

REGULATORY FRAMEWORK

The primary objectives of the NIRB are set out in Article 12, Section 12.2.5 of the *Nunavut Agreement* and are confirmed by s. 23 of the *NuPPAA*. The purpose of screening is provided for under Article 12, Section 12.4.1 of the *Nunavut Agreement* and s. 88 of the *NuPPAA*.

As set out under Article 12, Section 12.4.4 of the *Nunavut Agreement* and s. 92(1) of the *NuPPAA*, upon conclusion of the screening process, the Board must provide its written report the Minister indicating one of three options:

- (a) a review of the project is not required;
- (b) a review of the project is required; or
- (c) the project should be modified or abandoned.

PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

On March 20, 2025 the NIRB received a referral to screen NASA Ames Research Center’s “Mars Exploration through Analog-site Drilling” project proposal (NIRB File No.: 25YN017) from the Nunavut Planning Commission (Commission), with an accompanying positive conformity determination with the North Baffin Regional Land Use Plan.

All documents received and pertaining to this project proposal can be accessed from the NIRB’s Public Registry by using any of the following search criteria or www.nirb.ca/project/126161.

- Project Name: Mars Exploration through Analog-site Drilling
- NIRB File No.: 25YN017
- NIRB Application No.: 126161

1. Screening Process Timelines

The following key stages were completed for the screening process:

Table 1: NIRB’s Assessment Process

Date	Stage
March 20, 2025	Receipt of project proposal and positive conformity determination (North Baffin Regional Land Use Plan) from the Commission.
March 20, 2025	Pursuant to s. 144(1) of the <i>NuPPAA</i> requested an application on Public Registry and provide information
March 21, 2025	Receipt of online application from Proponent
March 21, 2025	Scoping pursuant to s. 86(1) of the <i>NuPPAA</i>
April 29, 2025	Public engagement and comment request (which included terms and conditions) was issued in English and translations were issued later to the community of Resolute
May 9, 2025	Receipt of public comments
April 19, 2025	Pursuant to Article 12 s 12.4.5 of the <i>Nunavut Agreement</i> and s. 92(3) of the <i>NuPPAA</i> , a ministerial extension requested due to limited capacity from the Minister Responsible for

Date	Stage
	Nunavut Arctic College seeking an extension to the 45-day timeline for the provision of the Board's Report
May 13, 2025	Proponent provided with an opportunity to address comments/concerns raised by public
May 14, 2025	Proponent responded to comments/concerns raised by public
May 30, 2025	Issuance of Screening Decision Report

2. Project Scope

Project:	Mars Exploring through Analog-site Drilling (MEAD)				
Region:	North Baffin Region				
Location:	Haughton River Valley (Haught Impact Structure) on Devon Island				
Closest Community:	Resolute	Distance (approximate)	175 kilometres (km)	Direction	Northeast
Summary of Project Description:	The Proponent intends to conduct MEAD drilling to excite the local surface to create a shallow seismic map and collect small samples to study microbial population changes at different depths. This information would enable future Mars and lunar missions to generate target maps before drilling and sampling.				
Project Proposed Timeline:	August 2025				

As required under s. 86(1) of the *NuPPAA*, the Board accepts the scope of the project as set out by NASA Ames Research Center in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Use of a low-power drill to drill up to four (4) shallow holes (less than 1 meter) for sampling and local seismic vibration at two (2) sites;
- Use of geophones to create shallow seismic map;
- Use of a tool called SOLID to search for tiny life signs;
- Use of a tool called ARIA to detect minerals and organic changes in crater rocks;
- Collect approximately 200 grams of soil per hole;
- Test new drilling imaging methods to avoid hazards and find underground targets;
- Use of all-terrain vehicles and trailers to transport personnel and equipment to scientific sites;
- Use of existing base camp at Haughton River Valley;
 - Use of three (3) generators for base camp instruments, communication, and drill instruments.
 - Storage of fuel at camp site;
 - Collection of drinking water from nearby Haughton River for camp activities;
- Transport of personnel to camp site from Resolute via Twin Otter;
- Use of facilities in Resolute;
- Removal of all wastes to Polar Continental Shelf or approved facilities for disposal; and

- Ongoing engagement with the communities of Resolute and Grise Fiord regarding the MEAD project.

3. Inclusion or Exclusion to Scoping List

At this time, the NIRB has identified no additional works or activities in relation to the project proposal. As a result, the NIRB will proceed with screening the project based on the scope as described above.

4. Public Comments and Concerns

Notices regarding the NIRB’s screening of this project proposal were distributed to community organizations (Table 1) as well as to relevant federal and territorial government agencies, Inuit organizations and other parties requesting they provide the Board with any comments or concerns regarding:

- Whether the project proposal is likely to arouse significant public concern; and if so, why;
- Whether the project proposal is likely to cause significant adverse eco-systemic or socio-economic effects; and if so, why;
- Whether the project proposal is likely to cause significant adverse impacts on wildlife habitat or Inuit harvest activities; and if so, why;
- Whether the project proposal is of a type where the potential adverse effects are highly predictable and mitigable with known technology, (and providing any recommended mitigation measures); and
- Any matter of importance to the Party related to the project proposal.

On or before May 9, 2025 the NIRB received comments from the following interested parties:

Table 2: Comments Received

Commenting Party	NIRB Doc ID No.
Government of Nunavut	355144
Crown-Indigenous Relations and Northern Affairs Canada	355145

a. Summary of Comments and Concerns Received

The following provides a summary of the comments and concerns received by the NIRB in relation to “Mars Exploration through Analog-site Drilling”:

Government of Nunavut (GN):

- Has reviewed the proposed project and related documents and has no comments or concerns.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC):

- Of the view that the potential impacts of the proposed project can be mitigated with known practices or technology related to spill prevention.
- CIRNAC recommended other best management practices to aid in mitigation of potential impacts that might arise from the use of fuels and waste in the proposed activities.
- CIRNAC requested clarification regarding the power source for the TRIDENT drill and whether or not high-energy batteries would be used and how the Proponent would deal

with cold-weather charging or physical damage that could trigger thermal-runaway fire and toxic-fume release in a remote tent camp.

