NIRB Application for Screening #126399

Geological Study of the Coppermine River Group volcanic rocks, Nunavut

Application Type:	New
Project Type:	Scientific Research
Application Date:	Tuesday, March 31, 2026
Period of operation:	from 2026-07-06 to 2026-07-31
Project Proponent:	Marie-Claude Williamson Natural Resources Canada - Geological Survey of Canada 601 Booth Street Ottawa ON K1A 0E8 Canada Phone Number:: 6137999513, Fax Number::

DETAILS

Non-technical project proposal description

English: Geological study of the Coppermine River Group volcanic rocks, NunavutMarie-Claude Williamson, Geological Survey of CanadaThe Coppermine River Group consists of ancient lava flows that outcrop over a large area south of Kugluktuk, Nunavut. These rock formations are part of the Mackenzie Large Igneous Province which formed 1.27 billion years ago. Previous studies have provided valuable insights but there are still important gaps in our understanding of the geological history and economic potential of the volcanic rocks. The 2026 field campaign will focus on these underexplored areas, where the rocks may contain important clues about nickel, copper, and platinum-group element resources. We will combine geological mapping and targeted rock sampling to assess whether dykes that acted as magma conduits for the lava flows could have trapped economic minerals such as nickel and copper. The project goal is to map and sample previously unstudied parts of the Coppermine volcanic system to improve our understanding of its mineral potential and connections to the Muskox intrusion located to the southeast. The Mackenzie Large Igneous Province (LIP) is considered a world-class target for nickel (Ni), copper (Cu), and platinum-group elements (PGEs). However, despite several decades of mineral exploration in this part of Nunavut, no major discoveries have been made. One of the challenges in finding new deposits is our limited understanding of the geological history of the three main components of the Mackenzie LIP: the Coppermine River Group volcanic succession, the Muskox intrusion, and the extensive Mackenzie dyke swarm. The Coppermine River Group geological study is a 3-year project (2024-2027) that is part of the Geological Survey of Canada's Critical Minerals and Geoscience Data (CMGD) program. The project focuses on new ways to explore for critical minerals in this part of the mainland Kitikmeot region. The bedrock in this region formed through ancient volcanic activity and our mapping project will help us understand if the region is prospective for critical minerals. The project objectives are to (1) fill knowledge gaps on the Coppermine lava flows and dykes by sampling and analysing the bedrock; (2) use geological maps to investigate how volcanic rocks of the Coppermine River Group might be connected to the Muskox intrusion; and (3) explore the hypothesis that a meteorite impact may have occurred during the emplacement of the volcanic rocks. The field season will take place over a period of four weeks from July 6 to 31, 2026. The fieldwork is divided into two parts. In Part 1, the team will operate from a base camp located 80 km south of Kugluktuk. The field crew will travel by foot to local outcrops. They will use geological hammers to collects samples and may use scientific instruments to collect data directly from the outcrops. For the third week, the field crew will require two days of helicopter support for the mapping and sampling of volcanic rocks located approximately 20 km north and east of the base camp. Part 2 will take place at the end of the field season and involve two days of helicopter-supported work on rocks located north of Cambridge Bay, on Victoria Island. The field and laboratory data, and the results of the project, will be published in the form of maps, government reports, open files and journal articles. The results will be presented to the residents of Kugluktuk and Cambridge Bay and made available to the Government of Nunavut through our collaboration with Resident Geologist Elisha Whelan.

