

# Annual Summary Report

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### KIVALLIQ HYDRO-FIBRE LINK

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June 2024 | ᐱᓄᓐᓂᓐ 2024



## CONTENTS / ᐃᓂᓕᗃᓯᓐ

1. MESSAGE FROM THE PRESIDENT . . . . .	2
2. MESSAGE FROM THE CEO . . . . .	4
3. ACKNOWLEDGEMENTS . . . . .	6
4. PROJECT OVERVIEW . . . . .	8
5. PROJECT BENEFITS . . . . .	12
6. PROJECT DEVELOPMENT PROCESS AND TIMELINE . . . . .	13
7. ACCOMPLISHMENTS FROM 2023/2024 . . . . .	15
8. ABOUT THIS REPORT . . . . .	17
9. ENGAGEMENT . . . . .	18
9.1 FRAMEWORK FOR ENGAGEMENT . . . . .	18
9.2 CURRENTLY ENGAGED COMMUNITIES AND ORGANIZATIONS . . . . .	19
9.3 PROPOSED ENGAGEMENT TIMELINE . . . . .	21
10. BASELINE DATA COLLECTION APPROACH . . . . .	26
10.1 PERMITTING . . . . .	26

Front cover image: Inukshuk, Chesterfield Inlet, 2023





<b>11. BASELINE DATA COLLECTION PROGRAMS . . . . .</b>	<b>28</b>
11.1 WILDLIFE. . . . .	28
11.2 GEOMORPHOLOGY AND PERMAFROST . . . . .	33
11.3 AQUATIC ENVIRONMENT. . . . .	34
11.4 ARCHAEOLOGY . . . . .	35
11.5 SOCIO-ECONOMIC . . . . .	35
11.6 INUIT QAUJIMAJATUQANGIT/INDIGENOUS KNOWLEDGE . . . . .	36
<b>12. PROJECT NEXT STEPS . . . . .</b>	<b>37</b>
<b>LIST OF APPENDICES / ᐱᐱᓕᓕᓕᓕᓕᓕ ᐱᐱᓕᓕᓕᓕᓕ ᐃᓕᓕᓕᓕᓕᓕ</b>	
Appendix A: Data Collection Teams . . . . .	38

Image below: Photo of Rankin Inlet, Nunavut, 2023



On behalf of Nukik Corporation's (Nukik) Board of Directors, we are pleased to share our Annual Summary Report that highlights the significant work by our project team and partners over the past year.

Nukik is a 100% Inuit-owned corporation overseeing the development of the Kivalliq Hydro-Fibre Link (KHFL), a national infrastructure project that will be Nunavut's first infrastructure link to southern Canada. Engagement with communities, fieldwork, and studies have been underway for many years to advance the planning of this project. Our objective is to provide communities in the Kivalliq region of Nunavut with baseload, renewable power, and fibre-optic internet capacity for generations to come, while providing lasting benefits to communities.

Nukik is owned by the Kivalliq Inuit Association (KIA) and Sakku Investments Corporation (Sakku). Nukik would like to

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**David Kakuktinniq**  
President, Nukik Corporation

Caribou, Nunavut, 2023

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Inuksuk, Chesterfield Inlet, 2023













A wide-angle photograph of an archaeological field site in a coastal landscape. Two workers in dark clothing and hard hats are kneeling on the ground, working on excavation pits. The ground is sandy and covered with low-lying vegetation, including patches of red and yellow plants. Several bright red flags are planted in the ground to mark specific locations. In the background, a body of water is visible under a cloudy sky. The text "Archaeology fieldwork, InterGroup, Manitoba, 2022" is overlaid in the top left corner.

Nukik also acknowledges Town of Churchill Mayor Mike Spence, the late Arviat Mayor Bob Leonard, and many others who championed the vision for the project over the last number of decades.

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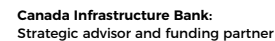
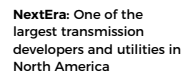
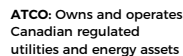
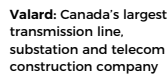
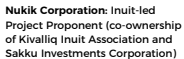






In early 2022, Nukik completed an initial business case and started working with federal government officials to seek a partnership to support the project. Nukik maintains a development partnership agreement with the Canada Infrastructure Bank (CIB) who serves as an advisor and supporter of the project. Nukik is also working in partnership through a Memorandum of Understanding (MOU) with NextEra Energy, ATCO, and Valard Construction as development partners to bring expertise and technical capabilities to the project.

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## 10 | Kivalliq Hydro-Fibre Link

## Overview Map

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- The project will bring cost-effective baseload energy into the Kivalliq region, helping to stabilize energy costs in the region.
- The KHFL will grid-connect Nunavut for the very first time, paving the way for two-way electricity trades in the future, unlocking Arctic renewable resources and helping Canada meet its 2050 net zero emissions economywide target.
- The Project can bring benefits through agreements to communities within northern Manitoba and the Kivalliq.
- KHFL will create good paying jobs for Inuit and Manitoba Indigenous communities during the development and operation of the line.

## 6. PROJECT DEVELOPMENT PROCESS AND TIMELINE

The work at each stage of development will support capacity building, add jobs for Nunavummiut and Northern Manitobans, and allow for the collection of baseline data that is important for many regional priorities including wildlife, heritage, terrain, and aquatics information.

### Pre-Development (2018 – 2021)

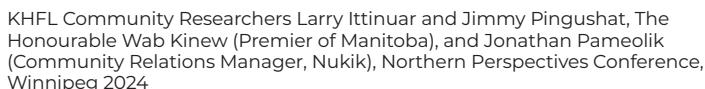
- The project initiated early engagement with local communities and organizations, conducted preliminary baseline research in Nunavut and northern Manitoba, started preliminary engineering design work and held meetings with Government and utility stakeholders.

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## 9. ENGAGEMENT

As the project looks to advance to the environmental assessment and regulatory approvals process, early community engagement activities have been structured to share information with communities and stakeholders and provide opportunities for the project to receive, consider, and integrate feedback into the project development and assessment process. The project team continues to work towards strengthening relationships and building awareness with communities and community organizations within the project development corridor in the Kivalliq region and northern Manitoba.

The information received through engagement activities will be used to support:

- Refinement of the project route;
- Development of fundamental elements of the physical, biological, or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds, and how people use the land and how that use may be affected by the project;
- Processes to consider these important elements and identify potential impacts; and
- Development of appropriate and effective mitigation and monitoring measures.