- Recommended the Proponent consult with the communities of Grise Fiord, Resolute Bay, the Iviq Hunters and Trappers Organization, the Resolute Bay Hunters and Trappers Association and any other relevant organizations on the proposed project. Recommended the Proponent consult on several issues including the following:
 - Incorporation of Inuit Qaujimajatuqangit;
 - Mitigation measures designed to prevent any disturbance to wildlife and the environment;
 - Experience of community members who participate in traditional harvesting activities within or close proximity to the project area;
 - Mitigation measures designed to prevent disturbance to sites with cultural sites and/or environmental significance;
 - Training, employment opportunities, and local procurement opportunities; and
 - Providing regular updates on the status of the project activities.

5. Comments and Concerns with respect to Inuit Qaujimaningit, Indigenous and Community Knowledge

No concerns or comments were received with respect to Inuit Qaujimaningit, Indigenous and Community Knowledge in relation to this project proposal.

6. Proponent's Response to Public Comments and Concerns

Due to the comments, and questions received from parties, the NIRB provided an opportunity for the Proponent to respond. The following is a summary of the Proponent's response to concerns:

- Agrees that the use of the best current practices and technologies can mitigate spill risks and prevention:
 - Noted the intention was to always place both planned 2 kilowatt (kW) generators and fuel drums for ATV use in impermeable portable berms for secondary containment at a safe distance from camp;
 - Spill kits and fire extinguishers were specified in the field equipment;
 - Spill response and cleanup materials would be readily available;
 - All participants would be trained in on-site spill response to ensure compliance with best practices;
 - Proponent noted that it has applied for a Nunavut Water Board application and will be in compliance with the *Nunavut Waters Regulations*, including ensuring all hazardous materials and sumps are a “minimum of thirty-one (31) metres away from the ordinary high-water mark of any waterbody”;
- Noted that no batteries will be used to power the TRIDENT drill, as the prototype drill is designed to use external power provided by one of the 2 kW generators; and
- Proponent noted that it would reach out and contact the communities and relevant organizations asking for their concerns or requests, as well as any advice regarding any recent wildlife sightings in or near the area of Devon Island; and,
- Noted that will work with the communities and organizations to address any concerns or request.

In determining whether a review of the project is required, the Board considered whether the project proposal had potential to result in significant ecosystemic or socio-economic impacts. Table 3. The Board took particular care to consider Inuit Qaujimaningit, Indigenous and Community Knowledge in carrying out its assessment and determination of the significance of impacts.

The following is a summary of the Board’s assessment of the factors that are relevant to the determination of significant impacts with respect of this project proposal:

Table 3: Summary of the Board’s Assessment of Factors s. 90 *NuPPAA*

Factor	Comment
The size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts.	<ul style="list-style-type: none"> ▪ The physical footprint of the proposed project components is located within the Houghton Crater site on Devon Island, a 22 kilometre (km) wide crater. ▪ The proposed project would take place within habitats of far-ranging wildlife species such as migratory and non-migratory birds, Arctic fox, Arctic hare, caribou, wolves and Species at Risk such as Polar Bears.
The ecosystemic sensitivity of that area.	<ul style="list-style-type: none"> ▪ No specific areas of ecosystemic sensitivity have been identified by the Proponent within the physical footprint of the proposed project.
The historical, cultural and archaeological significance of that area.	<ul style="list-style-type: none"> ▪ No specific areas of historical, cultural and archaeological significance have been identified by the Proponent within the physical footprint of the proposed project.
The size of the human and the animal populations likely to be affected by the impacts.	<ul style="list-style-type: none"> ▪ The proposed project is unlikely to result in impacts to local human and animal populations.
The nature, magnitude and complexity of the impacts; the probability of the impacts occurring; the frequency and duration of the impacts; and the reversibility or irreversibility of the impacts.	<ul style="list-style-type: none"> ▪ A zone of influence of up to 30 km from the most potentially-disruptive project activities was selected for the NIRB’s assessment. ▪ With adherence to the relevant regulatory requirements and application of the mitigation measures recommended by the NIRB, no significant residual effects are expected to occur.
The cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out.	<ul style="list-style-type: none"> ▪ The mitigation measures recommended by the NIRB have been designed with consideration for the potential for cumulative effects to result from the impacts of the project combined with other past, present and reasonably foreseeable projects.

Factor	Comment
Any other factor that the Board considers relevant to the assessment of the significance of impacts.	<ul style="list-style-type: none"> ▪ No other relevant factors were identified; however, see below for Regulatory Requirements mandating mitigation and/or reporting.

Regulatory Requirements

The Proponent is also advised that the following legislation may apply to the Project:

Acts and Regulations

1. The *Fisheries Act* (<http://laws-lois.justice.gc.ca/eng/acts/F-14/index.html>).
2. The *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (<http://laws-lois.justice.gc.ca/eng/acts/n-28.8/>).
3. The *Migratory Birds Convention Act* (<http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>), the *Migratory Birds Regulations* (https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1035/index.html) and the *Migratory Bird Sanctuary Regulations* (https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1036/index.html).
4. The *Species at Risk Act* (<https://laws-lois.justice.gc.ca/eng/acts/s-15.3/>). Attached in **Appendix A** is a list of Species at Risk in Nunavut.
5. The *Wildlife Act (Nunavut)* and its corresponding regulations (<http://www.canlii.org/en/nu/laws/stat/snu-2003-c-26/latest/snu-2003-c-26.html>).
6. The *Nunavut Act* (<http://laws-lois.justice.gc.ca/eng/acts/N-28.6/>). The Proponent must comply with the proposed terms and conditions listed in the attached **Appendix B**.
7. The *Transportation of Dangerous Goods Act* (<http://laws-lois.justice.gc.ca/eng/acts/t-19.01/>) and the *Transportation of Dangerous Goods Regulations* (<http://www.tc.gc.ca/eng/tdg/clear-tofc-211.htm>).