French: Étude géologique des roches volcaniques du Groupe de la rivière Coppermine, Nunavut Marie-Claude Williamson, Commission géologique du CanadaLe Groupe de la rivière Coppermine est constitué d'anciennes coulées de lave affleurant sur une vaste zone au sud de Kugluktuk, au Nunavut. Ces formations rocheuses font partie de la grande province ignée du Mackenzie, formée il y a 1,27 milliard d'années. Des études antérieures ont permis d'obtenir des informations précieuses, mais d'importantes lacunes existent dans notre compréhension de l'histoire géologique et du potentiel économique de ces roches volcaniques. La campagne de terrain de 2026 se concentrera sur ces zones sous-explorées, où les roches pourraient receler des indices importants sur les ressources en nickel, en cuivre et en éléments du groupe du platine. Nous combinerons la cartographie géologique et l'échantillonnage ciblé des roches afin d'évaluer si les dykes d'alimentation ayant servi de conduits magmatiques aux coulées de lave ont pu piéger des minéraux d'intérêt économique comme le nickel et le cuivre. L'objectif du projet est de cartographier et d'échantillonner des parties inexplorées du système volcanique de Coppermine afin d'améliorer notre compréhension de son potentiel minéral et de ses liens avec l'intrusion de Muskox située au sud-est. La grande province ignée de Mackenzie est considérée comme une cible de calibre mondial pour le nickel (Ni), le cuivre (Cu) et les éléments du groupe du platine (EGP). Cependant, malgré plusieurs décennies d'exploration minière dans cette partie du Nunavut,

aucune découverte majeure n'a été faite. L'un des obstacles à la découverte de nouveaux gisements réside dans notre compréhension limitée de l'histoire géologique des trois principaux éléments de la grande province ignée de Mackenzie : la succession volcanique du groupe de la rivière Coppermine, l'intrusion de Muskox et le vaste essaim de dykes de Mackenzie. L'étude géologique du groupe de la rivière Coppermine est un projet triennal (2024-2027) qui s'inscrit dans le cadre du programme Géoscience et données sur les minéraux critiques (GDMC) de la Commission géologique du Canada. Ce projet vise à développer de nouvelles méthodes d'exploration des minéraux critiques dans cette partie de la région continentale de Kitikmeot. Le socle rocheux de cette région s'est formé par une ancienne activité volcanique et notre projet de cartographie nous permettra de déterminer si la région présente un potentiel pour les minéraux critiques. Les objectifs du projet sont les suivants : (1) combler les lacunes de connaissances sur les coulées de lave et les dykes de Coppermine par l'échantillonnage et l'analyse du socle rocheux ; (2) utiliser des cartes géologiques pour étudier les liens possibles entre les roches volcaniques du groupe de la rivière Coppermine et l'intrusion de Muskox ; et (3) explorer l'hypothèse d'un impact météoritique sur le processus de mise en place des roches volcaniques. La campagne de terrain se déroulera sur quatre semaines, du 6 au 31 juillet 2026. Les travaux de terrain sont divisés en deux phases. Durant la première phase, l'équipe travaillera à partir d'un camp de base situé à 80 km au sud de Kugluktuk. Les membres de l'équipe se déplaceront à pied jusqu'aux affleurements rocheux locaux. Ils utiliseront des marteaux de géologue pour prélever des échantillons et pourront utiliser des instruments scientifiques pour recueillir des données directement sur les affleurements. La troisième semaine, l'équipe aura besoin d'un appui héliporté pendant deux jours pour la cartographie et l'échantillonnage des roches volcaniques situées à environ 20 km au nord et à l'est du camp de base. La deuxième partie se déroulera à la fin de la saison de terrain et comprendra deux jours de travaux héliportés sur des roches situées au nord de Cambridge Bay, sur l'île Victoria. Les données de terrain et de laboratoire, ainsi que les résultats du projet, seront publiés sous forme de cartes, de rapports gouvernementaux, de documents accessibles au public et d'articles scientifiques. Ces résultats seront présentés aux résidents de Kugluktuk et de Cambridge Bay et mis à la disposition du gouvernement du Nunavut grâce à notre collaboration avec la géologue résidente Elisha Whelan.

Inuktitut: See short description in Inuinnaqtun.