Consideration of community interests and concerns relative to the project's potential construction and operation remains a priority of the project team. To support this, engagement activities aim to:

- Ensure project updates are being shared with communities/stakeholders;
- Use formats that work best for each community and stakeholders;

- Understand what information, materials, and resources would be most helpful to support continued dialogue; and
- Continue to allow Nukik to work alongside communities for project field studies.



**“As an Inuit-led organization, it's great to see that the Nukik Corporation is listening to concerns and ideas from the people in the Kivalliq region and incorporating what they learn from who the corporation will serve.”**

Jonathan Pameolik, Community Relations Manager, Nukik Corporation, 2023

### 9.1 FRAMEWORK FOR ENGAGEMENT

Engagement activities are led by Nukik and are supported by Sakku and KIA leadership. These activities are supported by InterGroup Consultants and Chadwick Consulting, to support facilitated discussions, and track all engagement efforts and outcomes.

Early engagement activities include sharing information about the project through a variety of methods including phone, e-mail, letters, social media, videos, meetings, and community presentations. Feedback from communities on the effectiveness of these methods continues to refine the best way of sharing and receiving information. Other areas where these perspectives are valuable include how to effectively incorporate Indigenous Knowledge (IK) and Inuit Qaujimajatuqangit (IQ) in baseline research fieldwork.



KHFL engagement tour, Whale Cove, Nunavut 2023



## 9.2 CURRENTLY ENGAGED COMMUNITIES AND ORGANIZATIONS

Table 1 provides a list of the communities adjacent to, and organizations with interests located within the project development corridor in Nunavut and Manitoba, with which Nukik has engaged in discussions about the project. This includes Indigenous communities, non-Indigenous communities, umbrella organizations representing multiple communities, territorial and provincial interests, non-government organizations, and other potentially interested parties (e.g., those with land tenure).

Early engagement activities are focused on those most likely to experience direct project-related effects, in addition to having specific issues, interests, and concerns related to the project and its activities. In Nunavut, this includes consideration of five of the Kivalliq communities that would connect to the line (i.e., Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet, and Baker Lake). In Manitoba, this includes consideration of Fox Lake Cree Nation, Tataskweyak Cree Nation, Ghotelnene K'odtineh Dene (GKD – Sayisi Dene First Nation and Northlands Denesuline First Nation), and the Manitoba Métis Federation.

### Table 1: Currently Engaged Stakeholders

NUNAVUT	FEDERAL – TRANSBORDER	MANITOBA
Hamlet of Arviat	Athabasca Denesuline Ne Ne Land Corporation	Fox Lake Cree Nation
Hamlet of Whale Cove	Beverly and Qamanirjuaq Caribou Management Board	Ghotelnene K'odtineh Dene (Sayisi Dene First Nation/Northlands Denesuline First Nation)
Hamlet of Rankin Inlet	Northern Projects Management Office	Tataskweyak Cree Nation
Hamlet of Baker Lake	Impact Assessment Agency	Manitoba Métis Federation
Kivalliq Inuit Association	Canadian Northern Economic Development Agency	Town of Churchill
Kivalliq Inuit Association Lands Department	Government of Canada	Town of Gillam
Agnico Eagle Mines	Inuit Tapiriit Kanatami (ITK)	Government of Manitoba
Government of Nunavut		Manitoba Hydro
Qulliq Energy Corporation		Resource Management Boards
Hunters and Trappers Organizations		Seal River Watershed Initiative
Nunavut Tunngavik Inc.		
Kivalliq Wildlife Board		

# Project Timeline

Opportunities to get information, provide feedback, and participate in the planning process:





### 9.3 PROPOSED ENGAGEMENT TIMELINE

The overall engagement timeline is described in the Project Timeline graphic and is based on the project team's current understanding of the environmental assessment and regulatory approvals process. Nukik will regularly review the draft timeline and the effectiveness of the engagement program, and necessary adjustments to the approach, method, and materials, will be made where required to reflect community and stakeholder interests and project schedule.

### 9.3.1 Community Engagement Update

Engagement described in this section includes events occurring in late 2022 and 2023. Details from late 2022 sessions were not captured in last years Annual Summary Report and are valuable to include here.

In both Nunavut and Manitoba, the 2022 and 2023 community engagement activities built on the foundation provided by early project-related engagement efforts in 2019 and 2020. In 2019, engagement activities focused on sharing project details and planning processes at the political and leadership level. In 2020 engagement activities expanded beyond the leadership to include resource management boards and other community or regional-based organizations. In 2022 and 2023, engagement activities broadened working relationships beyond the leadership and relevant organizations and adopted a community-by-community approach, whereby workshop sessions with the leadership, relevant organizations, and community members were conducted in a holistic

multistakeholder approach. The rationale for this level of engagement is:

- Engagement activities build and strengthen established relationships;
- Sharing project description components supports a better understanding of what is important to communities and interested parties;
- Providing meaningful opportunities for community members to discuss areas of concern, articulate their understanding of the implications of the project, and make mitigation recommendations will result in a better project for everyone;
- Effective engagement activities will help reduce the number of adverse impacts and contribute to greater regulatory certainty; and
- Information received throughout the engagement process will help identify areas of environment that are important to participants, or Valued Components (VCs), within the impact assessment process.

At the beginning of engagement sessions, Nukik shared information about the project's purpose, objectives, design, routing, and progress made to date. The presentation was followed by a discussion, where Nukik received questions and provided responses. Meeting participants shared perspectives about possible areas of interest or concern related to the project. Interpreters were provided where needed. Detailed notes were taken during all meetings to ensure questions and responses were recorded.



KHFL engagement tour, Chesterfield Inlet, Nunavut, 2023

9.3.2 Nunavut

The 2023 engagement focused on five of the communities in the Kivalliq region that would connect to the KHFL. These are Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet, and Baker Lake. Three in-person meetings for leadership, Hunters and Trappers Organizations (HTOs), and the community were planned in each of the communities in the early spring of 2023. In most of the communities, leadership engagement took place in the hamlet office, while HTO meetings took place in the HTO office or jointly with the leadership meeting. The local community hall was the venue for all community meetings. Table 2 shows an overview of the engagement summary in each community.

Leadership and HTO engagement sessions were generally structured to include a presentation by Nukik followed by discussion and questions. Community sessions were more free-flowing. The Nukik team would present project description information followed by an informal mix and mingle where participants had the opportunity to ask questions to the project team, fill out a hard copy or digital project comment sheet, and select areas of priority using an interactive poster. The interactive poster contained 15 potential areas of interest or concern related to the project from which participants were asked to identify what they felt were the four most important topics in a dotmocracy exercise, see Important Values graphic. Raffle draws were provided as part of the incentive for public attendance. An interpreter was present during the community engagement session. Detailed notes were taken during the workshop sessions.

