number of management plans for big and small projects alike).

[36] (NWT & Nunavut Chamber of Mines, GNWT ITI, n.d.), p. 7
[37] (GNWT ITI, n.d.)
[38] (Hoefer, 2019)
[39] Industry representatives also gave the example of a requirement to do bathymetry on potential water sources for diamond drilling as new, costly, and "overly onerous". With respect to this issue, we note that the LWBs have recently initiated a process to define requirements related to determining the withdrawal capacity of water sources which may not require bathymetry measurements.

Industry representatives view the issues above as affecting their ability to create economic well-being for NWT citizens.

Ultimately the mining industry highlights that the absence of cohesion between all co-management partners in the NWT, with respect to exploration and mining, reduces investor confidence. We sought evidence from the mineral and exploration industry for lack of investor confidence. Industry representatives could not provide us with records of boardroom conversations leading to delayed or cancelled investments; instead they cited the outcome of these decisions as expressed by Natural Resources Canada (NRCan) in terms of spending estimates from mineral exploration over time and between jurisdictions.[40] We note from this NRCan data that year-over-year exploration expenditures in the NWT have been flat from 2014 to 2019, while year-over-year expenditures in the Yukon and Nunavut grew 1.5-to-2 times more than that in the NWT. GNWT's own consultant also noted that "the NWT lags behind other Canadian jurisdictions in exploration investment."[41] Although the statistics reveal that investment in the NWT is flat, the statistics do not explain why this trend is occurring. It is this difference between NWT and other northern jurisdictions that industry cites as evidence of a lack of investor confidence.

As Auditors we take no position on the merits of the mineral industry in the NWT. However, to the extent the GNWT wishes to “Unlock our Potential”[42] and stimulate responsible resource development in the NWT, then it is incumbent on the government to work with co-management partners and Indigenous governments to reflect an integrated voice and approach to supporting responsible economic development.

Recommendation 1-4: The GNWT refresh its NWT Mineral Development Strategy with the express goal of demonstrating unity in messaging and approach. Opening statements from the Premier, the Minister, and the Chamber of Mines should be enhanced by messaging from IGOs.

> ***GNWT’s response:*** *The GNWT agrees with this recommendation. The GNWT is working towards refreshing the Mineral Development Strategy in order to ensure that the Strategy reflects the current state of the mining industry and the post-Devolution NWT context. Engagement activities are planned to occur in 2020-21 and will focus on engaging with Indigenous governments and organizations and community members who are connected in current/planned mining projects as well as partner organizations that support mining initiatives in the regions to ensure that clear, consistent messaging between the GNWT and IGOs is reflected in the refreshed Strategy.*

Recommendation 1-5: The GNWT include a section in the Mineral Development Strategy describing aspects of the regulatory system that are important to industry, such as clarity on timelines and regulatory improvements, that are felt to be limiting mineral development. This may require engagement with a range of regulators including the LWBs to ensure the accuracy of any messages or conclusions.

The outcome we expect is that the GNWT, Indigenous governments and boards work together to create common messaging and an approach related to responsible mineral development in the NWT. Further, we expect the topics and the overall approach described in the new Mineral

[40] (NRCan, 2018)
[41] (Bauer, 2017), p. 17
[42] (GNWT ITI, n.d.)

Development Strategy to address some of the raised needs of industry about the regulatory system. Finally, we expect this exercise should be informed by outcomes from our recommendation in Section 1.3.2.

> ***GNWT's response:*** *The GNWT agrees with this recommendation. As stated in the GNWT's response to Recommendation 1-4, the GNWT is working towards refreshing the Mineral Development Strategy. Revisions are anticipated to refocus the Strategy, and potentially investment, on the outcomes that will have the most meaningful impact on mineral investment and development in the NWT. This will be accomplished through focused stakeholder engagement sessions with the mineral exploration and development sector, industry associations and regulatory authorities to ensure that regulatory issues that are felt to be limiting mineral development, such as clarity on timelines and regulatory improvement opportunities, are explored to develop shared understanding and solutions.*

1.2.4 There is insufficient evidence that the GNWT's NWT Economic Opportunities Strategy is effective at achieving its objectives

The GNWT developed an NWT Economic Opportunities Strategy (NWT-EOS) in 2013. The strategy describes an approach to expand and diversify emerging economic activities. Importantly the NWT-EOS outlines four themes, with associated targets, objectives, actions and expected outcomes, with preliminary measures to track progress.[43]

The GNWT published a progress and performance measures report for 2016-2018,[44] and the Minister of ITI announced that most recommendations in the NWT-EOS were implemented.[45] The report provides performance measure results, with some trend information; however, it does not provide as strong a link between expected and actual outcomes, nor any mitigations that are required should actual outcomes differ from expected outcomes. The report indicates that "*This will be the final published EOS Progress Report as many of the recommendations and actions have reporting structures built into their implementation and action plans.*" (p. 12)

Recommendation 1-6: The GNWT create an updated economic development strategy and regularly examine the effectiveness of this strategy against relevant measurable economic indicators such as gross domestic product, unemployment, and economic resilience. *The outcome we expect is that the NWT has an economic development strategy where it monitors indicators of success, and the results of monitoring are used to improve the strategy over time.*

> ***GNWT's response:*** *The GNWT agrees with this recommendation. The 19th Legislative Assembly's recently released a mandate document that requests the development of regional economic development plans. In 2019, the GNWT's Department of ITI created a Performance Management and Evaluation unit that develops monitoring and evaluation frameworks for initiatives and strategies. They will play a key role in the performance measurement of these new regional economic development plans.*

[43] (GNWT, 2013)
[44] (GNWT, 2019e)
[45] (GNWT, 2019g)

1.3 Outcomes of Regulatory Processes and Decisions

What We Examined

The Audit Team reviewed regulatory processes and decisions that are part of the co-management system, such as EAs, LWB authorizations, and advice by renewable resources boards. We looked for evidence that regulatory decisions are protective of all components of the environment (biophysical and socio-economic, including heritage resources and wildlife harvesting) and that the processes support good decision-making. We expected to find processes that are evidence-based, efficient, effective, certain, and clear.

We considered the satisfaction of participants in the process, gathered through public open houses, the public survey, surveys and interviews with industry, IGOs and NGOs. We also examined the case studies (Ekati Jay Project in particular) and focused on the collection and use of TK in co-management decision-making processes; we expected to find improvements since the previous Audits.

Why It's Important

The MVRMA sets out to "provide for an integrated system of land and water management in the Mackenzie Valley." Importantly, the MVRMA is built on settled land claims and on the assumption of co-management of resources by the territorial, federal, and Indigenous governments. In general, people are aligned on the goals of regulatory decision-making in terms of environmental protection – both in terms of the biophysical and social/cultural/economic impacts – but there are always differences of opinion with respect to how best to protect all components of the environment. In our evaluation of regulatory outcomes, therefore, we focused on whether current methods were achieving shared goals or whether new approaches need to be considered.

What We Found

1.3.1 Regulatory decision-making with respect to the biophysical environment[46] remains sound

Results from the public survey suggest the public is satisfied that the outcome of regulatory decisions effectively protects the land and water.[47] Respondents were asked to reflect on whether the decisions made at the end of each regulatory process effectively protected the land and water (EA, land use permitting, water licensing, land use planning). Most respondents felt that it was somewhat true or true that the processes were effective. However, there was less awareness of the effectiveness of land use planning when compared to the other processes. Appendix A provides a full summary of survey results.

Consistent with the survey results and the previous Audit, neither our case study review (see text box below), nor our interviews pointed to any specific regulatory decisions that neglected to protect aspects of the biophysical environment. Indeed, it is evident that with respect to protecting the biophysical environment, the boards have solid processes, guidelines, expertise, and, with the exceptions noted in Section 1.1, statutory/policy tools to make thorough and well-informed decisions. Despite the robust regulatory process though, people are still seeing effects to the environment, like the rapid decline of

[46] Gaps in socio-economic and community well-being are addressed in Section 1.2
[47] Decisions made regarding EA, land use permitting, water licensing and land use planning

caribou populations; without knowing the cause(s) of the effects, we cannot know if specific decisions were 100% protective or not.

We have no recommendations at this time for further improvements to regulatory processes with respect to the protection of the biophysical environment; however, we believe that improvements to the monitoring and assessment of cumulative impacts and regional trends (see Parts 2-4 of this report) will greatly help to give boards more of the information they need to make informed and protective decisions. This conclusion is supported by survey responses from the MVEIRB: "This [caribou] decline and the uncertainty around the cause of the decline is making it harder for the MVEIRB to confidently assess impacts to the herd during its project assessments. Additionally, the increasing rate of impacts associated with climate change is now creating concerns over predictions of impacts associated with things such as flood rates or permafrost containment being less reliable."

Ekati Jay Project – Outcomes of Decisions

We examined the EA of the Ekati Jay Project to test whether a specific decision was protective of the environment and whether it supported good decision-making. Our review, detailed in Appendix B, found that the parties to the review examined a wide and comprehensive information base, that the analysis of findings was well supported by evidence, and that the decision to approve the project, subject to mitigating measures, was defensible. We observed two notable components of the review. The first, that a public and comprehensive review helped to understand the full scope of impacts and benefits, resulting in the proponent's re-design of the project with a view to reducing impacts. The second notable component was that of the MVEIRB's requirement for reporting on follow-up measures by the proponent, regulators, and government. This requirement has resulted in annual reporting on the progress of measures. The result is that measures are less likely to be "orphaned" or forgotten and instead are actively monitored on a regular basis, thereby implementing a more comprehensive adaptive management approach.

Thaidene Nëné National Park Reserve – Outcomes of Decisions

After concluding our evidence collection process, the Auditors were made aware of a regulatory decision with respect to establishing the Thaidene Nëné National Park Reserve. We have not examined the decision-making process in this case, but we heard concerns from industry about the preliminary screening approach and decision made by Parks Canada. Further, we note that the subsequent reasons for decisions made by the MVEIRB confirm these concerns as well as concerns by Indigenous organizations.[48,49] We suggest this case could be examined in a future audit as a way to further explore outcomes of regulatory decisions.

1.3.2 Regulatory process for some low-risk activities causes uncertainty for industry

The MVRMA describes different processes for regulating activities according to the risk the activity poses to the environment. For example, there are differences in environmental impact assessment type, from screenings for smaller, lower-risk projects to panel environmental impact reviews for large higher-risk projects. In licensing, there are 'under threshold' activities that do not require permits, 'Type B

[48] (MVEIRB, 2019a)
[49] (MVEIRB, 2019b)

authorizations' for slightly more complex projects, and 'Type A authorizations' for larger more complex projects.

Missing is more detail with respect to the management of risks and the authority for regulators to develop guidance and standard practices to fully implement risk management. For example, industry representatives identified that small projects (e.g., small drill mineral explorations) required a similar burden of permitting to medium projects (e.g., advanced exploration), even if these activities had been previously reviewed in similar contexts in the same region. From the perspective of industry, the outcomes of regulatory processes, especially for small projects, are always uncertain.

To reduce that uncertainty, representatives from the mining industry identified the need for exploration activities to be permitted in a more streamlined manner to ensure explorers discover resources in a timely manner so as to replace maturing mines and sustain social and economic well-being of northern residents. In their view, "streamlining" is not about reducing industry's responsibilities to protect the environment; instead, it is about providing better tools for applicants seeking permits/licences for relatively common and low-risk activities (e.g., industry often uses small drill operations, small tent camps, and small fuel storage facilities). Industry representatives suggested regulators develop a permitting bundle for a category of exploration activity that operates under specific scenarios; also, that regulators consider issuing standard permits and authorizations with standard terms and conditions for small, low-risk undertakings. The assumption is that if proponents commit to standard conditions in their application, that it would not be necessary to undergo a lengthy and uncertain regulatory process.

Industry also noted that, outside project reviews, there is little to no opportunity to provide feedback to regulators with a view to enhancing the performance of the regulators or the regulatory system. This finding was corroborated by board and GNWT survey respondents who indicated that they do not examine the performance of the regulatory regime at meeting the needs of those parties they are regulating (e.g., rate of client satisfaction with transparency, or confidence in outcomes). The parties the boards and GNWT regulate, and therefore with whom they interact the most, do not appear to be consulted to determine if the regulatory regime is operating as intended or if improvements are needed. It seems the only consistent opportunity for engagement on the regulatory regime is through the NWT Environmental Audit, which only happens every five years. We believe this to be a significant gap.

Our discussions with industry reveal a major disconnect between their perceptions of the regulatory process as complicated and uncertain and the many tangible efforts the LWBs continue to make to improve clarity and certainty in the process (see text box below). We note that the LWBs solicit feedback from all parties, including industry, when developing guidelines and templates, as an opportunity for proponents to provide input to the boards.[50] Despite the efforts of LWBs, small exploration companies continue both to struggle with the application process and to meet its requirements. If allowed to persist, this disconnect between industry and regulators will continue to affect the level of exploration activity in the territory which, in turn, will affect the NWT's socio-economic environment.[51]

[50] LWBs comment on first draft of Audit report

[51] The Audit Team notes there are other factors that influence the amount of exploration activities, including commodity prices, labour mobility, and energy costs; we did not consider these factors in the Audit.

Examples of LWB efforts to improve consistency and certainty in the regulatory process[52,53]

- Process guides:
  - Guide to the Land Use Permitting Process
  - Guide to Completing Water Licence Applications
  - The MVLWB recently sent out a guide on the water licensing process for public review; these have not been approved yet.
- Standard conditions:
  - Standard Land Use Permit conditions, including a rationale for each condition
  - The MVLWB recently sent out standard conditions for water licences for public review; these have not been approved yet.
  - Standard Process for New Conditions
- Guidelines exist for some management plans including: Waste Management Plans, Spill Contingency Plans, Closure and Reclamation Plans, Engagement Plans, and Aquatic Effects Monitoring Plans.
- For municipal water licences, the MVLWB has standard "fill in the blank" templates for Operation and Maintenance Plans (including facilities for sewage and waste disposal as well as water treatment plant operation) and Spill Contingency Plans.

Recommendation 1-7: That the LWBs regularly meet with key client groups outside of specific regulatory processes to discuss opportunities and challenges with the goal of continuing to improve the regulatory system. We further recommend the LWBs use the information from these engagement sessions to inform priorities and workplans. *The outcome we expect is for the LWBs to create opportunities outside of specific regulatory processes, to understand the needs of groups of proponents (e.g., mineral exploration proponents). We also expect the LWBs to consider creating guidance and products that address the expressed needs identified by proponents.*

LWB's response: *The LWBs have multiple opportunities in place for meetings and information sharing with parties involved in the permitting and licensing processes. These include:*

- *Bi-monthly to quarterly joint meetings (joint meetings) of senior level staff from GNWT-Lands, GNWT-ENR, CIRNAC, CanNor, and MVEIRB.*
- *"MVRMA in a Day" presentations are given many times each year to various parties (e.g., in 2019 there were 24 such sessions with an average of 7-8 people per meeting, with participants including GNWT Lands, ECE, Health, and ENR; DFO; ECCC; various First Nations; and independent oversight bodies).*
- *For the last several years LWB staff have been key members of the organizing committee for the annual MVRMA Practitioner's workshops held in various regions of the NWT.*
- *LWB staff have participated in recent tradeshows organized by GNWT-ITI through their REDI initiative.*
- *In October 2018 the LWBs created and filled a Community Outreach Coordinator position. Through that position LWB staff have conducted multiple information, dialogue and training sessions in schools, at tradeshows, gatherings of Indigenous government organizations, and events held by other professional or municipal organizations (e.g., LGANT, NWTAC).*

[52] (MVLWB, 2019a)
[53] (MVLWB, 2019b)

- *The LWBs are a member of the organizing committee for the Regulatory Dialogue initiative spearheaded by CIRNAC and CanNor, and focused primarily on concerns with the regulatory processes raised by industry. The first workshop is planned for mid-March 2020.*

In addition to the ongoing initiatives, in early January 2020 the LWB EDs reached out to the NWT and Nunavut Chamber of Mines to propose periodic meetings for the purpose of informal discussions on various topics of their choosing.

With respect to the LWBs "creating guidance and products that address the expressed needs identified by proponents", there are multiple examples of such guidance on the LWB websites (under the Resources tab or via the "Apply for a Permit/Licence" button). To assist all applicants, clarify expectations, and improve consistency, the LWBs have been prioritizing updates to existing guidance and development of additional guidance documents, which includes information specific to particular types of projects where appropriate:

- *The LWBs recently updated the permit and licence application forms, and are in the process of updating the associated guidance documents.*
- *The LWBs have guidelines available for each of the management plans that are required with all applications, and these guidelines all contain templates or examples.*
- *A Standard Land Use Permit Conditions Template is available, and a similar template for licences is in the process of being finalized. Additionally, applicants can access copies of permits and licences for similar types of applications on the LWBs' public registry.*
- *The LWBs and the GNWT are currently in the process of developing a Guideline for Determining Water Source Capacity in the Mackenzie Valley.*
- *LWB staff are always open to participating in other opportunities for dialogue on the regulatory processes in the NWT, should another party wish to take the initiative.*

Recommendation 1-8: That the LWBs and the GNWT develop a standardized mineral exploration permitting bundle, in consultation with affected parties, similar to what the MVLWB has already done for municipal water licences. *The outcome of such an approach would be to streamline the approval of low-risk exploration activities while maintaining the made-in-the-north environmental protection and management system operating in the Mackenzie Valley. A standardized, or "fill-in-the-blanks", permitting bundle for low-risk mineral exploration could include such items as a draft project description, draft management plans, draft engagement plans, a draft screening report, and draft authorizations.*

LWB's response: *In considering this recommendation, it is important to recognize that municipal operations and mineral exploration are distinctly different types of projects. Municipal projects are stationary, affect a limited area, and, for the most part in the NWT, consist of existing operations, so potential concerns and impacts are generally already known and limited to a localized area. Mineral exploration projects are much more variable in terms of location and project area, so there is greater potential for these projects to overlap with culturally significant areas and with other land and water uses. Accordingly, there is greater potential for variability in what is considered acceptable and low-risk for different projects and even within a given project boundary. It is important that each applicant provide adequate project-specific information for potentially affected parties and the LWBs to understand and assess the potential impacts of the project. Further, if a project requires a water licence, the LWBs require information regarding water sources to fulfill additional requirements under the Waters Act and MVRMA (e.g. to assess potential claims for water compensation and determine precedence).*

To assist all applicants, clarify expectations, and improve consistency, the LWBs have been prioritizing updates to existing guidance and development of additional guidance documents, which includes additional information specific to particular types of projects where appropriate:

- *The LWBs recently updated the permit and licence application forms and are in the process of updating the associated guidance documents.*
- *The LWBs have guidelines available for each of the management plans that are required with all applications, and these guidelines all contain templates or examples.*
- *A Standard Land Use Permit Conditions Template is available, and a similar template for licences is in the process of being finalized. Additionally, applicants can access copies of permits and licences for similar types of applications on the LWBs' public registry.*
- *The LWBs and the GNWT are currently in the process of developing a Guideline for Determining Water Source Capacity in the Mackenzie Valley.*

This information is applicable to all types of applications, including mineral exploration, and while the LWBs will continue to evaluate the need for development of additional general guidance on an on-going basis, the LWBs currently have no plan to develop further guidance based on specific project types. If another party (e.g., the NWT and Nunavut Chamber of Mines or GNWT-ITI through its Client Services and Community Relations Division) was to take the initiative to build on the above noted guidance documents to develop more specific management plan templates for their members/clients, LWB staff would be available to assist and review the templates; however, it should be noted that the LWBs will continue to assess each application on a case-by-case basis and will continue to conduct their standard public review process for each application. Should applicants have questions about the application process, they are encouraged to contact LWB staff. In the longer term, the LWBs may work towards providing online applications.

In developing the response to this recommendation, the LWBs have engaged with the GNWT.

***GNWT's response:** The GNWT agrees with the intent of this recommendation. The GNWT recognizes there is a growing interest by industry proponents to streamline permitting processes for low-risk, small exploration activities. The GNWT, the Government of Canada, regulators and reviewers plan to come together in a workshop in 2020 to develop shared understanding of process and content issues related to small-scale exploration regulatory applications, and identify potential solutions for joint action. GNWT ITI's Client Services and Community Relations Unit will also continue to work with industry associations and regulatory partners at the early stages of the application process in an effort to expedite review processes, while ensuring the requirements under the MVRMA are adhered to.*

1.3.3 New approaches to integrating TK in decision-making are being implemented

The 2005 and 2010 Audit Reports provided comprehensive evaluations of many issues related to TK collection and its use in co-management decision-making processes; their analysis resulted in nine TK-related recommendations in 2005 and four in 2010. Both of those Audits acknowledged that despite the issues they had identified, there was an increasing acceptance and respect for the usefulness and role of TK in regulatory and land use planning processes. The 2015 Audit had two recommendations related to

TK collection and use,[54] which indicates that, over the years, progress has been made on many of the earlier Audit recommendations. In this section of the 2020 Audit Report, we specifically evaluate the use of TK in regulatory decision-making.

The 2015 Audit noted that efforts were being made to "integrate TK into the decision-making process, with varying degrees of success,"[55] but recommended that: "LWBs and MVEIRB should work with interested parties to identify approaches to better utilize and integrate TK information into the decision-making processes."[56] In response to this recommendation, the MVEIRB referenced its 2005 'Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessments' and committed to seeking further improvements to the use of TK in their processes. The LWBs responded that "TK is used meaningfully when present" and they were able to cite examples to support that statement. In addition, we note the following examples of TK-related efforts made by the boards since 2015:

- The GNWT ENR and the LWBs published the Guidelines for Aquatic Effects Monitoring Programs (AEMPs) in March 2019.[57] The guidelines describe a process for developing an AEMP that seeks the collection and use of TK in the design and implementation of the program.
- The LWBs are considering including two TK-related conditions[58] as standard in water licences. Collectively the conditions require the proponent to consider TK information given to them and to state, in plans required under the licence, what recommendations were made and how the proponent addressed them.
- As part of the EA process, the MVEIRB has hosted Cultural Impact Technical Sessions to gather information from land and resource users about potential cultural impacts. The sessions provide an opportunity for TK holders to submit evidence in their own community, using a process separate from the typical technical sessions that tend to focus on scientific data.[59] In the case of the Prairie Creek All Season Road Project EA, the MVEIRB engaged with community members prior to the session, through door-to-door visits, to inform them of the session and to request advice on methods to apply at the session to solicit community-based knowledge and TK.[60] The MVEIRB has also worked with proponents and Indigenous government representatives to ensure local Elders, women, and youth have opportunities to provide input at public hearings early in the agenda instead of at the end of the meeting (e.g., Tłı̨chǫ All-Season Road).[61] In each of these cases, there is evidence that the MVEIRB acknowledged the need for different approaches in different regions and adapted their processes accordingly. The reports of EA in these cases describe how the MVEIRB considered TK in its conclusions.

The results of our surveys related to TK in decision-making indicate that boards and the GNWT receive TK information occasionally or rarely in regulatory processes, with more TK provided in the EA process than licensing. Indigenous organizations that responded to the survey indicated that they have processes

[54] Recommendations 2015-16 and 2015-23. Recommendation 23 of the 2015 Audit called for NWT CIMP to work with partners to enhance and facilitate the collection of TK; as we discuss in Part 5, we find that specific recommendation to have been adequately addressed although we have noted in Part 2 that there is still a problem having that information available to assess trends in water quality and quantity.
[55] Section 2.65 of the 2015 Audit
[56] Recommendation 2015-16
[57] (MVLWB, 2019c)
[58] Standard water licence conditions were released for public review by the MVLWB in May of 2019 (see mvlwb.com/resources/policy-and-guidelines); at the time of writing this document, these conditions have not been approved.
[59] (Barnaby, 2016)
[60] MVEIRB, email correspondence (2019)
[61] (MVEIRB, 2017)

in place to share TK to help inform decision-making. Boards and the federal government respondents indicated that TK is somewhat to effectively co-applied with western science in decision-making. However, when asked if TK was used meaningfully in the MVRMA for the purpose of environmental management, the majority of Indigenous respondents were of the opinion that TK was not used meaningfully.

On balance, the evidence suggests that while several new efforts are being made to incorporate TK into decision-making, the effects of these efforts have not yet been felt by all participants in the EA and regulatory processes. Given the innovative approaches taken in the last few years by the MVEIRB, we expect the situation to continue to improve in the next few years, at least with respect to the EA process. At this stage, it is not clear what impact the most recent LWB efforts will have.

Partially Implemented 2015 Audit Recommendation

We find that progress has been made to address the recommendation from the 2015 Audit, (**Recommendation 2015-16** *"LWBs and MVEIRB should work with interested parties to identify approaches to better utilize and integrate TK information into the decision making processes.")*, particularly with respect to the EA process; however, additional evidence of the impact of these efforts on participants in the EA and regulatory processes is needed to confirm that Recommendation 2015-16 has been fully implemented.

During our interviews with Indigenous organizations, representatives identified that participation in the regulatory process is a substantial burden for those who want to provide TK for decision-making. One representative described the experience of a TK holder providing evidence at hearings as 'embarrassing' and 'demeaning' because it requires the TK holder to have technical skills to speak and present information in a rigid manner with a purpose, method, analysis, and a conclusion-type approach. In their opinion, the experience and information of TK holders, whose very survival requires an intimate understanding of animal and plant colouration, locations, timing of movement, smells, and textures, are considered anecdotal to that of a scientist conducting a study in glass jars on a lab bench for less than one year. Furthermore, Indigenous representatives identified that the short moment of time where TK evidence can be presented during a regulatory process is a further impediment to sharing and using TK in an effective manner.

Some of the solutions from the MVEIRB (see above) may go a long way to addressing the issues raised by interviewees. For example, the Cultural Technical Sessions provide a dedicated, local, and respectful venue for people to share TK without being rushed for time. What still seems missing is the recognition that the meaningful sharing of TK is a process, not an event. Considering it from this perspective, the collection and integration of TK needs to take place over time, interacting with the regulatory process at many stages. We note that this is, for example, the same approach recommended by the GNWT and the LWBs for the development and implementation of AEMPs for individual projects. The AEMP Guidelines recommend the formation of a working group of monitoring experts before the regulatory phase officially begins, and well before a project's EA. This same working group is meant to continue to advise the proponent and the regulator from the collection of baseline information right through to review of monitoring reports, over the course of many years. The use of a TK body or working group to provide

advice over time is exemplified by Ni Hadi Xa, which is a committee of Indigenous organizations and a project proponent, who watch the land and waters and advise the proponent through time.[62]

Recommendation 1-9: The MVEIRB and the LWBs, in cooperation with other relevant regulators and affected Indigenous communities, establish, where necessary, a project TK Advisory Committee or talking circle to advise on the use of TK for the purpose of enhancing decision-making of the project. Such TK committees would advise project proponents and regulators and conduct monitoring, if required, from pre-regulatory though regulatory reviews, construction, operation, and beyond as required. To be most effective, a TK Advisory Committee would need to be established as early as possible, but no later than the start of an EA, and live through to the end of the project, advising both regulators as well as the project proponent. *The outcome we expect is that TK has an opportunity to be meaningfully incorporated and used in decision-making throughout the life of a project from project design, through operations, and closure. Project proponents are strongly encouraged to help fund such initiatives, as it could form an important element of community engagement and increase awareness about impacts, mitigation, and best operational practices.*

LWB's response: *The LWBs agree that more efforts need to be made to enhance the use of TK throughout the regulatory process. MVEIRB's methods are an illustration of progressive solutions that incorporate community knowledge into decision making. The LWBs' permitting and licensing processes consist of much longer and more complex relationships between project proponents, communities, and regulators. As such, instruments of partnership and collaboration are necessary between communities and proponents as the 2020 Audit suggests - through the life of the project, the regulator's role is to promote and foster those relationships while utilizing their proceeds in its process of review. The LWBs will examine our guidelines and our reviews over the coming years to better foster these relationships and to create a respectful integrated approach.*

MVEIRB's response: *MVEIRB fully agrees with the desired outcome "that TK has an opportunity to be meaningfully incorporated and used in decision-making throughout the life of a project from project design, through operations, and closure" and that proponents have a role in supporting this.*

MVEIRB has been using its Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessment. The guidelines stay high level and do not prescribe TK methods - MVEIRB respects and promotes the use of local protocols for knowledge ownership and sharing, interpretation, peer review, and use in environmental impact assessment.

In recent environmental assessments MVEIRB has used a variety of approaches to incorporating TK, based on discussion with Indigenous governments and organizations.

In future assessments, MVEIRB will engage Indigenous governments and organizations to determine if and when a TK Advisory Committee is the preferred approach and, whatever approach is chosen, to ensure it works for the people and project being considered.

[62] (Ni Hadi Xa, 2019)

1.4 Engagement and Consultation

What We Examined

The Audit Team sought evidence of improvements to engagement and consultation since the 2015 Audit, as well as the satisfaction of participants with engagement processes. We also looked to determine whether interested parties have access to and input into regulatory decision-making processes, and whether there is engagement coordination amongst responsible organizations.

The Audit Team collected qualitative information from the GNWT, GoC, boards, and Indigenous organizations through surveys and interviews. We examined documentary evidence of territorial, federal and board engagement processes and materials, and collected public input, through the public survey and open houses. Lastly, we used the case studies to further examine engagement and consultation, with a focus on the Enbridge Line 21 Pipeline.

Why It's Important

Participation of and engagement with interested parties ideally results in better decisions. When done effectively, it helps to raise awareness of an issue or pending decision, collect valuable information that is held by those to whom the participation and engagement is directed, as well as making the engaged parties feel more a part of the regulatory process and decision-making.

Participation in regulatory decision-making, as well as broader engagement and consultation, has been the subject of previous Audits. The 2015 Auditors found that:

- the GNWT has internal processes for consultation, but has no public position or guidelines; and,
- the GNWT and GoC rely on the developers' engagement and the EA process in lieu of conducting consultation activities directly, which has led to uncertainty regarding the adequacy of consultation.

What We Found

1.4.1 The public is largely satisfied with engagement, but strategies should continue to be reviewed

Public survey results indicate that the public is largely satisfied with engagement with respect to regulatory processes. Participants were asked to rate how truthful they perceived statements about access to information, timing, and whether the final decisions at the end of each regulatory process considered their input. Regulatory processes include EA, land use permitting, water licensing and land use planning. Most respondents felt that it was 'somewhat true' or 'true' that they had access to information and enough time to participate in each of the processes. Fewer respondents felt it was 'true' that decisions made at the end of the processes considered their input (whether they were "heard"). Most respondents to the IGOs survey were satisfied with the engagement approaches in regulatory decision-making, whether at the EA or permitting stage.

The Audit Team also sought information on the adequacy of community engagement by project proponents. Most respondents to the board survey, GNWT survey and federal government survey were unsure if adequate efforts were deployed by proponents. The majority of Indigenous representatives were satisfied with efforts made by proponents.

The positive survey results are consistent with the observation made by the 2015 Auditors that they heard less concerns about engagement and consultation challenges than during the 2010 Audit. To ensure ongoing satisfaction of the public with engagement, we also looked for evidence that the boards, the GNWT and the federal government were continuing to evaluate the effectiveness of the policies and practices with the clients they serve. While survey results are limited by those who responded to the survey request, the responses suggest that the federal government and some boards examine performance of their engagement strategies with clients (for example, see text box below), while the GNWT does not.

Recommendation 1-10: The GNWT and the federal departments with responsibility for engagement and consultation under the MVRMA work with their respective clients to review and improve engagement strategies. *The outcome we expect is that strategies for engagement and consultation are regularly reviewed and improved as necessary.*

CIRNAC's response: *The primary mechanism used by Canada to engage with Indigenous groups and to honour the Crown's section 35 (Constitution Act) duty to consult for applications within the Mackenzie Valley is to rely on assessment and regulatory processes established under land claims agreements and the MVRMA. These processes are facilitated by the establishment of implementation plans (contracts) that flow funds to Indigenous groups to support their involvement in land and water management processes. Capacity within Indigenous organizations is further supported through the Northern Participant Funding Program (NPFP) that provides financial support when large, complex or controversial projects enter the assessment process. Implementation plans with Indigenous groups are renewed on a 10 year cycle, and the NPFP will be reviewed in 2023 with the hope of extending and expanding this program if there has been a demonstrated need.*

Canada has developed a consultation model that supplements Board processes which directly requests information relating to impacts on treaty right and provides opportunity for comments on the consultation process for projects undergoing an Environmental Assessment. Canada also reviews its approach to consultation following judicial review process relating to consultation and s. 35 rights. Currently, Canada and the territorial government are working in collaboration with the Mackenzie Valley resource co-management Boards to review engagement and consultation strategies in light of the Clyde River-Chippewas of the Thames Supreme Court Decision (Hamlet of Clyde River v Petroleum Geo-Services Inc. and Chippewas of the Thames First Nation v Enbridge Pipelines Inc.). Finally, Canada actively participates in the MVRMA Audit process, which provides an opportunity for third party review of MVRMA process including engagement and consultation strategies. As the Boards update their consultation and engagement policy and guidelines, the federal government has expressed interest in participating in these initiatives and will be looking for any comments or recommendations on how the federal government can improve their involvement and processes.

The federal government will continue to review and look for ways to improve their engagement strategies. With the passage of Bill C-88, the federal government has the authority to develop consultation regulations, should resource management partners view this as a priority.

GNWT's response: *The GNWT agrees with this recommendation. The GNWT provides advice and resources to support the pro-active, coordinated and consistent government-wide approach to Aboriginal consultation and engagement with Indigenous governments. The GNWT undertakes ongoing review of its approaches to ensure consistency with the evolving case law as well as developing resources, tools and training to ensure meaningful public engagement and/or Aboriginal*

consultation to ensure responsible decision making, mutually respectful relationships, and to achieve reconciliation. As appropriate, the GNWT works with the Government of Canada and/or resource management boards to facilitate consistent approaches to Aboriginal consultation in the MVRMA and related processes.

Joint Engagement and Consultation Policy

The LWBs and the MVEIRB announced in August 2019 that they are pursuing the development of a joint engagement and consultation policy to update the existing MVLWB Policy (2013)[63] and to expand the policy to include EA and impact review. The aim of the policy is to affirm "shared principles and present a consistent policy," which will cover the roles of the boards, the expectations of project proponents, and the interface between board processes and overall Crown Consultation.[64] The boards will hold public engagement sessions in Fall 2019. This joint initiative demonstrates the ongoing collaboration shared between the MVEIRB and LWBs.

The federal government plans to be involved in any workshops or meetings related to this policy to "better understand what elements of consultation require greater clarification, and to better understand if there is a desire to develop consultation regulations." The federal government is interested in understanding what information communities, industry or others want detailed in regulations. The GNWT also plans to participate in these workshops.

1.4.2 The intent of the 2015 Audit recommendations are being met, but gaps persist

The 2015 Auditors made the following recommendations to the GoC and the GNWT to address gaps in consultation and engagement:

> ***Recommendation 2015-17:*** *The GNWT should develop a clear policy and program to address and communicate its responsibilities for consultation and public engagement.*
>
> ***Recommendation 2015-18:*** *INAC should make the development of regulations on consultation a priority to add further clarity and certainty to the regulatory process.*

With respect to a GNWT policy for consultation and public engagement, the GNWT has highlighted its commitment to meaningful consultation in "The Government of the Northwest Territories' Approach to Consultation with Aboriginal Governments and Organizations,"[65] and in the Respect Recognition Responsibility[66] document. We find the intent of the recommendation is being addressed, however, the GNWT has not developed a policy for consultation and public engagement and the recommendation remains outstanding.

With respect to CIRNAC's development of consultation regulations, CIRNAC's approach to consultation has been to develop guidelines and enact regulation-making authority under the NWT *Devolution Act*, rather than making regulations on consultation directly. Further, in response to the 2015 Audit, CIRNAC

[63] (MVLWB, 2013)
[64] (WLWB, 2019)
[65] (GNWT, 2007)
[66] (GNWT, 2012)

remained open to "assess the need for regulations on consultation."[67] We find the intent of the 2015 recommendation is being addressed, but the specific recommendation is outstanding.

Outstanding 2015 Audit Recommendations

The GNWT and CIRNAC should fully address the recommendations from the 2015 Audit.

Recommendation 2015-17 "*The GNWT should develop a clear policy and program to address and communicate its responsibilities for consultation and public engagement.*"

Recommendation 2015-18 "*INAC should make the development of regulations on consultation a priority to add further clarity and certainty to the regulatory process."*

The 2015 Audit finding that "the GNWT and Government of Canada rely on the developers' engagement and the EA process in lieu of conducting consultation activities directly," persists, and also applies to project-specific engagement. For example, the Enbridge Line 21 Pipeline case study, described in Appendix B and summarized in the text box below, demonstrates again that it is largely the proponent-led engagement of communities that satisfies engagement requirements in the permitting process.