Inuinnaqtun: Nunamik qauyihaiyut Qurluqtum Kuugaanik Katimaqatigiit naptuhihimayut aumait uyaqqat, NunavunmiMarie-Claude Williamson, Nunamik Qauyihaiyit KanatamiTaapkununnga Qurluqtum Kuugaanik Katimaqatigiinut ilauyut utuqqaqpiat aumait uyaqqat haavitihimayut ungahiaqtumut hivuraanit Qurluqtuq, Nunavunmi. Hapkua uyaqqait pitquhiit ilauyut taapkununnga Mackenzie Angiyut Naptuhihimayut Aviktuqhimanianik nuihimayut 1.27 pilian ukiungit ingilraaqnitaqpianit. Hivuani qauyihaqhimayunit ilittuqhitihimattiaqtut kihimi huli aghuurnaqtunik ayuqhautiqaqtut ilihimattiariaptingnik nunam ingilraaqnitainik manighiurnikkullu naahuriyaghat aumait uyaqqanit. 2026-mi maniraqmi havaaghainit ihumagilluaniaqtaat ihivriuttiaqhimaittut nunait, talvani uyaqqat aghuurnaqtunik ilihimayaghaqarungnaqhigamik haviit mighaagut, kannuyait, naptuyuillu pivighauyut. Avugiingniaqtaqqut nunanik nunauyaliurniqmik ihumagilluaqlugit katitirut uyaqqanik qauyihaiyaamik taapkuninnga kingighihimayut katitiqviuyaaghait aumayunik uyaqqanik naktitiqhugit manighiurutighat uyaqqat taapkuatut haviit kannuyallu. Havaanginnit iniqhiyumayut nunauyaliurniq qimilruklugillu qauyihaqhimaittut ilait Qurluqtum Aumait Uyaqqanit ihuaqtukkut ilihimattiariamik ingilraviit uyaraghiuruminariamik atatarutaillu Umingmangnik tikitpallianiit nayugaqnit hivuraqpianit kivallianit. Taamna Mackenzie Angiyuq Aumait Uyaqqat Aviktuqhimaniat (LIP) ihumagiyauvaktuq nunaqyuami-nakuuniqhatut ihumagiyaq havingnut (Ni), kannuyat (Cu), naptuyuniklu pivighanik (PGE-nguyut). Kihimi, qaffinik ukiunik uyaraghiuqvigivaghugu hamna Nunavunmi, nalvaaqhiyuqayuittuq. Atauhiq ayuqhautauvaktuq nutaanik nalvaaqhiuriamik uyaqqanik taimaa ilihimattianginnamik nunam ingilraaqnitainik taapkuanguyunik pingahuuyut ilauyut Mackenzie LIP-nganut: Qurqluqtuq Kuugaanit Katimayut aumaniit uyaqqanit, Umingmait tikitpalliavianik, taamnalu takiyuq Mackenzie kingingnianit imautainit. Qurluqtum Kuugaat Katimayut nunanik qauyihaiyut pingahunik (3) ukiunik havaaghauyuq (2024-2027) ilauplutik Nunanik Qauyihaiyut Kanatam Iharianaqtut Uyaqqat Qauyihaqtainillu Naunaitkutat (CMGD) havaangit. Havaaghaigut ihumagivagait nutaat havauhighait nalvaaqhiuriamik iharianaqtunik havingnik hamani ilangannik Ahiaq Qitiqmiuni Aviktuqhimayumi. Qaiqtut hamani nayugaqnit naptuhihimayut aumayunit uyaqqanit taimaalu nunauyaliurniq ikayuutauniaqtuq ilihimattiariaptingnik hamna avitkuqhimayuq uyaraghiuqvigilaariaghait. Havaaghanit iniqhiyumayut hapkuninnga (1) qauhimavalliayaamik aumait uyaqqat haavitiqvianik kingighihimayullu qimilruqhugit