Table 2: Summary of Nunavut Engagement

COMMUNITY	PARTICIPANTS	DATE	NUMBER OF PARTICIPANTS
Hamlet of Arviat	Mayor & Hamlet Council	February 20	8
	Hunters and Trappers Association	March 20	5
	Public	March 27	62
Hamlet of Whale Cove (Tikiraqjuaq)	Mayor & Hamlet Council and Hunters and Trappers Association <sup>1</sup>	March 30	21
Hamlet of Rankin Inlet (Kangiqtiniq)	Mayor & Hamlet Council	February 28	6
	Hunters and Trappers Association	February 27	5
	Public	February 28	13
Hamlet of Chesterfield Inlet (Igluligaarjuk)	Mayor & Hamlet Council and Hunters and Trappers Association <sup>1</sup>	February 23	5
	Public	February 23	9
Hamlet of Baker Lake (Qamani'tuaq)	Mayor & Hamlet Council	March 28	6
	Hunters and Trappers Association	March 29	3
	Public	March 29	44
Total			187

<sup>1</sup> Joint Mayor and Council and HTO meetings were held in Whale Cove and Chesterfield Inlet. Community session was not held in Whale Cove due to a Women's Mental Health Dinner taking priority for the community hall.



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When thinking about KHFL, what considerations are most important to you and your community?

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The workshop and dotmocracy exercise generated important feedback on areas of interest and recommendations including the following:

- Kivallirmiut areas of interest relative to the KHFL include impacts to wildlife and wildlife habitat, employment and training, and traditional land-based activities such as hunting, fishing, trapping, and sewing;
- Some of the benefits expected from KHFL include employment and training, high speed internet, access to hydroelectricity, opportunities for better navigation and safety on the land;
- Community members want more information about the potential impacts of the project on cultural landscape and wildlife, fuel, energy, and internet pricing and rates, integration with existing energy infrastructure, project financing, and the status of the Government of Nunavut's research on an inter-community road network; and
- Communities requested continuous engagement to

position them to participate effectively in all the phases of the project.

9.3.3 Manitoba

Engagement activities in Manitoba occurred with Fox Lake Cree Nation in Bird, Fox Lake Cree Nation in Gillam, Tataskweyak Cree Nation in Split Lake in November of 2022, and Ghotelnene K'odtineh Dene in Tadoule Lake in March of 2023. A single meeting occurred in each community. Participation in each community varied based on several factors, in particular the availability of the Chief and Council, Resource Management Board members, Elders, and other members of the community, as well as the community members' pre-existing awareness of, and interest in, the project. A summary of participants is shown in Table 3.

Each engagement session followed a similar format which included presenting current project description information followed by an interactive session where participants articulated their thoughts, questions,

Table 3: Summary of Manitoba Engagement

COMMUNITY	PARTICIPANTS	DATES	NUMBER OF PARTICIPANTS
Fox Lake Cree Nation, Bird	Leadership	November 15	6
	RMB		1
	Students		2
Fox Lake Cree Nation, Gillam	Leadership	November 15	2
	Community members		12
Tataskweyak Cree Nation, Split Lake	Leadership	November 16	13
	Elder		1
	Students		12
	Community member		1
Ghotelnene K’odtineh Dene, Tadoule Lake and Lac Brochet	Leadership	March 23	7
	Elder		1
Total			58



The engagement sessions generated important feedback on areas of interest and recommendation including the following:

- Northern Manitoba areas of interest relative to the KHFL include impacts to traditional land-based activities, employment and training opportunities, and sustainability of community culture;
- Some of the benefits expected from KHFL include employment and training opportunities, business opportunities for local companies, and benefit agreements;
- Community members wanted more information about the route, potential project impact, project development, energy pricing, and project financing; and
- Communities requested continuous engagement to position them to participate effectively in all the phases of the project.

In the spring of 2024, Nukik plans to visit all communities to share updated project information, provide feedback to previously asked questions and comments, discuss the next steps, and explain how community comments are making material changes to project development.

**Share information about the project:** Continue to share information about the project, emphasising that the KHFL is an Inuit-led, national infrastructure project that will be Nunavut's first link to southern Canada. The project will provide enough renewable power and fibre-optic internet capacity for the Kivalliq region for generations to come.

**Clarify distinction from the Inter-Community Kivalliq Road Project:** It is important to communicate that the early planning work by the Government of Nunavut on studying connecting Kivalliq communities with a potential road is fully separate from the KHFL, and that Nukik is not

**Provide a Progress Update:** The team intends to share the progress made to date and the next steps in engagement planning and project development.

**Project Design:** Nukik will also share how engagement feedback is influencing the project, including:

- Development of more frequent engagement opportunities for community members to participate in all phases of the project;
- Continued integration of IK and IQ into environmental and socio-economic impact assessment;
- Selecting a project route that will have the least impact to wildlife, the environment, and people; and
- Development of appropriate and effective mitigation and monitoring measures.



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## 10. BASELINE DATA COLLECTION APPROACH

Baseline data collection in environmental assessment and licensing that aims to establish the initial state of environmental conditions before a project begins, providing a reference point for measuring changes. It identifies environmentally sensitive areas, evaluates potential impacts, and informs decision-making processes for project approval and mitigation planning. This data ensures compliance with regulations, facilitates stakeholder engagement, and aids in designing effective strategies to minimize adverse effects on the environment. Ultimately, it supports sustainable development by promoting informed decision-making and responsible environmental management.

Between April 2023 and March 2024, Nukik engaged in baseline data collection to support our understanding of the existing conditions within, and in proximity to the proposed project area. Our approach to baseline data collection employs a mix of qualitative and quantitative methods. Quantitative approaches include sampling techniques, field measurements, remote sensing, and surveys, providing numerical data on environmental parameters. Qualitative methods involve interviews, focus groups, participant observation, and document analysis to gather insights into stakeholder perspectives and environmental dynamics. Mixed methods, such as

triangulation and integrated analysis, are employed to enhance data validity and comprehensiveness, ensuring a robust foundation for environmental assessments. This multifaceted methodology ensures a holistic understanding of stakeholder perspectives and environmental dynamics.