While no one disputes the responsibility of proponents with respect to engagement on their project, there are consequences to government or board representatives not engaging directly with communities earlier in the process. As noted in the Enbridge Line 21 Pipeline case study, the MVLWB seemed unaware of the extent of community concerns until the public hearing stage, thus necessitating an extended hearing. As well, one IGO representative highlighted that engagement led by proponents or communities, absent of government and/or other regulators, exposes a substantial gap because there are many issues of importance to the community that impact the proponent's project but are the responsibility of government to hear about and help manage (e.g. education, health impacts, wildlife management). A CIRNAC representative noted that governments are "working with the boards on a process to flag issues early if possible, particularly if issues raised are outside of the jurisdiction of the MVLWB." The representative also noted that pre-application involvement is difficult because governments are not always aware what and when regulatory applications will be submitted.

With respect to engagement of communities by the boards, the use of Cultural Impact Technical Sessions by the MVEIRB represents a significant advancement since the last Audit. The purpose of the sessions is for MVEIRB staff to gather information from land and resource users about potential cultural impacts from proposed projects. To us, this represents a unique opportunity for regulators to go into a community long before the more official public hearing process begins. Sessions specifically like that may not be feasible for LWBs or government departments, but other opportunities to engage people in their own communities early in the process or even in the pre-application phase should be identified.

Recommendation 1-11: The MVLWB re-examine its engagement process and enhance the process where appropriate to better detect emerging public concerns and to adapt their plan for engagement as required. *The outcome we expect is for MVLWB to be aware of community issues prior to hearings.*

[67] (Arcadis, 2016)

LWB's response: *The LWBs are pleased to note that the 2020 Audit found the majority of survey respondents indicated satisfaction with current engagement approaches and acknowledge the need to update policy and process to reflect lessons learned and ensure engagement with affected parties remains robust.*

The LWBs and MVEIRB are currently in the process of developing a joint engagement and consultation policy (joint policy). The purpose of this exercise is to both update the existing MVLWB Engagement and Consultation Policy to reflect experience over the past several years, incorporate emerging best practices, and expand the policy to include environmental assessment and impact review. In addition to considering past experience, the LWBs and MVEIRB are seeking input from interested parties to inform development of the joint policy. It is envisioned that the joint policy will cover the roles of the Boards, the Boards' expectations for project proponents, and the interface between Board processes and overall Crown Consultation.

As noted in the MVLWB Policy and 2020 Audit, there are aspects of engagement and consultation which fall outside of the LWBs' jurisdiction and will be more appropriately addressed by the GNWT and federal government. The LWBs are committed to working with governments to ensure efforts regarding engagement and consultation are complimentary. The LWBs will investigate and adopt, where appropriate and feasible, practices which ensure public concerns are identified early in review processes, as noted in Recommendation 1-11.

Enbridge Line 21 Pipeline – Engagement and Consultation

Enbridge proposed to replace a 2,500-meter segment of the existing pipeline to protect it from the impacts of slope movement and to support continued safe operation. The Line 21 Pipeline project required a coordinated review by the MVLWB and the National Energy Board (NEB).

Separate public hearings were hosted by the NEB and the MVLWB for the permitting/licensing process. The NEB fully funded participant funding applications and Enbridge further enhanced engagement by entering into a "Process Agreement" with a group of affected communities. We believe this regulatory review was enhanced significantly by NEB's injection of participant funding, as well as the proponent's Process Agreement.

In our review of the evidence, it is clear that the GoC and GNWT relied on the consultative processes of Enbridge and of the NEB/MVLWB to discharge the duty to consult. This is one example of the common practice of governments and boards relying on developers to engage with communities to address questions and concerns. As the case study further explains in Appendix B, the MVLWB seemed to be caught off guard by public concern; the Board adapted by allowing more time for public sessions (i.e., by adjourning and reconvening at a later date). This demonstrates the Board's responsiveness to emerging needs; however, the Board's engagement process may not adequately detect emerging public concerns.

1.4.3 Transparency and accessibility continue to improve for different aspects of the regulatory process

In addition to project-specific engagement and consultation of the public, we note the following initiatives as examples of how regulators have sought to improve the transparency and accessibility of the overall process since the last Audit:

- The MVEIRB noted in an interview that it has made its decisions more transparent through improved Reports of EA and has enhanced its engagement approaches throughout the various stages of EA (e.g., engagement in the scoping stage to tailor the process). The MVEIRB now provides executive summaries that have been translated into Indigenous languages (e.g., Tłı̨chǫ All-season Road Executive Summary).[68]
- The MVEIRB also provided evidence of improvements to accessibility of information related to the EA process. The MVEIRB has developed plain-language materials to describe the EA process steps, which are used for various outreach activities.[69] Under the amendments to the MVRMA, the MVEIRB is now required to ensure all preliminary screenings are viewable to the public online – the registry was established in the spring of 2019.[70] Lastly, the MVEIRB requires government, regulators, and proponents to publicly report progress of measures implementation. This requirement was introduced for the Ekati Jay project. It is apparent that there is continued progress in engagement and accessibility of information by the MVEIRB.
- Since 2016, the MVEIRB, LWBs, and GNWT have hosted annual workshops for interested parties across the NWT. A larger workshop is held in Yellowknife every two years, with smaller regional workshops every other year. The purpose of the workshops is to provide a forum for discussion on the regulatory regime, with each year focused on a different topic (e.g., 2016 was on Devolution; 2018 was on the stages of a project lifecycle after the EA is complete).[71] These workshops demonstrate a collaborative approach to engagement outside of specific project reviews. The workshops also provide an opportunity to educate and empower residents to participate in regulatory processes.

1.5 Land Use Planning

What We Examined

Building on the previous Audits, the Audit Team examined the status of land use planning, whether there are processes in place to track progress and performance of land use planning, and whether there is clear progress in conservation planning or resource development planning in those areas without land use plans (LUPs). We collected information from the GNWT, GoC, Land Use Planning Boards and IGOs through surveys, interviews and document review.

Why It's Important

Land use plans are a core component of the management regime in the NWT; they provide direction as to what types of land uses are allowed within a given area. "The GNWT considers regional land use plans to be the primary instrument to define where certain activities can take place."[72] Land use planning in the Mackenzie Valley has occurred on a regional basis according to settlement region boundaries. Land use plans exist in the Gwich'in (2003), Sahtu (2013) and Tłı̨chǫ settlement regions (for Tłı̨chǫ lands) (2013).

Only approved LUPs are used in conformity determinations – i.e., when a proponent applies for an authorization, the GNWT/boards will ensure conformity with a LUP before issuing an authorization for the

[68] (MVEIRB, 2018)
[69] (MVEIRB, n.d.)
[70] (MVEIRB, 2019)
[71] (Dillon Consulting, 2018)
[72] (GNWT, 2019f); p. 2

use of land or water.[73] The MVEIRB noted that there is greater potential for conflicts between development projects and public concern in areas that may be of high cultural, spiritual or conservation value, but are not recognized in any formal way (i.e., in a LUP).

Land Use Planning Boards are required to review LUPs every five years. Reviews and updates allow for the consideration and integration of changes to the regulatory system as well as broader policy, ecological and societal changes. Land use plans become less relevant over time if they do not undergo this review.

The absence of LUPs in certain areas of the NWT has been noted as a consistent barrier by previous auditors. In the most recent 2015 Audit, the absence of approved LUPs in the Dehcho and southeast NWT areas and the broader Wek'èezhìı area was identified as "impeding the successful implementation of an integrated system of land and water management." The 2015 Audit recommended the following:

> ***Recommendation 2015-2***: *INAC and GNWT should work together in good faith with Indigenous governments and other interested parties to develop enforceable land use plans in the absence of settled land claims. Timelines should be established, published and monitored*.

What We Found

1.5.1 Existing land use plans are not consistently reviewed and updated every five-years

Although LUPs are meant to be reviewed every five years under the MVRMA (Section 50), only one existing LUP, the Sahtu LUP (approved in 2013), is currently under review. The Sahtu Land Use Planning Board (SLUPB) initiated its review in 2018 by gathering input from impacted parties (e.g., GNWT, LWBs) on the scope of the review and held community gatherings in 2018 and 2019 to discuss the review and gather input from community members.[74] According to one GNWT interviewee, there is "political will" to complete the review; however, another informant noted that the review is taking too long, and that there is a significant time lag between review periods.

To inform its five-year review, the SLUPB conducted an assessment of the development and implementation of the Sahtu LUP since its inception to "evaluate the awareness and effectiveness of the Sahtu LUP and identify areas of priority for the planning partners."[75] The assessment found that overall the plan is "working as expected" and is seen as an "effective tool for managing land use at a regional scale (particularly through its different zones)."[76] The assessment included a set of recommendations for planning partners to consider in continuing to implement the Sahtu LUP and to help prepare for the five-year review.

In concurrence with its five-year review, the SLUPB is "developing an implementation monitoring and evaluation framework for the Sahtu LUP to better understand how successfully the plan is being implemented, and what the Board can do better to ensure that the plan's vision is being met."[77] We

[73] (GNWT, 2016b)
[74] (SLUPB, 2019)
[75] (HTFC Planning and Design, 2017), p. 5
[76] Ibid; p. 6
[77] SLUPB survey response

understand this monitoring and evaluation framework to be an ongoing monitoring tool to inform the SLUPB of issues in-between and leading-up to the required five-year reviews.

The Gwich'in LUP, developed in 2003, has been revised four times, but a review has never been finalized. Most recently, the plan has been under review since 2015, with a "Final Draft" released in 2018 by the Gwich'in Land Use Planning Board (GLUPB).[78] The Gwich'in LUP was identified as "out of date."[79] Concerns were raised that out-of-date plans "undermine confidence in land use planning as an adaptable component of the integrated system."[80] The Auditors did not seek evidence to confirm this statement. Capacity issues, including changes to staff and leadership, were raised as key barriers to the review and completion of the Gwich'in LUP.[81,82]

The Tłı̨chǫ had not initiated its review of the Tłı̨chǫ LUP at the time of the Audit.

Gaps in coordination between MVRMA planning and monitoring functions

The kinds of monitoring required to understand if a LUP is being implemented successfully will range from biophysical (e.g., water, wildlife, vegetation) to socio-economic and community well-being. As noted in different sections of this report, these kinds of monitoring are also required for other decision-makers under the MVRMA, but as noted by representatives at GNWT Lands: "Planning boards are trying to figure out monitoring and evaluation in isolation from the rest of the system – there's no connection between MVRMA monitoring and planning functions – greater coordination is required." The lack of coordination between MVRMA monitoring and planning functions was therefore identified as a gap.

We did not conduct a systematic review of the integration of planning and monitoring but did observe some opportunities for collaboration (e.g., the SLUPB five-year review process; annual Land Use Planning Forums hosted by GNWT). While these present opportunities for coordination, the inconsistent five-year reviews (noted above) and a lack of other coordination mechanisms will still make it difficult to resolve the identified gap.

Recommendation 1-12: The Land Use Planning Boards work with the GNWT to identify key capacity challenges and develop and implement a plan to help alleviate the identified challenges (e.g., to share administrative components amongst planning boards). ***The outcome we expect is that land use planning efforts are sufficiently resourced.***

SLUPB's response: *SLUPB: It is the SLUPB's perspective that any work relating to addressing capacity challenges within land use planning boards should be done with the Federal Government rather than the GNWT. According to the Land Claim in section 25.1.3, it is the responsibility of the Federal Government to fund LUPBs adequately to ensure their ability to be full partners in the integrated resource management system. This includes ensuring that capacity challenges and issues are addressed and therefore, the Federal Government must be involved in any such conversations. However, the SLUPB does see a role for the GNWT in coordinating amongst the LUPBs on*

[78] (GLUPB, 2018a)
[79] GNWT survey respondent
[80] Ibid
[81] GNWT interview response
[82] (GLUPB, 2018b)

substantive planning issues and challenges that all regions are facing such as climate change, cross-boundary issues, and training on land use planning.

***GLUPB's response**: Key capacity challenges have already been identified as part of a land claim funding review initiated by GoC in 2016. The GLUPB and SLUPB each provided documentation to GoC of the funding levels required to alleviate capacity challenges identified by both boards. Funding increases were provided to both the SLUPB and GLUPB but did not fully meet the needs of either Board. As noted in the SLUPB response, it is the federal government that bears responsibility for adequate funding, which is the most significant ongoing challenge for both Planning Boards. The GLUPB does not see how the GNWT can do more than the Boards already do by collaboratively advocating for adequate resources from the GoC.*

Clarification on the example of "sharing administrative components amongst planning boards" is required from the auditors. The GLUPB and SLUPB have always actively sought to collaborate on common issues while respecting regional differences and will continue to do so, but these efforts have not resulted in being sufficiently resourced, so this outcome as written does not seem realistic.

***GNWT's response:** The GNWT agrees with this recommendation. The GNWT commits to working with the Land Use Planning Boards and the Government of Canada (as the funding body) to identify, evaluate, and work to alleviate capacity challenges of the Land Use Planning Boards.*

Recommendation 1-13: The Land Use Planning Boards develop monitoring and evaluation frameworks for all established plans, using the Sahtu LUP as an example/template to reduce capacity challenges. We also recommend that those responsible for monitoring the environment and community well-being (e.g., GNWT ENR; GNWT ITI; GNWT Education, Culture and Employment) participate in LUP reviews and updates, at a minimum, to ensure community well-being and environmental monitoring information is considered and integrated into updated plans. *The outcomes we expect are monitoring and evaluation frameworks for all established plans as well as improved integration of community well-being and environmental monitoring information into the land use planning process.*

***SLUPB's response:** The work that the SLUPB has undertaken in its 5-year review relating to monitoring and evaluation of the plan is important and some of the first of its kind in the north. The SLUPB looks forward to implementing the framework in the years to come. The SLUPB received many inquiries regarding this work from across the NWT and is keen to share learnings and outcomes as they become available. The SLUPB encourages each LUPB to develop a framework that makes sense for the context within which they work rather than using the Sahtu's framework as a template. Each planning context is different and may require different approaches and partners to ensure that plan implementation is adequately monitored. Further, the SLUPB has recognized the monitoring of community well-being as an important component of monitoring the implementation of the SLUP. However, in order to do this, the SLUPB will require significant resources beyond its current funding in order to incorporate this additional monitoring in the best way. The SLUPB is currently chronically under resourced and any additional projects or components of projects such as the one recommended must be coupled with the appropriate resources for the SLUPB in order to coordinate and monitor appropriately.*

***GLUPB's response**: The GLUPB has enquired about the SLUPB monitoring and evaluation framework and is keen to draw from the excellent work the SLUPB has done. The GLUPB will develop a monitoring and evaluation framework that gives consideration to consistency with the SLUPB one while ensuring a framework that makes sense for the Gwich'in context. The GLUPB also re-iterates the SLUPB assertion that planning boards are "currently chronically under resourced". For example, The GLUPB has identified a component of monitoring plan implementation is the need to systematically engage with regulatory authorities to review and assess conformity determinations that have been made and whether conformity is maintained through the life of a project (e.g. inspectors might grant variances to permits or licences in the field). To date, efforts have been limited because the staff are required to focus on priority activities like the plan review, legislation reviews, etc. The audit recommendation has some good components, but the expected outcome is only realistically feasible with adequate funding for the planning boards to establish and participate in their respective frameworks once developed.*

***CIRNAC's response:** Canada supports this recommendation and recognizes that the SLUPB has made good progress on developing such a framework, but it is likely too early and too prescriptive to advise that all Land Use Planning Boards follow this model. Monitoring and evaluation are key considerations during plan review and this information should be incorporated into plan updates as necessary, Land Use Planning Boards should be given latitude to determine how best to design monitoring frameworks, incorporating feedback from federal, territorial and Indigenous governments and local communities and taking existing monitoring programs within the planning area into consideration.*

***GNWT's response:** The GNWT agrees with the intent of this recommendation. The GNWT supports the development and implementation of monitoring and evaluation frameworks to ensure that land use plans contribute to the vision and goals of the planning regions. The GNWT will continue to participate in the regular reviews of land use plans. The GNWT will continue to engage all GNWT departments with interests or responsibilities related to land use planning, including those responsible for monitoring environmental and community well-being, throughout the review processes.*

1.5.2 Land use plans have not been developed and/or finalized in areas with unsettled land claims and timelines have not been established, published or monitored; nonetheless, some encouraging progress has been made to advance land use planning in those regions

Since devolution in 2015, the GNWT has hosted an annual NWT Land Use Planning Forum to bring planning partners together to collaborate, discuss planning progress, and set priorities. In the 2016-2019 Mandate of the GNWT, the GNWT committed to advance land use planning in areas without completed LUPs. In 2019, Lands released *Finding Common Ground: A renewed commitment to regional land use planning in the Northwest Territories*, which articulates sixteen objectives centred on a shared responsibility and accountability among governments, a 'common ground' (information sharing and dialogue), and ongoing renewal. The document is high-level and does not include specific planned activities or performance measures.[83] The GNWT noted in a survey response and interview that it has committed to release an annual status report, starting in 2019, that will describe the collective progress on land use planning.

[83] (GNWT, 2019f)

The second draft of the Interim Dehcho LUP was completed in 2016; at the time of this Audit, the three planning partners (GNWT, GoC and Dehcho First Nations) were working to reach consensus on the final revisions to the draft plan, with an aim to complete the plan for public review by spring 2020.[84] As noted in the case study on the GNWT MVFL project (Appendix B), the proponent interfaced with the draft Dehcho LUP in the same manner as a final plan, suggesting that land use planning leadership in the Dehcho proved useful for the design considerations of the project, despite the absence of a settled land claim.

Officials from the GNWT, GoC and the Tłı̨chǫ Government reached a working level agreement on a government-to-government approach to develop a LUP for public lands in Wek'èezhìı and are working towards establishing a joint planning office. At the time of the Audit, the GNWT and the GoC are conducting Indigenous consultation on the draft Terms of Reference for the Wek'èezhìı Planning Committee with Indigenous governments or organizations with asserted or established Indigenous and/or treaty rights in the Wek'èezhìı area.[85]

Indigenous groups in the southeastern NWT, in particular the Akaitcho Dene First Nations (ADFN) and the Northwest Territory Métis Nation (NWTMN), are promoting a model that starts with Indigenous-led planning. Parties are considering this as a component of the proposed planning process.[86] The GNWT has signed separate Memorandums of Understanding with the ADFN government and the NWTMN to formalize commitments to advance government-to-government relationships and to work together to design a multi-party land use planning process for the region. Through the Memorandums of Understanding, the parties agreed to jointly develop Terms of Reference and to participate in a series of meetings in 2019-2020, funded by the GNWT.[87] The workshops "are intended to facilitate consensus on the approach to completing all phases of the work required for regional land use planning in the southeastern NWT," with participation from all parties (GNWT, ADFN, NWTMN, Ghotelnene K'odtineh Dene and Athabasca Dënesuliné, and Canada).[88]

Several interviewees identified funding challenges associated with those regions without CLCAs. As articulated in CLCAs (and interim agreements, in the case of Dehcho), the GoC funds the land use planning process in settled regions (and the formal planning process underway in the Dehcho). In unsettled areas, however, a GoC representative noted that Canada does not have a funding envelope for land use planning in the southeastern NWT and that land-use planning is the mandate of the GNWT.[89] It is the GNWT's position that the GoC should be responsible for funding land use planning processes because funding was not devolved under devolution (e.g., regional land use planning in the NWT is guided by the MVRMA and pursuant to Comprehensive Lands and Resource Agreements, which are federal statutes).[90] The GNWT has provided funding to IGOs to support pre-planning activities (e.g., salaries of community-based planning staff, Elders' workshops, data collection and mapping) in areas where plans are not in place, with approximately $1.6M provided in the past three years.[91,92] A GNWT representative highlighted that there is a lack of coordination in GNWT funding to IGOs for land and

[84] (GNWT, 2019f)
[85] GNWT survey response
[86] Ibid
[87] (GNWT-Akaitcho, 2019)
[88] (GNWT, 2019h)
[89] CIRNAC interview
[90] GNWT interview
[91] GNWT questionnaire response
[92] GNWT. 2019. Contributions in Support of MVRMA

resource planning/activities; funding is “ad hoc and inconsistent,” with multiple reporting requirements for recipient IGOs.[93]

Recommendation 1-14: The GNWT and the GoC work collaboratively to adequately fund land use pre-planning/planning activities in regions without settled land claims; it is incumbent on the GNWT and the GoC to adequately fund this process in these areas. *The outcome we expect is that the process for development of new LUPs is adequately and consistently resourced.*

CIRNAC’s response: *CIRNAC commits to working with GNWT to search for funding to support planning activities in areas with unsettled land claims and continues to actively participate in the existing initiatives in these areas mentioned in the report.*

GNWT’s response: *The GNWT agrees with the intent of this recommendation. The GNWT agrees that work to conduct land use planning on public lands in unsettled regions of the NWT requires appropriate in-kind and financial support from the GNWT and Government of Canada (GoC), and commits to having discussions with the Government of Canada regarding appropriate resourcing for these initiatives.*

Partially Implemented 2015 Audit Recommendation

The GNWT Lands and CIRNAC should fully address the recommendation from the 2015 Audit (**Recommendation 2015-2** *“INAC and GNWT should work together in good faith with Aboriginal governments and other interested parties to develop enforceable land use plans in the absence of settled land claims. Timelines should be established, published and monitored.”*)

1.5.3 Additional implementation training is warranted

The GNWT has developed and delivered LUP implementation training for GNWT staff who have a role in plan implementation and review (four sessions had been held as of July 2019).[94] A GNWT representative noted that there is a requirement for increased clarity and coordination in LUP implementation amongst regulators and planning boards, particularly on how conformity assessments are conducted.

Recommendation 1-15: The GNWT offer training for LUP implementation to the broader NWT community responsible for LUP implementation and monitoring, namely the LWBs, Land Use Planning Boards, and all regulators responsible for conformance authorizations. *The outcome we expect is that appropriate training is available both for land use planners as well as others responsible for LUP implementation and monitoring.*

GNWT’s response: *The GNWT agrees with this recommendation. The GNWT delivers land use plan implementation training internally to GNWT regulators to support effective land use plan implementation. The GNWT supports the delivery of land use plan implementation training to all regulators responsible for conformity in the issuance of permits, licenses and authorizations. As guidance on the implementation of land use plans is the responsibility of the Land Use Planning Boards, the GNWT is interested in partnering with the Land Use Planning Boards to extend and adapt*

[93] GNWT interview
[94] GNWT questionnaire response

the GNWT's existing training to the broader NWT regulatory community responsible for implementation (including the LWBs).

1.6 Comprehensive Land Claims Agreements

What We Examined

Building on the previous Audits, we examined the status of land claim negotiations, whether there are processes in place to track progress and performance toward CLCAs and SGAs, and whether there is clear progress in land claim negotiations in regions without settled land claims. The Audit Team sought information from the GNWT, GoC, and IGOs through surveys, interviews, and document review. The GNWT declined to participate in an interview or to provide documentation but did provide some review comments on the draft Audit report.

Why It's Important

Comprehensive Land Claim Agreements set out the rights and ownership of land and resources. For example, key objectives of the Sahtu Dene and Métis CLCA are to "provide certainty and clarity of rights to ownership and use of land and resources" and "to provide the Sahtu Dene and Métis the right to participate in decision making concerning the use, management and conservation of land, water and resources."[95] Self-Government Agreements provide Indigenous governments with decision-making power on how to deliver programs and services to their respective communities.[96]

Three CLCAs have been settled in the NWT (Inuvialuit Final Agreement; Gwich'in CLCA; Sahtu Dene and Métis CLCA) and one combined land claim and SGA has been completed (Tłı̨chǫ Land Claims and Self-Government Agreement with the four "Dogrib Treaty 11" communities). There are several CLCAs still under negotiation, located in the southern area of the NWT: Acho Dene Koe First Nation, ADFN, the Athabasca Denesuline, the Ghotelnene K'odtineh Nene, the Dehcho First Nations, and the NWTMN.

In regions without settled land claims, the MVRMA still applies and the MVEIRB and MVLWB have jurisdiction; however, without CLCAs in place, co-management boards and LUPs, which are key components of the MVRMA's integrated system of land and water management, cannot be implemented. Completion of CLCAs helps provide certainty, predictability, Indigenous capacity and self-determination.

The absence of CLCAs has been a consistent topic of the NWT Environmental Audits. The 2015 Auditors recommended the following:

> ***Recommendation 2015-1***: *Given the importance of CLCAs/SGAs within the MVRMA framework, INAC and the GNWT should continue to negotiate these agreements in good faith. Timelines should be established, published and monitored.*

[95] (GoC, 1993)
[96] (GoC, 2019b)

What We Found

1.6.1 Some progress has been made, but negotiations in the Dehcho on land and resources have been put on hold

Following the 2015 Audit, the GoC and the GNWT appointed two Ministerial Special Representatives, one for the Dehcho and one for the southeast NWT, to facilitate discussions between the negotiating parties to advance resolution of their claims.[97] Tom Issac, the Representative for the southeast NWT, stated his mandate as follows:

> *"I was mandated to examine existing Aboriginal claims and negotiation processes in the Southeast NWT and consider whether amended or alternative approaches would be more effective, with the objective of concluding agreements that support a cohesive land, resources and governance regime while fostering cooperative working relationships among the parties."*[98]

The reports provided recommendations to address the challenges in negotiations, including for the GNWT, Canada and the ADFN/NWTMN to develop respective workplans to move toward an agreement within 18-24 months; the workplans are to set out clear timeframes, schedules, deliverables, resources, and substantive issues.

In the GNWT's updated response to the 2015 Audit (February 2019), it stated that "in response to the Ministerial Special Representative recommendations, new land claim offers were tabled with the NWTMN, the ADFN, and the Dehcho First Nations."[99] Some key points of progress since 2015 include:

- A *Northwest Territory Métis Nation Land and Resources Agreement-In-Principle* was signed by all parties in July 2015.[100] Negotiations towards a final agreement continue; the parties have also been working on a self-government framework agreement to guide negotiations.[101]
- The Déline Final Self-Government Agreement came into effect in 2016.[102]
- In 2017, Canada/GNWT submitted a counteroffer for review by the ADFN. The ADFN agreement-in-principle (AIP) negotiations were proceeding as of July 2019, and the parties predicted reaching agreement on most of the core elements of the AIP in Fall 2019.[103] Section 35 consultations would then follow.
- A revised offer was made to the Dehcho First Nations in 2018. At the request of the Dehcho First Nations, negotiations related to lands and resources have been deferred to a future date.[104] Negotiations "will focus on education, health, governance and other areas where the sides can find common ground."[105]

[97] (GNWT, 2017b)
[98] (Issac, 2017); p. 2
[99] (GNWT, 2019b)
[100] (NWTMN, 2015)
[101] CIRNAC questionnaire response
[102] (Déline First Nation Band, GNWT, GoC, 2015)
[103] CIRNAC questionnaire response
[104] CIRNAC interview response
[105] (Brockman, 2019)

We also heard that final agreement negotiations with the Acho Dene Koe are moving forward, and there have been no changes related to land and resource management items since the AIP (signed in 2014).[106]

According to a GoC representative, Canada/GNWT have worked with Indigenous parties to jointly develop mutually agreeable workplans to lead to finalized land claims or a pause in negotiations for a set period of time. Each negotiating table develops an annual workplan; however, we were not provided with documentary evidence to confirm the existence of workplans; government contacts cited confidentiality.[107]

Partially Implemented 2015 Audit Recommendation

The GNWT and CIRNAC should fully address the recommendation from the 2015 Audit (and the Issac report. (**Recommendation 2015-1** *"Given the importance of CLCAs/SGAs within the MVRMA framework, INAC and the GNWT should continue to negotiate these agreements in good faith. Timelines should be established, published and monitored."*)

1.6.2 There are new approaches to developing resource management regimes in the southeastern NWT

Acknowledging the complexity of the southeastern NWT, the GoC and GNWT are exploring options to co-develop a resource management regime with multiple Indigenous groups in the region in companion to their respective land claim negotiations. The goal would be to co-develop, through a confidential, without prejudice process, a resource management approach that protects the rights and interests of Indigenous groups practicing traditional activities in the area.[108] It is too early to know the results of this new approach to assess its effectiveness.

We did not find evidence that the Indigenous groups with Section 35 interests in the southeast NWT are working to develop their own mechanisms and processes to resolve overlapping claims disputes among themselves, as recommended by Mr. Issac.[109]

1.6.3 Insufficient resources may be an ongoing concern

According to the GoC, for each negotiating table, there is a process for identifying, discussing, and providing resources for participants, as well as a process for identifying capacity requirements by Indigenous participants and for resource allocation decisions.[110] Documentary evidence was not provided to the Audit Team.

An IGO representative indicated that there are insufficient resources to sit at the negotiating table, while a federal government representative noted that resourcing affects every party at the table "to greater or lesser extents"; if resourcing is limited, then the GoC sets priorities and focuses on where "they can make the best gain." As with many other initiatives in the NWT, we anticipate that the larger resourcing limitation is capacity (i.e., people) to participate in the various negotiations, facilitated discussions, and other regulatory components of the MVRMA regulatory regime. In that case, more funding will not necessarily

[106] CIRNAC questionnaire response
[107] CIRNAC interview and questionnaire responses
[108] GoC email correspondence with Audit Team, 2019
[109] (Issac, 2017)
[110] CIRNAC questionnaire response

help, and prioritization of efforts may be the most effective way forward. For this reason, we have no recommendations on this issue.

1.7 Adequacy of Resources

What We Examined

The Audit Team sought to determine whether boards are sufficiently funded to meet their legal mandate, whether board appointments allow quorum to be maintained, and whether IGOs and other participants have access to sufficient funding, aligned with the scope and scale of regulatory decision-making. We expected to find improvements in all areas since the 2015 Audit, since each of these areas warranted recommendations by the previous Auditors.

We collected information from the GNWT, GoC, boards, and Indigenous organizations through surveys and interviews. We examined documentary evidence of territorial and federal funding programs.

Why It's Important

One of the principles governing land claims and underpinning the MVRMA is that of co-management of resources between governments and Indigenous groups. Should the capacity of any one critical co-management entity be compromised, it could compromise the co-management foundation of the regulatory framework in the Mackenzie Valley.

Adequacy of board funding as well as the ability of boards to reach quorum are two fundamental requirements for a functioning co-management regime. The 2015 Auditors identified significant vacancy gaps at co-management boards and noted that the nomination and appointment process has been an ongoing issue. In addition, the 2015 Auditor found that while the level and consistency of funding for co-management boards has improved through multi-year funding agreements, there continued to be funding issues associated with training. Lastly, the 2015 Auditors found that participant funding was not steady or readily available.

What We Found

1.7.1 Board vacancies continue to persist, with some process improvements made by CIRNAC

The 2015 Auditors recommended the following to address ongoing vacancy challenges:

> ***Recommendation 2015-9:*** *Working with affected parties, INAC's Resource Policy and Program Directorate, in association with the Board Relations Secretariat, the Corporate Secretariat and the Treaties and* Indigenous *Government Sector-Implementation Branch, should facilitate discussions for a more efficient and effective processes to ensure board nominations are made and approved in a timely manner.*

In our interview with CIRNAC on this issue, the department indicated that it has made some progress in its approach to the nomination process, by proactively starting the nomination process earlier to account for the security clearance requirements and Ministerial or Governor in Council review and approval. A

representative indicated that they have a scheduling and tracking system to manage the appointment process.

One change that had been pushed for by boards and has been adopted through the recently amended MVRMA, is the ability to extend a board member's term during a proceeding to ensure quorum and consistency. In addition, a CIRNAC representative noted that the appointment process became more transparent in 2016, when it moved from a sole discretion appointment process to advertised positions.[111]

Ongoing challenges remain, which were noted by CIRNAC and LWB representatives. These challenges include the length of time for security clearances and the associated requirement for fingerprinting (distance to a facility and the stigma of having fingerprint ink were noted as two deterrents for remote community members). In addition, the Governor in Council approvals, done by Cabinet for Renewable Resource Board appointments, take longer than Ministerial approvals, substantially delaying the approval process.

The LWBs recommended that further changes are required, specifically longer-term appointments (from three to five years) and staggered terms to ensure there are always experienced board members available. Board terms are set within the MVRMA and there is no indication additional amendments will be made; however, longer and/or staggered terms should continue to be discussed as part of fully implementing Recommendation 2015-9.

Partially Implemented 2015 Audit Recommendation

CIRNAC should fully address the recommendation from the 2015 Audit (**Recommendation 2015-9** *"Working with affected parties, INAC's Resource Policy and Program Directorate, in association with the Board Relations Secretariat, the Corporate Secretariat and the Treaties and Aboriginal Government Sector-Implementation Branch, should facilitate discussions for a more efficient and effective processes to ensure Board nominations are made and approved in a timely manner."*)

1.7.2 Core funding allocations have improved, but some boards still have funding issues

The 2015 Auditors recommended the following:

> ***Recommendation 2015-10*****:** *INAC should work with: (1) all co-management boards to better understand long-term secure funding needs for training, and (2) with Land Use Planning Boards to better understand resource requirements during various stages of the planning cycle, and then develop a funding model to better support resource requirements through this cycle.*

As of 2017, CIRNAC secured ten-year funding agreements for the boards. Boards also receive contingency funds for hearings and other periodic activities. Board remuneration (honoraria) is currently undergoing a review/risk-based analysis.[112]

In addition to the core and contingency funds, CIRNAC provides annual training funds for the boards; boards determine the training needs and prioritize topics for in-person and online training. Since the 2015

[111] CIRNAC interview
[112] (Stratos, 2017)

Audit, training courses have been developed and delivered on Board Orientation, Administrative Law, and Renewable Resources Management.

As part of this Audit, boards were asked, via a survey tailored for them, whether boards are sufficiently funded to meet their legal mandate. The responses indicate that core funding is sufficient in most cases, but that an ongoing contingency fund would be helpful (e.g., which would be needed if there are multiple new EAs in a short period of time). One respondent noted that there has been an improvement in the ability to carry-over unused funds from one fiscal year to the next (i.e., a one-year carry-over). An ongoing problem for some boards is that their core funding is not sufficient to meet the most basic functions of the board and that the supplemental funding that they must continually apply for is not guaranteed. Although we expect there will be ongoing refinement of the funding arrangements between CIRNAC and the boards to resolve remaining issues, we find that Recommendation 2015-10 has been adequately met.

1.7.3 There has been significant progress on participant funding for environmental assessments; gaps remain for other regulatory processes

Building on their findings, the 2015 Auditors made the following recommendation:

> ***Recommendation 2015-19:*** *INAC and GNWT should assess public participation/ consultation requirements and INAC should make a long-term funding commitment, including stress funding, to* Indigenous *governments and organizations and other participants in the MVRMA regulatory processes.*

The Audit Team found CIRNAC's recent deployment of the Northern Participant Funding Program[113] (NPFP), which aims to provide capacity funding for impact assessment review of major projects, to be a timely and new addition since the 2015 Audit. In our conversations with the MVEIRB staff and Indigenous organizations, the introduction of NPFP was found to be a ground-breaking improvement. We are encouraged by this progress; however, there remain gaps in participant funding for other regulatory processes (e.g., licensing and permitting).

Recommendation 1-16: The LWBs seek to develop a participant funding program, funded by the federal and territorial governments, to support regulatory decisions within its jurisdiction. The funding would provide capacity support to Indigenous parties requiring assistance to participate in the regulatory process, as well as technical support. *The outcome we expect is that Indigenous parties have adequate resources to meaningfully participate in licensing/permitting processes. In the interim, and until such time as a capacity funding program can be developed, we encourage the GNWT provide staff services (in-kind support) to provide technical advice and information to interested Indigenous parties in order to allow Indigenous parties to understand the project impacts and potential mitigations for development of recommendations to the LWBs.*

> ***LWBs response:*** *The LWBs have identified the need for a participant funding program in the past. For example, on page 11 of the 2011 MVLWB Perspectives on Regulatory Improvement in the Mackenzie Valley Paper, the LWBs state:*
>
> > *As many parties have put forth over many years since the establishment of the MVRMA, there is a need for intervener funding to enable affected communities and broader public participation*

[113] (GoC, n.d.)

in project reviews. This is clearly a federal responsibility. As was raised under our discussion of Crown consultation policy, there is also a need for funding to enable Aboriginal organizations to effectively participate in project reviews as it relates to their section 35 rights and interests and for increased funding to enable government agencies to effectively support Board reviews in this context, including the provision of expert legal, policy, scientific, and technical advice. Additionally, there is a need for financial, institutional, and human resource capacity for Aboriginal organizations to ensure that among other things Traditional Knowledge is effectively incorporated into decision-making processes.

Recently, during the environmental assessment for Diavik Diamond Mines Inc.'s proposal to deposit kimberlite into pits and underground, parties raised the issue about the need for funding following the environmental assessment phase. To illustrate, the Łutsel K'e Dene First Nation stated in its closing arguments that, "Funding should be made available for affected Indigenous governments and organizations to participate in the water licence and land use permit phase of the regulatory process in order to allow Indigenous parties [to] meaningfully participate in the entire regulatory process."

However, the LWBs wish to re-iterate that a funding program, including its administration, is a responsibility held by the federal government. The LWBs are quasi-judicial decision-making bodies and as such, administering a participant funding program could 1) create a perception of bias towards groups who do or do not receive funding, and 2) become an unnecessary administrative burden on the LWBs.

As identified in the 2020 Audit, CIRNAC has now developed the Northern Participant Funding Program to provide capacity funding for impact assessment review of major projects, and the LWBs strongly recommend that this Program be expanded to cover the LWBs' permitting and licensing process as well. This expansion of the current program would fulfill the intent of the Audit's recommendation. In developing the response to this recommendation, the LWBs have engaged with the GNWT.

CIRNAC's response: *In December 2018, CIRNAC announced the creation of the Northern Participant Funding Program, which supports participation in environmental assessments. In its current form it is unable to support participation in LWB or other regulatory processes and was not designed to provide additional funding to LWBs. As this new program is implemented, CIRNAC is actively seeking feedback from its partners on what needs this program does and does not meet, and may revise the program's design when it is up for renewal in 2022-23.*

GNWT's response: *The GNWT agrees with the intent of this recommendation. The GNWT was glad to see the federal government establish the Northern Participant Funding Program in 2019. The GNWT supports participant funding for regulatory processes and is of the opinion the recommendation should be directed solely to CIRNAC as the responsibility for the Mackenzie Valley Resource Management Act remains a federal responsibly.*

Where possible, the GNWT provides in-kind support to interested Indigenous parties and will continue to do so. The GNWT is of the opinion that the recommendation to provide in-kind support should also be directed to the federal government, in relation to federal mandates and responsibilities.

1.7.4 The Interim Resource Management Assistance continues to provide much needed capacity support, but additional improvements are warranted

The GNWT ENR's Interim Resource Management Assistance (IRMA)[114] program continues to provide capacity to Indigenous communities without a land claim in the southeast NWT to participate in land and resource management activities (e.g., land use planning; fisheries management; studies). We found the GNWT has enhanced the transparency of this program as well as its engagement with applicants/clients since the 2015 Audit. For example, in 2019, the GNWT hosted a workshop for potential applicants to discuss the application process and discuss opportunities for program improvements.[115] Discussions at the workshop were amicable, signaling a vibrant co-management relationship.

Interim Resource Management Assistance program users identified that funding certainty for multi-year projects can be very beneficial in retaining qualified staff for the entirety of a project. It allows applicants of multi-year projects the opportunity to receive some form of funding certainty and frees up some administration time for communities to spend it on more important tasks (e.g., review applications and engage with companies). We understand the IRMA allocation budget has not been increased since its inception over ten years ago.

We also found in our discussions with IRMA applicants that many sought funding to secure external expertise or sought funding for similar studies to help their own community understand a particular development project or government action. If applicants coordinated on these proposals, they could achieve more with the same amount of money and allow them to leverage their funding more effectively.

Since the NPFP is restricted to the EA process and IRMA funding is diluted to apply to all land and resource capacity issues in unsettled land claim areas, a funding gap remains for permitting and licensing processes in the NWT. The NEB will provide participant funding for the permitting phase when NEB permits are required (as noted in the Enbridge Line 21 Case Study, Appendix B). CIRNAC indicated that it is looking into a funding envelope for the permitting phase, but additional funding is difficult to secure.

Recommendation 1-17: The GNWT introduce a multi-year funding envelope for a portion of the IRMA funds; this is a leading practice for grant and contribution funding programs. We also recommend that the GNWT increase the IRMA funding envelope by an incremental amount commensurate with an appropriate index, such as cost-of-living differential or inflation, in order to continue to support Indigenous organizations at a similar level year-over-year. We further recommend GNWT help facilitate coordination opportunities between applicants where appropriate, since only the GNWT as the fund manager can identify similar project proposals that may benefit from cooperation. *The outcome we expect is reduced administrative requirements (with multi-year funds), adequate resources to meaningfully participate, and greater coordination and cooperation between applicants.*

> ***GNWT's response:*** *The GNWT agrees with the intent of this recommendation. The GNWT recognizes the importance of the IRMA Program to funding recipients and aims to make the funding process as efficient and effective as possible. The IRMA Program was reviewed in 2015 and improvements were implemented. The GNWT will further explore how the IRMA Program is being*

[114] (GNWT, 2019i)
[115] (GNWT, 2019j)

implemented, in consideration of this recommendation, and may conduct another review specific to this recommendation to fully inform any future decisions in regards to the program.

1.8 Compliance and Enforcement

What We Examined

The Audit Team collected qualitative information from the GNWT, GoC, boards, and Indigenous organizations through surveys and interviews, and collected public input, through the public survey and open houses. We also examined responses to recommendations from the 2015 Audit. Lastly, we used the case studies to further examine compliance and enforcement, with a focus on the GNWT MVFL project.

Why It's Important

Compliance and enforcement help reduce risks to the environment by ensuring parties operate using best practices, as well as meet their obligations under their authorizations and legislation. When properly employed, compliance and enforcement:

- Is promoted through education, which helps end-users operate within the law;
- Is used to monitor and verify that activities conducted by project proponents are aligned with commitments in authorizations and in the law; and,
- Takes action, such as stop work orders and the implementation of penalties, when and if activities do not comply with authorizations or the law.

The 2015 Auditors found that there was an administrative enforcement gap resulting from devolution where territorial inspectors do not have a direct link to the Federal Public Prosecution Service of Canada when initiating prosecutorial actions. They also found interpretation problems in the MVRMA and Regulations that appeared to limit the ability of inspectors to make "in-field" decisions. In addition, licence and permit terms and conditions were sometimes found to be very broad, posing challenges with respect to the enforceability by inspectors.

What We Found

1.8.1 Progress has been made to address the recommendations from 2015, but additional efforts are required

The 2015 Auditors included the following recommendation to address the administrative enforcement gap:

> ***Recommendation 2015-11****: INAC and GNWT need to enhance tools for the enforcement of the MVRMA and Territorial Lands Act through the introduction of Administrative Monetary Penalties regulations as planned. INAC also needs to formally resolve administrative matters in initiating prosecutorial actions at the territorial level.*

We found that GNWT Lands and CIRNAC have continued to work on the development of administrative monetary penalties. The federal government has now amended the MVRMA, adding administrative monetary penalties,[116] as well as other provisions such as the issuance of development certificates by the

[116] (Parliament of Canada, 2019)

MVEIRB. It is clear from our surveys and interviews for the 2020 Audit that both of these amendments would be very useful to boards and the GNWT; however, regulations that outline how administrative monetary penalties and development certificates operate are still under development by CIRNAC and delegations to the GNWT will not be active until the regulations have been implemented.[117]

For these reasons, we find this recommendation has not been fully implemented and continued efforts are required to meet the needs of the GNWT and boards.

Partially Implemented 2015 Audit Recommendation

We encourage CIRNAC and GNWT to fully address the recommendation from the 2015 Audit (**Recommendation 2015-11** "*INAC and GNWT need to enhance tools for the enforcement of the MVRMA and Territorial Lands Act through the introduction of Administrative Monetary Penalties regulations as planned. INAC also needs to formally resolve administrative matters in initiating prosecutorial actions at the territorial level.*")

To help address the interpretation problems in the MVRMA and Regulations, the 2015 Auditors recommended the following:

> ***Recommendation 2015-12****: Continued work is required between the LWBs and inspection agencies to balance the need for flexibility in the field and the need for proponents to have a clear understanding of what their permits and licences allow them to do and what they don't allow them to do.*

We found that the LWBs have made progress with development and regular review of standard terms and conditions, and opportunities are provided to the GNWT and many others to comment and provide advice. For example, the LWBs recently released a draft set of standard water licence conditions for public review.[118] The boards' response and work in these areas is adequate, and we encourage a continued dialogue between LWBs and inspectors to ensure licence terms and conditions are enforceable.

1.8.2 The compliance and enforcement regime is working, with some areas for improvement noted

Our survey and interview results indicate that the compliance and enforcement regime is largely working, in particular the GNWT's risk-based approach. Board and GNWT representatives noted some issues related to the clarity of roles/responsibilities, inadequate feedback mechanisms to the board/inspectors, and inadequate tools to deal with water licence violations. Board staff also highlighted concerns with respect to inspector capacity, exposing gaps in inspection frequency and follow-up (see table below). We also found areas for improvement from our examination of the GNWT MVFL case study, described in more detail below.

Inspections are risk-based. For example, GNWT Lands uses a risk assessment process to set the minimum number of inspections for an authorization. Risk levels are determined based on the type of

[117] (GNWT Executive and Indigenous Affairs, n.d.)
[118] Draft standard water licence conditions were released by the MVLWB in May 15, 2019 with a comment period that ran until July 19, 2019.

authorization, project activity, and past performance, with a consideration of a suite of risk drivers (e.g., project footprint, public and Indigenous concern). Other GNWT departments noted similar risk-based approaches.[119] These risk-based approaches help ensure that time and resources are spent on higher-risk authorizations.

Most GNWT survey respondents noted that the coordination and division of roles and responsibilities between organizations with jurisdictional responsibilities for inspections and enforcement is only partially clear and effective. Our interviews with the GNWT confirmed that coordination and the division of roles and responsibilities between GNWT Lands and ENR (Water Management and Monitoring Division) inspectors could use some improvement in order to enhance clarity and effectiveness. There is an existing protocol agreement on inspections for compliance between GNWT ENR and Lands, which describes how the two departments are to "plan and conduct effective and efficient" inspections.[120] It is a comprehensive protocol, but a GNWT representative noted that even with the protocol "there are still issues." The representative suggested that the inspectors should be "housed under a single roof." Similarly, a board representative recommended better coordination between land and water inspectors particularly in regions underrepresented by inspectors.

Additional improvements noted by survey respondents or discussed by GNWT and MVLWB interviewees include:

- More regular or permanent on-site inspectors for larger developments, such as the diamond mines.
- Improved mechanisms to provide feedback to the LWBs or inspectors about inspections, to inform licence terms and conditions. One board representative noted that some inspection reports are provided as part of the public record, but that more serious non-compliance activities are not made available because of the potential for prosecution.
- Improved inspection capacity (see below for more detail).
- Improved tools to deal with violations of water licence conditions when there is no harm to people, property or the environment (an enforcement issue/court action).[121]

Inspection Capacity – Some Gaps Remain

During our interviews, the MVLWB identified concerns with the capacity of inspectors to conduct inspections. In late 2017 and early 2018, the MVLWB and GNWT exchanged correspondence regarding the Board's concern about adequacy of water licence enforcement and inspections in the Dehcho region. The GNWT acknowledged a gap in inspector staffing but assured the Board other arrangements were in place in an interim approach. Although an Inspector has since been hired for the Dehcho region, the boards remain concerned about the capacity of Inspectors to conduct inspections and complete inspection reports across the Mackenzie Valley. Examples of their concern are as follows:

- Inspection for Paramount's Land Use Permit MV2014X0011 in July 2018 and inspection results submitted 11 months later in June 2019 indicating that "significant adverse environmental effects" were evident at the site;[122]

[119] GNWT survey responses
[120] (GNWT, 2014)
[121] An GNWT representative expressed that a "severe violation" of a water quality term and condition in a licence most likely will not cause "quantifiable harm to people property or the environment" – and that "without harm, a violation will not likely be successful in court."
[122] (MVLWB, 2019d)

- Water Licence MV2011L3-0001 Municipality of Fort Smith: last inspection report filed in January 2018 for June 2016 inspection;
- Water Licence MV2009L3-0005 Municipality of Hay River: last inspection report filed April 2017 for September 2016 inspection;
- Water Licence MV2014L3-0008 Municipality of Fort Resolution: last inspection report filed March 2017 for June 2016 inspection;
- Water Licence MV2016L3-0001 Municipality Fort Providence: no inspection reports filed under this licence to date;
- Water Licence MV2015L3-0001 Municipality of Fort Simpson: no inspection reports on file; and
- Water Licence MV2009L3-0025 Municipality of Fort Liard: last inspection report filed February 2019 for June 2018 inspection; prior to that, the last inspection was in June 2013.[123]

We recognize that these events could be a result of multiple factors, including staffing resources or implementation of GNWT's risk assessment process, and we encourage the LWBs and GNWT implement our recommendations below.

Mackenzie Valley Fibre Link Case Study – Inspection Coordination

We examined the inspection regime in the context of the GNWT MVFL project, which involved construction and operation of a fibre optic cable system spanning 1,200 km across three regions of the NWT. The project proponent was the GNWT and involved clearing a vegetation corridor, burying cable, crossing watercourses, and operating mobile camps and equipment. We examined 24 inspection reports between 2015 and 2018, which were authored by six different inspectors from GNWT Lands and ENR. We found the inspection reports mostly thorough, but with variation in content between authors. Reports were always shared with the proponent and the board, but not necessarily between inspectors from GNWT Lands and ENR (Water Management and Monitoring Division).

The Audit Team found the quality and frequency of inspections adequate but found it difficult to follow the progress on an element of inspection that was deemed 'unacceptable'. Only by scanning future inspection reports for the corresponding text did we found that an unsatisfactory issue had become satisfactory.

Furthermore, the Audit Team found some inconsistencies in the information collected. For example, inspectors did not always collect information on weather and light conditions (sunny / cloudy) on the day of inspection, or whether there was precipitation or melt in the last 24 hours. Such missing baseline information prevented the reader from appreciating what one inspector could have seen (or missed) on any given day; though most reports contained photographic evidence that could be used to provide context.

Overall, our review of the evidence including surveys, questionnaires, interviews, and a case study did not identify serious deficiencies in the compliance and enforcement regime of the NWT; the system appears to be working as intended. However, there is room for improvements in clarifying roles and responsibilities, ensuring adequate inspector capacity, and how the inspection regime communicates the results of its findings and the consistency of information collected and reported by inspectors.

[123] (MVLWB, 2019e)

Recommendation 1-18: The LWBs and the inspection units of GNWT and the GoC establish a process to meet and discuss challenges and solutions with respect to the inspection regime in the Mackenzie Valley, specifically as it relates to clarifying roles and responsibilities, ensuring adequate inspector capacity, as well as timely and transparent inspections, reporting and follow-up. We further recommend boards ensure a record of findings, actions, and outcomes are published to ensure transparency and facilitate future auditing of progress. *The outcome we expect is that there is a clear understanding of roles and responsibilities related to enforcement and compliance, that inspectors have the capacity and necessary tools and resources to execute these responsibilities, and that the LWBs and GNWT Inspection work together with the goal of ensuring a functioning enforcement and compliance regime for MVRMA authorizations.*

LWB's response: *There has been an informal process in the past for the LWBs, GNWT, and CIRNAC to meet to discuss compliance and enforcement issues, including annual inspector meetings and bi-monthly to quarterly joint meetings of senior level staff from GNWT-Lands, GNWT-ENR, and CIRNAC. Last year, the Executive Directors of the LWBs met with the Assistant Deputy Ministers (ADMs) of GNWT-ENR and GNWT-Lands to discuss the roles and responsibilities of inspectors regarding the enforcement of activities that require an authorization but do not have one; and the capacity of inspectors to conduct inspections and complete inspection reports. The LWBs aim to have regular meetings with the GNWT and CIRNAC to discuss specific compliance and enforcement issues, which largely fall under the governments' jurisdiction.*

As noted in the 2020 Audit, the LWBs have expressed concern about the capacity of inspectors, particularly for water licences, to conduct inspections and complete inspection reports. The LWBs are pleased to note that according to the 2020 Audit, the GNWT has confirmed that coordination and the division of roles between GNWT Lands and ENR inspectors could use improvement to enhance clarity and effectiveness. This is particularly important for regions of the Mackenzie Valley (e.g. the Dehcho) that seem to have a shortage of Water Resource Officers.

Regarding the need for records of findings, actions, and outcomes to be published to ensure transparency and facilitate future auditing of progress, the LWBs place every document that is received on the public registry, unless it is deemed to be confidential. Therefore, it is essential that inspection reports are submitted to the LWBs on a timely basis. The LWBs will continue to work with inspectors to ensure that these records are up-to-date and available to the public.

In developing the response to this recommendation, the LWBs have engaged with the GNWT.

CIRNAC's response: *CIRNAC is committed to exploring with our territorial government counterparts, processes aimed to improve our approach to inspections and reporting across the Mackenzie Valley and will continue to invite open dialogue. We continue to support initiatives to share information, coordinate, and collaborate such as the regularly scheduled joint meetings and spill working group meetings that are currently held with partners.*

CIRNAC uses a system based on the former Inspection Reporting and Risk Assessment system (IRRA) that existed prior to devolution in our department to accomplish consistency in several areas of its inspections program. The system tracks land use permits, water licences, and leases with important dates highlighted. CIRNAC uses this tool in determining inspection frequencies through a

risk based lens. It further allows for Inspectors to establish inspection plans for upcoming seasons, or future years; to track inspections completed and costs associated with inspection activities. It is the tool that Inspectors use to ensure a consistent approach to the reports generated by CIRNAC and the GNWT. It has the ability to carry forward non-compliance from one inspection to the next to ensure follow up is carried out. CIRNAC is developing a new land management system that will have the capacity to track non-compliance issues specific to land use permits based on notation in the reports completed. CIRNAC is committed to engaging with the public and the land and water boards, and to working with other federal and territorial inspection authorities to examine ways to improve already existing (and future) tools to provide for a consistent approach to inspection frequency and reporting to ensure that the information collected meets the needs of the land and water boards and the public.

GNWT's response: *The GNWT agrees with this recommendation. The GNWT acknowledges the need to work with the LWBs and other federal regulating departments with inspection responsibilities under the MVRMA to improve the overall effectiveness of the NWT regulatory system including the functioning of the inspection regime. The GNWT reinforced this commitment through the recently implemented Department of Lands Ministerial Policy on compliance and enforcement. Several opportunities are already available for the GNWT and LWBs to share information and to discuss pertinent issues related to compliance and enforcement. These include: annual inspector meetings, quarterly Joint Working group meetings between GNWT Lands, GNWT ENR, CIRNAC, and each Executive Director of the LWBs, and regular informal meetings between the GNWT and the LWBs throughout the year.*

New GNWT Compliance and Enforcement Policy

The GNWT released a Compliance and Enforcement Policy in August 2019.[124,125] The main components of the policy include principles, scope, authorities and accountabilities, provisions, transparency, and performance measurement. The Policy also describes Case File Review Committees, which would aim to provide guidance, assistance and oversight for individual case files. The "provisions" – Inform and Educate, Set Standards, Support to Comply, Monitor Compliance, Enforcement, and Encourage Higher Performance – sufficiently cover the key elements of compliance and enforcement.

It is too early to know the effectiveness of the Policy given its recent release. We suggest that the 2025 NWT Environmental Audit test whether the Compliance and Enforcement Policy is effective or whether additional tools are required.

Recommendation 1-19: The GNWT develop and publish an overall project inspection scheme to assist regulators, the public, and permit holders in tracking of 'unacceptable' items from previous inspections all the way to their satisfactory conclusion and inspector sign-off. Furthermore, improvements could be made in the consistency of information collected to ensure future inspectors, the proponent, and regulators appreciate the context of an inspection. We encourage the GNWT to work with their Federal counterparts on this initiative, including CIRNAC and the Canada Energy Regulator. ***The outcome we expect is that the GNWT adopt a publicly viewable singular common inspection scheme, to accompany the filing of multiple disparate inspector***

[124] Post devolution, the GNWT holds most of the inspection responsibility in the NWT.
[125] (GNWT, 2019k)

reports. Such a scheme would have a common numbering system to label an observation, event, or location. For each observation or event, the inspector would clearly describe their observation, the compliance tool deployed (surveillance, advice, direction, etc.), a description of the specific company action required, the due date for the company action, the date that the issue is closed in the opinion of the inspector, and the reason for closing the matter. Such a reporting scheme would greatly help multiple inspectors and regulators better track progress, and would assist auditing of the inspection regime.

CIRNAC's response: *CIRNAC is committed to working with the GNWT and other federal inspection authorities.*

GNWT's response: *The GNWT agrees with the intent of this recommendation. An Inspection Reporting and Assessment system (IRRA) is used to support inspectors and promote consistency across the GNWT. Upgrades to this system are currently in development. The GNWT is committed to engaging with the LWBs to examine ways to improve existing tools to provide for a more consistent approach to inspection frequency and reporting across the GNWT and to ensure that the information collected meets the needs of the LWBs and the public. The GNWT will include the Office of the Regulator of Oil and Gas Operations in these discussions as appropriate.*

Part 2: Evaluation of Environmental Trends in Water Quality and Quantity

What We Examined

Section 148(3)(a) of the MVRMA requires the Audit to include "an evaluation of information, including information collected or analyzed under Section 146, in order to determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends." For the 2020 Audit, the ASC requested the Auditor to focus its environmental trends evaluation on water quality and quantity for the following NWT watersheds:

- South Nahanni
- Central Mackenzie – The Ramparts
- Great Slave Lake – North Arm – East Shore
- Peel
- Hay
- Slave
- Coppermine
- Marian
- Lockhart
- Great Slave Lake – Christie Bay – North Shore
- Great Bear
- Western Mackenzie Delta
- Eastern Mackenzie Delta

For each of the audited watersheds we explored the availability of water quality data (both scientific and TK-based), assessed if the government had used the data to perform trend analysis, and determined what parameters showed trends. Statistically significant trends in water quality were then assessed to gauge their environmental importance based on several key parameter-specific criteria, including, where data allowed:

- evidence of potential toxicity;
- potential to contribute to a nutrient enrichment response;
- the magnitude of the trend and its relation to an appropriate water quality guideline (e.g., Canadian Council of Ministers of the Environment [CCME] Guidelines for the Protection of Aquatic Life); and,
- any potential consequences of the trend.

In addition to evaluating the trend data itself, we also sought to understand how well the available information is addressing the water-related concerns of communities and other decision-makers (e.g., co-management boards, governments). In this context, it is important to note the distinction we see between environmental trend monitoring and CIM (Table 2 below). While trend monitoring programs can answer questions like "Is water quality changing at location X over time?" or "Is the water safe to drink at location X?" such programs are not necessarily designed to consider what might be causing any of the detected changes or trends. Understanding the impact of multiple stressors on water or other valued ecosystem components (VEC) and, therefore, the cause of any detected trends, requires a CIM program or an interpretive framework that is deliberately designed to evaluate the impacts of multiple stressors on a

VEC; past, present, and future. In Parts 3 and 4 of this report, we discuss how data from individual environmental trend monitoring programs can and should feed into CIM efforts.

Table 2: Characteristics of Environmental Trend and Cumulative Impact Monitoring

	Trend Monitoring	Cumulative Impact Monitoring
Purpose	To understand how a VEC is changing over time – to see changes and rates of change. Data may be used as part of a larger CIM program	To understand how multiple stressors are impacting VECs – need to see cause and effect
Design	Monitor indicators over time at consistent locations	Consider all existing past, present, and future reasonably foreseeable stressors/inputs to understand cause and effect
Example	Surveillance Network Programs[126] (SNPs), Environment and Climate Change Canada's hydrometric stations	AEMPs

It was outside of the Audit scope to analyze raw water data for trends. Instead, we were provided a series of reports that analyzed and summarized the available monitoring data within the watersheds under audit. Evidence for our findings and recommendations for this section of the Audit came from the following sources:

- For several watersheds (i.e., Lockhart, Great Bear, Great Slave Lake-Christie Bay-North Shore, and Marian), trend inventory reports were compiled by a third party under contract with the GNWT to expedite the Audit process (see Appendix C for a complete list).
- Watershed inventories had not been prepared in advance for the South Nahanni, Central Mackenzie – The Ramparts, Great Slave Lake – North Arm – East Shore, Coppermine, Eastern and Western Mackenzie Delta, Hay, Slave and Peel watersheds, therefore individual reports were assessed by the Auditors where available (see Appendix C for a complete list).
- Questionnaire and interview responses, public survey, and comments received at public open-house events.

Note that no written evidence regarding TK of trends in water quality or quantity was provided for our review, nor was TK evidence provided in the public open houses, beyond observations of changes in the land and water related to climate change.

Why It's Important

Natural and anthropogenic factors including climate change, land use change, and industrial development can exert substantial impacts, which are often first observed in the aquatic environment. Comments from the public during the Audit open house events (Appendix A) confirmed that people are either directly observing aquatic changes now or are worried about how water quality and quantity might change in the

[126] SNPs and AEMPs are monitoring requirements often required in water licences issued by the LWBs.

future. For example, some people worried that their local water bodies are or could become contaminated enough to affect the health of humans or wildlife that use the water. Many people said they would like more information on the health of the water in their regions so that they can make informed decisions on personal water use. This information was not always requested as "more data" – in many cases, the identified need was for public access to plain language summary and interpretation of available data.

Importantly, water quality and quantity trend information is needed by co-management boards such as the LWBs or the MVEIRB to support the decisions they must make about the use of water for industrial or municipal purposes. All levels of government – municipal, territorial, federal, Indigenous – require the information to set or evaluate the effectiveness of their policies. For example, the NWT Water Stewardship Strategy can use the information to monitor its goal of ensuring that "water remains clean, abundant and productive for all time."[127] Land claim groups can monitor their assertion that the "quality, quantity and rate of flow" of waters on their lands remain substantially unaltered. The earlier parties are aware of unacceptable trends in water quality and quantity, the earlier can be the response to them.

What We Found

The Audit Team was provided a series of reports that summarized the available monitoring data for thirteen NWT watersheds and analyzed that data for trends. For each of the audited watersheds, we explored the availability of water quality data (both scientific and TK-based), assessed if the government had used the data to perform trend analysis, and determined what parameters showed trends. Much of the evaluation we performed is quite detailed and extensive; for this reason, we have provided a summary of results and conclusions in this section of the Audit Report. Our detailed analysis can be found in Appendix C.

2.1.1 TK-based information describing water quality and quantity trends was not available for this review

The first step of our environmental trend assessment for the NWT was to determine if sufficient data had been collected to perform meaningful water trend analyses. In assessing data availability, we looked for both scientific and TK data as required by Part 6 of the MVRMA. As described above, it was beyond our scope to analyze raw data for trends; instead, we relied on reports that had already analyzed available data. None of these environmental trend reports contained an analysis of TK-based data. This result is consistent with observations made in the 2015 Audit where the Audit Team concluded that there was little evidence that water trend analyses considered TK to support the observations and conclusions leading to their Recommendation 2015-23: "*NWT CIMP should engage partners of the NWT Water Stewardship Strategy to facilitate the collection of TK to complement the sound scientific analysis of water quality and quantity trends completed to date*."

As described in Part 5 of this report, we found that the progress on Recommendation 2015-23 to be adequate based on the efforts of the GNWT ENR's NWT CIMP unit to stimulate more TK-based monitoring. We note, however, that neither the original recommendation nor the response directly addressed how to integrate TK-based data into the analysis of trends or use it in support of conclusions drawn by scientifically-based trend analyses. One of the trend summary reports we reviewed for this Audit noted the same issue and recommended that the GNWT "establish a working group of traditional

[127] (GNWT, n.d. e)

knowledge holders to assist in advancing future water quality monitoring and assessment activities." [128] This may be the most prudent way to come up with a solution that is respectful of how and when TK should be used and also to meet the intent of Section 146 of the MVRMA.

Recommendation 2-1: The RA work with TK-holders to consider how best to recognize and utilize TK-based information in the evaluation of water quality and quantity trends and to develop a transparent process to guide the use of TK. *The outcome we expect is that TK-based information is available and utilized in water trend analysis in a way that is compatible and respectful for TK-holders.*

GNWT's response: *The GNWT, as the RA, agrees with this recommendation and the importance of traditional knowledge in water-related assessments and decision-making. The Traditional Knowledge Policy and Implementation Framework guides GNWT work, and efforts are underway to develop a GNWT-wide Traditional Knowledge Action Plan.*

The GNWT is working with partners, including Indigenous governments and organizations, to build a meaningful, informed and culturally appropriate foundation to advance work related to TK and water research, assessments and decision-making. This includes: a) a NWT Water Strategy Aboriginal Steering Committee which is made up of representatives from Indigenous governments, that provides strategic direction on NWT Water Strategy implementation, including the role of traditional knowledge; b) the Mackenzie River Basin Board, of which the GNWT is a member, is piloting a new approach grounded in traditional knowledge and community experience to assess the Basin's aquatic ecosystem health for the Board's next State of the Aquatic Ecosystem Report; c) multijurisdictional development of a framework for inclusion of TK in the bilateral water management agreement implementation; d) annual NWT Water Strategy partner meetings that bring together water partners to share ways of knowing in implementation activities; and e) support of and participation in traditional knowledge research on water and water governance, such as through the Tracking Change project led by the University of Alberta (trackingchange.ca). This ongoing work continues to inform the GNWT's approach to the use of TK in water-related decision-making and understanding of water quality and quantity across the NWT.

The GNWT commits to ongoing collaboration to build on this foundational work to identify and implement a meaningful, community-engaged process for ensuring TK informs water-related assessments and decision-making.

2.1.2 Long-term, scientifically-based monitoring data was available for 8 of the 13 watersheds audited, for rivers only

We first determined if sufficient scientifically-based water monitoring data had been collected to perform meaningful, robust trend analysis, following accepted statistical methodologies for water quality data in each of the watersheds under review. Ten years of data is a commonly used benchmark when assessing long-term temporal trends in water quality to help distinguish meaningful changes over time from the inter-annual variability present in water quality data.[129]

[128] (AMEC Foster Wheeler, 2018, p. 17)
[129] (Chapman, 1996)

Our review revealed that, although there are many programs collecting data on NWT rivers, only eight of the thirteen watersheds audited had one or more water quality monitoring stations that had been regularly sampled for a period of more than ten years to conduct a valid trend analysis (Appendix C provides details of this analysis). Stations that were able to provide long-term data came from three sources:

- Hydrometric and water quality stations in several watersheds co-maintained by Environment and Climate Change Canada's (ECCC) and GNWT.
    - These stations provide long-term records of useful data that could be used to assist interpretation of any trends.
- GNWT ENR water quality monitoring stations on the five transboundary rivers.
    - These stations are important given concerns regarding upstream stressors. It is therefore important to maintain water quality records for transboundary waters, at locations near where the waters flow into the NWT.
- The Community-Based Monitoring (CBM) Program supported by GNWT ENR.
    - This program was considered of high value as it was designed around community concerns, is intended to track changes over the long term, and included a formal review of results at the first five-year interval. Importantly, the CBM Program will provide ten years of data at many sampling stations by 2021.

It is important to note that the existing water monitoring stations listed above were not initially established to deliberately create an NWT-wide network; nonetheless, the existing stations provide an overall reasonable coverage for the NWT's major river systems. In some cases, however, it is not clear if the locations are optimally located or whether additional stations would be needed to ensure we are able to detect trends in all watersheds. For example:

- For eight of the thirteen audited watersheds (Nahanni Butte, Peel, East Mackenzie Delta, West Mackenzie Delta, Great Bear, Hay, GSL-Christie Bay – North Shore, Marian), there is only one long-term river sampling station to represent the entire watershed.
- The Great Bear watershed was represented by a single sampling point in the Great Bear River near the confluence with the Mackenzie River near Tulita, however Great Bear Lake was not sampled as a part of any program reviewed, nor were any other lakes in this large watershed.
- The South Nahanni watershed was sampled at a single point just outside the community of Nahanni Butte prior to the confluence with the Liard River. This station should inform on the overall changes in water quality within the South Nahanni watershed, but may not be sufficient or optimal to assess the impacts from multiple land use changes should numerous developments occur within the watershed in the future.
- It is unclear whether the two stations in the Mackenzie Delta are sufficient to characterize the braided river system in that region.

Recommendation 2-2: The RA develop and/or provide descriptions of the rationale and study design for individual monitoring stations sampled by the federal and territorial government and make this information available at a central electronically-accessible location. *The outcome we expect is that the network of long-term water monitoring stations in the NWT is described in a way that makes it possible to see gaps and overlaps and to understand the intent and purpose of monitoring stations.*

GNWT's response: *The GNWT, as the RA, agrees with the intent of the recommended outcome. Water monitoring networks and programs in the NWT are operated by numerous responsible agencies and are intended to address a wide range of objectives. Status and trend reports provide information about the rationale and study design for specific programs. The GNWT will explore*

consolidating the rationales and study designs of its programs in a publicly informative way, such as updating an inventory of water monitoring in the NWT to include rationale and study design for each identified program. This consolidation may assist with future gap and overlap assessment.

Use of long-term monitoring data from regulated developments

It is important to note that the Trend Summary Reports as well as our own research made us aware of other long-term water monitoring stations that are maintained by industry or municipalities as part of their regulatory requirements.

Surveillance Network Programs
While SNPs provide important information to the regulator, the monitoring is mainly conducted at internal project locations up to an effluent discharge location; therefore, the data cannot reliably contribute to regional trend analyses.

Aquatic Effects Monitoring Programs
AEMPs are typically robust programs designed to provide project proponent and regulators with information on project-related trends and effects to the environment. Although links are not routinely made to any regional trend information, AEMPs do include reference sites away from project influences and, for more recent AEMPs, response frameworks that allow for interpretation of any changes and the resultant potential to consider cumulative impacts. There are many AEMP programs in the NWT which monitor for environmental trends associated with individual projects. They are therefore useful for detection of water quality changes associated with industrial activity and to aid in the interpretation of changes detected in broader monitoring programs but are less useful as programs to detect broad environmental changes of the kind we are analyzing in this report. Lastly, and as well documented,[130] a lack of consistency in parameters monitored as well as analytical methodologies between AEMPs and government-led monitoring severely limits the ability to combine data sets in a meaningful manner.

Most of the monitoring studies reviewed, and monitoring stations reported, were for rivers; there was no evidence of a GNWT program for systematic evaluation of water quality in lakes in any of the audited watersheds. Water quality and flow in NWT rivers are highly variable by season and this confounds the ability of a monitoring program to detect statistically significant trends. Lakes, by contrast, integrate and aggregate all influences in their watersheds and express any changes in a more stable environment of water level, flow, and sediment deposition. They may therefore be better suited to detect changes and cumulative impacts. Lakes are also highly valued by NWT residents as they provide habitat for fish, waterfowl, and wildlife.

Recommendation 2-3: The RA perform a periodic review (e.g., every five years) of the overall monitoring network in the NWT to ensure that the network is sufficient to detect and explain trends in water quality and quantity. Monitoring locations should be added or dropped with the key consideration being their maintenance over the long term. Short-term monitoring programs are of limited use unless they are intended to answer a specific question over the short term. *The outcomes we expect are that water monitoring efforts are focused on stations located at sites that are representative of relevant watersheds and that can be maintained over the long term.*

[130] (Wong, 2018)

GNWT's response: *The GNWT, as the RA, agrees with this recommendation. The GNWT agrees that periodic reviews and audits of water programs are important components of the monitoring cycle to ensure that monitoring data are meeting the needs of water managers and stewards. Water monitoring in the NWT is re-examined and improved through regular network evaluations (e.g., Environment and Climate Change Canada Hydrometric Network 2014), status and trend reporting (e.g., Coppermine/ Lockhart 2015; Great Slave Lake Tributaries 2017), and frequent engagement with water partners (e.g., Water Stewardship Strategy and Aboriginal Steering Committee meetings). Monitoring programs are informed by, or designed through stakeholder input and are reviewed periodically with water partners to determine effectiveness in meeting program objectives and modified as appropriate. For example, the NWT-wide Community-based Water Quality Monitoring (CBM) program was evaluated in 2018 as part of a five-year review; a third party conducted this evaluation using feedback on program effectiveness and future improvements from multiple stakeholders.*

Data from long-term stations are essential for cumulative effects monitoring and should be maintained and enhanced through network partnerships.

Recommendation 2-4: The RA develop a lake-specific monitoring program. While there are hundreds of thousands of lakes in the NWT, reliable tracking of environmental trends could be conducted on a small subset of lakes stratified by size, watershed area and ecoregion. Ontario's Broad Scale Monitoring Program is referenced as an example of a program addressing large numbers of lakes in a systematic manner to document a) trends over time and b) the state of the resource. *The outcome we expect is that long-term water trend information is available to the RA for both rivers and lakes, to provide a comprehensive picture of aquatic health.*

GNWT's response: *The GNWT, as the RA, agrees with the intent of this recommendation. The GNWT acknowledges the importance of both river and lake monitoring to track environmental trends. The GNWT is currently leading or supporting numerous lake-specific monitoring programs in the NWT. Long-term lake monitoring is being carried out in the Coppermine and Lockhart basins and numerous lakes in the North Slave region. Short-term monitoring and research were conducted in lakes along the Inuvik to Tuktoyaktuk Highway. The GNWT is partnering with Canadian Lake Pulse Network and Environment and Climate Change Canada to expand lake monitoring in the NWT. Additionally, the GNWT will identify lake monitoring as a data gap when revising NWT Cumulative Impact Monitoring Program's Water Blueprint. Partnerships with other researchers are essential to overcome capacity and resource constraints, especially given the large number of lakes in the NWT.*

Recommendation 2-5: The various large mining operations are compiling long-term (20+ years) records of water quality and biology in lakes as part of their AEMPs. These include reference lakes which document regional and climate-related changes. These records may be lost or discontinued after mines close. We recommend the GNWT consider assuming monitoring programs (or at least key stations within those programs) initiated by industry as an efficient way to build a database for lakes and rivers. *The outcome we expect is that the RA curtail the loss of millions of dollars in monitoring investments made by industry and increase their ability to detect changes over the long term. Overall, the recommendations in this section are meant to support a cost-effective and focused network of long-term water monitoring stations that can produce data suitable for the detection of trends and their potential causes in key NWT watersheds.*

GNWT's response: *The GNWT agrees with the intent of this recommendation. The GNWT acknowledges the importance of long-term lake and river monitoring to track environmental trends.*

The GNWT will continue to monitor the regulatory requirements for current mining operations, including reference lakes, and will provide input to final closure requirements when required, including long-term monitoring requirements by industry. The GNWT may consider future incorporation of these industry-led monitoring sites into the existing GNWT monitoring networks, depending on the benefits and feasibility of doing so.

