National Aeronautics and Space Administration

Ames Research Center Moffett Field. CA 94035-1000



20 February 2025

Reply to Attn of: TI:269-4

To: Mr. Richard Dwyer, Manager of Licensing

Nunavut Water Board, Gjoa Haven, Nunavut, Canada

From: Brian Glass, MEAD Principal Investigator

Subject: Request for Approval for the Use of Water or Deposit of Waste Without a Licence

Please find accompanying, an application for the Approval for the Use of Waters and/or Deposit of Waste Without a Licence, in accordance with section 3 of the *Nunavut Waters Regulations*.

My team has recently begun a new project (Mars Exploration through Analogsite Drilling, or MEAD) to use Mars-like reaches of the Canadian Arctic (specifically, Haughton Crater on Devon Island) to improve our science and methods for future Mars life detection and shallow (<1m) imaging and sampling. We hope to conduct research from a campsite in early August 2025 in the Haughton River Valley, previously used by my colleague Prof. Gordon Osinski and his students from Western. In November I filed a request for Summer 2025 logistics assistance with Polar Shelf, and on 11 February 2025 filed an online application for an NPC conformance request (NPC #150680).

Brief Description of the Undertaking:

(English) We propose to use a low-power, shallow (<1m depth) drill to excite the local surface, the vibrations then are sensed with geophones to create a shallow seismic map. This enables future Mars and lunar missions to generate target maps before drilling and sampling. MEAD drilling will also bring up small ~50gm samples that will be fed to two prototype Mars life-detection instruments and contribute to a study of microbial population changes in a polar desert (Haughton impact crater) in summer, above and below the frozen boundary (active layer, about 0.6m deep). MEAD results will improve our knowledge of where to look for possible Mars life, how to target it for sampling, and the efficacy of two potential life-detection instruments.

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Thank you for your kind consideration.

Sincerely,

Brian Glass