Central to our data collection efforts are ethical considerations, including obtaining informed consent, upholding confidentiality, minimizing harm, respecting Indigenous knowledge, and ensuring equitable participation. To demonstrate this commitment, community members were invited to participate in all the fieldwork activities that occurred during the 2023-2024 fiscal year.

### 10.1 PERMITTING

Fieldwork was undertaken in a manner consistent with provincial, territorial, and federal regulatory requirements and expectations. This includes securing various research permits from Manitoba, Nunavut, and Canada. A permit summary table has been included below to describe the permitting agency, jurisdiction, permit sought, and execution date of permits currently in place for the KHFL and its feasibility work (Table 4).



KHFL engagement tour, Baker Lake, Nunavut, 2023

### Table 4: Permit Summary Table

Agency	Jurisdiction	Permit	Status
Nunavut			
Nunavut Planning Commission (NPC)	Responsible for the development, implementation, and monitoring of land use plans that guide and direct resource use and development in the Nunavut Settlement Area		Approved conformity May 7, 2021. Renewed with updated expiration April 2028
Nunavut Impact Review Board (NIRB)	Assesses the potential impacts of proposed development in the Nunavut Settlement Area prior to approval of the required project authorizations		Recommended Ministerial acceptance July 22, 2021. Exempt from renewal screening through NPC renewal
CIRNAC Land Administration	Activity on Crown Land	Land Use Permit	Deemed not required for baseline activities – July 26, 2021
Government of Nunavut (GN) – Culture and Heritage	Archaeological research	Class 2 Archaeologist permit	New permit secured annually
Canadian Wildlife Services	Migratory Birds	Migratory Bird Scientific Permit	Executed June 7, 2022 Renewed January 2024 Expires December 31, 2026
Department of Fisheries and Oceans Canada (DFO)	Fish and Aquatics	License to Fish for Scientific Purposes, and Animal Use Protocol (AUP)	Renewed when required
KIA Lands	Activity/Access to Inuit Owned Lands (IOL)		Certificate of Exemption, August 23, 2021 Renewed December 4, 2023 Expires December 31, 2025
Nunavut Research Institute (NRI)	Licenses issued for physical natural sciences research and/or social science research (IQ, community consultations)	Scientific Research License	Executed August 4, 2021 Renewed December 31, 2023 Expires December 31, 2024
Government of Nunavut – Department of Environment (DOE)	Wildlife research permit for aerial, other surveys, and monitoring (non-lethal)	Wildlife Research Permit	Expires December 31, 2026
Nunavut Water Board (NWB)	Water use and waste		Deemed not required for baseline activities – July 26, 2021
Manitoba			
Crown Land Work Permit	Access to Crown Lands	Fox Lake RMA Split Lake RMA Dene RMA	Expires April 30, 2026
MB Sport, Culture, and Heritage	Archaeological research	Heritage Permit	New permit secured annually
Wildlife Management Area (WMA)	Activities within WMA	Churchill Wildlife Management Area	Issued February 27, 2024 Expires March 31, 2025
Fish and Wildlife Branch	Ensure sustainable use of the fisheries resource	Scientific Collection (General) Permit	Renewed annually when required



## 11. BASELINE DATA COLLECTION PROGRAMS

### 11.1 WILDLIFE

#### 11.1.1 Field Program

During November to December 2023, a wildlife survey team conducted trail camera data collection and maintenance activities and recorded incidental wildlife observations by helicopter along the entire KHFL proposed corridor extending from northern Manitoba into Nunavut. Local community members provided support and on-the-ground safety during the field activities, while supporting the work with local knowledge.

Trail camera work and various wildlife surveys have been conducted annually for the project since 2020. These field activities are part of the overall objectives of baseline wildlife monitoring and data analyses to provide the project team with information to assist in the initial stages of project route planning, identifying potential constraints and opportunities for routing. Wildlife data analyses also contribute to community engagement processes, and early work towards an environmental assessment and regulatory process. Wildlife and other species groups

studied to date include barren-ground and coastal caribou, moose, polar and grizzly bear, furbearers, birds, and other wildlife and vegetation considerations.

The team collected data and performed maintenance on all 45 trail cameras previously deployed along the proposed corridor, except for one trail camera that had gone missing. Challenges encountered this year included needing to remove a thick buildup of ice (i.e. de-icing) from each camera due to inclement weather that occurred prior to the team's arrival.

Each trail camera was set up to take three consecutive photos of the same event, resulting in hundreds of photos in a series captured on the same day. Coding standards were used to account for all the photos captured in a series by coding new events instead of individual photos, identifying all wildlife groups in the event, and mapping areas of heavy and light use by season for all species, but specifically for caribou during spring calving, post-calving, summer, fall migration, and winter seasons. All non-wildlife photos, including staff/setup interactions, were filtered from the data. Photos were coded for each new event



Bear guard from Rankin Inlet assisting the Joro team with trail camera maintenance, Nunavut, 2023.



Example of frozen trail cameras, necessitating the need for mid winter maintenance.

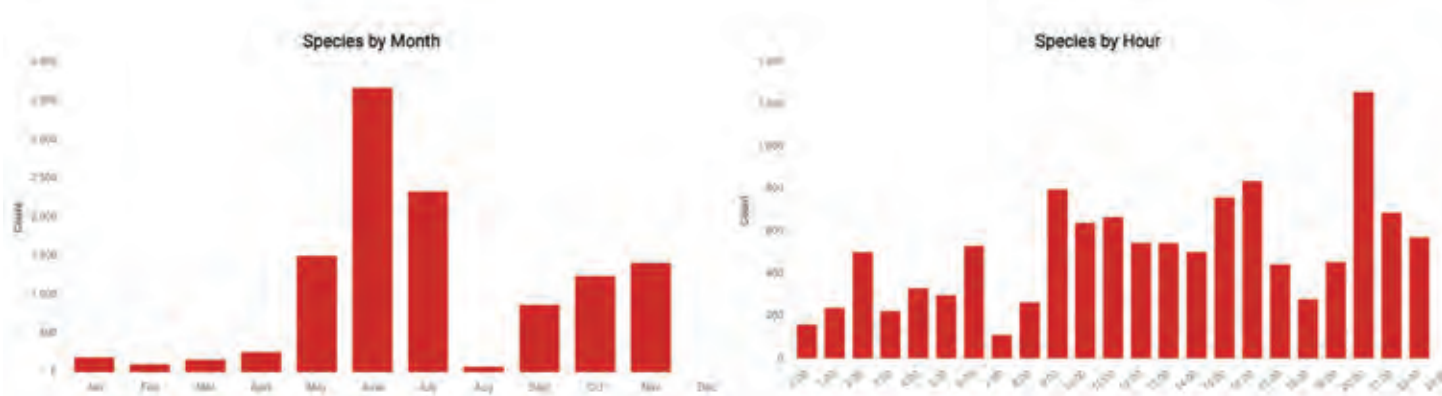
and include information associated with the entire event, species, number of females, males, or unknown sexes, number of offspring, action, and direction of travel.