2.1.3 Errors and inconsistencies were identified in some of the trend reports reviewed

We detected errors in data analysis and interpretation in some of the reports we reviewed related to interpretation of multiple detection limits and values at detection limits (censored data), mis-interpretation of lowered detection limits as a trend, overabundance of censored data, and trends based on two data points (Appendix C provides details of this analysis). These errors in interpretation speak to a need for more consistency and for better review and quality control of reports generated for the GNWT by outside parties, in order to prevent dissemination of misleading information. A defined and consistently applied methodology across the GNWT would allow the data from programs whose purpose varies to be compiled into a single regional data set, or within watersheds more readily.

Recommendation 2-6: The GNWT improve the consistency and quality of trend analyses performed on available water monitoring data by implementing a consistent methodological framework for water. This would include:

1. **Core parameter list - Additional parameters could be included per the individual study goals, but a core list of required parameters for all monitoring in the territory would greatly increase the compatibility between data sets**
2. **Consistent analytical laboratory methods and detection limits required for all core parameters**
3. **Establish a statistical framework for:**
    a. **Outlier detection and removal**
    b. **Censored data handling prior to or as part of trend analysis**
        i. **Allowable percentage of non-detect samples**
        ii. **What concentrations to substitute for non-detects**
    c. **Trend Analysis methodology**
        i. **parametric or non-parametric testing**
            - **preferred trend method (Mann Kendall or other – we note that the more recent trend assessments all used Mann Kendall so some consistency seems to have established itself)**
        ii. **Critical p value for determining significance of trends**
        iii. **Defining Seasons (Flow regime vs. Calendar Year)**

The outcome we expect is that trend analyses for all watersheds are performed using a consistent methodological framework to support consistent interpretation of results.

GNWT's response: *The GNWT agrees with the intent of this recommendation. The GNWT acknowledges the importance of consistency and quality of trend analysis of water monitoring data, but recognizes there are limitations. The GNWT is engaged in numerous initiatives to improve trend analysis through more consistent data management. Methodologies in data collection and in the evaluation of trends are standardized as much as possible, but flexibility is required to manage datasets that are not completely compatible. Trend analysis techniques should also evolve and follow current scientific literature and best practices. GNWT water monitoring frameworks are collaboratively*

developed with stakeholders in the NWT and with neighbouring jurisdictions (e.g., bilateral water management agreements). The GNWT, in partnership with other water managers, has or is in the process of developing guidance documents on water monitoring and assessment to promote consistency (e.g., Aquatic Effects and Baseline Monitoring Guidelines). The GNWT will also consider how to incorporate standardized methodology when revising NWT Cumulative Impact Monitoring Program's Water Blueprint to encourage consistency.

Recommendation 2-7: The GNWT implement a system of qualified peer review of all internally and externally produced reports on environmental trends. *The outcome we expect is that trend analyses for all watersheds are of consistent and adequate quality and that reports meet acceptable professional standards.*

GNWT's response: *The GNWT agrees with the intent of this recommendation. The GNWT will continue with the practice of qualified in-house peer review for all internally and externally produced reports. This internal review process ensures consistency with accepted methodologies in academic peer-reviewed literature. All GNWT-led manuscripts that are published in scientific journals will be peer reviewed within the GNWT prior to submission to journals. Reports that are developed with partner institutions (e.g. transboundary water agreement programs) will be reviewed internally by each institution prior to publication. Where possible, trend analysis will follow a consistent framework so that results are transferrable to other internal and external reports evaluating hydrologic and water quality metrics.*

2.1.4 Trends have been detected in all the audited watersheds; there are no consistent patterns between watersheds and there are no environmental concerns with the detected trends in rivers at this time

Although statistically significant trends in a wide range of water quality parameters were detected, there were no consistent trends within or across watersheds that could be determined or explained by the Audit review, beyond increases in major ions in the Coppermine River associated with the Ekati and Diavik mining operations on Lac de Gras. Changes in major ions were frequently observed across all watersheds. The authors of the reports we reviewed did not attempt to interpret the ecological significance of any trends. Our review of the results did not indicate that the environmental trends in water quality detected have:

- contributed to a nutrient enrichment response;
- a potential for toxicity; or
- a potential for any other consequences.

Details of the analysis used to support the conclusions and recommendations of this section can be found in Appendix C.

Recommendation 2-8: The GNWT provide a framework for future trend reports to follow for the evaluation of data such as a requirement that the authors interpret the significance and potential causes of any observed environmental trends, and that they address the potential for cumulative impacts. *The outcome we expect is that watershed trend reports by contractors for the GNWT follow a consistent framework of interpretation and provide a discussion of significance of any trends in order to inform the GNWT such that they can respond in an appropriate way.*

The overall outcome of Sections 2.1.3 and 2.1.4 is that trend analyses and summary reports prepared for each watershed accurately and defensibly describe the presence, causes and environmental significance of detected trends.

> ***GNWT's response:*** *The GNWT agrees with the intent of this recommendation. The GNWT currently employs a general framework for evaluating water quality and quantity with standardized levels of significance and appropriate statistical testing, consistent with current scientific literature and best practices. Cumulative effects assessment and an interpretation of observed environmental changes are common expectations of watershed trend analysis reporting. However, watershed trend analysis objectives are often numerous and the scope of each assessment can differ.*

2.1.5 Available trend analyses have only limited ability to address stakeholder concerns about water

The conclusions presented in the sections above showed that, although there are a variety of monitoring programs underway, their utility could be improved by closer attention to program design and interpretation and by commitment to maintaining appropriate sites over the long-term. Recommendations are made above to address this.

Although trends were observed in a variety of environmental indicators for water, the current status of the audited watersheds do not indicate a nutrient enrichment response, a potential for toxicity, or a potential for any other consequences. This information can go some way to addressing concerns about water, although we note that the conclusions are based on the professional judgement of the Auditors, which is based on limited information, and that monitoring results have not been formally presented to the public.

The CBM Program was identified as valuable as it was specifically designed to meet community concerns and is built around consistent methods. It will provide a valuable long-term data record and is subject to review and interpretation at five-year intervals. The CBM results are presented in plain language summaries, and interviews conducted as part of the Audit show that public feedback on that program is good.

The public meetings and interview portions of the Audit did reveal several potential shortcomings related to stakeholder concerns:

- Not all contaminants of public concern are being tested. The monitoring programs address hydrology, metals, major ions and nutrients but, with the exception of the CBM Program, do not address organic contaminants such as polyaromatic hydrocarbons or other oil sands-related transboundary pollutants. The depth of public concern over these contaminants suggests the need for a directed effort on monitoring of transboundary rivers and water bodies adjacent to large industrial projects in the NWT.
- It is not clear if and how the available trend information is being used to make decisions and the public does not seem to be aware of where to find the information (Section 2.1.6).
- Our surveys showed that the public expressed concerns related to the need for monitoring directed at climate change, present and future industrial operations in the NWT, transboundary pollution, and the effects of municipalities. Although there is no evidence of significant concerns at this point in time, public concern points to the need to continue monitoring programs, making sure that stations are chosen for the right reasons and maintained over the long term, and that program results are verified and reviewed at regular intervals in order to react to any observed

trends. The numbers of stressors of concern voiced by the public also points to a clear need to better understand and implement cumulative impacts monitoring.

- As noted in Section 2.1.2, although thirteen watersheds were part of the Audit, much of the available monitoring was not useful for long-term trend detection because data sets were incompatible, interpretation and quality assurance/quality control (QA/QC) were flawed, or the monitoring programs were too short. These findings do not mean that, individually, those programs were not meeting their objectives, but it points to the need for better planning, the opportunity for single programs to fulfill multiple objectives, the need for critical review and dissemination of results, and regular and systematic integration of results from different programs. Part 3 of this report provides additional detail on these points.

Specific concerns were raised during interviews related to environmental trend monitoring in support of cumulative impact assessments. These included:

- NWT CIMP felt that there was data for watersheds in “areas of past, current and reasonably foreseeable development,” but NWT CIMP, GNWT ENR, MVEIRB and CIRNAC all said that they believe trend availability is inadequate, that longer timeframes for monitoring were needed, and that more effort was needed to complete trend analyses on existing data. This confirms the Audit Team’s analysis.
- CIRNAC felt that monitoring programs have improved but did not provide evidence or specific examples.
- The MVEIRB wants to make sure that monitoring programs address the need for data near proposed infrastructure and transportation corridors. The NWTMN also identified the need for increased transboundary monitoring, while GNWT Lands said that areas with the largest changes should be targeted (we note that one cannot tell if there are changes without monitoring, but respect that this comment likely refers to land use changes as revealed by, for example, land use permit applications).

Strategic considerations emerged from our review that could help the GNWT meet program needs through more efficient planning and program management, in recognition that interviewees stated that program resources were limited and were not likely to increase:

- The benefits of the CBM Program were discussed above and in Appendix C; we advise that the Program be continued.
- The contributions of long-term AEMP programs from industrial operators could be optimized by development of a standard list of parameters, methods, and detection limits, and by arranging for useful sites, such as reference sites, to be assumed by the GNWT when the industrial operations cease (see Recommendation 2-5).
- Including a component in program review (see Recommendation 2-3) will optimize sampling by staggering sampling frequency at existing locations to allow the addition of more sites within the same program capacity (i.e., sample particular sites as three years on, three years off, or decrease sampling effort in more stable sites).
- A lake monitoring program with stratified sampling by lake size and ecoregion could be implemented (see Recommendation 2-4).
- Long-term assessments of lakes in the territory could be initiated using lake sediments (paleolimnology) to track historical changes in nutrients and other parameters where no monitoring has been done to date and then supplementing with ongoing conventional monitoring.

Recommendation 2-9: The RA work with other appropriate GNWT divisions and parties in the NWT to evaluate how best to improve their water monitoring efforts with the goal of ensuring that any data collected reflect the information needs of residents and could be used for trend analysis and CIM of water. With respect to trend analyses, the evaluation should focus on how best to optimize the availability of long-term data sets to provide good coverage of the NWT and address the gaps identified in Section 2.1.2. *The outcome we expect is that water monitoring efforts in the NWT adequately address stakeholder concerns.*

GNWT's response: *The GNWT, as the RA, agrees with the intent of this recommendation. The GNWT acknowledges the importance of partnering with others for improved monitoring efforts and addressing stakeholder concerns in the NWT. Water monitoring, data management and communication are pillars of the NWT Water Stewardship Strategy, which is co-developed, implemented and reviewed annually by GNWT ENR, other GNWT departments and water partners. Continued implementation of the NWT Water Strategy facilitates improved coordination of water monitoring efforts, such as through network partnerships, to ensure information needs are met and to address monitoring gaps in the NWT. These network partnerships are fundamental to support capacity and assist program delivery through unique northern logistical challenges and financial constraints and allow for greater coverage of the NWT. Partnerships, including those for community-based monitoring programs, also allow for direct input by NWT communities and stakeholders.*

2.1.6 Residents are aware of water monitoring efforts but do not know where to find results/information

The surveys, meetings and questionnaires completed as part of the Audit revealed useful considerations regarding dissemination of monitoring results.

- While the GNWT has a number of programs and a number of websites for disseminating information about water – (e.g., CBM, ENR and NWT CIMP sites), and the Mackenzie Datastream is accessible for water information, survey results showed that, although >60% of residents knew about monitoring programs, <15% knew where to find the results. Additional comments received from people at the public sessions confirmed this finding. This speaks to a clear need for guidance on access to information (Appendix A).
- The public open houses also revealed a lesser need for access to data and a greater need for access to knowledge – that is, interpretations of information that has been analysed to help inform the public's own behaviours and understanding. The need for interpretation and dissemination was exemplified by the public concern about the environment, in the absence of any alarming trends in water quality or quantity. The public were also not aware if anyone was using the available trend information to make decisions.

Recommendation 2-10: The GNWT improve the communication of available water monitoring information to residents. These efforts should include increased recognition of public concerns in program design (see also Recommendation 2-9), interpretation of trend monitoring information (see also Recommendation 2-8), the reasons for monitoring and site selection (see also Recommendation 2-2), increased emphasis on plain language summaries and interpretations derived from more detailed technical analyses and improved awareness of where and how such information can be accessed. *The outcome we expect is that NWT residents are aware of and understand water trends in their regions.*

GNWT's response: *The GNWT agrees with this recommendation. Sharing information on freshwater health with the public is a priority for GNWT monitoring programs. The GNWT provides environmental*

information as plain language summaries when possible through a number of online platforms including the GNWT website and the NWT Discovery Portal. The GNWT is a founding partner of Mackenzie DataStream which allows users to access, visualize, and download full water quality datasets. On Mackenzie DataStream, the rationale for sampling locations of the monitoring programs is described through the stories and videos of the monitoring groups as well as in the metadata.

Part 3: Role of the Responsible Authority in Coordinating Data Collection and Analysis for Environmental Trend and/or Cumulative Impact Monitoring

What We Examined

Under Section 146 of the MVRMA, "The responsible authority shall, subject to the regulations, analyze data collected by it, scientific data, traditional knowledge and other pertinent information for the purpose of monitoring the cumulative impact on the environment of concurrent and sequential uses of land and water and deposits of waste in the Mackenzie Valley." This applies to monitoring of all valued components of the environment, not just water. Our interpretation of this section is that the RA (i.e., the GNWT) is not compelled to collect all of the information itself, but rather is expected to bring the relevant information together and analyze it with respect to cumulative impacts.

In this context, we note that there are many entities in the NWT that conduct monitoring of all aspects of the environment. For example:

- Industry may conduct baseline monitoring (e.g., on water, wildlife, vegetation, socio-economic indicators) to support the EA of their projects and also monitor the environmental effects of their projects before construction, during operation, and beyond closure.
- Specific GNWT divisions routinely monitor several components of the environment including, but not limited to, wildlife, water, permafrost and socio-economic indicators.
- Federal government departments including Department of Fisheries and Oceans Canada (DFO), CIRNAC, and ECCC conduct monitoring on water, fish, and wildlife.
- Academic researchers and regional or community organizations conduct individual monitoring programs to answer specific research questions or concerns.
- The co-management boards under the MVRMA generally do not conduct monitoring themselves, but they do require others to do so under EA measures or regulatory permits.

While we understood that each of these monitoring programs would necessarily be designed to satisfy each entity's specific objectives, we felt that data from the individual programs could be pooled on a regional basis in order to monitor cumulative impacts as required by Section 146. To this end, we looked for evidence of a monitoring structure (e.g., policies, strategies, guidelines or regulations) that would ensure that data from individual programs could contribute to environmental trends analyses and CIM efforts by the RA.

Evidence for our findings and recommendations for this section of the Audit came from the following sources:

- Lindsay Wong, "Water Quality Data to Support Cumulative Effects Decision-Making in the Mackenzie Valley, Northwest Territories", Master of Science thesis, University of Saskatchewan (2018).

- Lauren Arnold, “Cumulative Effects Information and Environmental Assessment Decision-Making in the Mackenzie Valley, Northwest Territories”, Master of Arts thesis, University of British Columbia (2018).
- Bram Noble, “Assessing Regulator’s Needs to Make Decisions”, report to NWT CIMP, 2019.
- Questionnaire and interview responses, public survey, and comments received at public open-house events.

Why It’s Important

Given the vast landscape and sparse population in the NWT, monitoring of any component of the environment is expensive and logistically challenging. It is unlikely that any one entity would ever be able to monitor every VEC, in all locations, all the time. Therefore, the need for a structure that allocates monitoring resources efficiently and allows information from different monitoring programs to be knitted together effectively is especially important in this Territory.

As we noted for water in Part 2 of this report, it is not always possible to retrospectively pool data collected from different programs due to differences in the way samples are taken and analyzed. Instead, consistency in certain aspects of monitoring methodology needs to be deliberately applied to each monitoring program to generate data that can be used by the RA to detect environmental trends and to conduct CIM. We have used the term “monitoring structure” to describe the framework for ensuring such consistency. To be used effectively, all entities involved in monitoring need to understand their roles and responsibilities in this monitoring structure.

What We Found

3.1.1 It is not clear which division in the GNWT is meant to take the lead in fulfilling the role of the responsible authority

While the RA for Section 146 and indeed for Part 3 and 6 of the MVRMA was clearly delegated to the Minister of ENR as a result of devolution in March 2014, the delegation instrument only specifies the GNWT ENR (as a whole) as the RA - we found no evidence of a further delegation to a specific directorate, division, program, section or other official within the department.[131]

Interviews with GNWT employees and with parties outside of the GNWT found they assumed this authority was delegated to ENR’s NWT Cumulative Impact Monitoring Program (NWT CIMP). Many have expectations of NWT CIMP to carry out both CIM and assessments and to provide the information to decision-makers or to report to the public. Staff within NWT CIMP acknowledged others’ preconceptions but did not acknowledge that the role had been delegated solely to them. Instead, the responsibility for CIM appears to be shared between NWT CIMP and those programs that actually monitor trends in specific VECs: GNWT ENR (Wildlife Division) for caribou, GNWT ENR (Water Management and Monitoring Division) for water quality/quantity, and DFO for fish population monitoring.

When establishing caribou or water monitoring blueprints, NWT CIMP does engage respective experts in the GNWT Divisions such as Wildlife and Water Management and Monitoring. In addition, other external experts are also engaged including the NWT CIMP Steering Committee, Indigenous and federal

[131] (GoC, 2014)

governments, and co-management boards. NWT CIMP manages a proposal-based funding program and tries to work with other divisions to get input – seeking expert advice from government departments on priorities, synergies, and methodologies when initiating their annual call for monitoring project proposals. However, coordination between GNWT monitoring programs was reported as being dependent on staff availability and their interests, rather than as a result of legislated or regulatory requirements or a formal coordinating structure. Some of those interviewed in the GNWT expressed the desire for divisions to work together more closely. The "Knowledge Agenda Action Plan"[132] has a series of actions to aid in divisions working more effectively together on research and monitoring. At the end of the day, NWT CIMP staff do carry out CIM projects during the year but they do not 1) direct monitoring done by other GNWT divisions to ensure relevant data is available for cumulative impact assessments; or 2) conduct cumulative impact assessments themselves.

While NWT CIMP does meet its mandate to "Communicate results to decision-makers and the public," it is communicating highlights of reports from funded projects. In some instances, NWT CIMP does provide evidence directly to co-management boards as part of an EA or regulatory proceeding.[133]

Industry is expected to provide a cumulative impact assessment as part of an EA process (which is accepted by most) but also to monitor for cumulative impacts during the life of their project (which they do not believe they should do). Instead, industry is focused on the monitoring and management of their own impacts in the understanding that, if they are not creating impacts from their activities that they are not likely contributing to cumulative impacts. In this context, it is reasonable to expect that industry can focus on their own projects and the RA can or should be able to use industry monitoring data as input to their CIM assessments.

Some (like the Wek'èezhìı Renewable Resources Board [WRRB] and MVEIRB) are aware of the monitoring efforts of the various GNWT departments but do not know how the monitoring information eventually feeds into the assessment of cumulative impacts.

The interfacing between monitoring players is therefore incidental or opportunistic and not coherently organized to achieve the objective of Section 146 of the MVRMA. We find the assumed delegation of all CIM for all VECs in the NWT, including socio-economic indicators, to NWT CIMP, without also giving them the authority, direction or funding for such monitoring, not to be reasonable.

In summary, while there are many players in CIM, the absence of a framework and of overarching guidance and leadership means they are not working together. Although the lead is assumed to be NWT CIMP, the leadership has not been made explicit. Without a lead division within the RA, supported by an explicit definition of roles and responsibilities and support from senior management, there is no way to compel or ensure that divisions will work together. In our opinion, the absence of a defined RA lead within the GNWT makes it impossible for the GNWT to fulfill the responsibilities laid out in Section 146 in a coherent manner. Instead, Section 146 is only fulfilled in a piecemeal fashion with no one program, section, or individual with the clear authority to lead.

Recommendation 3-1: The RA identify an overarching coordinator to ensure the RAs responsibilities under MVRMA Section 146 are fulfilled; a logical coordinator could be the existing NWT CIMP. The coordinator for the RA must be given the authority including appropriate

[132] This has not been released yet.
[133] (WLWB, 2016a)

resources to direct the monitoring of other parties such that various entities collect information in a coherent manner according to an accepted monitoring structure and with the authority of regulations to ensure cooperation. *The outcome we expect is that the relevant business units with responsibility for CIM and trend monitoring are coordinated in delivering the RA's responsibility.*

GNWT's response: *The GNWT, as the RA, believes that its obligations for cumulative impact monitoring under Section 146 of the Mackenzie Valley Resource Management Act (MVRMA) are being fulfilled with the current structure. A number of new initiatives that will bolster GNWT efforts to understand cumulative impacts include:*

- *The development of water quality reporting guidelines, which have recently been adopted by the Land and Water Boards;*
- *The development of a cumulative effects framework for ENR, which will be distributed for input to our partners in 2020; and*
- *The development of an approach to water quality monitoring that will allow all water monitoring partners to contribute information to fill spatial and temporal gaps.*

These initiatives, along with existing monitoring activities, will contribute to ENR's ability to monitor and assess cumulative impacts in the NWT and to fulfilling the requirements of the MVRMA.

Recommendation 3-2: The GNWT, on the advice of the overarching coordinator identified in Recommendation 3-1, formally assign roles, responsibilities, and accountabilities, to relevant business units (i.e. other departments, expert divisions and programs that are involved in monitoring). *The outcome we expect is that relevant business units have clarity in their contribution to fulfilling the RA's responsibility under MVRMA Section 146.*

We recognize that implementation of Recommendations 3.1 and 3.2 may result in several business units having increased responsibilities. Therefore, it will be important to ensure the GNWT provides adequate resources to carry out their new responsibilities.

GNWT's response: *The GNWT understands the intent of this recommendation, but is of the opinion that the intent can be achieved with the current structure. To clarify roles and help parties identify opportunities to collaborate, the GNWT will include the current roles and responsibilities of all parties involved in cumulative impact monitoring across the NWT in the cumulative effects framework that is currently being developed by ENR. Further, established interdepartmental working groups can be used to discuss the roles and responsibilities of relevant GNWT business units and provide internal accountability.*

3.1.2 There is no structure in place to ensure that individual monitoring programs in the NWT contribute to environmental trend or cumulative impact monitoring

The task set out for the RA in Section 146 of the MVRMA is no small feat for a territory with a huge land mass, abundance of lakes and rivers, and a sparse population. It is simply not feasible for the RA to monitor all VECs in all locations for either environmental trends or cumulative impacts. With this in mind, we looked for evidence of efforts that would allow the data from monitoring programs set up for different reasons by different entities to be combined to make defensible conclusions about trends and/or cumulative impacts. A key line of inquiry for our interviews and questionnaires was about the use of standard monitoring protocols or methodologies for VECs by government agencies, co-management boards, and industry.

The majority of those interviewed for this Audit indicated that they use standard monitoring protocols and methodologies; however, the protocols they cited varied between respondents for the same VEC. That is, there was no absolute standard for a VEC, and any standard protocols cited tended only to address parts of a monitoring program (e.g., sampling methods) or were not "enforceable" by the RA or other regulators. There was evidence, however, of efforts of the GNWT and others to improve standardization:

- GNWT ENR (Wildlife Division) cited two standardized approaches, one for barren ground caribou and another for woodland caribou. A GNWT ENR (Wildlife Division) representative explained that "sometimes there is a standard methodology, sometimes there is not. We do work towards development of standard methodologies through regular periodic regional wildlife monitoring workshops."
- GNWT ENR (Water Management and Monitoring Division) uses some standardized water monitoring approaches. They are currently using meta-data standards for water quality that were developed with NWT CIMP and are also working with the Province of Alberta on standardizing water quality parameters for monitoring programs for rivers in the context of the Mackenzie River Basin but they could not cite a reference for us to examine.
- DFO uses various standard methods for fish population estimates, contaminant loads, and estimating cause.
- The NWT CIMP made recommendations to funding applicants on monitoring protocols to be used for three VECs (i.e., caribou, water, and fish), but we noted that other sections within GNWT and the LWBs had different monitoring guidance for these same VECs to meet their own purposes.
- Both NWT CIMP and the LWBs have described their joint work on water quality standards for meta-data, which can be considered descriptive information about data (for example, having site identifiers like unique numbers and GPS locations for sites); NWT CIMP staff confirmed that the meta-data guidance is not enforceable, only "encouraged".
- The Wek'èezhìı Land and Water Board (WLWB) oversaw the alignment of the Ekati and Diavik detection limits in water quality parameters and a review of the respective AEMP program in an effort to improve the potential of those programs to detect cumulative impacts.
- The MVLWB and GNWT worked together to develop guidance for proponents on monitoring for compliance and aquatic effects in the MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs.[134]

In most of the cases above, however, the development of standard monitoring approaches was focused on government surveillance programs such as caribou census, measuring water quality, and counting fish. None of these organizations included a description of monitoring cumulative impacts on the environment. In other words, government has guidance on how to count and measure some components of the environment, but the monitoring is not designed to help explain why changes might be occurring. For example, officials with GNWT ENR (Water Management and Monitoring Division) described how they conduct water quality baseline monitoring on the Coppermine River and that they are seeing changes in water quality at this station. These are likely attributable to development in the watershed, but their program is not designed to explain the contributions of various factors to the change (i.e., Development A, Development B, or another cause).

Issues associated with the lack of consistent monitoring on cumulative effects assessments in the NWT are well described in two recent reviews undertaken by Wong[135] and Arnold.[136] For example, Wong

[134] (MVLWB & GNWT, 2019)

presents substantive evidence of the variability between monitoring parameters and methodology between individual project proponents and between government and proponents, emphasizing the "need for standards to specify how data are generated and presented to facilitate data synthesis for cumulative effects assessments."[137] Wong concludes that monitoring data collected by proponents and governments need to complement each other.

Evidence from the Arnold thesis shows the significance of this lack of consistency, with respect to cumulative effects assessments, since "intervenors and decision-makers are highly dependent on the proponent to supply baseline data and monitoring information for assessing impacts."[138] Other important conclusions from Arnold include:

- "There is an overall lack of coordinated environmental baseline information for developments in the Slave Geological Province and access to information is also currently a challenge in the NWT. The current levels of baseline information collection by government agencies does not appear, to the MVEIRB, to be sufficient to support environmental impact assessment decisions of resource development projects within the Slave Geological Province."[139]
- *"*Data for CEA [cumulative effects assessment] is ideally compiled at multiple spatial and temporal scales, but the data available for CEA is almost exclusively supplied from proponents and focused on their specific project*."*[140]
- *"*Baseline data is typically collected at a limited spatial and temporal scope according to the proponents' resources and needs, which is not often sufficient to establish a reference condition. Proponents typically conduct baseline studies over 1-2 years prior to their proposal, which was consistently characterized by interviewees as insufficient for determining the presence and extent of biophysical impacts."[141]
- *"*Some intervening organizations, particularly GNWT, have internal monitoring programs and there are also some community monitoring programs, but these were described as limited and "piecemeal" across the territory and may not be compatible with each other or the data provided by proponent."[142]

Although proponents are (rightfully) focused on their own project needs, the lack of a strategy, structure or guidance on monitoring program design means that the expense and effort involved in the collection of baseline information by a wide variety of proponents could be put to better use. Because "data for CEA is ideally compiled at multiple spatial and temporal scales,*"*[143] better coordination would represent an opportunity to develop an environmental baseline or regional reference condition for the NWT based on data collected to the same standards at different locations and different times. Although, as noted by Arnold, "Proponents typically conduct baseline studies over 1-2 years prior to their proposal*,"* [144] this baseline can be extended if the project is approved and since proponents include reference sites in their post-development monitoring. Although Wong notes that each EA sets an individual terms of reference such that there is variability between EAs in terms of monitoring requirements, there are common

[135] (Wong, 2018)
[136] (Arnold, 2018)
[137] (Wong, 2018), p.77
[138] (Arnold, 2018), p. 70
[139] Ibid, p.61
[140] (Arnold, 2018), p.70
[141] Ibid, p.71
[142] Ibid, p. 71
[143] (Wong, 2018), p.77
[144] (Arnold, 2018)

elements to all projects that, if coordinated, could produce a better description of baseline conditions that would be useful to all parties.

In summary, there is no shortage of guidance on how to conduct monitoring. For example, NWT CIMP recommends several monitoring protocols in its NWT CIMP Scientific Proposal Guide for 2019-2020 Funding.[145] There is not, however, evidence of a coherent and consistent monitoring structure to ensure that data collected by different parties for different purposes can be brought together for any purpose.

The ability to access consistent data to describe environmental baselines, test for trends, seek causation or assess cumulative impacts would bring great benefits to environmental management in the NWT and could lead to efficiencies and cost savings for all parties. For example:

- the need for data on baseline or reference conditions is common to interpret changes associated with all development projects and to document regional conditions or describe the effects of climate change as input to cumulative effects assessment;
- determining the difference between natural and mining impacts in the GNWT is an ongoing problem, which would be aided by compatibility between AEMP and regional datasets; and,
- although cumulative effects assessment is sometimes assumed to require a specialized and dedicated monitoring program, it can be triggered by detection of a change as documented by conventional sampling and proceeds to interpretation and assignment of cause or causes. The latter may not require a dedicated or specific cumulative impacts monitoring program and may be accomplished by comparison of the documented changes to the status of the same VEC or indicator in other similar areas (i.e., is there a climate change signal contributing to the detected change?).

In all cases, however, the data must be consistent in order to be useful. It may therefore be beneficial for the GNWT and other parties to develop a cooperative and shared approach to baseline monitoring. Candidate sites across the NWT could be identified on the basis of ecoregion and baseline information on VECs (water, vegetation, caribou), monitoring protocols standardized among all parties and the sites monitored by the GNWT, with costs shared with developers. This would be an alternative to each developer monitoring their own baseline and reference conditions, with the advantages of consistent methodology and cost savings overall. See also Recommendations in Part 2 of this report.

To achieve Section 146, the RA needs to design and apply a deliberate CIM design to understand the causes of detected environmental trends and account for these from past, present and future activities - knowing the causes allows decision-makers to react appropriately.

Recommendation 3-3[146]: The RA develop a monitoring structure that will ensure that individual monitoring programs undertaken across the NWT can contribute to baseline description, trend analyses and CIM by the RA. This should be done in consultation with other organizations or departments that conduct or direct monitoring in the NWT. This structure could be implemented through policy, guidelines and/or regulations and should define standards for monitoring such as:

- **Rationale for site selection**
- **Core parameter or indicator lists for each VEC**

[145] (GNWT, 2018f)

[146] Note that this recommendation overlaps to some extent with Recommendation 2-6, however the latter recommendation was made specifically for water monitoring while Recommendation 3-3 is meant to be applied to all VECs, including water.

- **Sampling methods and analytical methods (e.g., detection limits, etc.)**
- **QA/QC and other data handling methods**
- **Statistical methodology**
- **Evidence that the results of individual monitoring programs were being reviewed by the RA, the methods and interpretation verified, and the results disseminated**

The outcome we expect is that there is a common set of rules and expectations to guide monitoring in the NWT such that results across a range of monitoring programs are compatible for the purpose of trend and CIM analysis.

GNWT's response: *The GNWT, as the RA, agrees with this recommendation. The GNWT supports the development of a monitoring structure that will ensure that individual monitoring programs undertaken across the NWT can contribute to baseline description, trend analyses and CIM, including the continued development and promotion of standard data collection and reporting protocols. GNWT will consider ways to promote the development and use of standardized monitoring structures to increase the compatibility of monitoring results to enable trend and CIM analysis. Any potential standardized monitoring structures will need to address the needs of decision-makers and monitoring partners.*

A number of initiatives that will bolster the GNWT efforts to understand cumulative impacts include:

- *The development of water quality reporting guidelines, which have recently been adopted by the Land and Water Boards;*
- *The development of a cumulative effects framework for ENR, which will be distributed for input to our partners in 2020; and*
- *The development of an approach to water quality monitoring that will allow all water monitoring partners to contribute information to fill spatial and temporal gaps.*

Recommendation 3-4: The co-management boards use their ability to impact the design of monitoring programs to ensure the adoption of consistent monitoring requirements for proponents. ***The outcome we expect is that industry's monitoring efforts will be able to aide the RA in meeting its Section 146 responsibilities.***

The overall outcome we expect from the above sections is that existing and future monitoring programs in the NWT contribute meaningfully to environmental trends analyses and CIM efforts by the RA.

LWB's response: *There are examples of LWB efforts made to ensure the adoption of consistent monitoring requirements by proponents. Page 63 of the 2020 Audit describes the CIMP and LWB joint initiative on guidelines for reporting water quality data. The LWBs are involved in an initiative to standardize Surveillance Network Program (SNP) requirements for municipal water licences through the development of guidance manuals for communities.*

The design of monitoring programs required by the LWBs through permit and/or water licence conditions is impacted by evidence gathered during regulatory proceedings. With respect to monitoring effects in aquatic environments, the MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs (AEMP) is a high-level document that guides proponents with the development of their monitoring program, but does not include required technical specifications for sampling methods (e.g. specific QA/QC procedures, minimum detection limits, sampling schedules).

Consequently, the data collected by different proponents through water licence AEMP requirements are not necessarily standardized, and may not contribute meaningfully to a dataset that is to be analysed for environmental trends or cumulative impacts.

If the GNWT does not provide evidence for monitoring programs to be designed in a certain way, it is challenging for the LWBs to include conditions and/or approve monitoring plans that will result in consistent monitoring requirements for proponents. Standards or guidelines with specifications that would help inform cumulative impacts monitoring could potentially be used to help guide the development of these monitoring programs and help inform Board decisions. The development of such standards/guidelines is currently hindered by the lack of an overarching framework within which to obtain and consider cumulative impacts data in a meaningful and consistent manner.

GRRB's response: *GRRB does not have the authority to demand that proponents use specific designs for their monitoring programs – we can (and do) make recommendations in our comments on permit applications, but it is up to the LWBs to decide what the standardized requirements for monitoring programs are and to enforce the requirements when issuing permits and reviewing annual reports from permit-holders.*

- *GRRB has contributed by providing comments on draft versions of the LWB's Guidelines for Aquatic Effects Monitoring Programs (AEMP) and other guideline documents as they are developed.*
- *GRRB does not know the monitoring program details until they are provided during the LWB review process - so these same rules and expectations should already have been shared with the proponent at the LWB level.*

WRRB's response: *The WRRB reviews and comments on all wildlife monitoring programs, as well as other monitoring programs that are consistent with the Board's mandate, to ensure consistent mitigative and monitoring actions, including CIM, are implemented by the RA.*

GLUPB's response: *As they are identified in the planning process, the Board will keep the CIMP decision makers apprised of the baseline information and monitoring programs necessary so that cumulative effects policy, such as limits of acceptable change, can be integrated into the land use plan in the future. These policy measures will be developed with full consideration given to the roles and responsibilities of all entities with respect to CIM.*

MVEIRB's response*: MVEIRB supports the overall outcome of the recommendation, from the perspective of having good information to assess cumulative impacts of future development proposals.*

When MVEIRB sets measures in reports of EA to require monitoring, the measures focus on information needs and monitoring outcomes to prevent significant adverse impacts and ensure mitigation measures are effective, without being too prescriptive about the specific design or methods of a monitoring program. In this way the measures leave space for regulators and developers – who have the knowledge and expertise – to set out monitoring details that are consistent with and contribute to broader cumulative impact monitoring frameworks, where such frameworks exist.

MVEIRB agrees that the establishment of standard monitoring frameworks and protocols would better enable project-specific monitoring to be designed and carried out in a consistent way that contributes to cumulative impact monitoring and environmental trend analyses. MVEIRB will continue to support CIMP, LWBs, and others working to establish monitoring frameworks.

3.1.3 Regulations would be useful to implement a structure for the collection and analysis of consistent monitoring data by the responsible authority

Section 150(a) of the MVRMA sets out the ability to make regulations "respecting the collection of data and the analysis of data so collected and scientific data, traditional knowledge and other information, for the purposes of Section 146." In our discussions with NWT CIMP we found that development of regulations under Section 150 to help clarify monitoring roles and obligations by the RA had initially been an expectation when NWT CIMP began but, based on guidance from the NWT CIMP Steering Committee, the approach was adjusted in favour of implementing the program slowly prior to developing regulations.

Although the GNWT was appointed the RA as part of devolution in 2014, it was not given the authority to make regulations under this part of the MVRMA; therefore, only CIRNAC, via a federal Order in Council, has regulation-making authority under the MVRMA and currently no such regulations exist. In the Audit Team's opinion, such regulations would clarify roles, obligations, and structures to improve cohesion and utility of individual monitoring programs.

Recommendation 3-5: The GNWT and CIRNAC work together to develop regulations under Section 150(a) of the MVRMA to ensure implementation of a monitoring structure for the NWT that would help the RA to successfully fulfill Section 146 responsibilities. *The outcome we expect is that entities that conduct monitoring or cause others to conduct it are required to contribute usable data to the RA in support of its Section 146 responsibilities.*

CIRNAC's response: *CIRNAC is supportive of the ongoing work that contributes to the fulfilment of MVRMA Section 146. CIRNAC is open to exploring, with resource management partners, whether the development of regulations should be established in the future in response to this recommendation.*

GNWT's response: *The development of regulations under Section 150(a) are not a priority at this time. The GNWT believes it is adequately addressing cumulative impact monitoring. In addition, the GNWT has started a number of initiatives which contribute to the fulfilment of Mackenzie Valley Resource Management Act (MVRMA) Section 146, such as:*

- *The development of water quality reporting guidelines, which have recently been adopted by the Land and Water Boards;*
- *The development of a cumulative effects framework for ENR, which will be distributed for input to our partners in 2020; and*
- *The development of a pilot project investigating a novel approach to regional long-term monitoring for water.*

Part 4: Effectiveness of Cumulative Impact Monitoring in the NWT

What We Examined

Section 148(3)(b) of the MVRMA requires the Audit to look at how well the RA is analyzing data to monitor cumulative impacts on the environment. Previous audits have interpreted this requirement as a need to evaluate the effectiveness of NWT CIMP itself. While NWT CIMP has an obvious mandate with respect to cumulative impacts, we have not seen any evidence to suggest that NWT CIMP is solely responsible to meet the requirements of Section 146 of the MVRMA.[147] Instead, the evidence shows only that the GNWT ENR has been designated as the RA; our evaluation of the effectiveness of CIM methods extends to the GNWT as a whole. The data needed to understand and act on cumulative impacts is being collected independently by many parties, including the GNWT, but needs to be brought together.

We consider that CIM is fundamentally different from environmental trend monitoring with the latter having been evaluated in Part 2 of our report with respect to water. Our view of the main differences between CIM and trend monitoring are described in Table 2 (see Part 2 – What We Examined). While there are differences between the two intents, we note that cumulative effects assessments begin with detection of a change or a trend in a VEC or indicator. From there, cumulative impacts and their significance can be documented through a) interpretation of potential stressors where the trend was established, b) compilation of data from other programs (e.g., meteorological or land use data) to inform interpretation of cause, and c) implementation of additional monitoring in a response framework to determine causation. Cumulative effects assessment is therefore as much a process as a monitoring program.

For this part of the Audit, we sought to understand if the methods used by the RA and others to monitor cumulative impacts are used in a targeted manner, are effective at detecting impacts, and if results are communicated broadly. Some of the questions we sought to answer were:

- What CIM approaches and methods for data collection, analysis, and reporting are used by the agencies responsible for conducting environmental monitoring of caribou, fish, and water?
- Is CIM targeted to areas of major proposed development, natural change, or where most needed by decision-makers?
- Is cumulative impact analysis being done in a systematic manner and updated as required?
- Are cumulative impact analyses available and being used by decision-makers and others?
- Have methods for monitoring and reporting on cumulative impacts been further developed since the last Audit?

Evidence for our findings and recommendations for this section of the Audit came from the following sources:

- Lindsay Wong, “Water Quality Data to Support Cumulative Effects Decision-Making in the Mackenzie Valley, Northwest Territories”, Master of Science thesis, University of Saskatchewan (2018).

[147] Also see Section 3.1.3

- Lauren Arnold, “Cumulative Effects Information and Environmental Assessment Decision-Making in the Mackenzie Valley, Northwest Territories”, Master of Arts thesis, University of British Columbia (2018).
- Bram Noble, “Assessing Regulator’s Needs to Make Decisions”, report to NWT CIMP, 2019.
- Focused review of the GNWT State of the Environment Report (SOE) and Bathurst Caribou monitoring.
- Ekati Jay Project Case Study.
- Questionnaire and interview responses, public survey, and comments received at public open-house events.

Why It’s Important

Many decision-makers in the NWT, including the co-management boards and the GNWT itself, require information about potential or existing cumulative impacts. Cumulative effects assessment is a required element of the EA process in the NWT, the potential for cumulative impacts is a concern of NWT residents in the face of increasing industrial development, transboundary water use, a growing population and rapidly advancing climate change, and it was an important element in the implementation of CBM by the GNWT. At the same time, the NWT remains sparsely populated with few major industrial developments. It is therefore in a position to adopt sound processes for CIM at an early stage and to get it right.

The need to focus CIM to maximize its efficiency and effectiveness is highlighted by the size of the NWT and the challenges incumbent in managing cumulative effects on mobile and wide-ranging wildlife (caribou), hundreds of watersheds, and hundreds of thousands of water bodies. It is therefore crucial for managers to plan carefully, to coordinate monitoring efforts to provide useful data, and to integrate and interpret monitoring results and resources from all useful sources. The annual budget for NWT CIMP is $3M. Of this ~$1.7M is allocated to fund proposal projects and this amount is reviewed annually.

What We Found

Many of the barriers to effective CIM, such as the need for well-organized and effective monitoring for trends and a clear regulatory lead, were identified in our Audit of the “Environmental Trends” in Part 2 and “Role of the Responsible Authority in Coordinating Data Collection and Analysis or Environmental Trend and/or Cumulative Impact Monitoring” in Part 3. Part 4 relies on these previous findings but focuses on challenges specific to CIM.

4.1.1 NWT CIMP has made improvements to its program since the last Audit

The vision of NWT CIMP is “to watch and understand the land so that it can be used respectfully forever.”[148] The four main activities undertaken to achieve that vision are:

- Work with partners to understand key monitoring and research priorities;
- Coordinate, conduct, and fund CIM, research and analysis;
- Communicate results to decision-makers and the public; and,
- Assess the program and the regulatory regime by facilitating the NWT Environmental Audit.

It is necessary for NWT CIMP to work with other agencies, internally and externally, to fulfil its mandate, but it does not control the monitoring efforts, budget, or reporting of other divisions. Much of NWT CIMP’s

[148] (GNWT ENR, 2016)

ability to influence CIM in the NWT is done with their modest pool of monitoring funding available under their request for proposal envelope, which totals approximately $1.7M annually. The allocation of funds to specific monitoring efforts is largely based on a request for proposal process using their associated guidance documents for TK and scientific proposals.[149] Further guidance to help meet the needs of decision-makers is offered by publishing annual blueprints for each of NWT CIMP's current priorities; caribou, water, and fish.[150] The blueprints outline the priority areas for monitoring reflected from an engagement process with decision-makers, experts, and the NWT CIMP Steering Committee. The focus on priority areas and three VECs is therefore a necessary response to the size of the NWT and the limited resources available.

Since the last Audit, NWT CIMP continued to make improvements:

- An increased program focus on funding proposals related to caribou, water, and fish;
- A change in program reporting - frequent highlight reports are now issued on program findings; and,
- An implemented Landscape Disturbance map/tool as an accessible online resource.

4.1.2 The Responsible Authority is not employing cumulative impact monitoring effectively

Our review found that the RA is not performing CIM effectively. The Audit Team's major concerns are related to the need for longer term data sets for monitoring environmental trends (see Part 2), the inability to determine causation for any detected trends, and the resultant lack of management response to changes observed in monitoring programs. Analysis of causation was hampered by a) programs designed in the absence of testable hypotheses of what might cause change (which means that data are not available to interpret changes or trends should they occur), and b) the lack of a framework to respond to detected trends. Both are characteristics of the AEMP programs regulated by the LWBs and should be considered in the implementation of CIM.

Four examples that illustrate various aspects of this concern are discussed further in the sub-sections below.

GNWT State of the Environment Reports discuss trends but is not designed to defensibly attribute cause

Monitoring data are compiled into SOE Reports by the GNWT every four years.[151] The specific objectives of these reports are to provide an assessment of environmental status and trends in the NWT, provide data and information for territorial, national and international state of the environment initiatives, and provide an early-warning system of possible impacts resulting from environmental change. Given the comprehensive nature of these reports, we looked at these reports to see if they could satisfy the RA's responsibilities for CIM.

While these SOE reports, which are made available to the public, provide useful descriptions of the environment and give an indication of changes over time in the NWT, we do not consider the SOE to be an example of CIM, predominantly because it was not designed to defensibly attribute specific causes to

[149] (GNWT, n.d. a)
[150] (GNWT, n.d. c)
[151] (GNWT, n.d. d)

observed environmental trends. While the GNWT reports that research[152] on the possible causes of observed changes informs the SOE, we find the SOE report does this in a general way by listing a number of possible causes of change, without testing the relative contribution of these possible causes through a defensible and transparent process. Finally, although the SOE describes where more monitoring might be useful, it was not designed to provide a framework for responding to the observed environmental changes.

Overall, we conclude that the SOE, as designed, is valuable as a comprehensive summary of environmental health and trends that brings together a great deal of monitoring and research information in a publicly accessible format; however, we believe that more specific details would be required to make it an effective standalone assessment of causation that would inform CIM.

Government-led water monitoring programs are not set up to understand cumulative impacts

Water monitoring programs managed by the GNWT and ECCC are intended for trend detection, but many are not of long enough duration to detect trends, are not intended to address causation of any trends, and/or are developed as individual watershed programs with no linkage to overall regional goals or intent for CIM. Trend analyses completed for individual watershed studies are useful but do not constitute CIM – programs need to be designed so that datasets are compatible with lines of responsibility and leadership clearly defined (see Parts 2 and 3 of this report). Although existing programs are designed for valid reasons, such as monitoring of specific watersheds, areas of known and future development, “hot spots”, or to meet community needs, they result in a singular focus on the activities of interest and result in the lack of a coherent CIM framework. There is need for coordination among monitoring programs or interpretation of data to gain an understanding of:

a) if water resources are changing in the NWT;
b) if any changes are consistent across the NWT;
c) spatial differences in water quality across the varied biophysical regions of the NWT; and,
d) the cause(s) of any changes – this understanding is central to any effort at CIM.

The Jay Diamond Project environmental assessment illustrates the important role of MVEIRB and the LWBs in cumulative impact monitoring

The Jay Project is an expansion of the Ekati Diamond Mine. The project proposal was to construct a horseshoe dike in Lac du Sauvage and process the ore at the existing Ekati processing site. The environmental review of the Jay Project led to the MVEIRB concluding there is a likelihood the project will cause significant adverse impacts on the environment, but specifically cited a cumulative impact from the potential effects of the Jay Project combined with the effects of other activities. The unequivocal determination by the MVEIRB that cumulative impacts were cause for concern is a unique finding in the MVRMA and therefore presents a useful case study.

The MVEIRB focused its report of EA on cumulative impacts for caribou, water quality, and social impacts. Our review, detailed in Appendix B and summarized in the text box below, focused on these VECs in particular.

[152] An example of relevant research can be found here: https://www.wrrb.ca/sites/default/files/Analysis%20of%20environmental%2C%20temporal%2C%20and%20spatial%20factors%20affecting%20demography%20of%20the%20Bathurst%20and%20Bluenose-East%20caribou%20herds_0.pdf

Ekati Jay Project EA - Cumulative Impacts to Water Quality

During operation of the Jay Project, mine wastewater discharged into Lac du Sauvage would flow into Lac de Gras. This could potentially add to effects from the discharges to Lac de Gras from the existing Diavik and Ekati mines. Lac de Gras empties through the Coppermine River watershed, which is a source of drinking water for the community of Kugluktuk. The proponent's cumulative impact assessment was that water quality changes have already occurred in Lac de Gras from existing projects, and that the Jay Project's additions to these water quality effects would not have an adverse impact on aquatic life. Other intervenors' evidence included concerns for degraded water quality by the community of Kugluktuk, and cumulative effects concerns by both the Tłı̨chǫ Government and Diavik.

The MVEIRB's analysis was that, although the proponent's modelling showed a marginal increase in total dissolved solids (TDS), they remained below thresholds for protection of aquatic life and were not likely to cause significant adverse cumulative impacts on water quality of Lac de Gras and the Coppermine River. The conclusions of the MVEIRB appear sound and we found that sufficient evidence was presented at an assessment level; however, we find that a reasonable conclusion flowing from the analysis and evidence should require government to verify these conclusions with assistance from the proponent using CIM in combination with water quality trend analysis. As we have found in our Audit, both trend monitoring and CIM conducted by government were able to detect water trends in some parameters (see Part 2); however, the program design and analyses were not sufficient to determine the cause of the detected water quality trends or assess cumulative impacts. Changes to these programs, additional focused studies (e.g., Stantec 2015) and coordination of individual AEMPs (such as detection limits and sampling schedules) of both operators under the direction of the WLWB, were required to improve the detection of trends in some parameters of interest (e.g., nutrients) and to improve understanding of the mechanisms responsible for long-term water quality change.

Early coordination of the AEMPs of Dominion Diamond Mine and Ekati and adoption of those approaches for the Jay Project at the early stages would have allowed the early detection and determination of causation of cumulative effects.

Ekati Jay Project EA – Cumulative Impacts to Caribou

Evidence was presented that caribou populations have greatly decreased and that breeding females decreased by a factor of 50% between 2012 and 2015. Activities associated with a mine haul road proposed to cross an important caribou migration corridor would add sensory disturbances such as noise, dust and visual stimuli. In addition, there was evidence presented of pre-existing significant cumulative impacts to caribou such that the Jay Project would add additional stresses on the herd.

The MVEIRB found that the Jay Project was likely to cause significant adverse project-specific and cumulative impacts to the Bathurst caribou herd. MVEIRB therefore stipulated specific measures in its project decision, such as the Caribou Road Mitigation Plan, a Caribou Offset and Mitigation Plan and improved dust management.

This case study demonstrates that the MVEIRB plays an important function in the implementation of cumulative impact management activities at the EA stage and also highlights that an EA adds to other management recommendations by other parties, such as the WRRB.[153]

Ekati Jay Project EA - Socio-Economic Considerations

The proponent concluded that its project would have a net-positive effect on the socio-economic environment.[154] The GNWT concurred with the proponent's assessment and found that existing measures, such as its SEA with the proponent, GNWT's own monitoring of diamond-communities, and its existing health and social services and programming can mitigate impacts. Intervenors stated that, while the monitoring did present trends in the socio-economic indicators, there was no follow-up to identified trends - no causal links identified that would inform mitigation. The MVEIRB concluded that there were significant cumulative social impacts from diamond mining on communities, and that "It is evident … that the GNWT has not successfully addressed deteriorating socio-economic conditions caused by mining in Aboriginal communities*"* and recommended Measure 8.1 requiring "an improved engagement and adaptive management process by the GNWT to measure and respond to adverse health and well-being impacts from the Jay Project."

This case study demonstrates that the MVEIRB plays an important function in the development and oversight of community well-being monitoring through, for example, EA measures.

The MVEIRB is required under the MVRMA to consider cumulative impacts when making recommendations. In addition, the LWBs of the Mackenzie Valley who regulate land and water resources, must comply with the MVEIRB measures and evolving environmental conditions throughout the life of the project. The Boards are quasi-judicial bodies that rely on evidence provided to them from intervenors. The Renewable Resource Boards and Wildlife Management Advisory Council (in the ISR) have a mandate for managing wildlife and wildlife habitat and play a key role in monitoring and managing cumulative impacts; these organizations have provided cumulative monitoring recommendations in the past.

The Audit Team respects that the historically low level of significant industrial development in the NWT overall means that there is little direct past experience in monitoring, identifying, and managing cumulative impacts and that the rapidly changing climate increases the need to understand CIM. At the same time, the example of the drastic decline in the Bathurst caribou herd over the time frame of rapid climate change and the onset of several new developments in the NWT, coupled with lack of understanding of the cause(s), points to the need for clear understanding and direction in the management of cumulative impacts. The Jay Project case study illustrates the important role that EA decisions and resultant LWB actions can play in addressing CIM. Proponents, NWT residents, and the EA process would therefore benefit from clear direction from the boards on what information needs they require to make informed decisions with respect to cumulative impacts.

Recommendation 4-1: The MVEIRB and the LWBs clearly describe the specific information required from government, including the RA, that would aid the boards in considering cumulative

[153] (WRRB, 2016)
[154] (Dominion Diamond Mines, 2014a)

impacts in making decisions. We encourage the boards to consider what data, analyses, interpretation, and significance requirements would help inform cumulative effects assessment (MVEIRB) and cumulative impacts management (LWBs).

We would expect, for example, that the boards might outline requirements for government to provide baseline status of VECs subject to a development proposal and that this would form the basis of the cumulative impact assessment by the proponent. *The outcome we expect is for board process participants to better understand what is expected of them allowing them to improve their submission in individual proceedings and, more broadly, to assist the RA in identifying monitoring priorities.*

LWB's response: *It is currently difficult for the LWBs to consider cumulative impacts because there is no overarching framework within which to be able to obtain or consider cumulative impacts information in a consistent matter. The LWBs are of the opinion that it is the responsibility of the GNWT, in collaboration with relevant partners (e.g., Indigenous Governments and Organizations, LWBs, MVEIRB), to develop such a framework.*

Currently, the LWBs are limited to making decisions on a case-by-case basis as a result of evidence provided during proceedings. When information is provided, or if potential cumulative impacts are known, then these can be reflected with conditions to a permit and/or licence. For example, the LWBs have included conditions in permits related to limiting activities during nesting season for birds. As another example, if evidence is presented during a proceeding for a water licence that other Effluent Quality Criteria (EQC) values from other projects should be considered for a certain waterbody, as there could be cumulative impacts to the waterbody based on all discharges, the LWBs could take this evidence into account when making a decision on the final EQC for the project that is under review.

MVEIRB's response: *MVEIRB relies on active participation from government departments, Indigenous government organizations, and others to inform cumulative effects assessments.*

For each EA, MVEIRB provides project information and seeks input from government regarding: potential impacts, baseline and other information needs, project design and mitigations, remediation, and assessment methods. Further, MVEIRB actively notifies and requests information from government departments where applicable (and where government appears not to be actively providing the information on their own initiative).

Where applicable, MVEIRB has and will continue to request specific information (such as the example provided) directly from government. For this to be effective, government needs to respond in a timely and fullsome manner.

Also, departments likely have the knowledge and expertise (within their jurisdictions) to help identify the right questions. In other words, it is important for departments to be active participants in the EA, not limiting themselves only to responding to specific requests from MVEIRB. If a department has information it believes is relevant, it should provide this information in a timely and through manner so that all parties, the developer, and MVEIRB can make use of it.

There is no evidence of a timely response to observed trends in the Bathurst herd size

We reviewed CIM with respect to Bathurst caribou because it appeared to be one of the valued components at highest risk. The GNWT monitors the Bathurst caribou population by conducting aerial surveys every three years. The GNWT and co-management organizations have included available TK to estimate population size, the range and habitat caribou utilize, and the places caribou have been known to cross over land and water. The surveys showed a steady and dramatic decline in population size over the last 20 years; from estimates of 186,000 animals in 2003 to 8,200 in 2018.

In response, the GNWT and its co-management partners designed a cumulative impact assessment and management approach that supplements the caribou population monitoring. The Bathurst Caribou Range Plan[155] describes a Cumulative Land Disturbance Framework (CLDF), which outlines the management responses that could be implemented as a function of the human footprint of direct land disturbances plus a zone of influence in areas used by caribou. The pairing of the landscape disturbance database with caribou utilization areas to triage management actions and outlining management responses for each possible scenario is a laudable interim response to a wildlife population crisis. It clearly outlines what future government actions will be taken depending on the level of human disturbance on the landscape. Similar cumulative assessment analysis through modelling exercises by the GNWT have not been able to elucidate the cause of caribou declines, though energetics, habitat, and perhaps human development may play a role. This points to a problem in which retrospective analysis is based only on data that were available as the herd declined, instead of some form of adaptive management in which initial trends of herd decline would have triggered causation studies and cumulative effects analyses. In the absence of a cumulative impact framework, the GNWT continued to document the decline of the herd but could not assign causation or inform adaptive management to mitigate the decline. The NWT Species at Risk Committee also recommended examining the causes of barren-ground caribou population decline to better inform management actions.

While responses such as the CLDF are useful, they fall short of a cumulative impacts monitoring program and do not represent an adequate implementation of Section 146 of the MVRMA,[156] as the GNWT and its co-management partners are not able to make a defensible estimate of the cause of the trend in caribou decline. Causation cannot be determined because:

a) the CIM programs were not designed to test hypotheses on potential causes and hence did not monitor relevant stressors from the outset; and,
b) the monitoring results did not trigger a response framework to consider potential stressors in the monitoring or interpretation when the decline was first detected.

Therefore, while there is evidence that the GNWT and its co-management partners are engaging in quantitative population monitoring and using the results to inform elements of cumulative impact management, there is no evidence of a timely response to observed trends in the herd size by implementing CIM of caribou. While it is possible to do a retrospective analysis of data to try to understand cumulative impacts, we believe that a framework needs to be designed from the beginning to answer cumulative impact questions. The framework can take one of two forms:

1. Design a CIM program by considering all existing and reasonably foreseeable types of impacts and monitoring the appropriate indicators; or,

[155] (GNWT ENR, 2019)
[156] The RA "*shall…analyze data collected by it, scientific data, traditional knowledge and other pertinent information for the purpose of monitoring the cumulative impact on the environment of concurrent and sequential uses of land and water and deposits of waste in the Mackenzie Valley.*"

2. Design a CIM program in which observations of trends in the main VEC are compared to sensitive triggers for additional monitoring or interpretation to determine causation.

Monitoring wildlife through western science approaches is a notoriously expensive endeavour for any jurisdiction and we understand that the RA cannot meet Section 146 of the MVRMA for all wildlife species in the NWT.

Recommendation 4-2: The RA consider a risk-based CIM strategy, prescribing the design and delivery of a CIM program to meet Section 146 of the MVRMA, in response to evidence that a particular VEC is demonstrating a concerning negative trend. traditional knowledge may be a particularly valuable method of tracking wildlife populations such as caribou, in which TK observations could alert the RAs to a change and could then inform development of a response framework. *The outcome we expect is that when a substantial concern in a VEC is identified, comprehensive CIM is deployed in order to help determine the possible cause of the change.*

GNWT's response: *The GNWT, as the RA, agrees with this recommendation. GNWT ENR is currently working on the development of a Cumulative Effects Framework to meet the need for a coordinated approach to cumulative effects across the Department. The framework will improve GNWT ENR's ability to consistently monitor, assess and predict cumulative effects, the results of which can inform GNWT ENR and other GNWT decision-making processes. The ultimate aim is to ensure resource management decisions are made with the best available understanding of cumulative effects. This initiative is currently in the planning stage and GNWT ENR will be discussing it with our partners in 2020, in part to begin work on how to best incorporate and include Traditional Knowledge in a meaningful way.*

There is uncertainty around the role of cumulative impacts monitoring, assessment, and management responsibilities in the Mackenzie Valley. Absent inter-agency clarity and total collaboration on cumulative impacts monitoring, assessment, and management, the capacity to detect and manage cumulative effects in the NWT will continue to be compromised. This observation applies to all VECs in the NWT, but the example of caribou is most informative.

Uncertainties in Responsibilities in CIM for Caribou

It is not clear:

- how the GNWT ENR (Wildlife Division) has devised its caribou monitoring program to take into consideration cumulative impacts;
- how various Wildlife Management Boards, communities, and NWT CIMP contribute to this monitoring and collection for cumulative impacts information;
- how this monitoring information is provided to industry for it to adapt its mitigations;
- how the information is presented to the MVEIRB when it considers evidence for cumulative impacts for its EA purposes of a new project;
- how the millions of dollars in annual caribou monitoring information collected by industry as part of Wildlife Management and Monitoring Plans approved by the LWBs and the GNWT were designed to consider cumulative impacts; or,
- how the RA under the MVRMA may or may not use all this information to examine trends in the environment or evaluate cumulative impacts.

We observe that there is little effective organizational coordination around CIM such that at least part of the confusion about cumulative impacts is simply organizational.

Recommendation 4-3: The RA should design a coherent cumulative impacts monitoring and assessment framework for the NWT that includes clarity on language, the role of different organizations, policy directions for boards and departments, monitoring protocols, and advice for industry to manage and consider cumulative impacts. *The outcome we expect is that the roles and responsibilities of all entities with respect to CIM in the NWT are clear and agreed upon.*

GNWT's response: *The GNWT, as the RA, agrees with this recommendation. In addition to the Cumulative Effects Framework described in response to Recommendation 4-2, GNWT ENR is outlining the current roles and responsibilities of all parties involved in cumulative impact monitoring across the NWT to clarify roles and help parties identify opportunities to collaborate. This information will be made publically available on the GNWT ENR website.*

4.1.3 Additional enhancements of cumulative impact monitoring required

The Audit Team developed other recommendations on environmental monitoring and CIM that were not linked to specific Audit questions but arose from our analysis and interpretation of the audit research, case studies, and interviews.

In the past, the MVEIRB and MVLWB published their research, monitoring, and knowledge needs on an annual basis, to inform governments and intervenors of knowledge gaps.

Recommendation 4-4: The boards publish their CIM knowledge gaps on a regular schedule and request a response from government on how they may assist in providing information. *The outcome we expect is that the RA is consistently updated on the needs of the boards with respect to knowledge gaps that if filled would aid in the board's decision-making.*

LWB's response (including IWB): *All information submitted to the LWBs and all LWB decisions are posted to the LWBs' public registry. Thus, any decisions or issues raised with respect to cumulative impacts are publicly available.*

In addition, the LWBs collate issues/questions that have arisen during proceedings related to cumulative effects. This information is regularly communicated to CIMP.

The biggest limitation/gap at the moment is the absence of a framework within which to be able to obtain or consider cumulative impacts information in a consistent matter. It is difficult to identify gaps in the absence of a framework. The LWBs are of the opinion that it is the responsibility of the GNWT, in collaboration with relevant partners (e.g., Indigenous and Government Organizations, LWBs, MVEIRB), to develop such a framework.

WRRB's response: *Through its recommendations and reasons for decisions reports, the WRRB regularly provides input on existing CIM knowledge gaps that if filled would aid in the Board's decision-making.*

Interviews showed that data and information brought together via NWT CIMP-funded projects is not effectively linked to EA and management decisions as it is not readily usable for assessing and making decisions about cumulative impacts.

GLUPB's response: *The GLUPB sees this recommendation as being an important element of the framework identified in recommendation 4-3. As they are identified in the planning process, the Board will keep the CIMP decision makers apprised of the baseline information and monitoring programs necessary so that cumulative effects policy, such as limits of acceptable change, can be integrated into the land use plan in the future. These policy measures will be developed with full consideration given to the roles and responsibilities of all entities with respect to CIM.*

MVEIRB's response: *MVEIRB's published reports of environmental assessment frequently note gaps and information needs. These reports are posted to the public registry and sent directly to responsible ministers and decision makers. The analysis, explanation, and reasoning in the reports of EA provides important context for identified information gaps.*

MVEIRB is also willing to publish information gaps in a more generic manner and is currently working with the NWT Board Forum to compile and prioritize research/monitoring priorities.

MVEIRB is committed to working closely with CIMP, LWBs, and others to identify and communicate knowledge gaps. MVEIRB will endeavour to publish an update each year.

Recommendation 4-5: When evaluating NWT CIMP funding proposals, the NWT CIMP Steering Committee ensure they consider the needs of decision-makers and document how these concerns were addressed in their funding decisions. *The outcome we expect is that the results of projects funded by NWT CIMP are increasingly relevant for decision-makers.*

GNWT's response: *The GNWT agrees with this recommendation. The NWT CIMP and the NWT CIMP Steering Committee currently consider the needs of decision-makers when evaluating funding proposals. All funding applicants are required to provide details of the engagement and support from relevant decision-makers to ensure funded projects meet decision-makers' needs. The reasons for decisions for project funding are documented internally and are treated confidentially. To further address this recommendation, NWT CIMP will consider how to better communicate the relevancy of NWT CIMP funded projects to decision-makers as part of our program delivery.*

NWT CIMP has made notable progress in aligning its activities to those requirements of the MVRMA and those of decision-makers to help detect and manage cumulative effects. Other programs or parties have also made valuable contributions to CIM. For example:

- Revisions to the AEMP programs by the WLWB have been stimulated by the Jay Project decision leading to better analysis of cumulative impacts to water quality in Lac de Gras watershed;
- The pre-emptive detection of landslides, slumps, and water quality changes in the Mackenzie Mountains where oil and gas and mineral exploration have occurred were documented in the GNWT CBM program; and,
- The creation of the Inventory of Landscape Change by NWT CIMP is a ground-breaking initiative that should begin to allow detection of cumulative impacts when used in combination with valued components such as caribou.

In spite of these advances, opportunities were missed to communicate the results of cumulative impacts findings to regulators and industry, resulting in limited changes to regulator and industry best practices for monitoring. NWT CIMP must continue to evolve from a monitoring program and data warehouse to one that digests its findings into consumable knowledge that can be actioned by decision-makers.

Recommendation 4-6: The NWT CIMP continue to evaluate its monitoring priorities on a five-year cycle in response to findings from monitoring and research, and that it provide specific directions and conclusions to decision-makers in the form of memoranda, NWT CIMP-certified monitoring protocols, policies, and customized project-specific advice. *The outcome we expect is that NWT CIMP enhances the delivery of products that are usable by decision-makers.*

GNWT's response: *The GNWT agrees with this recommendation. The NWT CIMP will continue to evaluate and refine its monitoring priorities in collaboration with co-management and Indigenous partners. NWT CIMP will also continue to require funding recipients to make their results publically available, as well as ensure all results are provided to the relevant decision-makers. Furthermore, NWT CIMP will consider how to better develop useable products and communicate project results to decision-makers as part of our program delivery. In turn, the timely adoption of NWT CIMP recommended protocols, policies and advice by decision-makers would support the implementation of this recommendation.*

Part 5: Adequacy of Responses of Parties to the Previous Audit

This section of the Audit is a review of responses to previous Environmental Audit recommendations. The GNWT provided updated responses in February 2019 and we requested additional information and updates from the GNWT and respective parties where required. The Audit Team then evaluated what, if any, actions have been taken in response to recommendations made in the 2015 Audit. We considered the clarity of the recommendation and any changes to the regulatory or operating environment that would impact the ability of regulators/decision-makers to address the recommendation, as well as the applicability of the recommendation. For each of the Audit findings, the Audit Team has identified the adequacy of the response using the following classification:

- Outstanding
- Partially implemented
- Adequate
- Unclear

A summary table of the recommendations and the adequacy of response can be found below, followed by a more detailed summary and assessment of the status of recommendations from the 2015 Audit. Of the 24 recommendations, the Audit Team assessed the adequacy of responses as:

Outstanding	**4**
Partially implemented	**8**
Adequate	**11**
Unclear	**1**

The Audit Team also reviewed all the recommendations from the previous three Audits (2005, 2010, and 2015) to determine consistent themes. The following provides a summary of the consistent recommendations made across the three Audits:

1. Training needed for government, board members and Indigenous groups
2. Stable, long-term, flexible funding and funding mechanisms required for boards, Indigenous, and government organizations
3. Needed improvements in consultation and engagement processes and the communication of such processes to the public
4. More effective collection and use of information in decision-making, including monitoring of changes to the environment (excluding TK – see 5)
5. More effective TK collection and “integration” in decision-making
6. Improved LUP development and implementation

Table 3: Status of 2015 Recommendations

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
1	Given the importance of CLCAs/SGAs within the MVRMA framework, INAC and the GNWT should continue to negotiate these agreements in good faith. Timelines should be established, published and monitored.	Partially implemented	Comprehensive Land Claims Agreements (Section 1.6)
2	INAC and GNWT should work together in good faith with Indigenous governments and other interested parties to develop enforceable land use plans in the absence of settled land claims. Timelines should be established, published and monitored.	Partially implemented	Land Use Planning (Section 1.5)
3	GNWT and INAC should establish and publish formal plans/commitments, including timelines, for the development, implementation and enforcement of regulations and guidelines to address the identified regulatory gaps.	Partially implemented	Regulatory Scope (Section 1.1)
4	GNWT should work with MVEIRB and communities to identify indicators of community wellness and to develop monitoring programs for these indicators that can support the regulatory decision-making process.	Partially implemented	Socio-Economic and Community Well-being (Section 1.2)
5	LWBs should develop a plan to periodically and formally engage proponents, regulators, Indigenous Governments, and organizations and community members in ongoing refinements and optimization to the land permitting and water licensing system and to develop guidelines for monitoring data that enhances data recording and reporting in a more consistent, available and easier to use format.	Adequate	Responses to Previous Audits (Part 5)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
6	INAC should work with LWBs, GNWT Lands, GNWT ENR and other interested parties to establish appropriate regulated timelines taking into account commitments made in Agreements with Indigenous Governments and organizations and engagement and consultation requirements resulting from these Agreements and requirements under the MVRMA.	Adequate	Responses to Previous Audits (Part 5)
7	The MVEIRB should check in with parties on a case-by-case basis before making project-specific changes to the standard EA process to ensure all parties have the ability to participate in the EA in a meaningful manner.	Adequate	See Responses to Previous Audits (Part 5)
8	GNWT Lands should develop a process to track and assess the effectiveness of EA measures and suggestions directed at government, including consideration of whether tracking would be for all levels of governments or whether the federal government (or other governments) would be tracking separately.	Adequate	Responses to Previous Audits (Part 5)
9	Working with affected parties, INAC's Resource Policy and Program Directorate, in association with the Board Relations Secretariat, the Corporate Secretariat and the Treaties and Indigenous Government Sector-Implementation Branch, should facilitate discussions for a more efficient and effective processes to ensure Board nominations are made and approved in a timely manner.	Partially implemented	Adequacy of Resources (Section 1.7)
10	INAC should work with: (1) all co-management boards to better understand long-term secure funding needs for training, and (2) with Land Use Planning Boards to better understand resource requirements during various stages of the planning cycle, and then develop a funding model to better support resource requirements through this cycle.	Adequate	Adequacy of Resources (Section 1.7)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
11	INAC and GNWT need to enhance tools for the enforcement of the MVRMA and *Territorial Lands Act* through the introduction of Administrative Monetary Penalties regulations as planned. INAC also needs to formally resolve administrative matters in initiating prosecutorial actions at the territorial level.	Partially implemented	Compliance and Enforcement (Section 1.8)
12	Continued work is required between the LWBs and inspection agencies to balance the need for flexibility in the field and the need for proponents to have a clear understanding of what their permits and licences allow them to do and what they don't allow them to do.	Adequate, but continued work encouraged	Compliance and Enforcement (Section 1.8)
13	*The Waters Act* and Regulations should be amended to allow the LWBs to request final plans, issue letters of clearance, reconciliation of water use fees, and request the appropriate government and department to return the appropriate securities deposits to the licencee for water licences, similar to existing regulatory requirements for land use permits. The Boards should revise their procedure guidelines and licences to reflect the prescribed regulatory requirements.	Outstanding	Responses to Previous Audits (Part 5)
14	Led by GNWT ENR, an independent review of the existing monitoring agencies should be undertaken to determine strengths and weaknesses so that any future similar agencies are structured to function effectively.	Unclear	No new evidence provided to address the disagreement between the Auditors and GNWT. See Responses to Previous Audits (Part 5)
15	GNWT Lands should develop policy documents outlining its approach to and timeline for establishing a structured approach to securities management within the NWT.	Outstanding	Responses to Previous Audits (Part 5)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
16	LWBs and MVEIRB should work with interested parties to identify approaches to better utilize and integrate TK information into the decision-making processes.	Partially implemented	Outcomes of Regulatory Processes and Decisions (Section 1.3)
17	The GNWT should develop a clear policy and program to address and communicate its responsibilities for consultation and public engagement.	Outstanding	Engagement and Consultation (Section 1.4)
18	INAC should make the development of regulations on consultation a priority to add further clarity and certainty to the regulatory process.	Outstanding	Engagement and Consultation (Section 1.4)
19	INAC and GNWT should assess public participation / consultation requirements and INAC should make a long-term funding commitment, including stress funding, to Indigenous governments and organizations and other participants in the MVRMA regulatory processes.	Adequate	Adequacy of Resources (Section 1.7)
20	NWT CIMP should develop a more focused work plan that clearly identifies and prioritizes geographic “hot spots” and specific research requirements within each “hot spot” to allow for an adequate baseline to be developed and assessment of cumulative impacts to be completed.	Adequate (however, this has not resulted in adequate baseline and assessment of cumulative impacts)	Cumulative Impact Monitoring (Part 4)
21	GNWT ENR and NWT CIMP should include the identified data gaps for caribou monitoring in planning research priorities.	Adequate	Responses to Previous Audit (Part 5)

#	2015 Audit Recommendation	Status	Addressed in 2020 Audit Report
22	GNWT ENR (Water Management and Monitoring Division) should develop NWT site-specific guidelines for use in water quality assessments to better reflect the impact of naturally high suspended solids on water quality in many watersheds in the territory.	Adequate	Responses to Previous Audit (Part 5)
23	NWT CIMP should engage partners of the NWT Water Stewardship Strategy to facilitate the collection of TK to complement the sound scientific analysis of water quality and quantity trends completed to date.	Partially implemented	Responses to Previous Audit (Part 5)
24	NWT CIMP should continue to work with DFO to identify locations where fishery baseline and trend data are required.	Adequate	Responses to Previous Audit (Part 5)

The following section provides a more detailed summary and assessment of the status of recommendations from the 2015 Audit.