VIEWS OF THE BOARD

In considering the above factors, the Board has identified the following and respectfully provides its views regarding whether or not the proposed project has the potential to result in significant impacts. The NIRB has also proposed terms and conditions that would mitigate the potential adverse impacts identified.

Ecosystem, wildlife habitat and Inuit harvesting activities:

Valued Component	Migratory and non-migratory birds, terrestrial and Species at Risk
Potential effects:	Potential adverse effects to migratory and non-migratory birds, Species at Risk (such as Polar Bears), terrestrial wildlife such as caribou, wolves, foxes, and their migratory routes from noise and visual disturbance generated from the re-establishment of an existing camp, transportation of personnel and equipment via all-terrain vehicle to the proposed research sites, and noise activities related to the proposed research activities such as the use of low-power drills and geophones.
Nature of Impacts:	The potential for impact(s) is applicable to a small set of sampling sites within the Houghton River Valley (Haught Impact Structure) on Devon Island, is considered to be limited due to the temporary activities, and due to infrequent activities within sensitive wildlife temporal periods. Project activities, such as transport of personnel and research activities, could potentially disturb wildlife and migratory birds with home range sizes habituated to the project area; however, any resulting impacts would be expected to be reversible and temporary only.
Mitigating Factors:	The Proponent noted that wildlife would not be disturbed nor interacted with while conducted the research. Recommended terms and conditions are expected to mitigate potential adverse impacts to terrestrial wildlife and birds.
Proposed Terms and Conditions:	Waste Management – 7 Fuel and Chemical Storage – 12 Wildlife-General – 14 through 17 Migratory Birds and Raptors Disturbance – 18 and 19 Caribou Disturbance – 20 through 22

Valued Component	Surface water quality, fish and fish habitat, terrestrial soil and vegetation
Potential effects:	Potential adverse impacts to water quality, fish and fish habitat, the land and vegetation from storage and use of fuel at the camp site, re-fuelling activities, and shallow drilling activities.
Nature of Impacts:	The potential impacts are applicable to an existing temporary camp site and to small set of sampling sites within the Houghton River Valley and the probability of impacts occurring is considered to be low, with potential adverse effects anticipated to be low in magnitude, infrequent in occurrence and reversible in nature.
Mitigating Factors:	The Proponent proposes to minimize impacts to the land by using a campsite previously used by Western University, using existing trails to

	get to the research sites, and to remove all trash upon abandonment of camp.
Proposed Terms and Conditions:	Watercourses and Waterbodies – 6 Waste Management – 7 Fuel and Chemical Storage – 8 through 11, and 13 Road and Ground Disturbance – 23 Land Use and Restoration of Disturbed Areas – 24 through 26

Valued Component	Public and Traditional Land Use Activities
Potential effects:	No specific concerns or impacts to public and traditional land use activities in the area have been identified, however, the Board is recommending terms and conditions to ensure project activities are informed by available Inuit Qaujimaningit and that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.
Nature of Impacts:	The potential for impacts is considered to be minimal due to the temporary and low-impact nature of the activities and any resulting impacts would be expected to be reversible.
Mitigating Factors:	It is possible that the area could be used for traditional activities; however, no comments were received from the nearest communities on this aspect. As noted, the Board is recommending the Proponent engage with local residents if possible and practical, regarding planned activities in the area to ensure project activities are informed by available Inuit Qaujimaningit and that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities, and to ensure safety to the public.
Proposed Terms and Conditions:	Waste Management – 7 Fuel and Chemical Storage – 8 through 13 Road and Ground Disturbance – 23 Land Use and Restoration of Disturbed Areas – 24 through 26 Public Consultation – 29 Traditional Harvesting & Public and Traditional Land Use – 30

Socio-economic effects on northerners:

Valued Component	Historical, Cultural and Archaeological Sites
Potential effects:	No historical sites in the proposed project area were identified by the Proponent within the physical footprint of the proposed project.
Nature of Impacts:	The potential for impacts are considered minimal due to the nature of the activities.
Mitigating Factors:	The Proponent noted that it would record any locations of archaeological sites and contact the appropriate authorities. The Board is also recommending terms and conditions to ensure that project activities do not negatively affect historical or heritage sites.

Proposed Terms and Conditions:	Heritage Sites – 27 and 28
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Valued Component	Local economic impact
Potential effects:	Potential positive impacts as the Proponent has noted that it would be sourcing groceries from Resolute and would reach out to the communities of Resolute and Grise Fiord for their concerns regarding the proposal.
Nature of Impacts:	The nature of the impacts are considered positive. The Proponent has committed to contact the local communities regarding the research activities
Mitigating Factors:	Terms and conditions are recommended to ensure the Proponent informs the communities of the research activities and findings, and consider hiring locally.
Proposed Terms and Conditions:	Public Consultation – 29 Local Hiring – 31

Significant public concern:

Valued Component	Public Concerns
Potential effects:	No significant public concern was expressed during the public commenting period for this file.
Nature of Impacts:	The potential for impacts is considered to be minimal as long as the Proponent follow the recommended terms and conditions.
Mitigating Factors:	The Proponent has committed to consult with local community members on the results of the scientific research. The Board previously recommended terms and conditions to ensure that to the Proponent to the extent possible hire locally and access local services where possible, and to ensure planned activities in the area utilizes available Inuit Qaujimaningit.
Proposed Terms and Conditions:	Public Consultation – 29 Local Hiring – 31

Technological innovations for which the effects are unknown:

No specific issues have been identified associated with this project proposal. However, it is noted that the “Mars Exploration through Analog-site Drilling” project would be testing new technologies at the Haughton Impact Structure (such as new drilling imaging methods) which would be helpful to scientist looking for life under the surface of Mars in the future.

