

**SCIENTIFIC RESEARCH LICENSE**

LICENSE NUMBER 02 034 24N-M

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**TITLE:** Identifying Putative Microbial Drivers of Methane Flux on Earth and Mars

### OBJECTIVES OF RESEARCH:

Methane plays a critical role in climate change on Earth and observations of methane on Mars may suggest the presence of life. Understanding the relationship between subsurface microorganisms and methane in the Arctic will help predict the influence of climate change on methane concentrations in permafrost environments and inform our understanding of methane on Mars. The following are required to assess methane-microbe relationships: i) diversity and metabolic potential; ii) physical architecture and spatial relationships between microorganisms and minerals, organic substances, and elements; iii) geochemical parameters of the environment. We will investigate three environments on Axel Heiberg Island: i) hypersaline cold spring hosted methane seeps (Colour Peak, Gypsum, and Wolf springs); ii) cryosols from polygonal terrain known to be both methane sources and sinks; and iii) glacial ice not known to be associated with methane release (Crown and White glaciers).

**TERMS & CONDITIONS:**

The holder of the licence will be bound by the terms and conditions of the Nunavut Impact Review Board Screening Decision Report and the Department of Culture & Heritage archaeological sites terms and conditions. These terms and conditions will form part of this licence.

## DATA COLLECTION IN NU:

**DATES:** June 26,2024 to August 1,2024

LOCATION: Axel Heiberg Island

Scientific Research License 02 034 24N-M expires on December 31,2024

Issued at Iqaluit, NU on May 28, 2024

Mosha Cote  
Science Administration  
Officer