qauyihaqhugulu qaiqtuit; (2) atuqhugit nunanut nunauyait ihivriuqhiyaamik qanuq aumayuit uyaqqat Qurluqtum Kuugaanit Katimayunit ilauyaaghaanik Umingmait tikitaqvianik; taimaalu (3) ihivriuqlugit uqauhiuvaktut taimaa uyarakyuaq kataghimayaamik qilangmit nuitpalliavianik aumayayuit uyaqqat. Maniraqmi havaangit aulavangniat hitamanik Santinik July 6-mit 31-mut, 2026. Maniraqmi havaaghait aviktuqhimayut malrungnut. Ilanga 1-mi, havaqatigiit havakpangniat tupiqtuqvingnit ungahiktigiyuq 80 km-nik hivuraanit Qurluqtuq. Maniraqmi havaktut hanguvangniat pihughutik kingiktunut. Atuqpangniat nunaliqiyit kautauyaqnik katitiriamik uyaqqanik qimilruktaghat atuqpangniaqtainiklu qauyihautighat katitiriamik naunaitkutanik kingiktunit. Pingahuannit Santit kinguani, maniraqmi havaktut ihariagivangniaqtaat halikaaptait nunauyaliuriamik qimilrugiamiklu aumayuit uyaqqait 20 km-nik ungahiktigiyuq tununnngaanit kivalliqhianit tupiqtuqviat. Ilanga 2-mi havangniaqhimayut havakvighaat nungunnuaqvianit malruulutik upluit halikaaptatuqhutik qaiqtunik ihivriuriamik tununngaanit Iqaluktuuttiaq, Kiilliniqmi. Maniraqmit qauyihaqvingnillu naunaitkutat, ilihimaliqtait hapkunannga havaanit, titiraqtauniat makpiraaqnut nunauyaqtut, kavamatkut naunaitkutainit, angmaumalutik titiqqat unipkaaliuqhimayuniklu taiguaqtaghat. Iniqhimaliqtait takupkaqtitauniat nunallaarmiunut Qurluqtuqmit Iqaluktuuttiaqmilu hailihimalutik Kavamatkunnut Nunavunmi havaaptikkut taamnalu Havaktiuyuq Nunaliqiyi Elisha Whelan.

Personnel

Personnel on site: 6

Days on site: 22

Total Person days: 132

Operations Phase: from 2026-07-06 to 2026-07-31

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Coppermine Base Camp	Camp	Inuit Owned Surface Lands	Mapped by the Geological Survey of Canada.	Unknown	80 km South of Kugluktuk
Washburn Lake	Sampling sites	Inuit Owned Surface Lands	Mapped by the Geological Survey of Canada.	Unknown	North of Cambridge Bay

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Kugluktuk	Amanda Dumont, Manager	Kugluktuk Agnoniatit Association	2026-02-19
Kugluktuk	Kevin Niptanatiak, Senior Administrative Officer	Hamlet of Kugluktuk	2026-02-19
Cambridge Bay	Jim MacEachern, Chief Administrative Officer	Municipality of Cambridge Bay	2026-02-19
Cambridge Bay	James Panioyak, Chairman	Ekaluktutiak Hunters and Trappers Association	2026-02-19
Cambridge Bay	Tannis Bolt, Senior Lands Officer	Kitikmeot Inuit Association	2026-02-19

Authorizations

Indicate the areas in which the project is located:

Kitikmeot

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Information is not available				

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Helicopter transport of field crew from Kugluktuk to Coppermine base camp.	

Project accomodation types

Temporary Camp

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Helicopter	1	NA	Transport of field crew to base camp

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Gasoline	fuel	1	20	20	Liters	Portable generator for Coppermine base camp

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Water for cooking and field crew will be obtained from local streams using buckets	local streams

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Waste disposal	Greywater	10 l per day	Disposed of at a single site located at regulatory distance from watercourse	N/A
Waste disposal	Sewage (human waste)	N/A	Portable incinerator	N/A

Environmental Impacts:

The temporary camp will be set with a rigorous attention to environmental impacts by ensuring that no trace of tents and field equipment remain at the end of the field season. The field crew will follow directives on water usage and waste management as listed in this application. In all our field research, we ensure our staff are properly trained and maintain high safety standards. We are committed to avoiding and reporting any wildlife observations or archeological artefacts or sites found as we work. To support this, the team is seeking to hire a local wildlife monitor to join the team in the field at the Coppermine base camp.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