Administrative Conditions:

To encourage compliance with applicable regulatory requirements and assist the Board and responsible authorities with compliance and effects monitoring for project activities, the following project-specific terms and conditions have been recommended: 1-5.

In considering the above factors and subject to the Proponent's compliance with regulatory requirements and the terms and conditions necessary to mitigate against the potential adverse environmental and social effects, the Board is of the view that the proposed project is unlikely to cause significant public concern and its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.

RECOMMENDED PROJECT-SPECIFIC TERMS AND CONDITIONS

The Board is recommending the following specific terms and conditions to apply in respect of the project:

General

1. NASA Ames Research Center (the Proponent) shall maintain a copy of the Project Terms and Conditions at the site of operation at all times and make it accessible to enforcement officers upon request.
2. The Proponent shall operate in accordance with all commitments stated in correspondence provided to the Nunavut Planning Commission (NPC File No.: 150680), and the NIRB (Online Application Form, March 21, 2025). This information should be accessible to enforcement officers upon request.
3. The Proponent shall operate the site in accordance with all applicable Acts, Regulations and Guidelines.
4. The Proponent shall ensure that it meets the standards and/or limits as set out in the authorizing agencies' permits or licences as required for this project.
5. The Proponent shall ensure that all personnel, staff and contractors are adequately trained prior to commencement of all project activities, and shall be made aware of all operational plans, management plans, guidelines and Proponent commitments relating to the project.

Water courses/Water bodies (including fresh and marine waters)

6. The Proponent shall ensure that water extraction from any fish-bearing waterbody is done with appropriate care and caution. Small lakes or streams should not be used for water withdrawal unless approved by the appropriate authorizing agency.

Waste Management

7. The Proponent shall manage all hazardous and non-hazardous waste including food, domestic wastes, debris and petroleum-based chemicals (e.g., greases, gasoline, glycol-based antifreeze) in such a manner to avoid release into the environment and access to wildlife at all times until disposed of appropriately or at an approved facility.

Fuel and Chemical Storage

8. The Proponent shall locate all fuel and other hazardous materials a minimum distance away from the high-water mark of any water body and environmentally sensitive areas as required by the appropriate authorizing agencies. The materials shall be stored in such a manner as to prevent their release into the environment.

9. The Proponent shall ensure that re-fuelling of all equipment occurs a minimum distance away from the high-water mark of any water body as required by the appropriate authorizing agencies.
10. All fuel and chemical storage containers must be clearly marked with the Proponent's name for ease of identification.
11. The Proponent shall have a Spill Contingency Plan in place at all fuel storage or transfer locations and shall ensure that appropriate spill response equipment and clean-up materials (e.g., shovels, pumps, barrels, drip pans, and absorbents) are readily available.
12. The Proponent shall ensure that wildlife deterrent systems are utilized at the time of a spill incident in order to avoid wildlife (terrestrial or marine) and migratory birds from being contaminated.
13. The Proponent shall ensure that all spills of fuel or other deleterious materials of 100 litres or more must be reported immediately to the 24-hour Spill Line at (867) 920-8130.

Wildlife – General

14. The Proponent shall not substantially alter or damage or destroy any wildlife habitat in conducting this operation unless otherwise authorized by the appropriate authorizing agencies.
15. The Proponent shall not chase, weary, harass or molest wildlife. This includes persistently circling, chasing, hovering over, pursuing or in any other way harass wildlife, or disturbing large groups of animals.
16. The Proponent shall not hunt or fish, unless proper Nunavut authorizations have been acquired.
17. The Proponent shall ensure that all wildlife have the right-of-way on any roads or trails. Vehicles are required to slow down or stop and wait to permit the free and unrestricted movement of wildlife across roads or trails at any location.

Migratory Birds and Raptors Disturbance

18. The Proponent shall carry out all phases of the project in a manner that protects migratory birds and avoids harming, killing or disturbing migratory birds or destroying, disturbing or taking their nests or eggs. In this regard, the Proponent shall take into account Environment and Climate Change Canada's *Avoidance Guidelines*. The Proponent's actions in applying the *Avoidance Guidelines* shall be in compliance with the *Migratory Birds Convention Act, 1994* and with the *Species at Risk Act*.
19. The Proponent shall not disturb or destroy the nests or eggs of any birds. If active nests of any birds are discovered or located (i.e., with eggs or young), the Proponent shall avoid these areas until nesting is complete and the young have naturally left the vicinity of the nest by establishing a protection buffer zone¹ appropriate for the species and the surrounding habitat.

¹ Recommended setback distances to define buffer zones have been established by Environment and Climate Change Canada for different bird groups nesting in tundra habitat and can be found at www.ec.gc.ca/paom-itmb.

Caribou Disturbance

20. The Proponent shall avoid interfering with any paths or crossings known to be frequented by caribou during periods of migration as identified by current land use plans in place and/or by Inuit Qaujimaningit.
21. The Proponent shall not locate any operation or undertake activities that could block or cause any diversion to migration of caribou.
22. The Proponent shall immediately cease activities likely to interfere with the migration or calving of caribou until such time as the caribou have passed.

