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Indigenous and Northern Affairs Canada
Land Administrator Engineer
P.O. Box 100
IQALUIT, NU XOA OHO

March 4, 2021

Re: Land Use Permit #N2016N0014
McGill Arctic Research Station
Annual report for 2020

2020 Annual Report

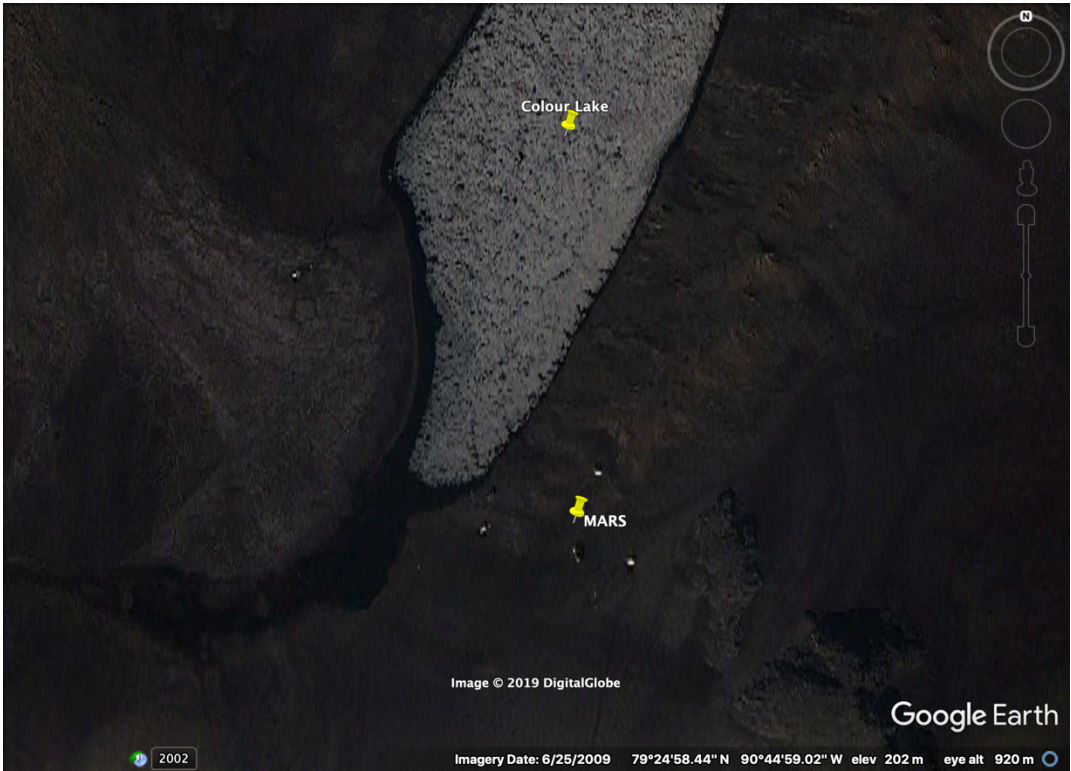
- (A) Activities based out of MARS in 2020 did not proceed due to COVID-19.
- (B) The list below and attached satellite images show the locations of current fuel caches:
- i. No drilling
 - ii. Fuel caches:
 - (A) Jet fuel cache adjacent to seasonal airstrip: 79°24'59"N 90°45'27"W
 - (B) Diesel fuel cache adjacent to permanent structure: 79°24'54"N 90°44'53"W
 - (C) Diesel fuel cache adjacent to permanent structure: 79°24'55"N 90°44'53"W
 - (D) Gasoline fuel cache: 79°24'53"N 90°44'51"W
 - (E) Diesel fuel cache adjacent to temporary structures: 79°23'22"N 91°01'22"W
- (C) The work plan for the year 2021 includes: (1) collecting climate data and monitoring landscapes and landscape variability associated with climate change, including vegetation cover, net ecosystem exchange rates, and plant microbiota; (2) determining the amount and rate of landscape change caused by permafrost degradation, as well as evaluating the nature and extent of ground ice in permafrost; (3) studying the diversity and activity of terrestrial invertebrates; (4) documenting groundwater–permafrost interactions; and (5) taking low frequency measurements of the radio sky. The locations where these activities are proposed to be conducted are listed below and shown in the attached satellite images:

- (1) Climatic conditions and vegetation studies:
 - a. Glacial/moraine 79°26'23"N 90°38'07"W
 - b. Wetland 79°24'58"N 90°45'23"W
 - c. Tundra/coastal 79°23'22"N 91°01'22"W
- (2) Permafrost degradation/ground ice:
 - a. Polygonal terrain 79°24'59"N 90°45'37"W
- (3) Invertebrate study:
 - a. Active layer soils 79°24'59"N 90°45'37"W
- (4) Groundwater-permafrost interactions:
 - a. Colour Lake 79°25'05"N 90°44'55"W
 - b. Gypsum Hill diapir 79°24'30"N 90°43'05"W
 - c. Colour Peak diapir 79°22'48"N 91°16'24"W
- (5) Radio sky measurements
 - a. MARS 79°24'52"N 90°45'01"W

Location of the McGill Arctic Research Station (MARS) on Axel Heiberg Island:



Location of MARS with respect to Colour Lake:



Locations of fuel caches at MARS:



Locations of scientific activities and fuel cache E:

