

Project Dashboard

Geological study and mapping of hydrothermal deposits and gossans at Expedition Fiord, Axel Heiberg Island, Nunavut, as analogues for Mars (149716)

Proposal Status: Conformity Determination Issued

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Project Overview

Type of application: **New**

Proponent name:	Myriam Lemelin
Company:	Université de Sherbrooke

Schedule:

Start Date:	2022-07-08
End Date:	2022-07-24
Operation Type:	Seasonal

Project Description:

Gossans are surficial deposits that form through the chemical and physical weathering of bedrock. They can be observed on the land because of their orange colour, and be preserved in the permafrost for thousands of years. In the Expedition Fiord area, gossans contain minerals that are also found on Mars. Importantly, gossans in the Expedition Fiord area could be part of a network of fractures through which hot fluids have been circulating for millions of years. The interaction between these fluids and the bedrock is an ideal location to study the presence and potential preservation of microbial life. Our main objective is to investigate the origin of gossans on Earth and Mars by surveying and sampling the gossans in the study area, and to determine their potential to harbor life. We use satellite images to map our field area and locate gossans, then we collect samples in the field and measure their properties using portable instruments such as those used by exploration rovers on Mars. The project is also referred to as TMARS in this application: Terrestrial Mineral Analysis by Remote Sensing.

Personnel:

Persons:	7
Days:	17

Project Map

List of all project geometries:

ID	Geometry	Location Name
8543	point	TMARS Base Camp 2022

Planning Regions:

Kivalliq

Affected Areas and Land Types

Settlement Area

North Baffin Planning Region

Project Land Use and Authorizations

Project Land Use

Scientific Research

Bulk Sample

Scientific Research

Licensing AgenciesNRI: [Scientific Research Licence](#)**Other Licensing Requirements**

No data found.

Material Use**Equipment**

Type	Quantity	Size	Use
No records found.			

Fuel Use

Type	Container(s)	Capacity	UOM	Use
No records found.				

Hazardous Material and Chemical Use

Type	Container(s)	Capacity	UOM	Use
No records found.				

Water Consumption

Daily Amount (m ³)	Retrieval Method	Retrieval Location
0.02	bucket transported manually	Local stream

Waste and Impacts**Environmental Impacts**

The following protocols will be adhered to at base camp: greywater will be disposed of at least 50 m away from the base camp and away from watercourses; paper will be stored and burned at base camp location; garbage and human waste will be stored in sealed containers and transported regularly by helicopter to the McGill Arctic Research Station to be incinerated. There are no projected environmental impacts.

Waste Management

Waste Type	Quantity Generated	Treatment Method	Disposal Method
Greywater	less than 0.01 cubic metres a day	no additional treatment	at least 50 m away from base camp and from streams Stored in sealed containers
Sewage (human waste)	less than 0.005 cubic metres a day	No additional treatment	containers that will be transported by helicopter to the McGill Arctic

Research
Station for
incineration