Road and Ground Disturbance

23. The Proponent shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles must be suspended if rutting occurs.

Land Use and Restoration of Disturbed Areas

24. The Proponent shall use existing trails where possible during project activities on the land.
25. The Proponent shall ensure that the land use area is kept clean and tidy at all times.
26. The Proponent shall remove all garbage, fuel and equipment at the end of each field season and/or upon completion of work and/or upon abandonment.

Heritage Sites

27. The Proponent shall ensure that archaeological and paleontological sites are not purposely or inadvertently disturbed by clients or staff as a result of project activities.
28. The Proponent shall ensure that all clients and staff are aware of the Proponent's responsibilities and requirements regarding archaeological or palaeontological sites that are encountered during land-based activities. This should include briefings explaining the prohibitions regarding removal of artifacts, and defacing or writing on rocks and infrastructure.

Other

29. The Proponent should consult with local residents regarding their activities in the area and solicit available Inuit Qaujimaningit and information that can inform project activities.
30. The Proponent shall ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.
31. The Proponent should, to the extent possible, hire local people and access local services where possible.

In addition to the project-specific terms and conditions, the Board is recommending the following:

Change in Project Scope

1. Responsible authorities or Proponent shall notify the Nunavut Planning Commission as appropriate, and the NIRB of any changes in operating plans or conditions, including phase advancement, associated with this project prior to any such change.

Copy of licences, etc. to the Board and Commission

2. The NIRB respectfully requests that responsible authorities submit a copy of each licence, permit or other authorization issued for the Project to the NIRB to assist in enabling possible project monitoring that may be required. Please forward a copy of the licences, permits and/or other authorizations to the NIRB directly at info@nirb.ca or upload a copy to the NIRB's online registry at www.nirb.ca.

Use of Inuit Qaujimaningit

3. The Proponent is encouraged to work with local communities and knowledge holders to inform project design, to carry out the project, and to confirm or validate the perspectives represented in publications, reports produced as part of the project. Care should be taken to ensure that Inuit Qaujimaningit and local knowledge collected for the project is used with permission and is accurately represented.

Bear and Carnivore Safety

4. The Proponent should review the Government of Nunavut's booklet on Bear Safety, which can be downloaded from this link: http://gov.nu.ca/sites/default/files/bear_safety_-_reducing_bear-people_conflicts_in_nunavut.pdf. Further information on bear/carnivore detection and deterrent techniques can be found in the "Safety in Grizzly and Black Bear Country" pamphlet, which can be downloaded from this link: https://www.enr.gov.nt.ca/sites/enr/files/resources/safety_in_grizzly_and_black_bear_country_english.pdf.
5. There are polar bear and grizzly bear safety resources available from the Bear Smart Society with videos on polar bear safety available in English, French and Inuktitut at <http://www.bearsmart.com/play/safety-in-polar-bear-country/>. Information can also be obtained from Parks Canada's website on bear safety at the following link: <http://www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq/visit/visit6/d.aspx> or in reviewing the "Safety in Polar Bear Country" pamphlet, which can be downloaded from the following link: http://www.pc.gc.ca/eng/pn-np/nu/quttinirpaaq/visit/visit6/~media/pn-np/nu/auyuittuq/pdf/shared/PolarBearSafety_English.ashx.
6. Any problem wildlife or any interaction with carnivores should be reported immediately to the local Government of Nunavut, Department of Environment Conservation Office (Conservation Officer of Resolute, phone: 867-252-3879).

Species at Risk

7. The Proponent review Environment and Climate Change Canada's "Environment Assessment Best Practice Guide for Wildlife at Risk in Canada", available at the following link:
http://www.sararegistry.gc.ca/virtual_sara/files/policies/EA%20Best%20Practices%202004.pdf. The guide provides information to the Proponent on what is required when Wildlife at Risk, including *Species at Risk*, are encountered or affected by the project.

Migratory Birds

8. The Proponent review Canadian Wildlife Services' "Key migratory bird terrestrial habitat sites in the Northwest Territories and Nunavut", available at the following link: <http://publications.gc.ca/site/eng/317630/publication.html> and "Key marine habitat sites for migratory birds in Nunavut and the Northwest Territories", available at the following link: <http://publications.gc.ca/site/eng/392824/publication.html>. The guide provides information to the Proponent on key terrestrial and marine habitat areas that are essential to the welfare of various migratory bird species in Canada.
9. For further information on how to protect migratory birds, their nests and eggs when planning or carrying out project activities, consult Environment and Climate Change Canada's Incidental Take web page and the fact sheet "Planning Ahead to Reduce the Risk of Detrimental Effects to Migratory Birds, and their Nests and Eggs" available at: http://publications.gc.ca/collections/collection_2013/ec/CW66-324-2013-eng.pdf.

Heritage Resources

10. During the assessment, the NIRB has identified that no archaeology surveys have been conducted in the proposed project areas and that potential for the presence of archaeological resources is likely, therefore the Proponent shall contact the Department of Culture and Heritage to initiate a field archaeology assessment program prior to undertaking any land disturbance activities.

Transport of Dangerous Goods and Waste Management

11. Environment and Climate Change Canada recommends that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
12. The Proponent shall provide an authorization or letter of conformation of disposal be obtained from the owner/operator of the landfill to be used for disposal of project-related wastes.

CONCLUSION

The foregoing constitutes the Board's screening decision with respect to the NASA Ames Research Center's "Mars Exploration through Analog-site Drilling". The NIRB remains available for consultation with the Minister regarding this report as necessary.

Dated May 30, 2025 at Iqaluit, NU.