### 11.1.2 Findings

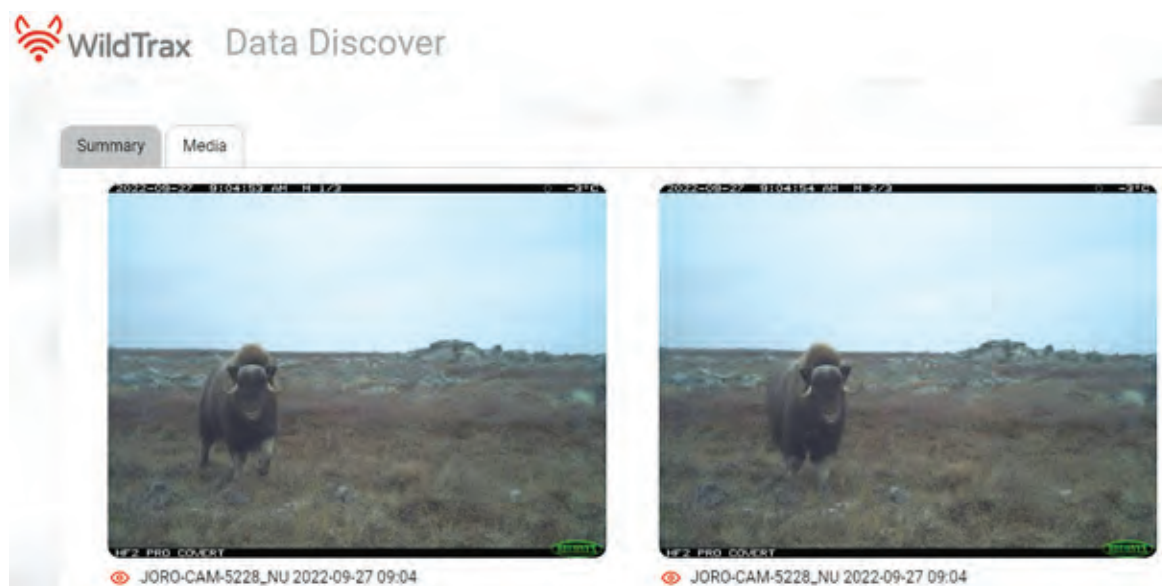
Analyses, mapping, and reporting for the trail camera data are currently being completed and are being updated using WildTrax software developed by the University of Alberta to facilitate and provide both the study team and community organizations better access to the data and

preliminary findings. Final analysis of current trail camera data is being conducted and will be provided in a separate report and included in subsequent Summary Reports. Preliminary review of the coded data shows barren-ground caribou are the most common species captured. Other species captured include Canada goose, snow goose, black bear, polar bear, moose, muskox, gray wolf, arctic fox, red fox, sandhill crane, wolverine, and a variety of other bird species.

Summary of caribou observations by month and time of day derived from preliminary screening of trail camera data collected in 2023.



Example of muskox coded trail camera images included in the trail camera data analysis report.

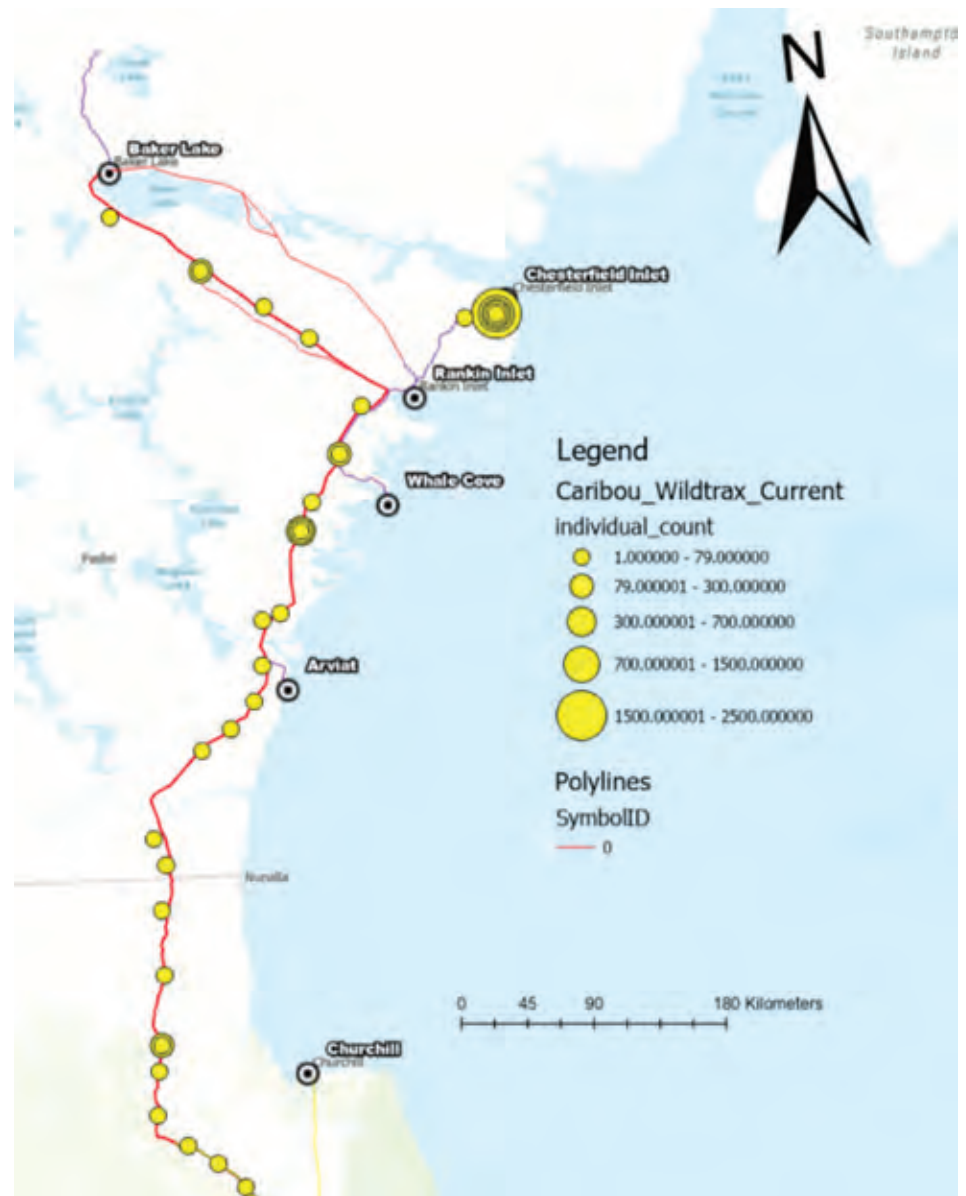


### 11.1.3 Next Steps

Trail camera maintenance activities will be conducted by local ground-based crews (i.e. snowmobile teams) along the KHFL in February/March 2024 to check the status of battery strength and secure digital (SD) memory card space for a few cameras located closest to the Rankin Inlet community. Replacement of trail camera batteries and SD cards along the entire corridor will also be completed in late August/Sept 2024 by helicopter to complete annual maintenance work. During this time, three new trail cameras will be installed to replace existing trail cameras that are showing some wildlife damage and one that went missing in 2023. Five additional cameras will be installed along the proposed route alternative from Rankin Inlet to North of Baker Lake. A total of eight new trail cameras will be installed.

Trail camera de-icing activities will potentially be conducted along the entire corridor in December 2024 by helicopter and/or by ground-based crews to inspect cameras for, and remove, any ice buildup as encountered in 2023 due to inclement weather. Ongoing maintenance and retrieval of trail camera data SD cards will be conducted both by local ground community crews and helicopter teams. Data will continually be updated into WildTrax for analysis and sharing with project partners.

Polar bear den emergence surveys by helicopter were underway in March 2024 to acquire additional information on polar bear presence and denning locations along the KHFL. This is a follow up survey to one conducted in February/March 2023. The survey will be expanded to encompass additional areas of the proposed corridor in



Example of caribou hotspot locations from trail camera data included in the trail camera data analysis report.

Nunavut, north from Arviat to Rankin and into Chesterfield Inlet and south of Churchill. There is potential to acquire polar bear telemetry data that would augment the assessment of potential effects of the route.

Bird fieldwork activities planned by helicopter for 2024 include installation of Autonomous Recording Units (ARU's) concurrent with polar bear emergence surveys underway



The team will conduct further detailed barren-ground caribou data analyses by mid-2024 using telemetry data previously acquired from the Nunavut government. Specific tasks will be to:

- Review the proposed Churchill Study Area interconnection alternative relative to caribou, moose, and polar bear.

**KHFL Project Polar Bear Distribution**

Coord Sys: NAD 1983 UTM Zone 14N  
Datum: North American 1983  
Source: NRCan Canvec Series

0 100 200 Kilometers

1:4,000,000

**Ioro Consultants**

[illegible]

# Trail Camera Images





## 11.2 GEOMORPHOLOGY AND PERMAFROST

### 11.2.1 Field Program

In 2023, research focused on completing a detailed report and maps that describe the various landforms and frozen ground conditions along the proposed KHFL corridor. This report represents the culmination of three years of fieldwork and analysis involving different experts. It provides essential information for evaluating potential changes to the route, figuring out where to place transmission towers, and estimating project costs accurately. The report covers work including:

- Mapping different types of surface materials and ground ice conditions along the 1,200 km corridor, as well as the routes that connect each community. This helps identify suitable and less suitable areas for tower placement;
- Pinpointing areas where it's best to avoid placing towers due to risks like small landslides, flooding from rivers, snow accumulation, and thawing permafrost causing ground movement;
- Highlighting how ground temperatures vary across different seasons and latitudes, as well as the geology beneath the surface based on fieldwork surveys; and
- Researching how future climate changes might affect permafrost and ground stability, which is crucial for designing tower foundations that can withstand these changes.

The KHFL corridor mainly follows ancient sandy or gravelly beach ridges in southern Manitoba, as the proposed route heads north into Nunavut it transitions to more varied terrain with low hills of glacial sediments surrounded by marine deposits. Gravelly meltwater landforms are scattered across this area. Over time, streams have reshaped some of these deposits, and materials of natural origin have accumulated on top. Permafrost is close to the surface in most areas, with temperatures ranging from warmer than  $-2^{\circ}\text{C}$  in Manitoba to as cold as  $-7^{\circ}\text{C}$  in Nunavut, with varying amounts of ice content.

Understanding the landscape and permafrost conditions along the KHFL corridor is essential not only for tower placement but also for heritage studies, mapping vegetation and wildlife habitats, and deciding where to conduct further geotechnical investigations.

### 11.2.2 Findings

The detailed mapping and characterization of landforms and frozen ground conditions provided important information for the first phase of a ground study along the KHFL corridor. This study aims to understand how deep the bedrock is, what the soil is like (including how salty it is), the temperatures of the frozen ground, and whether there is ice underground, up to about 15 meters deep, at sites that show different characteristics along the route.

Different ways of collecting information were required to make sure it is both accurate and practical in the region. This included consideration of the pros and cons of using standard methods like sonic drilling compared to lighter equipment such as a Shock Auger drill. Research methods also examined the potential of ground-based electrical imaging to check sites before digging. Finally, new temperature sensor technology was researched to find units with strong and animal-proof outer cases, as well as the ability to send data via satellites for remote monitoring.

### 11.2.3 Next Steps

In 2024, the primary research objective is to finish mapping the different landforms and frozen ground features along several alternative routes being considered. Focus will then move to planning and carrying out the next phase of ground studies. Geomorphology drill work will follow archaeological screening to ensure sites or heritage objects are first fully reviewed. Following that work geophysical surveys will be completed using equipment that can scan up to 100 meters underground, followed by drilling to get soil and frozen ground samples, and installing temperature sensors at key locations. The Geological Survey of Canada will be involved in the sample analysis and help with setting up the temperature sensors.



Geomorphology and Permafrost Fieldwork,  
Palmer, Manitoba, 2023



## 11.3 AQUATIC ENVIRONMENT

### 11.3.1 Field Program

Baseline research has begun on the western Hudson Bay marine environment. Information on marine resources present in the area includes an assessment of potential species of interest and their distribution, seasonality, and migration migratory behaviour. Marine research also took Inuit harvest of a marine species group or individual into consideration. Baseline information is required to identify potential project interactions from an increase in marine shipping during the construction phase of the project and possible monitoring during or post construction. The team is also identifying areas where baseline information could benefit from further research and investigation.