Recommendation 2015-5 - LWB Engagement for Refinements & Optimization

In the 2015 Audit, the Auditor noted that LWBs continued to make progress toward clarity and consistency. However, some practices and procedural details continued to cause friction for end-users, and there was a need for the LWBs to create a dialogue among users to resolve these irritants. Recommendation 5 of the 2015 Audit states:

"LWBs should develop a plan to periodically and formally engage proponents, regulators, Indigenous Governments, and organizations and community members in ongoing refinements and optimization to the land permitting and water licensing system and to develop guidelines for monitoring data that enhances data recording and reporting in a more consistent, available and easier to use format."

The LWBs response was that it established three new Areas of Operations to help address the issues identified by the Auditor. These were:

1. Regulatory Improvement - to develop policies, guidelines, and procedures to ensure the regulatory process is transparent, consistent, and efficient.
2. Information and Communications - to focus on improvements on the online registry, the online review system, and its website.
3. Outreach and Engagement - engaging stakeholders to focus on evaluating boards' policies, procedures, and programs.

Since 2015, the LWBs reported working with GNWT to develop meta-data standards for monitoring. The LWBs released their AEMP guidelines after an extensive engagement period. With respect to plans for

ongoing refinements, the LWBs are now broadly engaging on an annual basis through MVRMA workshops open to the public. In addition, the LWBs are hosting workshops in different communities every year to enhance participation.

Adequate: We found the boards' response and work in these three areas adequate and we consider the intent of the recommendation fulfilled if the LWBs continue their work in this area.

Recommendation 2015-6 - Establishing Appropriate Regulatory Timelines
In the 2015 Audit, the Auditors noted challenges with the regulatory timelines. Recommendation 6 states:

"INAC should work with LWBs, GNWT Lands, GNWT ENR and other interested parties to establish appropriate regulated timelines taking into account commitments made in Agreements with Indigenous Governments and organizations and engagement and consultation requirements resulting from these Agreements and requirements under the MVRMA."

CIRNAC's response in 2015 noted that amendments to the MVRMA added timelines to most stages of the EA process, with each Agreement having consultation provisions within each chapter.

Adequate: Regulated timelines were not raised as an item of concern by boards or others in interviews or surveys. In fact, the MVEIRB noted in its survey response that "Timelines have been helpful to provide more clarity on time frames to expect for project reviews. The timeliness of Ministerial decisions seems to have improved during this time frame."

Recommendation 2015-7 - MVEIRB Engagement Before Making Changes to EA Processes
In the 2015 Audit, the Auditor noted that adjustments made by the MVEIRB to increase efficiency during an EA review contributed to making the process less clear. For this reason, the Auditors recommended:

"MVEIRB should check in with parties on a case-by-case basis before making project-specific changes to the standard EA process to ensure all parties have the ability to participate in the EA in a meaningful manner."

The MVEIRB responded by reviewing its guidelines, best practices, and Rules of Procedure. The MVEIRB also highlighted that it has discretion to make changes to its processes to ensure fairness and efficiency and notifies and consults parties before doing so.

Adequate: We found the Boards' response and work in these areas adequate. Further, we found no evidence in our survey, questionnaires, and interviews of outstanding concerns.

Recommendation 2015-8 - Process to Track EA Measures and Suggestions
In the 2015 Audit, the Auditor noted the absence of a formal process to track the implementation and completion of measures directed at government. For this reason, the Auditors recommended:

"GNWT Lands should develop a process to track and assess the effectiveness of EA measures and suggestions directed at government, including consideration of whether tracking would be for all levels of governments or whether the federal government (or other governments) would be tracking separately."

The GNWT Lands updated response noted that the MVEIRB now requires developers, governments, and regulators to report annually on the implementation and effectiveness of measures. The GNWT's measure

reports are available on the MVEIRB public registry. The GNWT believes that other governments are responsible for their own reporting.

Adequate: The Audit Team reviewed GNWT's annual reports for the Ekati Jay project as well as the Tłı̨chǫ All-Season Road and are satisfied that the MVEIRB's new requirement addresses the 2015 Audit recommendation. We note, however, that this recommendation should continue to be revisited in future Audits in light of evidence that some regulators are finding reasons to no longer comply with the MVEIRB recommendation.[157]

Recommendation 2015-13 - Amendments to Waters Act, Regulation, and LWB Guidelines
In the 2015 Audit, the Auditor noted the usefulness in proponents presenting final plans as part of land use permits and suggested the same should be done for water licences. The Auditors recommended:

"The *Waters Act* and Regulations should be amended to allow the LWBs to request final plans, issue letters of clearance, reconciliation of water use fees, and request the appropriate government and department to return the appropriate securities deposits to the licencee for water licences, similar to existing regulatory requirements for land use permits. The Boards should revise their procedure guidelines and licences to reflect the prescribed regulatory requirements."

Outstanding: The GNWT is working on amendments to the *Waters Act* and has been engaging IGOs and regional LWBs through a Technical Working Group process to discuss these amendments. Furthermore, GNWT and the LWBs have been working together on a security policy and a more formal process for security refunds. Due to the volume of legislative processes that the GNWT undertook over the past few years, work on the *Waters Act* has not yet been completed. For this reason, we find this recommendation has not been implemented and continued efforts are required.

Recommendation 2015-14 - Review of monitoring agencies to enhance effectiveness
In the 2015 Audit, the Auditor noted there are several oversight agencies established as a result of environmental agreements, but that some of these agencies are seen as effective while others are not. As such, the Auditors recommended:

"Led by GNWT ENR, an independent review of the existing monitoring agencies should be undertaken to determine strengths and weaknesses so that any future similar agencies are structured to function effectively."

Unclear: The GNWT responded that the monitoring agencies are generally functioning as intended and do not believe an independent review is warranted at this time. Our cursory examination is that the agencies were each designed to be different and appear to be working as intended. We see value in an examination of effectiveness but leave it to the GNWT and the agencies themselves to conduct such a review.

Recommendation 2015-15 - GNWT Policy for Structured Security Management
The 2015 Auditors noted the importance of security management, that there were significant unresolved challenges with respect to security deposits and the role of federal, territorial, and Indigenous landowners. For this reason, the Auditors recommended:

[157] see Wek'èezhìı Land and Water Board letter to MVEIRB, dated Novermber 4, 2019

"GNWT Lands should develop policy documents outlining its approach to and timeline for establishing a structured approach to securities management within the NWT."

The GNWT has reported it has several priorities with respect to this issue, including communicating progress to the Legislative Assembly and the annual Mackenzie Valley resource co-management workshops, addressing the Commissioner of Environment and Sustainable Development's report, ensuring coordination between GNWT approaches, and working with others to identify and address common priorities with respect to security.

Outstanding: Though GNWT's efforts are laudable and show progress, missing still is a policy demonstrating a structured approach to security management within the NWT. We believe transparency, clarity, and articulation of the government's approach to security management in a tractable policy should be an outcome of this recommendation. For this reason, we find this recommendation has not been implemented and continued efforts are required.

Recommendation 2015-21 - Caribou Monitoring Priorities

In the 2015 Audit, the Auditor noted seven significant data gaps relating to the observed trends in individual herds; these are listed in Part 4 of the 2015 Audit report. Recommendation 21 of the 2015 Audit states:

"GNWT ENR and NWT CIMP should include the identified data gaps for caribou monitoring in planning research priorities."

GNWT's response was that it would use the data gaps identified by the Auditor to identify areas for further collaboration with co-management partners, communities, industry and academia. GNWT also said that the data gaps would be specifically considered when revising the NWT Barren-ground Caribou Strategy and NWT CIMP's Caribou Blueprint.

Adequate: We found the GNWT's response adequate. NWT CIMP continues to update the Caribou Blueprint annually to identify gaps and knowledge and allocate funds to proposals that would help fill these gaps. GNWT also cited the completion of the Bathurst Caribou Range Plan [158] and the Boreal Caribou Recovery Strategy.[159]

Recommendation 2015-22 – Site Specific Water Quality Objectives

In the 2015 Audit, the Auditor noted that GNWT should develop site-specific water quality guidelines to help calibrate water quality assessments to local water conditions. For example, such guidance could help people to understand that even though some parameters, like total metals, seem very high compared to generic guidelines, there is not necessarily a cause for concern since the background levels are naturally high.

GNWT's updated response was that "land and water boards set water quality objectives that protect the receiving environment should a project deposit waste into water" and further that site specific objectives are determined by relying "upon scientific data (i.e., naturally high sediment rivers are also high in metals that adhere to the solids), baseline water quality data (i.e. variability of sediment loads and metals in

[158] (GNWT ENR, 2019)
[159] (Conference of Management Authorities - Species at Risk, 2017)

total/dissolved form), national guidelines (i.e., CCME guidelines for the protection of aquatic life which includes Total Suspended Solids and Turbidity) and the technical expertise of reviewers (i.e., sediment impacts to fish gills, eggs, etc.) to ensure that objectives set for high sediment laden waters are appropriate." In other words, site specific objectives are set as needed and based on local conditions so there is no need for general guidance.

Adequate: We found the GNWT's response adequate.

Recommendation 2015-23 - Traditional Knowledge

In the 2015 Audit, the Auditor noted that, while substantial progress was made by NWT CIMP to engage northern communities in monitoring, there was little evidence that trend analyses considered TK to support observations and conclusions. Recommendation 23 of the 2015 Audit states: "NWT CIMP should engage partners of the NWT Water Stewardship Strategy to facilitate the collection of TK to complement the sound scientific analysis of water quality and quantity trends completed to date."

GNWT's response was that "providing TK for use in decision making is a priority for NWT CIMP" and that they would engage their partners to facilitate the collection and analysis of TK for the purposes of identifying environmental trends. In GNWT's updated response (dated February 2019), ENR noted that NWT CIMP developed a TK Strategy, and has funded three TK projects focused on aquatic resources and seven TK projects related to caribou.

Partially implemented: We found that NWT CIMP has also enhanced its ability to stimulate more TK-based monitoring by offering a dedicated traditional knowledge Proposal Guide[160] in addition to their existing Scientific Guide. The intent of this separate guidance was to specifically invite TK knowledge holders to conduct monitoring with their own knowledge and share these results with decision-makers. Furthermore, NWT CIMP funded an examination of the use of TK in decision-making and CBM, with a view to receive recommendations on enhancing the use of TK.[161] The work conducted is very insightful. While we found that NWT CIMP has made great strides, there remains a gap in the consideration of TK to support the observations and conclusions in trend analysis. We suggest the GNWT, LWBs, and MVEIRB consider the report's recommendations when crafting a monitoring strategy.

Recommendation 24 - Fish Baseline Monitoring

In the 2015 Audit, the Auditor noted that the analysis and assessment of trends for fish is not as far advanced as the work on caribou and water. Recommendation 24 of the 2015 Audit states: "NWT CIMP should continue to work with DFO to identify locations where fishery baseline and trend data are required."

GNWT's updated response (February 2019) was that it "continues its involvement with DFO through its membership on the Steering Committee. DFO and co-management partners also have the opportunity to identify priority locations for understanding fishery baseline and trend data during the annual review of the Fish Blueprint. Since the 2015 Audit was released in March 2016, NWT CIMP has funded 16 projects focusing on fish led by DFO and co-management partners in areas that they have identified as priority locations, with five of these projects ongoing at this time (2018/2019 FY)."

Adequate: We found the GNWT's response adequate. NWT CIMP continues to work with DFO on an annual basis to revise the Fish Blueprint. DFO continues to be a recipient of funding from NWT CIMP to

[160] (GNWT, 2018e)
[161] (Keats, Evans, King, Wong, & Shiga, 2018)

monitor fish populations in the NWT. We encourage DFO to obtain its own funding to conduct fish population monitoring and monitor cumulative impacts instead of relying on NWT CIMP.

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Appendix A: Public Engagement Results

This appendix includes the results of the public survey and open houses conducted as a part of the Audit.

Public Survey: Results Summary

The public survey is designed to enable the participation of NWT residents in the Environmental Audit. Through the survey, the opinions and views of the public on the key processes and outcomes of the territory's integrated environmental management system are gathered. The topics covered in the survey were aligned with the Audit criteria, including the effectiveness of the regulatory system and the monitoring of VECs.

For this Audit, there was a total of 94 respondents; however, not every respondent answered each question. Logic was applied to the survey design to ensure that the members of the public were not asked questions that they could perceive as irrelevant to them. A link to the survey was posted to the GNWT's website, circulated within the GNWT, and shared broadly through local Facebook groups across the territory.

The data presented and analysed in this section were collected from April 24 to June 13, 2019. Respondents were based in nine communities, as depicted in Figure AX-1; however, 41 respondents did not answer when asked about the community to which they belong.

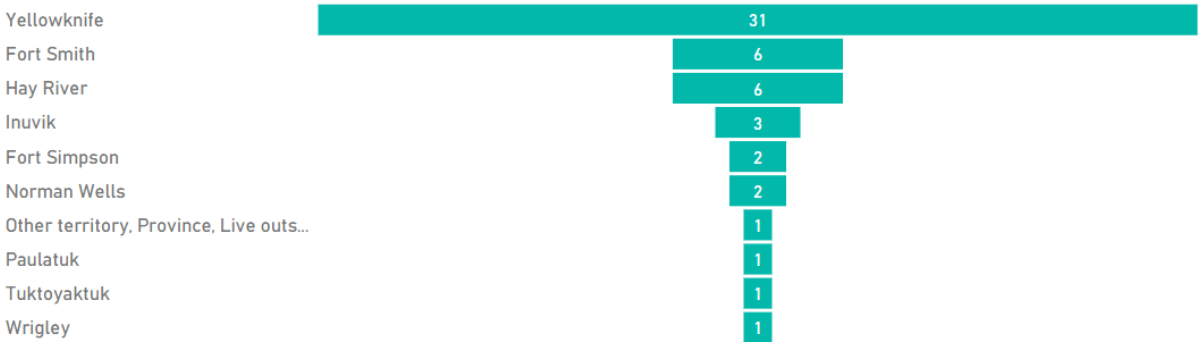

Figure AX-1: Respondents to the Public Survey, by community

The survey was divided into four thematic areas: managing environmental resources in the NWT, monitoring, measuring progress, and satisfaction with resource management.

Managing Environmental Resources in the NWT

The survey asked members of the public about their experience with the various processes and components of the NWT's resource management system: the NWT Environmental Audit, environmental assessment, land use permitting, water licensing, land use planning, wildlife management, and environmental agreements.

When asked about familiarity with the NWT Environmental Audit, 63% of respondents were not familiar Audit (Figure AX-2). Of those who were familiar with it, about 16% (5 individuals) had previously been

involved and 23% (7 individuals) answered that they were satisfied with the Audit (Figure AX-3 and Figure AX-4).

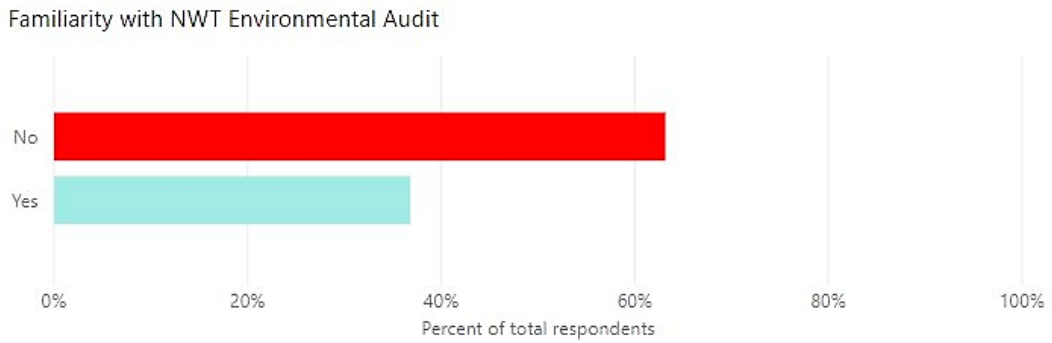

Figure AX-2: Respondents' familiarity with the NWT Environmental Audit

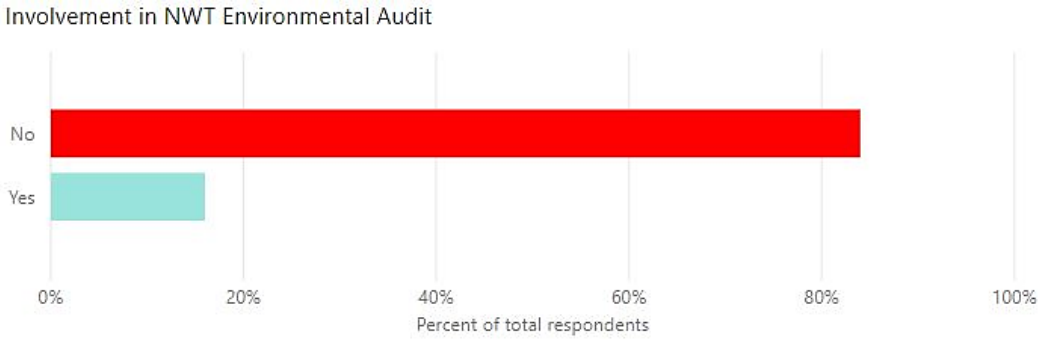

Figure AX-3: Respondents' previous involvement in the NWT Environmental Audit

The majority of respondents were neither satisfied nor dissatisfied with the Audit. Five out of 31 respondents were either dissatisfied (3) or very dissatisfied (2) (Figure AX-4).

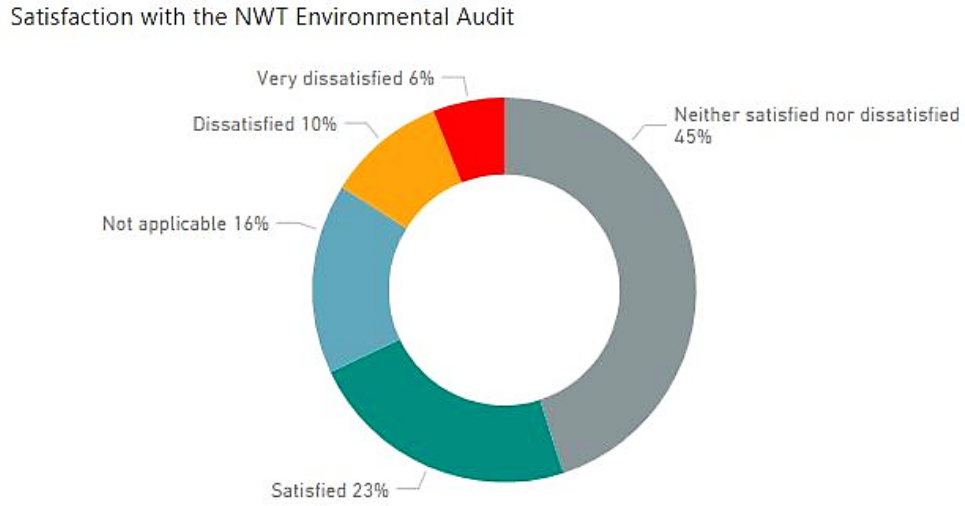

Figure AX-4: Respondents' levels of satisfaction with previous Audits

Participants were asked to rate how truthful they perceived statements about access to information, timing, and whether the final decisions at the end of each regulatory process considered their input. Most

respondents felt that it was somewhat true or true that they had access to information and enough time to participate in each of the processes, as detailed in Table AX-1.

Table AX-1: Respondents' perspectives on access to information, timing, and decisions made in the NWT's regulatory system

I had access to information that helped me understand how to participate

Perception of truth	Environmental assessment	Land use permitting	Water licensing	Land use planning
True	39%	60%	61%	42%
Somewhat true	50%	40%	33%	58%
Not at all true	11%	0%	6%	0%

I had enough time to give my input into the process

Perception of truth	Environmental assessment	Land use permitting	Water licensing	Land use planning
True	33%	53%	44%	42%
Somewhat true	56%	47%	44%	50%
Not at all true	11%	0%	11%	8%

The decisions made at the end of the process considered my input – "I was heard"

Perception of truth	Environmental assessment	Land use permitting	Water licensing	Land use planning
True	22%	33%	33%	25%
Somewhat true	67%	54%	61%	50%
Not at all true	11%	13%	6%	25%

Respondents were also asked to reflect on whether the decisions made at the end of each regulatory process effectively protected the land and water and ensured social and economic benefits to the NWT (Table AX-2). Most respondents felt that it was somewhat true or true that the processes were effective. A greater percentage of respondents expressed that they were unaware of whether the decisions ensured social and economic benefits (up to 18%). There was also less awareness of the effectiveness of land use planning when compared to the other processes.

Table AX-2: Respondents' views on the effectiveness of regulatory processes in protecting the land and water and ensuring social and economic benefits to the NWT

The decisions made at the end of the process help to protect the land and water

Perception of truth	Environmental assessment	Land use permitting	Water licensing	Land use planning
Unaware	4%	9%	5%	15%
True	43%	38%	46%	38%
Somewhat true	49%	49%	46%	47%
Not at all true	4%	4%	2%	0%

The decisions made at the end of the process ensure social and economic benefits to the NWT

Perception of truth	Environmental assessment	Land use permitting	Water licensing	Land use planning
Unaware	4%	11%	15%	18%
True	38%	29%	39%	47%
Somewhat true	40%	56%	39%	29%
Not at all true	11%	4%	7%	6%

Two other components of the management system that the public were asked about were wildlife management (Figure AX-5) and environmental agreements (Figure AX-6). The majority of the respondents were neither satisfied nor dissatisfied with either component. In the case of wildlife management planning, there were slightly more respondents who felt satisfied/very satisfied (12 individuals) than dissatisfied/very dissatisfied (10). A very small proportion of respondents were dissatisfied/very dissatisfied with environmental agreements (6%, 2 individuals), and 15% felt satisfied (5).

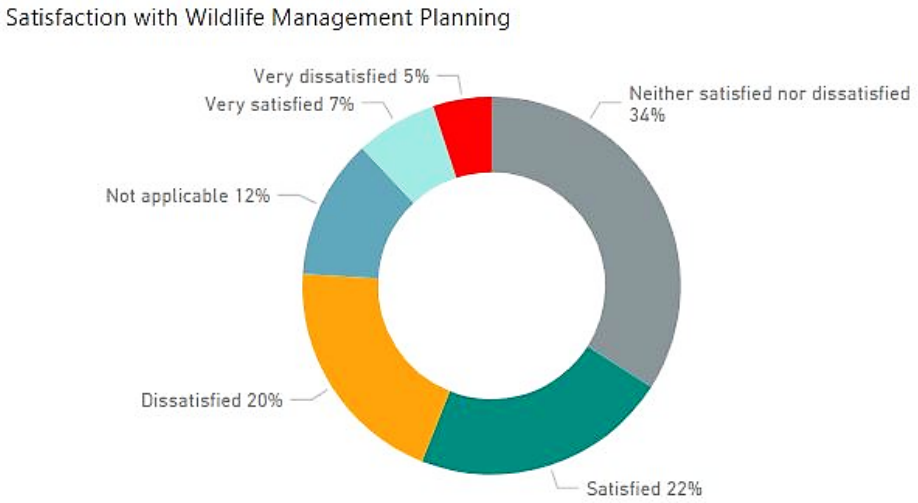

Figure AX-5: Respondents' levels of satisfaction with wildlife management planning

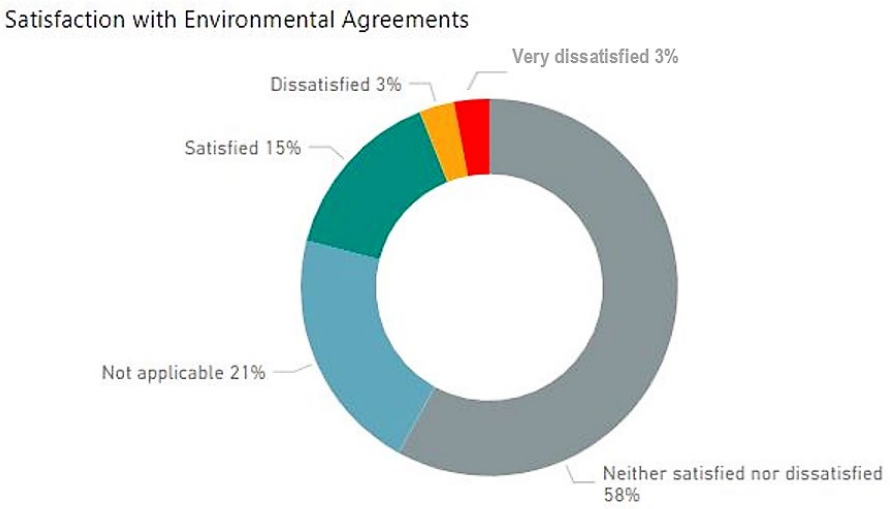

Figure AX-6: Respondents' levels of satisfaction with environmental agreements

The following focuses emerged when respondents were asked to provide comments or suggestions with respect to the NWT's environmental management processes:

- Increased protection of wildlife and wildlife habitat; better balance of wildlife management and permitting
- Greater focus in environmental agreements and general environmental management on long term sustainability and infrastructure development, as opposed to short term, specific benefits
- Improved monitoring and enforcement to ensure compliance with permits and agreements
- Emphasizing the importance of combatting climate change to protect wildlife species
- More consideration or the establishment of large protected areas, particularly for migratory Barren Ground Caribou
- Increased time for reviewing and commenting on files/applications
- Giving more weight and resources to wildlife management and environmental protection than economic gain

Monitoring

There was a high level of awareness among respondents regarding water, caribou, and fish monitoring programs (Figure AX-7), particularly caribou programs (88%, 53 individuals). The awareness of monitoring results for each VEC was more limited, with the highest being about 45% respondents who claimed to either be knowledgeable or somewhat knowledgeable of the existence of caribou monitoring results. However, respondents were mostly, somewhat or not aware of where to find said results.

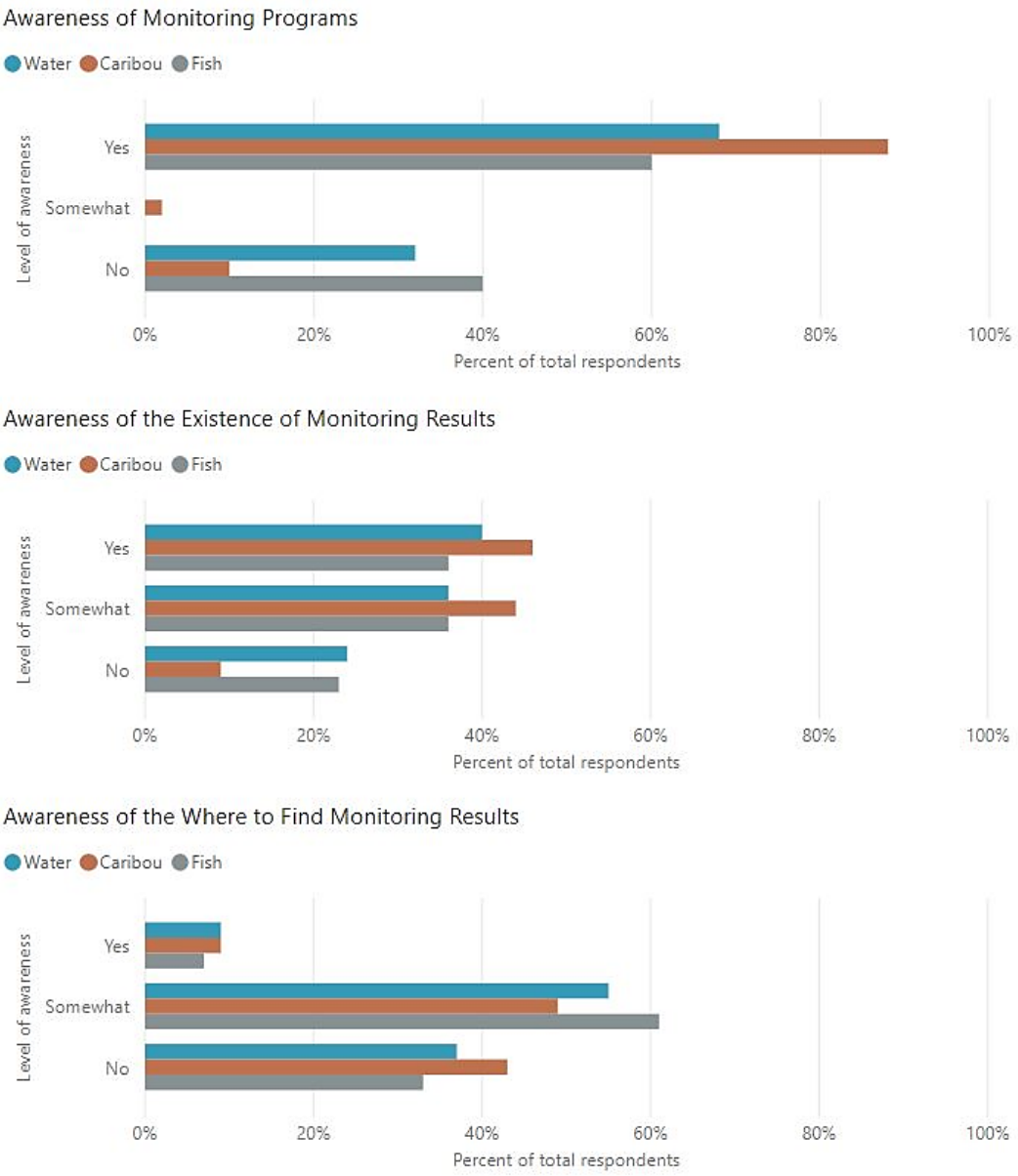

Figure AX-7: Respondents' awareness of monitoring programs, results, and where to find monitoring results

Respondents were invited to provide additional comments or suggestions with respect to water, caribou, or fish monitoring. The majority of the concerns pertained to the health of wildlife species, especially the rapid decline of caribou (e.g., Barren Ground). There was also concern for transboundary impacts, such as effects on water in NWT from developments in British Columbia and Alberta. Two respondents emphasized the need to pace development and chose types of development that have fewer environmental impacts (e.g., wind and solar energy). A couple of other respondents felt that government should take greater initiative and increase funding for research and monitoring.

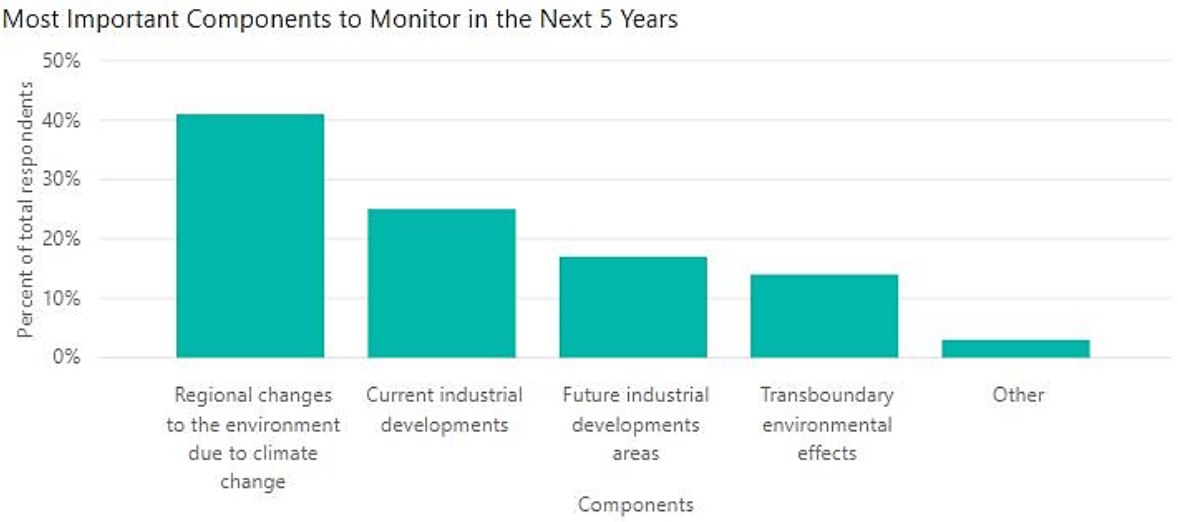

Figure AX-8: Environmental components that respondents' considered to be most important for the government to monitor in the next five years

When considering which components of the environment were most important for the government to monitor over the next five years, over 40% of the respondents chose "regional changes to the environment due to climate change" (Figure AX-8). The other selections, in order of popularity, included: current industrial developments, future industrial developments, transboundary environmental effects, and other. The two "other" responses mentioned "all of the above" and "government oversight."

Measuring Progress

The public was asked to rank the level of progress that has been made in the last five years on the following areas:

- completing LUPs,
- completing unsettled land claims,
- considering things like community wellness when making decisions about land and resource management or development,
- improving communication on how to have government-Indigenous consultation, and
- increasing funding for IGOs and others to participate in land and resource management activities.

As shown in Figure AX-9, a significant percentage of the respondents were unaware of the status of these areas, ranging from 23 to 45%. The lowest level of awareness seems to be around the completion of LUPs, followed by communication on government-Indigenous consultation. The greatest progress among these areas has been made on increasing funding for IGOs and others to participate in land and resource management activities (27%). Overall, many respondents felt insufficient progress has been made in these areas (30-63%); this is particularly true for the completion of unsettled land claims, which received the highest rating of "insufficient progress."

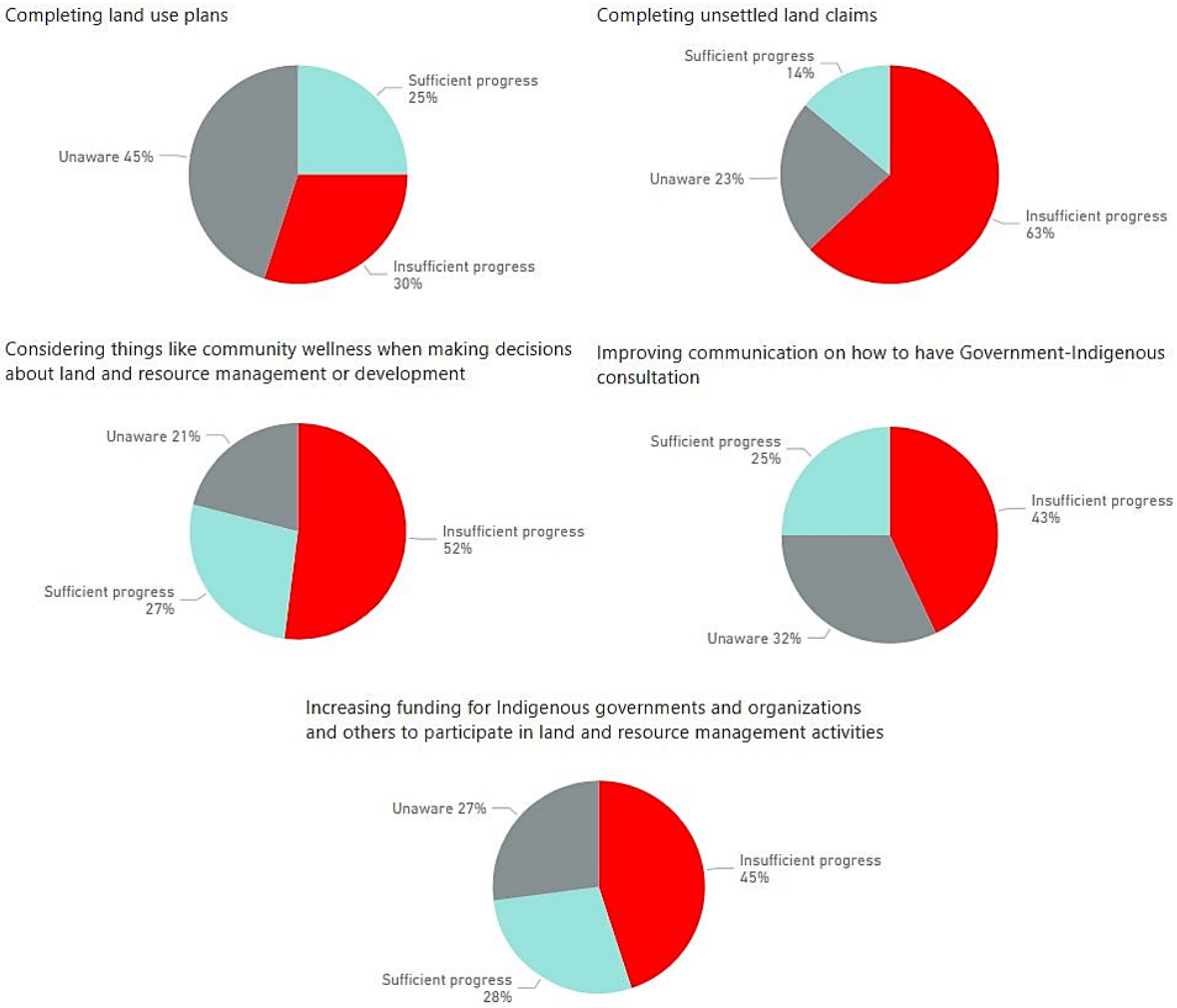

Figure AX-9: Public perceptions of progress on five key areas of environmental management in the NWT

Satisfaction with Resource Management

The public was also asked to rate their levels of satisfaction that:

a) The current management of land, water and resources is protecting the environment (Figure AX-10), and
b) The current environmental regulatory processes are protecting the social, cultural and economic well-being of NWT residents (Figure AX-11).

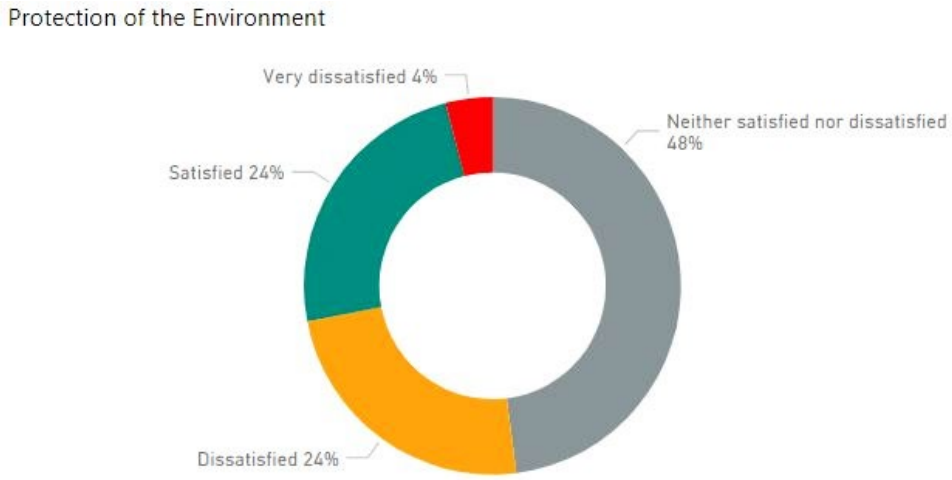

Figure AX-10: Respondents' levels of satisfaction that the current management of land, water and resources is protecting the environment

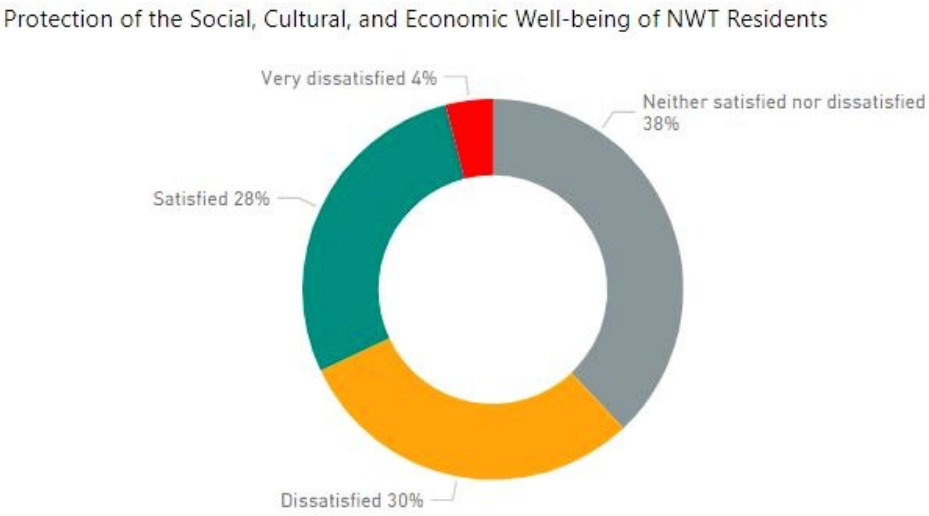

Figure AX-11: Respondents' levels of satisfaction that the current environmental regulatory processes are protecting the social, cultural and economic well-being of NWT residents

Regarding both areas, most respondents were neither satisfied nor dissatisfied (48% for protection of the environment; 38% for protection of social, cultural and economic well-being). Most respondents were also dissatisfied or very dissatisfied with the state of both areas of protection. Below are summary tables of what respondents felt was working well and what could be improved with respect to environmental and social, cultural and economic well-being in the NWT (Table AX-3 and Table AX-4).

Table AX-3: Respondents' comments on environmental protection

What's working well	What could be improved
• Cooperation between industry and environmental representatives • The application process and review of large-scale developments • Community-based monitoring • Regional and community land use planning • The dedication of organizations and individuals working in environmental management • Mechanisms for regulation • Promotion of mining and industrial activities • The public process and transparency • The leadership of regulatory boards • GNWT collaboration with IGOs • GNWT's inclusion of TK in research, monitoring, and management • Awareness workshops	• Management of wildlife harvest and habitat for endangered and threatened species • Monitoring, compliance and enforcement • Processes could be more streamlined • Consideration of cumulative effects • Analysis of climate, water and wildlife monitoring • Communication/coordination between management groups • Improved research on environmental degradation and impacts • Accommodation of Section 35 of the Constitution • Promotion public knowledge • Efficiency and accountability of government officials • Increased TK on management boards and in land/water/wildlife management decisions

Table AX-4: Respondents' comments on social, cultural and economic well-being

What's working well	What could be improved
• Programs that help and educate harvesters to get more value out of their harvests • Permitting processes • Volume of consultation and Indigenous participation in regulatory processes • Economic development opportunities • Ability to trigger a full EA based on community concerns • Inclusiveness of the processes • Growth in number of jobs and gross domestic product	• Conservation of wildlife (particularly caribou) • Monitoring and compliance and enforcement • GNWT's emphasis on the well-being of other cultures • Settling of unsettled land claims • Greater public/Indigenous involvement and plain language communication of processes • Exempt mineral, gas and oil, as well as smaller projects like quarries, from EA processes • Reduce regulatory "red tape" • Avoid reliance on Western scientific methods, standards and worldviews • Create more jobs and hire more Northerners

Open Houses: Results Summary

Between February and May 2019, public open houses were held in the following communities: Inuvik, Yellowknife, Behchokǫ̀, Hay River, Fort Smith, Fort Simpson, and Norman Wells. During the sessions, comments from the public were obtained either in written form or through discussion with a facilitator. Comments are grouped into topic areas (e.g., water quality, regulatory, etc.) and then into similar themes that are listed in column 2 of the table below. Specific comments are captured in column 3.

Table AX-5: Results of open houses

Theme #	Theme	Specific comments/questions supporting theme
Topic 1:	**Water Quality**	
1-1	Industrial developments are affecting water quality	• Several participants said they were worried about the effects of the Fortune Mine on water quality around Behchokǫ̀; it is important to keep monitoring in the Marian River. • Uncertain whether water monitoring is being done around Ray Rock or Colomac. Unsure if water quality from those areas is alright or not. • One person was worried that mining has impacted water quality in the past or that it would in the future. • Several people said they were worried about the effect of the Alberta oil sands on waters coming into the NWT. One person felt that the oil sands projects were moving further north and so effects on water and air quality in the north would be increasingly affected; also unsure how the tailings ponds will be reclaimed. People in Fort Resolution are afraid to drink local water. • Several people were also worried about how the Con and Giant Mines are affecting the water around Yellowknife and into Great Slave Lake.
1-2	People are uncertain about where to find water quality monitoring information	• Several people stated that they were unsure about the level of water quality monitoring being done to check on water coming from the Alberta oil sands, arsenic levels around Yellowknife (including Great Slave Lake) due to the old gold mines, or effects from fracking, sewage, or roads. • Several people also stated that even when they were aware of monitoring being undertaken on local water bodies, they were not sure where to find the water quality results. • There was a sense that monitoring information is being collected by many different groups and so it is not all available in one place; this makes it difficult to get a picture of what is happening overall. • Water levels across the NWT should be shown online. • Suggestions were made about the presentation of water quality information online - maps should be available showing water levels and where water quality is good or bad with respect to swimming and

Theme #	Theme	Specific comments/questions supporting theme
		drinking. There should be an online portal for the public to ask any questions they have about water. • Some participants felt that since devolution there has been a de-emphasis on water. For example, the CBM Program doesn't seem as prominent, there is very little communication about water issues or monitoring, and the focus seems to be on only Yellowknife-based concerns.
1-3	NWT water quality is good and should be kept that way	• Several people stated that they felt that the water quality in the NWT was quite good, especially compared to southern Canada. • NWT residents should make sure the water quality stays good in the long-term.
Topic 2:	**Value of Community-based Monitoring**	
2-1	Examples of successful community-based monitoring	• GNWT ENR and the Aboriginal Aquatic Resource and Oceans Management Program are very good at providing funding for monitoring larger water systems. But some groups, including the K'atl'odeeche First Nation (KFN), are interested in monitoring watersheds that are smaller but still important to them. Monitoring should include water as well as fish tissue testing. • There are several Indigenous guardian programs that are active now both as monitors as well as educators for those coming from outside the region. • NWT CIMP provides good funding for traditional knowledge monitoring and studies. • The GNWT should consider sponsoring a type of "what is it?" monitoring that allows the public to send in samples or specimens to an expert to provide an assessment of what they are looking at.
2-2	Monitoring programs provide community- and cultural-building opportunities	• Community-based monitoring programs can help community groups to get back on the land to practice their traditional and cultural practices. • Communities benefit from elders going out on the land teaching the younger generations.
Topic 3:	**Wildlife**	
3-1	Climate change and pollution are affecting wildlife	• Climate change is altering many types of wildlife habitat for various reasons including an increased number of forest fires. Effects include: caribou numbers are way down, grizzly bears and polar bears are mixing, and the last white fox around Fort Smith was trapped in 1963. • The pollution caused by roads is causing animals to go further north. Frogs avoid the oil on road pavements and so there have been much fewer frogs in the Behchokǫ̀ area lately. One person was very concerned about the pollution that might be caused by the all-season road to Whati.
3-2	Wildlife management requires cooperation	• In the Inuvialuit region, many groups and levels of government are involved in wildlife management and use. This system is a good example of how to work together. • In the Hay River region, the KFN has worked with GNWT ENR to do wildlife monitoring. The relationship

Theme #	Theme	Specific comments/questions supporting theme
		is beneficial since the GNWT does not have good information about the Indigenous harvest; Indigenous harvest numbers can be collected Guardian monitors. KFN has also enforced wildlife harvesting limits on their own members. • Mines who monitor caribou in the same region need to work together as well - how else will they know how caribou are doing if each mine is only looking at one mine area at a time.
3-3	Wildlife management decisions must be more timely	• Caribou monitoring has been going on for a very long time and so we have known that caribou numbers have been steadily declining for some time. But politicians didn't like the results and so kept asking for more and more evidence so they could delay making any decisions that might be unpopular. As a result, caribou populations continue to decrease. • We must reduce the delay between monitoring/data collections on a species and making management decisions.
Topic 4:	**Fish Impacts and Management**	
4-1	Concerns about fish health	• Prospecting in the area around Snare Dam and Rayrock have caused a big decrease in the amount of fish available between Russell and Slemmon Lakes. • Hislop Lake used to have really big inconnu fish (too big for a frying pan). People have seen dead fish in Hislop Lake recently and don't know if it is because of a development or because of forest fires. • One person said that they had caught a three-eyed fish in Jackfish Lake and suggested that studies should be done on that lake. • One participant was worried that there could still be acid rain contaminating fish in the north. • A resident of Fort Smith said that they had seen deformed fish in local water bodies in the 1970's. They were unaware of any fish studies in the area since then and now routinely go 100 miles away to catch fish. • Unclear what kinds of impacts winter roads have on aquatic life. • One person noted that culverts do not allow fish to properly migrate and bridges should be built for roads.
4-2	It is good to work with DFO on managing and monitoring fish	• People in the Hay River region reported working well with the DFO to use TK and science to research and manage local trout and inconnu populations. • A couple of people noted the usefulness of a DFO monitoring technique called eDNA to track fish species in water bodies. Since the sampling is easy to do, it is also a good method to use when taking children out on the land.
Topic 5:	**Air Quality**	
5-1	Regional air quality trends	• One person asked how air quality trends across the territory are monitored, noting that it is significantly more difficult than monitoring water.

Theme #	Theme	Specific comments/questions supporting theme
		• One person felt that air quality was getting worse and is responsible for an increase in breathing-related problems. They were unaware of any studies on air quality trends especially related to effects on human health. • Several people understood that contaminated dust from mining or other developments could go onto the land and water and then affect wildlife and humans. Also that particulates landing on snow can accelerate surface warming.
5-2	Community air quality should be assessed	• There should be an assessment of the effect of air-borne pollutants in the community on human health. • One person was concerned that any air quality studies that have been done in communities weren't done properly or at the right time to see true issues. For example, in downtown Yellowknife in winter there could be an air inversion making air quality worse than in summer when the wind is blowing.
Topic 6:	**Human Health**	
6-1	Research is needed to link environmental studies of air, water, or wildlife to people's health	• Right now many people believe hearsay (e.g., water from the oil sands is causing cancer in Fort Resolution) because they don't have verified information. • If there were verified links to human health issues, maybe people would try harder to protect and/or clean up the air and water.
Topic 7:	**Regulatory System**	
7-1	The NWT should balance environmental protection with development	• Several people stated that they felt industrial development could happen in a sustainable way but that, currently, there wasn't a good balance of development and environmental protection. • Some participants expressed concerns about whether the environment is being sufficiently protected from industrial developments. One person felt that the all-season road to Whati was permitted too quickly and there are still many outstanding concerns. Someone else felt that exploration and mining are taking a much bigger toll on the environment than the public is currently aware of. • Other people worried that regulatory processes were often too long and they suggested that solutions should be looked at like a way to pre-qualify some kinds of projects or have check-box application forms to expedite the permitting process. • One person felt that Mackenzie Gas Project (MGP) didn't go ahead because of too many regulations. Another felt that the reviews of the Mackenzie Valley Highway, the MGP, and the GNWT MVFL project were duplicative - why have so many reviews for the same stretch of land? • Feels like there is a new park being announced every year which takes away more land from the possibility of development. • Shouldn't always take an attitude which says that land users and proponents are all bad. Instead, provide guidance on best practices for the use of land and water, especially for activities that are smaller and not

Theme #	Theme	Specific comments/questions supporting theme
		regulated.
7-2	The regulatory system is still improving	• Some people noted that there has been good progress by the GNWT and the LWBs on guideline development since 2015. These guidelines are helping to clarify the regulatory process and expectations. • One person stated that they felt the LWBs were doing their job; they appreciated the online registry and felt it was easy to get help from Board staff. • One person stated that they felt DFO had been doing a better job with respect to co-management in the past year. • Some concerns were expressed about the security deposit system for water licences. One person felt that not enough money was being held in security to actually remediate the sites if a developer (e.g., a mine owner or an oil sand project) went bankrupt. Others felt it was important to force companies to do progressive reclamation while they still had revenue stream. • The regulatory system should not be thought of as “one size fits all”. Different application forms and different processes should be in place for municipalities versus a mine. • Boards should be encouraged to make timely regulatory decisions. • The regulatory system will be improved further once land claims were completed. • Feels like the federal government is still trying to control the regulatory system by stalling board appointments or through legislative changes like the attempt to create the “superboard”.
7-3	Community members often feel disconnected from the regulatory process	• Board members that are from communities should make an effort to connect with local people to make people aware that their interests are being represented in regulatory decisions. • Many community members are strongly invested in what happens on their land but have trouble navigating the public registry because they do not have high computer literacy. It would be good to find a way to keep these people informed and to encourage their input. • One person felt that, since devolution, decisions are being made in Yellowknife instead of Ottawa so there is no difference for community members.
7-4	Youth should be more involved in the regulatory process	• Young people care about the environment but don’t seem to know that they can get involved in the regulatory process to share their opinions and concerns with decision-makers. • It might be useful to hire or train a youth ambassador to go into the schools to talk about environmental issues and then encourage people to go speak to the boards. • The MVRMA Workshops are very helpful; would it be possible to run a workshop that focuses on youth?
7-5	Traditional knowledge should be incorporated into	• It is not clear how and when TK (other than archeological sites and caribou migration) is incorporated into the environmental assessment process. • Elders need to see what is happening on the land firsthand in order to understand what advice to

Theme #	Theme	Specific comments/questions supporting theme
	regulatory processes	give. This has been done at Diavik Mine for a recent EA. • The taste of meat is important as it tells you what animals eat (e.g., willows, closeness to salty oceans) - but it is important to use the same people over time since everyone has different taste buds.
Topic 8:	**Socio-Economic**	
8-1	There are social impacts from the mining economy	• One person spoke at length about the impacts of the mining economy on his personal life. Both of his parents worked at the mines on a 2-week-in/2-week-out rotation. When his parents were at the mine working (they had the same shift), he was left with family friends from the age of two years old. He said that when his parents were in town they drank a lot and used drugs so were not able to take care of him properly. He eventually ended up in foster care. Although he did not complete high school, he is working now and is independent. • To some, it feels like there are greedy people taking over and that as the rich get richer, the poor are getting poorer.
8-2	Regions and/or communities are often best-placed to improve local socio-economic conditions	• One participant noted that "sometimes a complex problem can have a simple solution when implemented locally." • Several participants commented that the GNWT should help fund local, community-run initiatives such as: ○ Homeless shelters for men. ○ Programs to get kids off the streets and motivate them to stay in school. Suggestions included: on-the-land programs, cultural programs, community walks, winter hockey for youth (more than once a month), or other ideas to keep youth busy. ○ Housing programs.
Topic 9:	**Environmental Concerns Related to Community Garbage and Sewage**	
9-1	More focus needed on the impact of communities on the environment	• Several people felt that there was too much focus on development-related environmental impacts and not enough focus on impacts from communities. • Individual comments included: ○ How can the local environment be audited? ○ How the GNWT will look at improving the quality of life in the communities? ○ Is anyone looking at the effects of increasing concentrations of people - including sewage lagoons, garbage, roads? ○ There is only limited capacity for communities to monitor and manage the environmental impacts of community operations. ○ Feels like there wasn't much thought put into the location of the sewage lagoon and garbage dump; often too close to the road or houses and the smells are bad in the summer.

Theme #	Theme	Specific comments/questions supporting theme
9-2	Garbage management needs improvement	• Concerns were expressed about management of garbage in several communities. • There doesn't seem to be a long-term plan related to garbage management in communities. For example, how can communities reduce their amount of garbage so that the dumps don't just keep getting bigger? What about creating local recycling programs? • Participants from different communities expressed the need for programs to pick up garbage throughout the town and on the land. • Bears are getting into the dump in Norman Wells; there is a need to be more rigorous about electric fences and gates to prevent bear problems.
9-3	Uncertain about sewage treatment	• Several participants asked about how well the community's sewage was being treated; they did not know if the treated sewage could cause health problems or where they could find that information.
Topic 10:	**Climate Change**	
10-1	Residents from all NWT regions are noticing the effects of climate change	• Many people who attended the public sessions brought up examples of environmental changes that they felt were the result of climate change. ○ Low water levels were widely observed by people based on indicators like being unable to swim in certain lakes, more visible rocks in rivers and lakes, and the inability to launch barges or other boats. ○ Ice is melting faster because heat waves are stronger than they used to be. ○ Winter roads are closing earlier and are muddier when they are in operation. ○ All season roads are heaving because of melting permafrost. ○ Erosion on the northern coastline around Tuktoyaktuk started in 1993 and buildings are starting to fall into the oceans now. ○ Blueberries and raspberries are low in some areas and completely absent in other areas that were traditionally good for berry picking. ○ Birch bark for baskets not as available as before either.
10-2	Residents are keen to reduce GHG emissions	• Probably the most noticeable theme throughout the public open-houses was the desire of community members to reduce GHG emissions by changing aspects of their lifestyles. • Note that the desire to start reducing emissions was more important and relevant than further climate change monitoring in the territory.
10-3	Communities should look at ways to improve self-reliance	• Right now it feels like there are a lot of disincentives to growing food and selling it locally - too many restrictive (i.e., unhelpful) regulations. Why can't communities have a vegetable or hunting co-op? • Insufficient recycling/reuse programs or incentives. • Need more government-level support and/or facilitation for self-reliance initiatives like: ○ Community harvesting - like promoting and supporting hunters to hunt enough to supply a town.

Theme #	Theme	Specific comments/questions supporting theme
		There used to be a special funds for “primary producers” - folks that need support for using/paying for snowmobiles or boats, etc. ○ Encourage benefits for individuals to be more healthy personally and to use local goods (i.e., to encourage using less fuel to ship goods North) • All schools should have compost collections. • There is a need to support commercial agriculture - incentives and less onerous regulations are required. Similar to the strategy of no more grocery bags, government can develop initiatives and incentives to change behaviour. Government can “set the tone” to encourage the public by setting a good example.
10-4	Encourage community use of renewable energy sources	• There are good examples in the NWT of communities using renewable energy sources, for example, Inuvik has wind farms and Colville Lake relies on solar power. • Should allow individual NWT residents to set up an energy source like solar power and then be able to give back to the power grid. • Need to incentivize the generation of electricity through biomass, solar, and wind.
10-5	Check or change community practices to reduce emissions	• There was a general sentiment that since things are changing over time, we should check whether we are still doing the minimum or if we are doing the best we can. • Need to recognize that adapting to climate change could save money and have a positive impact on the economy through new technologies, an increase in local focus, or an increase in locally-available jobs. • Try to find ways to incentivize the use of a renewable fuel source (i.e., get people to switch from diesel etc). • What can communities do to improve air quality? For example, do we know if catalytic converters even work below -20C? • Communities should see if there is anything they can do to restore decreasing water levels.

Appendix B: Case Studies

In an effort to supplement the Audit with a more in-depth review, the Audit Team conducted an analysis of three case studies of decisions made by agencies in the last five years. The case study analysis included an evaluation of the effectiveness of decisions to protect the environment from significant adverse impacts and was a more granular examination of decision-making under specific scenarios. We selected examples of decisions based on recommendations from decision-makers. A summary of our findings from the case studies and any applicable recommendations have been included in the main body of the Audit Report.

Selected case studies are as follows:

- GNWT Finance - Mackenzie Valley Fibre Link[162]
- Enbridge Pipeline - Line 21 Pipeline[163]
- Dominion Diamond Mines - Ekati Jay Project[164]

Case Study 1: GNWT Finance – Mackenzie Valley Fibre Link

For this particular case study, we examined several dimensions:

- How the regulatory system handled a transboundary project
- How the land use planning process integrated with permitting

The Mackenzie Valley Fiber Link (MVFL) project is described as a construction and operation of a fibre optic cable system between the McGill Lake Microwave Site near Ft. Simpson and the Town of Inuvik, NWT - a distance of approximately 1,200 km.[165] The project proponent is the GNWT Finance. The project involved clearing a vegetation corridor, burying cable, crossing watercourses, and operating mobile camps and equipment.

Transboundary - Review and Permitting

The extent of the project footprint spans three regions of the Mackenzie Valley, namely Dehcho Region, Sahtu Settlement Area and the Gwich'in Settlement Area. The project crossed multiple regulatory jurisdictions and spanned private and public lands lending itself to an examination of how well the regulatory system functions in a transboundary context.

The project proponent had a comprehensive engagement approach spanning the three regions, and their engagement records show a willingness to negotiate access and benefit agreements with individual communities.[166] The filing of water licence and land use permit applications by the project proponent on October 31, 2014 caused the MVLWB to make a transboundary determination some 45 days later on December 16, 2014, triggering a joint review process with SLWB, GLWB and MVLWB.[167]

[162] Water licence MV2014L1-0011, and land use permit MV2014X0027. Also withdrawn applications MV2014X0009 and MV2014L1-0003.
[163] Water licence MV2017P0013, land use permit MV2017P0013, and NEB MH-001-2017
[164] Environmental assessment EA1314-01, water licence W2013L3-0002, and land use permit W2013D0007
[165] (Stantec Consulting Ltd., 2014b)
[166] Ibid
[167] (MVLWB, 2014a)

Interface with Land Use Planning

The project proponent examined the relationship between its project and relevant LUPs along the valley.[168] The proponent highlighted where its project activities interfaced with conservation and special management zones. We note that despite no approved LUP for the Dehcho region, the proponent used the 2006 draft plan as a reference, describing how the GNWT MVFL project interfaced with the LUP in the same fashion as it did for approved and final LUPs in other regions. This suggests that the land use planning leadership demonstrated by the people in the Dehcho proved useful to a project proponent in designing their project, despite the absence of a settled land claim.

For the Sahtu and Gwich'in regions, the proponent summarized the LUP conformity requirements and its response to such requirements. On April 15, 2014, the GLUPB informed the MVLWB that conformity could not be determined because of information gaps. Following additional submissions by the proponent, on October 21, 2014,[169] the GLUPB determined the MVFL project was in conformance with the GLUP and an exception was granted to allow construction. The GLUPB also provided recommendations for regulating the project via the land and water authorizations of the MVLWB. Specifically, GLUPB requested MVLWB issue a licence condition that mirrors a GLUPB recommendation in hopes that such duplication would provide greater certainty; the MVLWB implemented this suggestion under both the water licence and land use permit to the proponent.

In contrast, on May 2, 2014, the SLUPB provided a negative conformity determination deeming insufficient details to make a positive conformity determination and inviting the proponent to resubmit.[170] The project proponent filed new information in a new project description, but no further determinations from the SLUPB was requested by either the proponent or the MVLWB. Rather the MVLWB interpreted the SLUPB decision according to MVRMA 47(4) to be final and binding so that further review was not an option. As such, in its reasons for decisions the MVLWB made a positive conformity determination against the SLUP after evaluating the proponent's re-submission and additional evidence.[171]

Transboundary - Compliance and Inspection

Once the project was approved, construction began in January 2015. We examined how regulators managed inspection and compliance of the transboundary undertaking. We examined 24 inspection reports between 2015 and 2018, conducted by six different inspectors from GNWT Lands and ENR.

We found the inspection reports mostly thorough, but they varied in content between authors. Reports were consistently shared (carbon copy) between the proponent and the Board, but not necessarily between inspectors from Lands and the water inspectors from ENR. As such the Audit Team found it difficult to follow the progress on an element of inspection that was deemed 'unacceptable'. It was also difficult to appreciate the context of an inspection because the background data collected by different inspectors was not always consistent. For example, inspectors did not always collect information on weather and light conditions on the day of inspection, or whether there was precipitation or melt in the last 24 hours. Such missing baseline information prevented the reader from appreciating what one inspector could have seen on any given day; though most reports contained photographic evidence that could be used to provide context.

[168] Chapter 4.9.3 of Project Description.
[169] (GLUPB, 2014)
[170] (SLUPB, 2014)
[171] (MVLWB: Mackenzie Valley Fibre Optics Project, 2014b)

Overall the quality and frequency of inspections appears adequate, but improvements could be made in the consistency of information collected to ensure subsequent inspections conducted by different inspectors track progress. In this manner, inspectors may benefit from an enhanced inspection checklist or template, and also summarize the tracking of ‘unacceptable’ items from previous inspections all the way to their satisfactory conclusion and inspector sign-off. As written, the Audit Team assumed that an unsatisfactory issue had become satisfactory only by scanning future inspection reports for the corresponding text.

Case Study 2: Enbridge – Line 21 Pipeline

For this case study, the Audit Team focused on public and Indigenous engagement, and Crown consultation.

Enbridge Line 21 is an existing pipeline that extends 869 km from Norman Wells, NWT to Zama, Alberta. For this project, Enbridge proposed to replace a 2,500-meter segment of the existing pipeline (under the Mackenzie River near Fort Simpson) to protect the pipeline from the impacts of slope movement and to support continued safe operation of the pipeline.

This Enbridge Line 21 project is an oil and gas pipeline operation and, as such, required the coordinated review by both the MVLWB and the NEB. Below is a chronology of the process and documents reviewed for this Audit.

- On 10 March 2017, Enbridge filed applications with the NEB.[172]
- On 15 March 2017, the NEB released its Notice of Hearing.
- On 16 March 2017, the NEB announced a participant funding envelope of $100,000. The NEB received four applications totalling $210,196 and funded all four to their requested amount by raising its funding envelope to match the need.[173]
- On 23 March 2017, Enbridge applied for a permit and licence from the MVLWB.
- On 19 April 2017, the MVLWB deemed the application complete and distributed the application to interested parties.
- On 18 May 2017, the NEB determined that the Application was complete enough to proceed to assessment. The NEB also released Hearing Order MH-001-2017 outlining the review process.
- On 25 May 2017, the MVLWB determined further studies were required and issued two information requests. In well-argued submissions to the MVLWB, intervenors from local communities raised significant concerns with the project, and a request that the project be subject to an EA was made.
- On 10 August 2017, the MVLWB found that the project was already subject to an EA and several preliminary screenings and ruled that this project should be exempt from further environmental screenings or assessments (grand-fathered).[174]
- On 28 August 2017, the MVLWB advertised a public hearing.
- On 15 September 2017 MVLWB staff held a pre-hearing conference to discuss the upcoming hearing.
- On 23-26 October 2017, the NEB held a public hearing in Fort Simpson separate from the hearings by the MVLWB that were held at the same location on 27-28 October 2017.[175,]
- On 8-9 January 2018, the MVLWB reconvened public hearings.[176]
- On 25 January 2018, the NEB issued its reasons for decisions.[177]
- On 2 February 2018, the MVLWB issued Enbridge a Type A land use permit.[178]
- On 9 March 2018, the Minister of ENR approved the license.[179]

[172] (Enbridge Pipelines (NW) Inc., 2017)
[173] (National Energy Board, 2018a)
[174] (MVLWB, 2017)
[175] (National Energy Board, 2017)
[176] (MVLWB, 2018a)
[177] (National Energy Board, 2018b)
[178] (MVLWB, 2018b)
[179] ENR Approval

- On 16 February 2018, the MVLWB issued its reasons for decision for the land use permit and water licence.[180]
- On 9 March 2018, the MVLWB issued Enbridge a Type B water licence and reasons for decision.[181]

Engagement and Consultation Framework

We found that the GoC relied on the consultative process of both the MVLWB and NEB, as well as any engagement conducted by the developer, as the primary means for discharging any potential consultation obligations.[182] Similarly, the GNWT relied on the consultative process of the MVLWB as well as the applicant's engagement to assist in fulfilling the GNWT's duty to consult.[183] The MVLWB Engagement and Consultation Policy has determined that, in most cases, the Board will be able to rely on the robustness of existing procedures to satisfy themselves and other parties that consultation with potentially impacted Indigenous organizations / governments carried out under the MVRMA has been adequate, particularly where land claims have been settled and land use plans are in place.[184] The existing procedures described by the MVLWB Policy are pre-engagement by the proponent, public hearings, and written submissions, such as information requests and final arguments.

With the GoC, GNWT, and the MVLWB relying on others and on the regulatory process, it leaves the two directly affected parties, namely the proponent and affected communities, to work out their differences and engage with each other in a productive manner with the oversight of the NEB and MVLWB. Figure AX-12 represents this relationship.

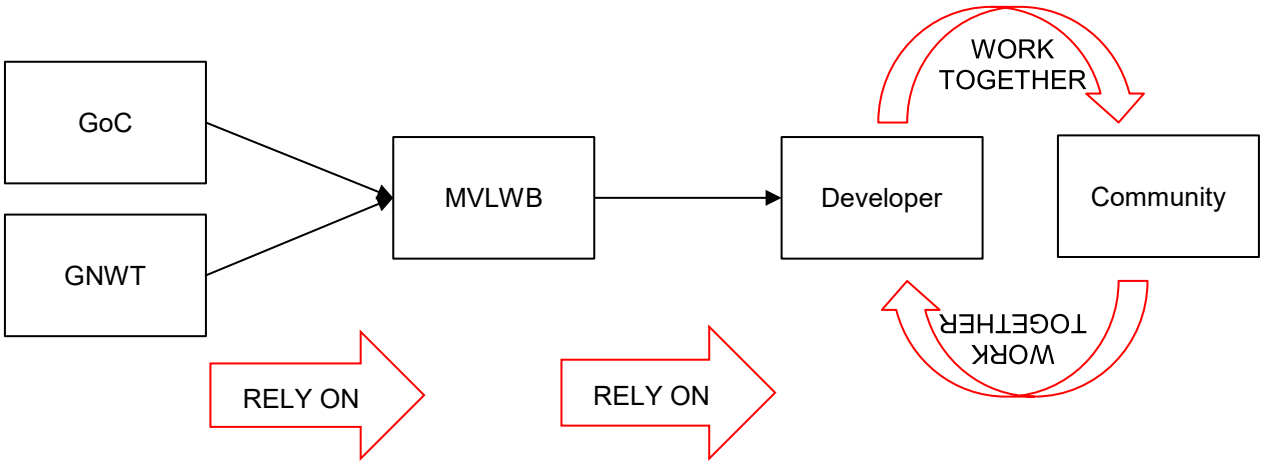

Figure AX-12: Pictorial representation of governments and boards relying on the developer and community for engagement and consultation in the permitting and licensing process

Enhanced Engagement, Participation, and Consultation

On 16 March 2017, the NEB announced a participant funding envelope of $100,000. The NEB received four applications totally $210,196 and funded all four to their requested amounts by raising the funding

[180] (MVLWB, 2018c)
[181] (MVLWB, 2018d)
[182] (Canadian Northern Economic Development Agency, 2017)
[183] (GNWT, 2017c)
[184] (MVLWB, 2013)

envelope to match the need.[185] Review of transcripts from hearings for both regulatory processes shows substantial participation by Indigenous parties, including their retaining of legal and technical experts. The proponent further enhanced engagement by entering into a private (non-public) "Process Agreement" (PA) with a suite of affected communities. It appears the PA provided additional community capacity building to engage in technical discussions, protocols for engagement and negotiations, joint environmental monitoring, an archaeological survey, and funding for an Indigenous Knowledge and Land Use Study. We believe this regulatory review was enhanced significantly by NEB's injection of participant funding, as well as the proponent's PA.

Though public hearings for Type B water licence proceedings are not mandatory, the MVLWB decided to hold one because of community concerns and regulatory complexities. The record of the MVLWB public hearing in October 2017 shows the regulator was not fully aware or was caught off guard by the substantial concerns raised by communities, likely a result of solely relying on the proponent's engagement record. This is to be expected, since the MVLWB does not establish its own engagement with which to assess emerging concerns; it relies on its regulatory process, the proponent, and the community. Other than a pre-hearing conference call and a few letters from parties,[186] the MVLWB appeared to miss indications of the brewing discontent. The MVLWB responded to requests for additional public input at their October 2017 hearing by extending the engagement process and reconvening the public session in January 2018. In our opinion, this was an appropriate response given the public need, and it demonstrates the Board's responsiveness to emerging needs. However, the Board's engagement process should be re-examined to enhance its ability to detect emerging public concerns and adapt the engagement plan as required. Without the NEB's comprehensive participant funding program, which benefited the intervenors, we are doubtful that the MVLWB's own engagement process or conclusion on the adequacy of Crown consultation would have been as clear.[187]

[185] (National Energy Board, 2018a)
[186] Letters from Sambaa K'e First Nation and Łíídlıı̨ Kų́ę́ First Nation
[187] The Auditors did not examine whether IRMA funding was used for this project by indigenous communities.

Case Study 3: Dominion Diamond Mines – Ekati Jay Project

For this particular case study, the Audit Team examined several dimensions:

- How cumulative environmental monitoring and assessment were examined
- The engagement process and efficacy
- How the project proponent and reviewers adapted to new information during the review
- How socio-economic considerations were incorporated

The Jay Project is an expansion of the Ekati Diamond Mine. The project proposal was to construct a horseshoe dike in Lac du Sauvage to expose the proposed open pit, transport ore in trucks 30 km along the proposed Jay Road and existing Misery Haul Road, and process ore at the existing Ekati processing site. The proponent proposed a waste rock storage area on land adjacent to the Jay Pit; fine processed kimberlite from the mill would be backfilled into the mined-out Koala and Panda Pits at the main Ekati site. Below is a chronology of the process and documents reviewed for this Audit.

- On 18 October 2013, Dominion Diamond applied for a Water Licence with the WLWB.[188]
- On 7-8 January 2014, the MVEIRB held a scoping session to aid in the creation of terms of reference for the EA.
- On 21 February 2014, the MVEIRB issued the terms of reference for the EA.[189]
- On 7 November 2014, Dominion Diamond filed the Developers Assessment Report (DAR).[190]
- On 1 February 2016, the MVEIRB published its Report of EA and Reasons for Decisions.[191] On 19 May 2016 the GNWT, as the delegated authority, agreed to adopt the recommendations of the MVEIRB.[192]
- On 6 June 2016, Dominion Diamond filed a post-environmental assessment information package with the WLWB (application for licence).[193]
- From 4 to 6 of October 2016, the WLWB held technical sessions.[194]
- From 13 to 15 of December 2016, the WLWB held public hearings.[195]
- On 19 January 2017, the WLWB issued a draft water licence.[196]
- On 23 March 2017, closing arguments concluded.
- On 29 May 2017, the WLWB issued land use permit (W2013D0007).[197]
- On 9 May 2018, reports emerged the Jay project was on hold and no longer economically feasible.[198]

Cumulative Environmental Assessment and Monitoring

The environmental review of the Jay Project led to the MVEIRB concluding there is a likelihood the project will cause significant adverse impacts on the environment, but specifically cited a cumulative impact from the potential effects of the Jay Project combined with the effects of other activities. The unequivocal

[188] (WLWB, 2013)
[189] (MVEIRB, 2014)
[190] (Dominion Diamond, 2014b)
[191] (MVEIRB, 2016)
[192] (GNWT, 2016d)
[193] (Dominion Diamond, 2016)
[194] (WLWB, 2016b)
[195] (WLWB, 2016c)
[196] (WLWB, 2017)
[197] (WLWB, 2016d)
[198] (Gleeson, R. 2018)

determination by the MVEIRB that cumulative impacts were cause for concern is a unique finding in the MVRMA and therefore presents a useful case study.