Albert Ehaloak, *Acting* Chairperson

Attachments: Appendix A: Species at Risk in Nunavut
Appendix B: Archaeological and Palaeontological Resources Terms and Conditions for Land Use Permit Holders

APPENDIX A: SPECIES AT RISK IN NUNAVUT

Due to the requirements of Section 79(2) of the *Species at Risk Act*, S.C. 2002, c. 29 (*SARA*), and the potential for project-specific adverse effects on listed wildlife species and its critical habitat, measures should be taken as appropriate to avoid or lessen those effects, and the effects need to be monitored. Project effects could include species disturbance, attraction to operations and destruction of habitat. This section applies to all species listed on Schedule 1 of *SARA*, as listed in the table below, or have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which may be encountered in the project area. This list may not include all species identified as at risk by the Territorial Government. The following points provide clarification on the applicability of the species outlined in the table.

- Schedule 1 is the official legal list of Species at Risk for *SARA*. *SARA* applies to all species on Schedule 1. The term “listed” species refers to species on Schedule 1.
- Schedule 2 and 3 of *SARA* identify species that were designated at risk by the COSEWIC prior to October 1999 and must be reassessed using revised criteria before they can be considered for addition to Schedule 1.
- Some species identified at risk by COSEWIC are “pending” addition to Schedule 1 of *SARA*. These species are under consideration for addition to Schedule 1, subject to further consultation or assessment.

If species at risk are encountered or affected, the primary mitigation measure should be avoidance. The Proponent should avoid contact with or disturbance to each species, its habitat and/or its residence. All direct, indirect, and cumulative effects should be considered. Refer to species status reports and other information on the Species at Risk Registry at <http://www.sararegistry.gc.ca> for information on specific species.

Monitoring should be undertaken by the Proponent to determine the effectiveness of mitigation and/or identify where further mitigation is required. As a minimum, this monitoring should include recording the locations and dates of any observations of Species at Risk, behaviour or actions taken by the animals when project activities were encountered, and any actions taken by the proponent to avoid contact or disturbance to the species, its habitat, and/or its residence. This information should be submitted to the appropriate regulators and organizations with management responsibility for that species, as requested.

For species primarily managed by the Territorial Government, the Territorial Government should be consulted to identify other appropriate mitigation and/or monitoring measures to minimize effects to these species from the project.

Mitigation and monitoring measures must be undertaken in a way that is consistent with applicable recovery strategies and action/management plans.

Schedules of *SARA* are amended on a regular basis, so it is important to check the *SARA* registry (www.sararegistry.gc.ca) to get the current status of a species.

Updated: September 2024

Terrestrial Species at Risk²	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility³
Buff-breasted Sandpiper	Special Concern	Schedule 1	Environment and Climate Change Canada (ECCC)
Common Nighthawk	Threatened	Schedule 1	ECCC
Eskimo Curlew	Endangered	Schedule 1	ECCC
Harlequin Duck	Special Concern	Schedule 1	ECCC
Harris's Sparrow	Special Concern	Schedule 1	ECCC
Horned Grebe	Special Concern	Schedule 1	ECCC
Ivory Gull	Endangered	Schedule 1	ECCC
Olive-sided Flycatcher	Threatened	Schedule 1	ECCC
Peregrine Falcon	Special Concern	Schedule 1	ECCC
Red Knot Islandica Subspecies	Special Concern	Schedule 1	ECCC
Red-necked Phalarope	Special Concern	Schedule 1	ECCC
Ross's Gull	Threatened	Schedule 1	ECCC
Rusty Blackbird	Special Concern	Schedule 1	ECCC
Short-eared Owl	Special Concern	Schedule 1	ECCC
Porsild's Bryum	Threatened	Schedule 1	Government of Nunavut (GN)
Transverse Lady Beetle	Special Concern	No Schedule	GN
Caribou (Dolphin and Union Population)	Endangered	Schedule 1	GN
Caribou (Barren-ground Population)	Threatened	No Schedule	GN
Caribou (Torngat Mountains Population)	Endangered	No Schedule	GN
Grizzly Bear (Western Population)	Special Concern	Schedule 1	ECCC
Peary Caribou	Endangered	Schedule 1	GN
Polar Bear	Special Concern	Schedule 1	ECCC
Wolverine	Special Concern	Schedule 1	GN
Atlantic Walrus (High Arctic Population)	Special Concern	No Schedule	Fisheries and Oceans Canada (DFO)
Atlantic Walrus (Central/Low Arctic Population)	Special Concern	No Schedule	DFO
Beluga Whale (Cumberland Sound Population)	Threatened	Schedule 1	DFO
Beluga Whale (Eastern Hudson Bay Population)	Endangered	No Schedule	DFO
Beluga Whale (Eastern High Arctic-Baffin Bay Population)	Special Concern	No Schedule	DFO
Beluga Whale (Western Hudson Bay Population)	Special Concern	No Schedule	DFO
Atlantic Cod (Arctic Lakes Population)	Special Concern	No Schedule	DFO
Fourhorn Sculpin (Freshwater Form)	Data Deficient	Schedule 3	DFO
Lumpfish	Threatened	No Schedule	DFO
Thorny Skate	Special Concern	No Schedule	DFO

² The Department of Fisheries and Oceans has responsibility for aquatic species.

³ Environment and Climate Change Canada (ECCC) has a national role to play in the conservation and recovery of Species at Risk in Canada, as well as responsibility for management of birds described in the Migratory Birds Convention Act (MBCA). Day-to-day management of terrestrial species not covered in the MBCA is the responsibility of the Territorial Government. Populations that exist in National Parks are also managed under the authority of the Parks Canada Agency.