### 11.3.2 Findings

Baseline information on marine resources in western Hudson Bay has been based on current readily available public information. The research identified potential areas of interest and considered whether the collected information is sufficient to understand potential interactions with shipping.

Certain sensitive areas and arctic marine mammal species such as whales, Atlantic walrus, polar bears, seals, and marine associated birds were identified as being vulnerable to ice-breaking activities and vessel transits arising from the proposed project activities. In addition, expectations of associated effects on nearby communities within the project area which rely on marine mammals for food and clothing were analysed. The effects of shipping on various

aquatic mammals and growing concerns among Inuit community members were identified.

Marine shipping activities have the potential to interact with various areas of interest including caribou migration, hunter safety, food security, marine mammal calving areas, costal erosion, marine mammal haul outs, coastal shorelines, marine mammals, fish, cultural sites, marine mammal distribution and behaviour. Specifically, marine fish species (Arctic char, Benthic fish) are identified as important subsistence species, seasonal abundance, and role as a key component in the Arctic food web. Marine mammals (commonly include polar bear, bowhead whale, beluga, seal, and walrus) are often considered important areas of interest in projects with shipping components due to their conservation status and sensitivity to shipping. Potential measures to mitigate negative effects from project-related shipping such as creating “no wake” zones, restricted access during harvesting seasons, and avoidance of key wildlife areas were identified.

Some areas of marine resources such as birds and invertebrates have less publicly available information in comparison to marine mammals or fish. Finding information on community specific information is challenging as most peer-reviewed papers for a particular species are focused at a more regional level. Also, local environmental baseline information for harbour communities within the project area will require input from Kivallirmiut. Baseline information compiled summarizes current information on the potential effects of shipping in the Arctic marine environment.

Whale Cove, Nunavut, 2023



A list of questions has been prepared for interviews with sea-lift companies regarding logistics (seasonality) of shipping and any environmental knowledge of harbour communities not presented in reviewed reports. The team will also be reaching out to Canadian Wildlife Service and Government of Canada's National Wildlife Research Center to discuss marine bird baseline information. Marine environment questions will be integrated into future IQ/IK data collection processes to ensure project teams are finding efficiencies and reducing the strain on project communities.

### 11.4.1 Field Program

A photograph showing five small, light-colored, rounded objects, possibly eggs or seeds, arranged on a white surface. A yellow ruler is placed below the objects for scale, indicating they are approximately 1-2 cm in size. The background is a dark, textured surface, likely soil or gravel.

### 11.4.2 Findings

### 11.4.3 Next Steps

Proposed 2024 fieldwork for Nunavut will include: the examination of proposed geotechnical drill test locations (138); a detailed assessment of the Diane River area south of Rankin Inlet to identify a transmission line route that would reduce chances to affect archaeological sites and continued in-field visual assessment of the corridor that have been identified during LiDAR and ortho imagery analysis. Proposed Manitoba fieldwork will include ground-truthing

## 11.5 SOCIO-ECONOMIC

### 11.5.1 Field Program

Activities in 2023-2024 focused on incorporating data collected in 2022-2023 into baseline reporting for the Kivalliq Region and northern Manitoba. Following completion of baseline reporting, gaps in data collection were outlined, along with next steps for additional fieldwork and verification in the Kivalliq region and starting outreach to facilitate primary data collection in northern Manitoba.

### 11.5.2 Findings

The analysis of primary socio-economic data consisted of reviewing notes from interviews conducted in Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet, and Baker Lake. Information from interviews was used to supplement secondary data on population and demographics; employment, education, and training; local businesses; infrastructure and services; housing; and other land and resource use (i.e., land and resource use not for traditional purposes).

### 11.5.3 Next Steps

In the Kivalliq Region, additional data collection and verification will occur closer to the start of the impact assessment process. The delay is to ensure that the effects assessment reflects recent information as some of the secondary sources are close to a decade old. In northern Manitoba, outreach with Manitoba First Nations will get underway. Initial outreach will dovetail with engagement. Primary data collection in northern Manitoba will reflect the preferred approach and interests of each community and therefore may not be uniform.



## 11.6 INUIT QAUJIMAJATUQANGIT/INDIGENOUS KNOWLEDGE

### 11.6.1 Field Program

Activities in 2023-2024 consisted of interpreting primary and secondary IQ data collected in 2022-2023 and incorporating it into baseline reporting for the Kivalliq region. Following the baseline drafting, gaps in data collection were outlined as well as next steps for additional fieldwork and verification of previously collected data.

### 11.6.2 Findings

The analysis of primary IQ data consisted of reviewing the maps, surveys, and audio recordings captured during each of the twenty-eight map biographies. Mapping data collected from land and resource users was combined into hodgepodge maps illustrating Inuit land use in reference to the KHFL for each of the communities in the Local Study Area. Analysis of secondary IQ data included reviewing publicly available geospatial databases, completed IQ and land use reports, and academic articles.

The baseline IQ data collected illustrated how and where people have and continue to use the land for things like hunting and fishing, and shed light on the vital role that the land and its resources play in sustaining individuals, communities, and Inuit culture in the Kivalliq region. The information shared by participants describes living knowledge and current use of the land in the Local Study Area, including analysis of the resource use patterns, along with insights and stories shared during the interview process. Land and resource use was found to be clustered in proximity to communities, although there is overlap between maps, as resource users are frequently active on the land in more than one area, often traveling vast expanses for their land-use activities relative to the availability of resources.