The cumulative impact assessment was led by the proponent, who examined cumulative impact for each VECs, namely caribou, water quality, fish, birds, and numerous other components of the environment. The MVEIRB focused its report of environmental assessment on cumulative impacts for caribou, water quality, and social impacts. Our review focused on these VECs.

Cumulative Impacts to Water Quality
During operation of the Jay Project, Dominion proposed to discharge mine wastewater into Lac de Gras. This could potentially add to effects from existing mine wastewater already being discharged to Lac de Gras from the Diavik diamond mine (Diavik) and the existing Ekati mine. Lac de Gras empties through the Coppermine River watershed, which is a source of drinking water for the community of Kugluktuk.

The proponent's cumulative impact assessment was that water quality changes have already occurred in Lac De Gras from existing projects, and that the Jay Project's additions to these water quality effects would not have an adverse impact on aquatic life.

Other intervenors' evidence included concerns for degraded water quality by the community of Kugluktuk, and cumulative effects concerns by both the Tłı̨chǫ Government and Diavik.

The MVEIRB's analysis relied on Dominion's modelling of cumulative impacts from both the Diavik discharge and Jay Project in two different scenarios, namely simultaneous discharge and sequential discharges. The MVEIRB was satisfied that modelling showed a marginal increase in TDS while remaining below thresholds for protection of aquatic life. The MVEIRB concluded that the Jay Project is not likely to cause significant adverse cumulative impacts on water quality of Lac de Gras and the Coppermine River.

The conclusions of the MVEIRB appear sound and we found that sufficient evidence was presented at an assessment level; however, we find that a reasonable conclusion flowing from the analysis and evidence should require government to verify these conclusions with assistance from the proponent using CIM in combination with water quality trend analysis. As we have found in our Audit, trend monitoring conducted by government were able to detect water trends in some parameters, however, the program design and analyses were not sufficient to determine the cause of the detected water quality trends or assess cumulative effects; changes to these programs are required to improve the detection of trends in some parameters of interest (e.g., nutrients) and to improve understanding of the mechanisms responsible for long-term water quality change.

Cumulative Impacts to Caribou
The proposed mine haul road would cross an important caribou migration corridor; associated activities would add sensory disturbances such as noise and visual stimuli. In addition, there was evidence presented that pre-existing significant cumulative impacts to caribou and the Jay Project would add additional stresses on the herd. Finally, evidence was presented that caribou populations have already greatly decreased; between 2012 and 2015, breading females decreased by a factor of 50%.

The MVEIRB found that the Jay Project was likely to cause significant adverse project-specific and cumulative impacts to the Bathurst caribou herd.

Adapting to Concerns during the Assessment

The initial project filing of October 2013 by Dominion Diamond was for the Jay-Cardinal project.[199] Figure 4.6-6 (page 141 of 198) of the project description shows approximately half of Lac du Sauvage needed to be isolated (approximately 50 km^2) and drained of its water (284 million m^3 of water) in order to access two kimberlite deposits; Jay and Cardinal. By June 2014, as a result of early engagement and community concerns about the project footprint, Dominion removed the Cardinal pipe from the project, leaving the Jay Project, requiring isolation of only approximately 5% of the lake (approximately 4 km^2) and draining 27 million m^3 of water. In their report of decisions, the MVEIRB cited that Dominion listened to community concerns and, based on these concerns, made a significant project design adjustment. The adjustment in dike positioning in the Jay-only project description would now only impact about 5% of Lac du Sauvage, down from approximately 45%.

We found this outcome not atypical of other EAs where input from Indigenous participants, the public, governments, and others tend to improve a project description through thoughtful discussions and an openness from project proponents to adjust project plans. However, the magnitude of the changes undertaken by the proponents of the Jay Project were quite unprecedented, and we commend the proponents and all the participants of the EA for working hard to reduce the impacts to the natural environment.

Socio-Economic Considerations

In examining socio-economic considerations for this project, we examined additional documents in more detail; these included the proponent's technical presentation on socio-economics,[200] the GNWT's technical analysis of the project's socio-economic impacts,[201] the MVEIRB's report and reasons for decisions,[202] and the GNWT's latest 2018 Report on EA Measures.[203] The proponent concluded that its project would have a net-positive effect on the socio-economic environment.[204] The GNWT concurred with the proponent's assessment and found that existing measures, such as its SEAs with the proponent, GNWT's own monitoring of diamond-communities, and its existing health and social services and programming, can mitigate impacts. On the balance of considering all the evidence, the MVEIRB concluded "*It is evident to the Review Board that the GNWT has not successfully addressed deteriorating socio-economic conditions caused by mining in Aboriginal communities".* Furthermore, the MVEIRB concluded there were significant cumulative social impacts from diamond mining on communities (p. 175, sect 8.4.1). This led the MVEIRB to recommend Measure 8.1 requiring "an improved engagement and adaptive management process by the GNWT to measure and respond to adverse health and well-being impacts from the Jay Project", which included the requirement to meet on an annual basis with communities to discuss priority social issues, the effectiveness of GNWT programs, and improvements to mitigate issues.

This case study demonstrates that the MVEIRB plays an important function in the development and oversight of community well-being monitoring. Further information on community well-being monitoring is provided in Section 1.2 of this Audit report.

[199] (Dominion Diamond, 2013)
[200] (Dominion Diamond, 2015)
[201] Ibid
[202] (MVEIRB, 2016)
[203] (GNWT, 2019l)
[204] (Dominion Diamond, 2014b)

Appendix C: Detailed Findings for Environmental Trends in Water Quality and Quantity

Detailed Findings for Part 2, Section 2.1.2

Long-term, scientifically-based monitoring data was available for 8 of the 13 watersheds audited, for rivers only

With respect to available scientifically-based water monitoring data, we first determined if sufficient data had been collected to perform meaningful, robust trend analysis following accepted statistical methodologies for water quality data in each of the watersheds under review. Ten years of data is a commonly used benchmark when assessing long-term temporal trends in water quality to help distinguish meaningful changes over time from the inter-annual variability present in water quality data.[205]

Trend Inventory reports, provided to us for the Lockhart, Great Bear, Great Slave Lake-Christie Bay-North Shore, and Marian watersheds, showed that although there were many monitoring efforts in those regions, only a few programs yielded datasets longer than two years. Our review of those reports as well as other individual trend reports revealed that only eight of the thirteen watersheds audited had one or more water quality monitoring stations that had been regularly sampled for a period of more than ten years (Table AX-6).

Table AX-6: Summary of the period of record for data in each audited watershed

Years of Data	Watershed(s)	Stations	Parameters	Program/Source
10+	• Coppermine	• 7 ECCC and GNWT monitoring sites	• Water Quality and Quantity	• ECCC and GNWT LTM/Stantec (2015)
	• Lockhart	• 4 ECCC and GNWT monitoring sites	• Water Quality and Quantity	• ECCC and GNWT LTM/Stantec (2015)
	• Great Slave Lake – North Arm – East Shore • Great Slave Lake – Christie Bay – North Shore • Hay • Marian • Lockhart	• Yellowknife River • Cameron River • Great Slave Lake at Taltheilei Narrows • Hay R. at West Channel Bridge • Marian River • Lockhart River at mouth	• Water Quality and Quantity	• Tetra Tech 2017 • Environ EC (Canada), Inc, (2012)
	• Slave	• Slave at Fitzgerald • 2 ECCC and GNWT Monitoring Sites	• Water Quality and Quantity	• Sanderson et al. (2012) • Tetra Tech (2017)
	• Peel	• Peel above Ft. McPherson	• Water Quality and Quantity	• Stantec (2012)

[205] (Chapman, 1996)

Years of Data	Watershed(s)	Stations	Parameters	Program/Source
5+	• Central Mackenzie – The Ramparts • Hay • Peel • Slave • Eastern Mackenzie Delta • Western Mackenzie Delta	• Norman Wells at Mackenzie River Upstream • Hay River Upstream West Channel Bridge • Fort McPherson at Peel • Fort Smith at Slave • Tsiigehtchic at Mackenzie River • Inuvik at Mackenzie River Delta East	• Water Quality and Quantity	• CBM/HESL (2018)
<5	• Great Bear • South Nahanni	• Great Bear River at Tulita • South Nahanni at Nahanni Butte	• Water Quality and Quantity	• CBM/HESL (2018)

Table AX-6 only lists monitoring data that was used in the evaluation of trends described in Section 2.3.2, all of which came from one of the following three sources:

1. Hydrometric and water quality stations maintained by ECCC and the GNWT.
    - In speaking with GNWT ENR staff, we understand that these stations were originally only for the purpose of hydrometric monitoring and that water quality sampling at those locations was added later. Although water quality sampling locations would ideally be chosen deliberately to meet specific objectives (e.g., like the CBM Program), these stations now offer the benefit of:
        - long-term datasets that are useful for detecting trends in several rivers; and,
        - by direct linkage with flow data, evidence of whether or not changes in water quality are accompanied by changes in flow, assisting the interpretation of causation.
2. GNWT ENR water quality monitoring stations on the five transboundary rivers.
    - These stations are important especially given the frequently-voiced concerns from the public about pollution coming from upstream jurisdictions. It is therefore important to maintain water quality records for transboundary waters, at locations near where the waters flow into the NWT. Our understanding is that under the signed or draft transboundary agreements, monitoring of these rivers will continue.

3. The CBM Program supported by the GNWT ENR.
    - This program shows promise as a comprehensive, consistent monitoring program with substantial spatial scope that will produce relevant trend analysis data from across the GNWT, focused on the Mackenzie River. The program was designed around community concerns, is intended to track changes over the long term, has established a central data repository (Mackenzie Datastream), and has included (to date) a formal review of results at the first five-year interval. The review not only assessed current trends but also assessed sampling locations and parameters as well as sampling methodology with the goal of adaptive management of the program. Important features of the CBM Program include:
        - Providing a long-term monitoring dataset with stations in several watersheds, if maintained, the CBM Program will provide ten years of data at many sampling stations by 2021.
        - Sound and consistent methodologies across the program.

- Community engagement in selecting the sampling locations and in performing the monitoring means that the program is addressing community concerns by design while still maintaining compatibility with scientific and management goals.

Overall, the existing water monitoring stations listed above provide reasonable coverage for the NWT's major river systems; however, in some cases it is not clear if the locations are optimally located or whether additional stations would be needed to ensure we are able to detect trends in all watersheds. For example:

- For eight of the 13 audited watersheds, there is only one long-term river sampling station to represent the entire watershed.
- The Great Bear watershed was represented by a single sampling point in the Great Bear River near the confluence with the Mackenzie River near Tulita; however, Great Bear Lake was not sampled as a part of any program reviewed, nor were any other lakes in this large watershed.
- South Nahanni watershed was sampled at a single point just outside the community of Nahanni Butte prior to the confluence with the Liard River. This station should inform on the overall changes in water quality within the South Nahanni watershed, but may not be sufficient or optimal to assess the impacts from multiple land use changes in the future should numerous developments occur within the watershed.
- It is unclear whether the two stations in the Mackenzie Delta are sufficient to characterize the braided river system in that region.

A major observation is that most of the monitoring studies reviewed, and monitoring stations reported, were for rivers. There was little evidence of a GNWT program for systematic evaluation of water quality in lakes in any of the audited watersheds other than Great Slave Lake, except for the Coppermine and Lockhart watersheds that included sampling on five and three lakes respectively. Long-term records of water quality are being collected for the AEMP programs of the diamond projects (e.g. Lac de Gras, Snap Lake, and associated reference lakes) and these records will be valuable in the long-term.

Water quality and flow in NWT rivers are highly variable with season, which confounds the ability of a monitoring program to detect statistically significant trends. Lakes, by contrast, integrate and aggregate all influences in their watersheds and express any changes in a more stable environment of water level, flow, and sediment deposition. Lakes may be better suited to detect changes and cumulative effects, they are highly valued by NWT residents, and provide habitat for fish, waterfowl and wildlife.

We conclude that, although there are many river water monitoring programs collecting data on NWT rivers (see map), the monitoring effort is weak for lakes and only a small subset of the available river data is useful for the evaluation of water quality trends. The major weaknesses are a) the lack of an overall program linking regulatory requirements for monitoring to the development of specific programs and details of site selection, monitoring effort, and rationale and b) the lack of sites at which monitoring efforts have extended long enough to detect trends (10+ years). As such, the recently implemented CBM Program provides a potentially valuable resource for future trend detection.

Detailed Findings for Part 2, Section 2.1.3 and 2.1.4

For several watersheds (i.e., Lockhart, Great Bear, Great Slave Lake-Christie Bay-North Shore, and Marian) trend inventory reports were compiled by a third party under contract with the GNWT to expedite the Audit process. As noted in the last column of Table AX-7, we discovered some inconsistencies and contradictory information between the trend inventory report and the source reports being summarized.

Contradictory information was noted between the Lockhart Watershed Trend Inventory Report[206] and the source report (i.e., Stantec 2015) that contained significant environmental trend analysis on major ions, total nitrogen and total phosphorus. The inventory report suggested sufficient data were not available for environmental trend analysis, however Stantec[207] performed trend analyses on numerous parameters. The Stantec report was deemed essential to a proper review of environmental trends and therefore included in our Audit as a separate document review (Table AX-8). Wood also referred to "unimpacted waterbodies"[208] for dissolved oxygen, major ions, conductivity, and chlorophyll a, a qualifier that was not included in the scope of work (based on our brief review of the scope of work provided by the GNWT). It is not clear what the report defined as an impacted and unimpacted waterbody, nor is it clear if significant trends for dissolved oxygen, major ions, conductivity, and chlorophyll a were detected in "impacted waterbodies" as they are not discussed independently.

The Great Bear watershed Trend Inventory Report included 12 documents and monitoring programs as detailed in Table AX-7.[209] The CBM Program was briefly discussed, however the five-year review of the program was not included in the Trend Inventory Report.[210] It is not clear if this document was missed or was not available at the time of the compilation of the trend inventory; however, HESL[210] was deemed essential to a proper review of environmental trends and therefore included in our Audit as a separate document review. Likewise, in the Marian watershed Trend Inventory Report,[211] no mention was made of the Status and Trends of Water Chemistry and Flow of Tributaries into Great Slave Lake,[212] which included trend analysis in a Marian River monitoring station. As above, it is not clear if this report was missed during the trend inventory review process or was not available to the reviewers. Given the significant number of environmental trend analyses included, it was deemed essential to our Audit and therefore was included as a separate document review (Table AX-8).

Due to these issues, our assessment of environmental trends focused on six essential reports that, in our opinion, represent the state of knowledge for environmental trends in the NWT at the time of the 2019 Audit; an overview of the content of these six reports is found in Table AX-8. Note that the trend analyses described in these reports (Sections 1.3.2.1 – 1.3.2.5) are based on the long-term datasets listed in Table AX-6. Numerous other reports, theses, data summaries[213] and other documents were provided and reviewed during the Audit process, however, the six documents below (Table AX-8) were the only documents found to have data over a sufficient period of record to perform an assessment of long-term change in water quality and/or quantity.

[206] (Wood, 2018a)
[207] (Stantec, 2015)
[208] (Wood, 2018a)
[209] (Wood, 2018b)
[210] (HESL, 2018)
[211] (AMEC Foster Wheeler, 2018)
[212] (Tetra Tech, 2017)
[213] Note that our review of the trend inventory reports provided by the ASC for this work had several issues that could not be resolved. Table AX-7 summarizes each report and the issues encountered. Because of those issues, we were unable to use those reports directly to inform the summary in section 2.3.2 of this report.

Table AX-7: Findings of the four watershed trend inventory reports - water quality/quantity

Source	Documents included	Watershed(s)	Data Availability	Water Quality Trend Analyses	Water Quantity Trend Analysis	Issues and Notes
Wood 2018a	• Rescan, 2013 • Golder, 2017a, b, c • De Beers, 2002; 2012; 2015 • Blais, 2004 • Faithful, 2016 • Korosi et al., 2016 • ECCC, 2018 • Stantec 2015	• Lockhart	Sufficient data for: • pH • TSS/Turbidity • Flow	• No trends* • Conductivity increased in King Lake and Lockhart River • Turbidity decreased in Lockhart River	• No trends in water quality • Stable long-term flow	*Contradictory information between Inventory Report and Source Reports (i.e., Stantec, 2015) on Major Ions, Total Phosphorus and Total Nitrogen. Inventory report suggests sufficient data were not available but Stantec (2015) performed trend analyses on multiple parameters. Stantec (2015) was therefore included in our review as a separate document review (Table AX-8). An "Unimpacted waterbodies" qualifier has been added to the Inventory report review comments for dissolved oxygen, major ions, conductivity, and chlorophyll a which was not included in the Scope of Work. It is not clarified what the report defined as an impacted and unimpacted waterbody. Did not review Tetra Tech (2017) which included a monitoring location on the Lockhart River
Wood 2018b	• GNWT, 2018 • Community Government of Tulita, 2016 • Community Government of Gameti, 2014 • WRRB and TG, 2016 • Franz, 2010 • SENES, 2005a, 2008a,b,c • ECCC, 2018a, 2018b • NWT Water Stewardship, 2018 (CBM)	• Great Bear	Sufficient data for: • Flow	• No Analysis Conducted	• No Analysis Conducted for water quality or flow	HESL (2018) was not included in the Inventory Report and contains trend analyses from the Community-based water quality monitoring program including a monitoring station in the Great Bear Lake Watershed
Wood 2018c	• EBA, 2010a,b,c,d,e,f; 2013 • Franz, 2009a,b • Stantec, 2015; 2017a,b,c,d,e • De Beers, 2010; 2014 • Avalon, 2011 • Korosi et al., 2016	• Great Slave Lake-Christie Bay-North Shore	Sufficient data for: • Flow	• No Analysis Conducted	• No Analysis Conducted for water quality or flow	DeBeers (2010) monitoring program for the environmental impact study for Kennady Lake Project may have sufficient data for trend analysis on physical parameters, nutrients, major ions and total and dissolved metals (1999 – 2014); EBA (2013); De Beers (2014) Did not review Tetra Tech (2017) which included a monitoring location at Taitheilei Narrows on Great Slave Lake in the GSL – Christie Bay – NS Watershed
AMEC 2018	• Baseline Sampling for Proposed Tłı̨chǫ All-season Road • Surveillance Network Program (SNP) monitoring, Community of Behchokǫ̀ • SNP for Municipal Water Licence, Community of Whati • Aquatic Baseline Sampling for the Proposed NICO Project • NWT-wide Community-based Water Quality Monitoring Program: Frank's Channel (outlet of Marian Lake) • NWT-wide Community-based Water Quality Monitoring Program: Tłı̨chǫ at Hislop Lake / Marian River • North Slave Water Quality Network (NSWQN) • NWT Contaminated Sites SNP Monitoring Marian • Watershed Stewardship Program • Establishing a metals and hydroecologic baseline to support the Marian Watershed Stewardship Program	• Marian	Sufficient data for: • Flow	• No Analysis Conducted	• Positive Trend @ LaMartre • Stable long-term flow	Results from the NSWQN are pending. Community-based monitoring shows promise but additional data collection was needed when data was last analyzed. Tetra Tech (2017) was not reviewed, which included a monitoring station on the Marian River. HESL (2018) was not included in the Inventory Report and contains trend analyses from the Community-based water quality monitoring program including a monitoring station in the Marian watershed at Behchokǫ̀. Several long-term datasets are available, however Inventory report suggested there was insufficient data for trend analysis.

Table AX-8: Findings of the audited environmental trend reports

Source	Watersheds	Data availability	Data Sources	Trend Analysis Method	Issues
HESL (2018)	• Central Mackenzie – Ramparts • Hay • Great Bear • Peel • Slave • South Nahanni • Mackenzie Delta – East and West	• Total/dissolved metals • Major ions • Nutrients • Field parameters • Physical parameters • Flow	• GNWT Community Based Monitoring • Water Survey of Canada	Mann Kendall	Only five years of data
Stantec (2015)	• Coppermine • Lockhart	• Total/dissolved metals • Major ions • Nutrients • Field parameters • Physical parameters	• ECCC and GNWT • Water Survey of Canada	Mann Kendall	
Sanderson et al. (2012)	• Slave	• Total metals • Major ions • Nutrients • Physical parameters	• ECCC and CIRNAC • Water Survey of Canada	Modelled	
Stantec (2012)	• Peel	• Total metals • Major ions • Nutrients • Physical parameters	• ECCC and CIRNAC • Water Survey of Canada	Mann Kendall	
Environ EC (Canada), Inc. (2012)	• Hay	• Total/dissolved metals • Major ions • Nutrients • Field parameters • Physical parameters	• ECCC • Water Survey of Canada	ANCOVA and Linear Regression	
Tetra Tech (2017)	• Lockhart • Great Slave Lake - Christie Bay – North Shore • Great Slave Lake - North Arm – East Shore • Hay • Marian • Slave	• Total/dissolved metals • Major ions • Nutrients • Field parameters • Physical parameters	• ECCC and GNWT • Water Survey of Canada	Mann Kendall	See Section 1.3.2.5.1

HESL (2018)

Hutchinson Environmental Sciences Ltd. reviewed the GNWT's CBM Program at the end of the first five years of data collection.[214] Environmental trend analyses using non-parametric Mann Kendall analysis were completed for those stations for which the period of record included data from all five sampling years (2012 - 2016). Seven sites in six watersheds were relevant to the scope of work of this Audit:

- Slave watershed
    - Slave River / Big Eddy at Fort Resolution
    - Slave River / Rapids at Fort Smith
- Hay watershed
    - Hay River / Upstream of West Channel at Hay River
- Central Mackenzie - The Ramparts watershed
    - Mackenzie River / Upstream at Norman Wells
- Eastern Mackenzie Delta watershed
    - Mackenzie River at Tsiigehtchic
- Peel watershed
    - Peel River at Fort McPherson
- Western Mackenzie Delta watershed
    - Mackenzie River Delta / East Channel at Inuvik

In the Central Mackenzie - The Ramparts watershed, significant local increases in dissolved aluminum, lithium, and selenium, as well as sulphate (SO_4) and conductivity were documented at Norman Wells and downstream at Tsiigehtchic, which the authors indicated may suggest an impact on water quality of local industrial (oil production at Norman Wells) development.

In the Slave watershed, significant upward trends in chloride, sulphate and dissolved strontium were detected, while in the Slave and Mackenzie Rivers (excluding Hay River, Peel River, and the Mackenzie Delta) a decreasing trend in dissolved organic carbon (DOC) was observed. Limitations in the length of the period of record (five years) prevented interpretation of the cause and potential effect of these trends. A more robust temporal analysis of the CBM data set, including accounting for any potential serial correlation was proposed once ten years of data have been collected.

No assessment of long-term trends in water quantity was performed as a part of this report. In all cases the authors did not attempt to interpret the ecological significance of any trends. Our review of the results did not indicate that the environmental trends in water quality detected have contributed to a nutrient enrichment response, potential for toxicity, or potential for any other consequences.

Stantec (2015)

Stantec Consulting Ltd. (Stantec) was retained by the GNWT to undertake an evaluation of the status and trends of water chemistry and flow in the Coppermine and Lockhart watersheds.[215] Hydrometric and water chemistry monitoring data from the following ten long-term ECCC and GNWT sites in two watersheds were analyzed in the report using Mann Kendall trend analysis:

- Coppermine watershed

[214] (HESL, 2018)
[215] (Stantec, 2015)

    - Lac de Gras outlet
    - Desteffany Lake
    - Daring Lake
    - Point Lake outlet
    - Rocknest Lake
    - Coppermine River above Copper Creek
    - Coppermine River mouth
- Lockhart watershed
    - King Lake
    - Lake of the Enemy
    - Mackay Lake
    - Lockhart River at the outlet of Artillery Lake

Stantec noted significant increasing temporal trends for total barium (Lac de Gras Outlet), total molybdenum (Lac de Gras Outlet, Desteffany Lake) and total strontium (Lac de Gras Outlet, Desteffany Lake, Point Lake), and decreasing temporal trends for total aluminum (Point Lake), total barium (Daring Lake, Point Lake), total copper (Lac de Gars Outlet, Daring Lake, Point lake, Desteffany lake and Coppermine River above Copper Creek), and total nickel (unspecified sites in Coppermine watershed).

Furthermore, significant increasing trends in total alkalinity (Point Lake outlet), sulphate (Point Lake), total phosphorus (Coppermine River mouth), and total barium (Lac de Gras outlet) were also identified at sites in the southern Coppermine watershed, though there was no apparent spatial tendency to these trends. Increasing trends in calcium, magnesium, and sulphate were observed at the Lac de Gras outlet, Desteffany Lake, and to a lesser extent, the Point Lake outlet, and could not be solely attributed to natural phenomena, such as chemical weathering or groundwater inflow, but rather were concluded to be influenced by the discharge of waters from the Lac de Gras basin. Numerous industrial developments are present within the Lac de Gras watershed including the Ekati and Diavik diamond mining operations and major ions are a significant component of their effluent. The Stantec report did not attribute the changes observed in water quality to any specific cause but we note that:

- The 2018 AEMP report for the Diavik project reported that TDS concentrations had triggered Action Levels 1 and 2 in their response framework, where Action Level 2 is the 5th percentile of Near Field concentrations and is greater than two times the median of the reference dataset and the normal range.[216]
- TDS was not an evaluated variable in the 2018 annual report for the Ekati Mine but the report states “Some increasing variables were not selected for evaluation because they were represented by other variables (e.g., TDS concentration was increasing but was considered to be included indirectly as chloride, nitrate, sulphate, and potassium).”[217]

These results indicate that discharge of effluent from the diamond operations to Lac de Gras are the likely source of increasing trends in major ions.

Comparison of water quality data to guidelines showed that only 1-15% of measured values exceeded the relevant guidelines and did not suggest significant ecological issues. Many of the exceedances were for total metals and deemed to be the result of seasonal variability associated with high suspended solids.

[216] (Dominion Diamonds Mines, 2018)
[217] (ERM, 2016a)

Stantec identified decreasing trends in turbidity at the Lac de Gras outlet and the Point Lake outlet, which indicated a reduction in particulates over time, though the reasons for this were unclear.

No consistent significant trends were identified in annual mean or median flow, nor in seasonal extremes (minimum or maximum flows); however, a significant increase in freshet flow was observed in Fairy Lake River near the outlet of Napaktulik Lake, in June flow at the Yamba River, and in baseflow and September flow on the Coppermine River below Desteffany, which the authors attributed to a potential alteration in the seasonal timing of the hydrological cycle within the Coppermine watershed.

Sanderson et al. (2012)

Sanderson et al.[218] was prepared by Aboriginal Affairs and Northern Development Canada (AANDC) to:

- Provide a general overview of the current state of water quality, suspended sediment quality and flows in the transboundary reach of the Slave River; and.
- Determine if water quality and flows had changed over time.

Water and suspended sediment quality data for this report were obtained from three long-term sampling sites located on the transboundary reach of the Slave River:

- The Slave River at Fort Smith (mid-river) Water and Suspended Sediment Monitoring Program led by AANDC Water Resources Division;
- The Slave River at Fort Smith (shore) Water Quality Monitoring Program led by the AANDC Fort Smith District office; and,
- The Slave River at Fitzgerald Water Quality Monitoring Program led by Environment Canada.

Statistical models were fit to best describe the variability in each parameter with explanatory variables including flow, time, and season.

At the Fitzgerald sampling station, Sanderson et al. noted a significant annual decrease in TDSs, and a significant annual increase in sulphate in non-flow adjusted data. Several additional trends were noted in seasonal data:

- long-term increases in sodium (spring and summer) and dissolved phosphorus (spring and winter); and,
- significant decreases in dissolved potassium (spring), and total chromium (summer) and molybdenum (spring).

When the data were adjusted for flow, dissolved sulphate and dissolved sodium continued to exhibit increasing annual trends and TDSs continued to show decreasing trends. It was determined that further work was required to determine the significance, if any, of these trends and that dissolved metals be the focus of future trend analysis.

Decreasing trends in flow during the summer and fall were identified, as well as an increasing trend in winter flow based on seasons delineated according to annual hydrographs rather than fixed calendar dates. Additional study was recommended to parse the effects of upstream regulation at the Bennett Dam on the Peace River from potential long-term changes in climate.

[218] (Sanderson, Czarnecki, & Faria, 2012)

The authors did not attempt to interpret the ecological significance of any trends. Our review of the results did not indicate that the environmental trends in water quality detected have

- contributed to a nutrient enrichment response;
- potential for toxicity; or,
- potential for any other consequences.

Environ EC - Hay River (2012)

An assessment of trends in hydrology, water quality, and suspended sediment quality of the Hay River was performed by Environ EC in 2012. Trends were assessed using regression analysis for simple temporal trends in the entire dataset by location, and ANCOVA was used to assess trends by flow season/location. Two sites on the Hay River were assessed: one near the border between Alberta and the NWT, and one at the West Channel Bridge in the Town of Hay River.

A significant increasing trend was identified in pH at both sites and significant decreasing trends were identified in numerous physical parameters and major ions including alkalinity, dissolved calcium, hardness, magnesium, dissolved sulphate, and conductivity at the Alberta-NWT site and total potassium at the West Channel Bridge site. Significant decreasing trends were recorded for Total Kjeldahl nitrogen and total nickel and increasing trends for nitrate + nitrite, total phosphorus, dissolved arsenic and total vanadium and dissolved metals (dissolved arsenic, total nickel and total vanadium).

Although individually significant trends were reported for specific sites and parameters, Environ EC concluded that there were no consistent long-term temporal trends in the target surface water monitoring parameters over the monitoring period.[219,220] Where trends were detected, causation was not discussed as a part of this report.

No long-term assessment of trends in flow were performed during this study.

Tetra Tech (2017)

Tetra Tech Canada Inc. assessed the current status and trends in the tributaries to Great Slave Lake by assessing seasonal variability and temporal trends.[221] Tetra Tech Canada evaluated data from 17 sites in the GSL watershed; eight sites in six watersheds were relevant to this audit:

- Lockhart
    - Lockhart River at mouth
- Great Slave Lake - Christie Bay - North Shore
    - Great Slave Lake at Taltheilei Narrows
- Great Slave Lake - North Arm - East Shore
    - Yellowknife River
    - Cameron River
- Hay

[219] (Environ EC (Canada), Inc., 2012)
[220] The report is not clear on what the target parameters were. It states “The water quality parameters were segregated into target and non-target parameters by media. For target parameters, the assessment included the calculation of summary statistics and comparisons to relevant guidelines. The target parameters were also subject to trend analysis and additional analyses (e.g., correlation analysis).” We conclude that any parameter reported was a target parameter. The bulk of the non-target parameters were organic chemicals.
[221] (Tetra Tech, 2017)

    - Hay River at Western Channel Bridge in Hay River
- Slave
    - Slave River at Fort Smith
    - Slave River at mouth
- Marian
    - Marian River

Tetra Tech Canada used the non-parametric Mann Kendall analysis to test for significant temporal trends in water quality parameters at a defined significance level of 0.05. Significant trends were identified in all six watersheds under investigation; however, issues with the analysis methodology prevent some of the trend analyses from being useful. We review the analysis issues before reviewing the significant trends identified below.

Data Issues

During our Audit of the Tetra Tech Canada report on the tributaries of Great Slave Lake, we identified several data and analysis methodology issues that limit the usefulness of those analyses.

Total nitrogen trend analyses were performed on only two years of data, which, given the inter-annual variability in water quality data, does not produce meaningful results.

The total phosphorus data that were analyzed for significant trends appear to have multiple detection limits and the analysis did not consider this. Specifically, the period between 2005 and 2011 in the Cameron River watershed and prior to 1987 in the Lockhart watershed had higher detection limits than the rest of the dataset. Variable detection limits can result in false detection of trends where no real trends exist and therefore make interpretation of these data difficult.

The Tetra Tech Canada report also analyzed a suite of metals parameters for temporal trends, however there are serious methodological issues apparent when reviewing these data centred around the detection limits. Total aluminum data in the Cameron River watershed had a much higher detection limit for most of the period of record prior to 2005,[222] which is likely largely responsible for the significant decreasing trend reported. Furthermore, trend analyses in the Hay watershed for total aluminum were performed on one or two years of data, which is not sufficient for long-term trend analysis.

Several other metals were impacted by serious detection limit issues including arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and zinc. All these parameters have multiple detection limits that decreased over the course of the monitoring record and also have highly censored datasets with 30-100% of values falling below the detection limit. A long-term trend analyses should not likely have been performed on these parameters or included in the summary of trends presented in the report.

For the reasons described above we have not considered the parameters discussed in the review of trends from the Tetra Tech Canada report in Section 1.3.2.5.2. These errors in interpretation speak to a need for better review and quality control of reports generated for the GNWT by outside parties in order to prevent dissemination of misleading information.

[222] Figure B.12a in Tetra Tech (2017)

Trend analyses

Several long-term trends in water quality were identified across multiple watersheds in the Tetra Tech Canada report. Watersheds along the Northeastern shore of Great Slave Lake (i.e., Lockhart, Great Slave Lake - Christie Bay - North Shore, Great Slave Lake - North Arm - East Shore) showed increases in conductivity and hardness.

Regionally inconsistent trends were found in chloride, with significant increases in the Yellowknife and Cameron River watersheds and significant decreases in the Hay and Slave watersheds. Significant increases in sulphate, nitrate-nitrite, and TDSs were also noted in the Hay and Slave watersheds.

Tetra Tech Canada summarized significant long-term water quality trends for analytes of interest, however conclusions and recommendations based on these analyses were limited to a description of the trend analyses, and no determinations of causation or ecological significance were incorporated as a part of the report.

Long-term assessment of flow was performed using Mann Kendall Trend tests. Significant trends were described for multiple watersheds relevant to this audit:

- Downward trends over the past decade were described for the Cameron River below Reid Lake (Great Slave Lake – North Arm – East Shore) for:
    - Mean Flow
    - Median Flow
    - Annual Max Flow
    - Annual Min flow
    - Seasonal Flows (Spring Freshet, Summer Recession and Winter Base Flow)
    - Monthly Median Flow (All months)
- Significant upwards trends were described in winter flows (Nov-Apr) and a slight downward trend in summer (July) flows in the Hay River
- Significant downward trends were apparent in monthly flows from December - July in the Lockhart River
- Significant increasing trends were identified in winter flows and decreasing trends in summer flows of the Slave River
- Significant downwards trends in monthly flow from October to July in the Yellowknife River

Table AX-9. Summary of significant trends in the Tetra Tech 2017 trend report

Watershed	Increasing Trends	Decreasing Trends
Lockhart	• Conductivity • Hardness • pH	• December – July monthly flows
Great Slave Lake - Christie Bay - North Shore	• Alkalinity • Conductivity • pH	• Total dissolved solids • Total iron

Watershed	Increasing Trends	Decreasing Trends
Great Slave Lake - North Arm - East Shore	Yellowknife River: ● Alkalinity ● Chloride ● Conductivity ● Hardness ● Sulphate ● Total dissolved solids ● Nitrate-Nitrite ● Total strontium Cameron River: ● Alkalinity ● Chloride ● Conductivity ● Hardness ● Sulphate ● Total dissolved solids ● Nitrate-Nitrite	Yellowknife River: ● Monthly flow October - July Cameron River: ● hydrological parameters
Hay	● pH ● Winter flows	● Chloride ● Summer flows
Marian	● Nitrate-Nitrite	
Slave	at Fort Smith: ● Hardness ● pH ● Sulphate ● Nitrate-Nitrite ● Total strontium ● Winter flows At Mouth: ● Hardness ● pH ● Sulphate ● Winter flows	Fort Smith: ● Chloride ● Summer flows

Stantec (2012) – Peel River

Stantec was retained by the GNWT to undertake an evaluation of the status and trends of water chemistry and flow in the Peel River.[223] Hydrometric and water chemistry monitoring data was from a long-term monitoring station “Peel River above Fort McPherson.”

Stantec noted significant positive trends over the period of record for calcium, magnesium, and sulphate, and significant decreasing trends in total lithium.

Significant increasing trends were identified in minimum daily flow, baseflow, and monthly flows (Jan, Feb, Mar, Apr, Oct, Nov, Dec) as well as significant decreasing monthly flows in June. No trends in annual mean flow or total annual flow were noted over the period of record and the authors concluded that the total volume of water flowing within the Peel River above Fort McPherson has remained the same for 40 years and that the hydrological cycle has remained unchanged over the period of record.

[223] (Stantec, 2012)