**APPENDIX B: ARCHAEOLOGICAL AND PALAEOLOGICAL RESOURCES TERMS AND
CONDITIONS FOR LAND USE PERMIT HOLDERS**



INTRODUCTION

The Department of Culture and Heritage (CH) routinely reviews land use applications sent to the Nunavut Water Board, Nunavut Impact Review Board and the Indigenous and Northern Affairs Canada. These terms and conditions provide general direction to the permittee/proponent regarding the appropriate actions to be taken to ensure the permittee/proponent carries out its role in the protection of Nunavut’s archaeological and palaeontological resources.

TERMS AND CONDITIONS

- 1) The permittee/proponent shall have a professional archaeologist and/or palaeontologist perform the following **Functions** associated with the **Types of Development** listed below or similar development activities:

	Types of Development (See Guidelines below)	Function (See Guidelines below)
a)	Large scale prospecting	Archaeological/Palaeontological Overview Assessment
b)	Diamond drilling for exploration or geotechnical purpose or planning of linear disturbances	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/or Mitigation
c)	Construction of linear disturbances, Extractive disturbances, Impounding disturbances and other land disturbance activities	Archaeological/Palaeontological Overview Assessment and/or Inventory and Documentation and/or Mitigation

Note that the above-mentioned functions require either a Nunavut Archaeologist Permit or a Nunavut Palaeontologist Permit. CH is authorized by way of the *Nunavut and Archaeological and Palaeontological Site Regulations*⁴ to issue such permits.

⁴P.C. 2001-1111 14 June, 2001

- 2) The permittee/proponent shall not operate any vehicle over a known or suspected archaeological or palaeontological site.
- 3) The permittee/proponent shall not remove, disturb, or displace any archaeological artifact or site, or any fossil or palaeontological site.
- 4) The permittee/proponent shall immediately contact CH at (867) 934-2046 or (867) 975-5500 should an archaeological site or specimen, or a palaeontological site or fossil, be encountered or disturbed by any land use activity.
- 5) The permittee/proponent shall immediately cease any activity that disturbs an archaeological or palaeontological site encountered during the course of a land use operation until permitted to proceed with the authorization of CH.
- 6) The permittee/proponent shall follow the direction of CH in restoring disturbed archaeological or palaeontological sites to an acceptable condition. If these conditions are attached to either a Class A or B Permit under the Territorial Lands Act Indigenous and Northern Affairs Canada directions will also be followed.
- 7) The permittee/proponent shall provide all information requested by CH concerning all archaeological sites or artifacts and all palaeontological sites and fossils encountered in the course of any land use activity.
- 8) The permittee/proponent shall make best efforts to ensure that all persons working under its authority are aware of these conditions concerning archaeological sites and artifacts and palaeontological sites and fossils.
- 9) If a list of recorded archaeological and/or palaeontological sites is provided to the permittee/proponent by CH as part of the review of the land use application the permittee/proponent shall avoid the archaeological and/or palaeontological sites listed.
- 10) Should a list of recorded sites be provided to the permittee/proponent, the information is provided solely for the purpose of the proponent's land use activities as described in the land use application, and must otherwise be treated confidentially by the proponent.

Legal Framework

As stated in Article 33 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)*:

Where an application is made for a land use permit in the Nunavut Settlement Area, and there are reasonable grounds to believe that there could be sites of archaeological importance on the lands affected, no land use permit shall be issued without written consent of the Designated Agency. Such consent shall not be unreasonably withheld. [33.5.12]

Each land use permit referred to in Section 33.5.12 shall specify the plans and methods of archeological site protection and restoration to be followed by the permit holder, and any other conditions the Designated Agency may deem fit. [33.5.13]

Palaeontology and Archaeology

Under the *Nunavut Act*⁵, the federal government can make regulations for the protection, care and preservation of palaeontological and archaeological sites and specimens in Nunavut. Under the *Nunavut Archaeological and Palaeontological Sites Regulations*⁶, it is illegal to alter or disturb any palaeontological or archaeological site in Nunavut unless permission is first granted through the permitting process.

Definitions

As defined in the *Nunavut Archaeological and Palaeontological Sites Regulations*, the following definitions apply:

“archaeological site” means a place where an archaeological artifact is found.

“archaeological artifact” means any tangible evidence of human activity that is more than 50 years old and in respect of which an unbroken chain of possession or regular pattern of usage cannot be demonstrated, and includes a Denesuline archaeological specimen referred to in section 40.4.9 of the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement).

“palaeontological site” means a site where a fossil is found.

“fossil” includes:

Fossil means the hardened or preserved remains or impression of previously living organisms or vegetation and includes:

- (a) natural casts;*
- (b) preserved tracks, coprolites and plant remains; and*
- (c) the preserved shells and exoskeletons of invertebrates and the preserved eggs, teeth and bones of vertebrates.*

Guidelines for Developers for the Protection of Archaeological Resources in the Nunavut Territory

(Note: Partial document only, complete document at: www.ch.gov.nu.ca/en/Archaeology.aspx)

Introduction

The following guidelines have been formulated to ensure that the impacts of proposed developments upon heritage resources are assessed and mitigated before ground surface altering activities occur. Heritage resources are defined as, but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historic buildings and cairns. Effective collaboration between the developer, the Department of Culture, and Heritage (CH), and the contract archaeologist(s) will ensure proper preservation of heritage resources in the Nunavut Territory. The roles of each are briefly described.

⁵ s. 51(1)

⁶ P.C. 2001-1111 14 June, 2001

CH is the Nunavut Government agency which oversees the protection and management of heritage resources in Nunavut, in partnership with land claim authorities, regulatory agencies, and the federal government. Its role in mitigating impacts of developments on heritage resources is as follows: to identify the need for an impact assessment and make recommendations to the appropriate regulatory agency; set the terms of reference for the study depending upon the scope of the development; suggest the names of qualified individuals prepared to undertake the study to the developer; issue an archaeologist or palaeontologist permit authorizing field work; assess the completeness of the study and its recommendations; and ensure that the developer complies with the recommendations.