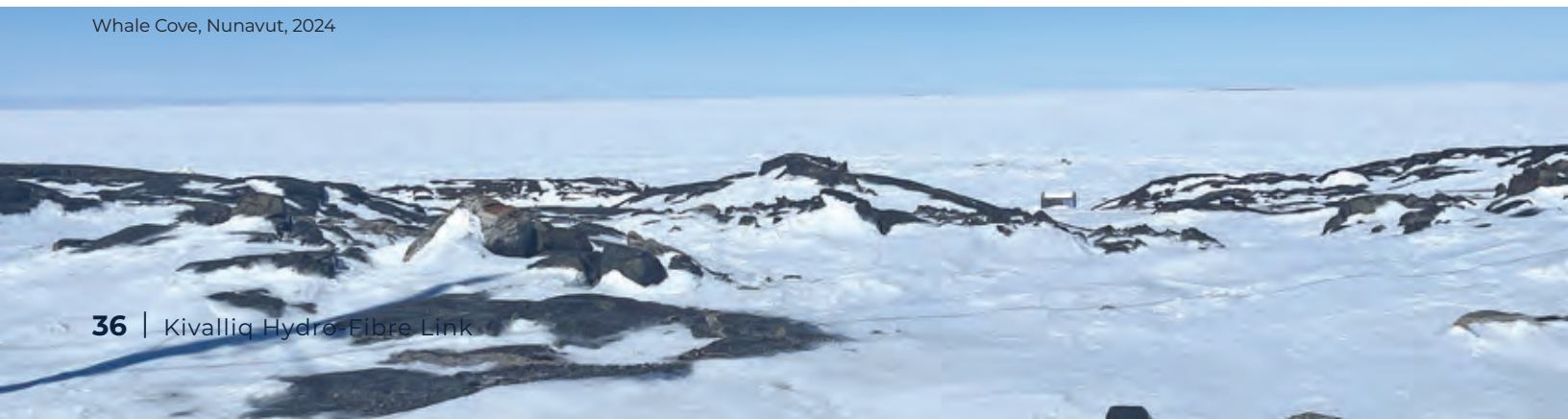
KHFL engagement tour, Chesterfield Inlet, Nunavut, 2023

### 11.6.3 Next Steps

The IQ data collected through map biographies needs to be validated with resource harvesters and communities, and potentially redacted if documents will be made public. Validation of mapped data typically involves sharing individual results with the harvesters who participated, along with sharing information with communities to determine whether a) the data collected is represented accurately on maps, b) whether any important data are missing, and c) whether there is any sensitive information that should be withheld from public display (as compared to being made available to the project team to inform routing and siting decisions).

Additional IQ collection is planned relative to land uses and areas of intensive use or importance to support project siting, and topics such as community well-being. Data collection will be approached in several different ways (e.g., interviews, community workshops). The direct hiring of beneficiaries to support this research process has been very valuable and will be continued with any future fieldwork. In February 2023, Nukik hired four community researchers to work with InterGroup and support the activities planned in 2024/2025.

Whale Cove, Nunavut, 2024





## 12. PROJECT NEXT STEPS

Anticipated next steps for fieldwork include activities to advance further assessment of the entire proposed development corridor as well as anticipate areas of future fieldwork as part of the overall larger Environmental Assessment program.

**Priority activities for 2024, include:**

- Secondary data analysis;
- Ground and aerial based surveys;
- Collection of data from deployed monitoring equipment; and
- Mapping.

Engagement with Indigenous, and specifically Inuit communities, including Elders and resource users will remain an important activity. The project will support the inclusion of Indigenous Knowledge and Inuit Qaujimajatuqangit and will work with communities to determine the best approach to do this important work.

Nukik looks forward to visiting communities, sharing traditional meals, gathering knowledge, and building relationships. We encourage you to learn more about our work by visiting [www.nukik.ca](http://www.nukik.ca) or contact us at [info@nukik.ca](mailto:info@nukik.ca)

Matna / Thank you



Tim Verbiwski (Joro) and Eric Nukapiak (Rankin Inlet), 2023

Whale Cove, Nunavut, 2024

## APPENDIX A: DATA COLLECTION TEAMS

This section includes description of service providers undertaking the initial preliminary studies along the proposed KHFL development corridor.

### A&B SULUK TRANSLATION SERVICES



A&B Suluk Translation Services is an Arviat based company that provides Inuktitut / English translation services. Their translation support for the project has been invaluable with fast and accurate service.

### BERNADETTE DEAN



Bernadette Dean is an experienced interpreter, adept at bridging linguistic and cultural gaps. With two decades of experience, she facilitates effective communication in diverse settings, from legal proceedings to international conferences. Fluent in Inuktitut and English, Bernadette ensures accuracy, confidentiality, and professionalism, earning trust from clients and colleagues alike. She strongly believes that in interpreting, both sides must be on the same page, fostering mutual understanding and cooperation.

### CHADWICK CONSULTING LTD.



Chadwick Consulting is a Manitoba-based firm focusing on Indigenous relations and northern

issues. The firm specializes in project management and stakeholder relations, as well as planning, media, and government relations. Chadwick Consulting works closely with the project team on efforts related to government relations, including the Government of Nunavut as well as the Federal and Manitoba governments and takes the lead on project communications. Chadwick Consulting also represents the project in public forums, updates the KIA and Nukik Boards and leadership on activities, and presents recommendations to advance the overall project development effort.

### HILARIE MAKPAH

Hilarie Makpah is an Inuk woman residing in Rankin Inlet, Nunavut, where she works as a translator. Raised

in Chesterfield Inlet, she developed a strong connection to her heritage and language early on. Through her role, Hilarie facilitates communication between Inuktitut and English speakers, contributing to cultural understanding. Beyond her professional duties, she supports initiatives promoting Inuit languages and traditions, reflecting her commitment to preserving her community's heritage. Hilarie's work underscores the importance of linguistic and cultural preservation in the Arctic region.

### INTERGROUP CONSULTANTS LTD.



InterGroup Consultants Ltd. (InterGroup) is an independent, multi-disciplinary firm based in Winnipeg, Manitoba, with 50 years of experience providing a wide range of consulting services to clients and industries across Canada and all three territories. InterGroup provides leading-edge consulting services in managing project development, multi-stakeholder processes, public engagement, socio-economic research, heritage and cultural resources, and economic analyses. The InterGroup team provides advice on the strategic development, regulatory and licensing considerations for the project, along with planning and implementation of engagement efforts, socio-economics, IQ/IK, archaeology, and heritage for the future impact assessment.

### JORO CONSULTANTS INC.



Joro Consultants Inc. (Joro) is a Manitoba owned and operated environmental consulting firm

specializing in wildlife research, monitoring, and environmental assessment. Joro has extensive experience with large biological monitoring and environmental assessment undertakings and has experience in presenting data and findings as part of environmental and cumulative impact assessments involving terrestrial and avian wildlife. They specialize in caribou, large mammals, geospatial analysis, that has served to contribute both to industry partners and academia. Joro has worked with a variety of academic, corporate, government, First Nations, and community partners. Their mission is to provide innovative, efficient services to address original research questions as well as prevent, mitigate, and monitor environmental effects of development. Canadian-owned and operated







John Batstone (Churchill) and Rob Bruce (Joro), northern Manitoba, 2023)





Jonathon Pameolik (Nukik) and Tim Verbiwski (Joro), Rankin Inlet, 2023



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