Description of Existing Environment: Biological Environment

Description of Existing Environment: Socio-economic Environment

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

Cumulative Effects

Impacts

Identification of Environmental Impacts

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
Construction																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
Operation																									
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Decommissioning																									
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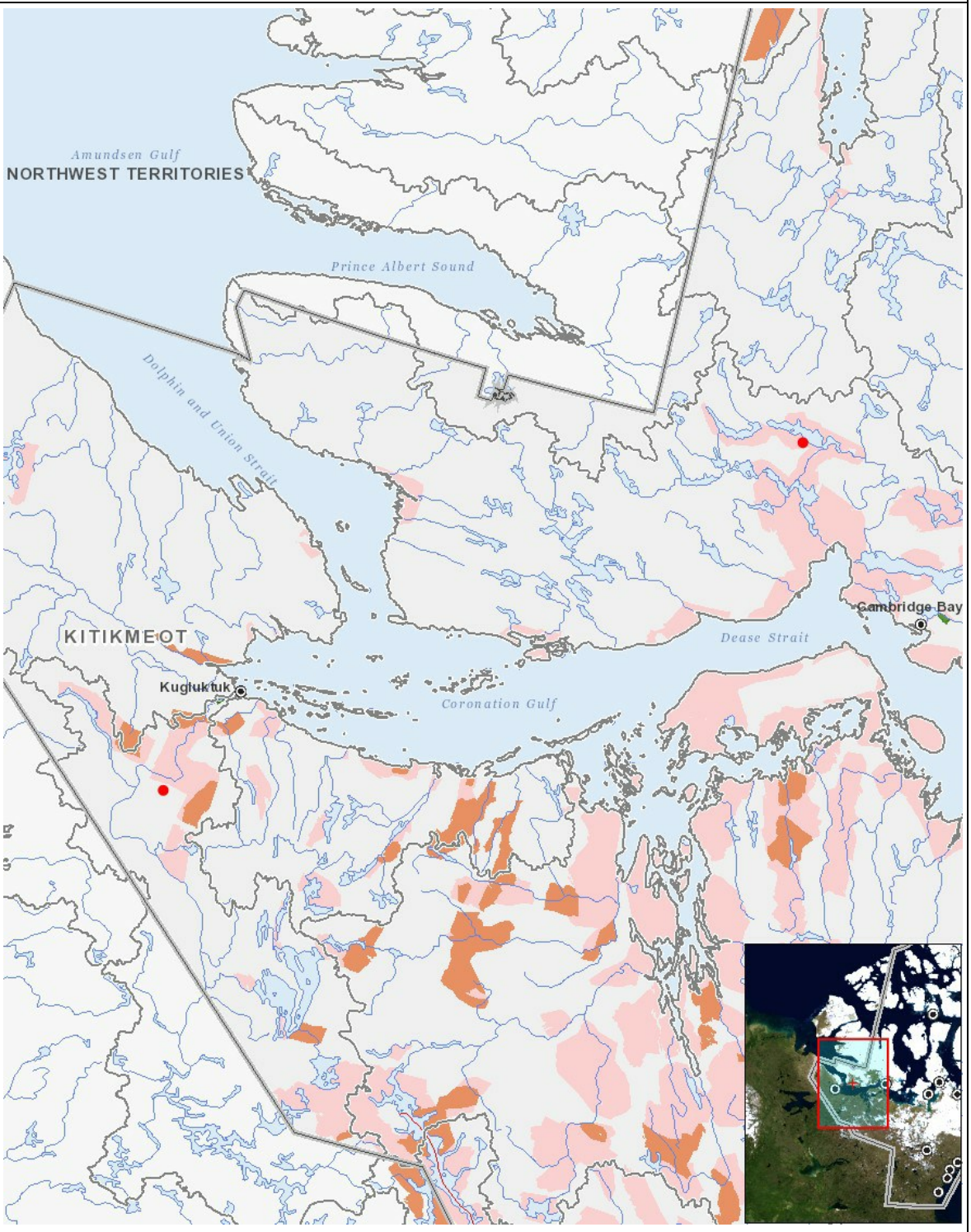
(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	point	Coppermine Base Camp
2	point	Washburn Lake