The primary regulatory agencies that CH provides information and assistance to are the Nunavut Impact Review Board, for development activities proposed for Inuit Owned Lands (as defined in Section 1.1.1 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)*), and the Indigenous and Northern Affairs Canada, for development activities proposed for federal Crown Lands.

A developer is the initiator of a land use activity. It is the obligation of the developer to ensure that a qualified archaeologist or palaeontologist is hired to perform the required study and that provisions of the contract with the archaeologist or palaeontologist allow permit requirements to be met; i.e. fieldwork, collections management, artifact and specimen conservation, and report preparation. On the recommendation of the contract archaeologist or palaeontologist in the field and the Government of Nunavut, the developer shall implement avoidance or mitigative measures to protect heritage resources or to salvage the information they contain through excavation, analysis, and report writing. The developer assumes all costs associated with the study in its entirety.

Through his or her active participation and supervision of the study, the contract archaeologist or palaeontologist is accountable for the quality of work undertaken and the quality of the report produced. Facilities to conduct fieldwork, analysis, and report preparation should be available to this individual through institutional, agency, or company affiliations. Responsibility for the curation of objects recovered during field work while under study and for documents generated in the course of the study as well as remittance of artifacts, specimens and documents to the repository specified on the permit accrue to the contract archaeologist or palaeontologist. This individual is also bound by the legal requirements of the *Nunavut Archaeological and Palaeontological Sites Regulations*.

Types of Development

In general, those developments that cause concern for the safety of heritage resources will include one or more of the following kinds of surface disturbances. These categories, in combination, are comprehensive of the major kinds of developments commonly proposed in Nunavut. For any single development proposal, several kinds of these disturbances may be involved

- *Linear disturbances: including the construction of highways, roads, winter roads, transmission lines, and pipelines;*
- *Extractive disturbances: including mining, gravel removal, quarrying, and land filling;*

- *Impoundment disturbances: including dams, reservoirs, and tailings ponds;*
- *Intensive land use disturbances: including industrial, residential, commercial, recreational, and land reclamation work, and use of heritage resources as tourist developments.*
- *Mineral, oil and gas exploration: establishment of camps, temporary airstrips, access routes, well sites, or quarries all have potential for impacting heritage resources.*

Types of Studies Undertaken to Preserve Heritage Resources

Overview: An overview study of heritage resources should be conducted at the same time as the development project is being designed or its feasibility addressed. They usually lack specificity with regard to the exact location(s) and form(s) of impact and involve limited, if any, field surveys. Their main aim is to accumulate, evaluate, and synthesize the existing knowledge of the heritage of the known area of impact. The overview study provides managers with baseline data from which recommendations for future research and forecasts of potential impacts can be made. A Class I Permit is required for this type of study if field surveys are undertaken.

Reconnaissance: This is done to provide a judgmental appraisal of a region sufficient to provide the developer, the consultant, and government managers with recommendations for further development planning. This study may be implemented as a preliminary step to inventory and assessment investigations except in cases where a reconnaissance may indicate a very low or negligible heritage resource potential. Alternately, in the case of small-scale or linear developments, an inventory study may be recommended and obviate the need for a reconnaissance.

The main goal of a reconnaissance study is to provide baseline data for the verification of the presence of potential heritage resources, the determination of impacts to these resources, the generation of terms of reference for further studies and, if required, the advancement of preliminary mitigative and compensatory plans. The results of reconnaissance studies are primarily useful for the selection of alternatives and secondarily as a means of identifying impacts that must be mitigated after the final siting and design of the development project. Depending on the scope of the study, a Class 1 or Class 2 Permit is required for this type of investigation.

Inventory: A resource inventory is generally conducted at that stage in a project's development at which the geographical area(s) likely to sustain direct, indirect, and perceived impacts can be well defined. This requires systematic and intensive fieldwork to ascertain the effects of all possible and alternate construction components on heritage resources. All heritage sites must be recorded on Government of Nunavut Site Survey forms. Sufficient information must be amassed from field, library and archival components of the study to generate a predictive model of the heritage resource base that will:

- allow the identification of research and conservation opportunities;
- enable the developer to make planning decisions and recognize their likely effects on the known or predicted resources; and

- make the developer aware of the expenditures, which may be required for subsequent studies and mitigation. A Class 1 or 2 permit is required.

Assessment: At this stage, sufficient information concerning the numbers and locations of heritage resources will be available, as well as data to predict the forms and magnitude of impacts. Assessments provide information on the size, volume, complexity and content of a heritage resource, which is used to rank the values of different sites or site types given current archaeological knowledge. As this information will shape subsequent mitigation program(s), great care is necessary during this phase.

Mitigation: This refers to the amelioration of adverse impacts to heritage resources and involves the avoidance of impact through the redesign or relocation of a development or its components; the protection of the resource by constructing physical facilities; or, the scientific investigation and recovery of information from the resource by excavation or other method. The type(s) of appropriate mitigative measures are dictated by their viability in the context of the development project. Mitigation strategies must be developed in consultation with, and approved by, the Department of Culture and Heritage. It is important to note that mitigation activities should be initiated as far in advance of the construction of the development as possible.

Surveillance and monitoring: These may be required as part of the mitigation program.

Surveillance may be conducted during the construction phase of a project to ensure that the developer has complied with the recommendations.

Monitoring involves identification and inspection of residual and long-term impacts of a development (i.e. shoreline stability of a reservoir); or the use of impacts to disclose the presence of heritage resources, for example, the uncovering of buried sites during the construction of a pipeline.