



SCREENING DECISION REPORT NIRB FILE No.: 17WN058

NPC File No.: 148586
DFO File No.: 17-HCAA-00770
Transport Canada File No.: 2017-195

September 19, 2017

Following the Nunavut Impact Review Board's (NIRB or Board) assessment of all materials provided, the NIRB is recommending that a review of Government of Nunavut – Community and Government Services' "3AM-ARV1016 Water Reservoir Cell #3" is not required pursuant to paragraph 92(1)(a) of the *Nunavut Planning and Project Assessment Act* (NuPPAA).

Subject to the Proponent's compliance with the terms and conditions as set out in below, the NIRB is of the view that the project proposal is not likely to cause significant public concerns, and it is unlikely to result in significant adverse environmental and social impacts. The NIRB therefore recommends that the responsible Minister accepts this Screening Decision Report.

OUTLINE OF SCREENING DECISION REPORT

- 1) REGULATORY FRAMEWORK
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REGULATORY FRAMEWORK

The primary objectives of the NIRB are set out in Section 12.2.5 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (Nunavut Agreement) as follows:

"In carrying out its functions, the primary objectives of NIRB shall be at all times to protect and promote the existing and future well-being of the residents and communities of the Nunavut Settlement Area, and to protect the ecosystemic integrity of the Nunavut

Settlement Area. NIRB shall take into account the well-being of the residents of Canada outside the Nunavut Settlement Area.”

These objectives are confirmed under section 23 of the NuPPAA.

The purpose of screening is provided for under section 88 of the NuPPAA:

“The purpose of screening a project is to determine whether the project has the potential to result in significant ecosystemic or socio-economic impacts and, accordingly, whether it requires a review by the Board...”

To determine whether a review of a project is required, the NIRB is guided by the considerations as set out under subsection 89(1) of NuPPAA:

“89. (1) The Board must be guided by the following considerations when it is called on to determine, on the completion of a screening, whether a review of the project is required:

- (a) a review is required if, in the Board’s opinion,*
 - i. the project may have significant adverse ecosystemic or socio-economic impacts or significant adverse impacts on wildlife habitat or Inuit harvest activities,*
 - ii. the project will cause significant public concern, or*
 - iii. the project involves technological innovations, the effects of which are unknown; and*
- (b) a review is not required if, in the Board’s opinion,*
 - i. the project is unlikely to cause significant public concern, and*
 - ii. its adverse ecosystemic and socioeconomic impacts are unlikely to be significant, or are highly predictable and can be adequately mitigated by known technologies.”*

It is noted that subsection 89(2) provides that the considerations set out in paragraph 89(1)(a) prevail over those set out in paragraph 89(1)(b).

Where the NIRB determines that a project may be carried out without a review, the NIRB has the discretion to recommend specific terms and conditions to be attached to any approval of the project proposal. Specifically, paragraph 92(2)(a) of NuPPAA provides:

“92. (2) In its report, the Board may also
(a) recommend specific terms and conditions to apply in respect of a project that it determines may be carried out without a review.”

PROJECT REFERRAL

On May 18, 2017 the Nunavut Impact Review Board (NIRB or Board) received a referral to screen Government of Nunavut – Community and Government Services’ (GN-CGS) “3AM-ARV1016 Water Reservoir Cell #3” project proposal from the Nunavut Planning Commission (NPC or Commission), with an accompanying positive conformity determination

with the Keewatin Regional Land Use Plan. The NPC noted that the previous conformity determination issued on January 28, 2010 for the activities associated with the current proposal continues to apply and has determined that the project proposal is a significant modification to the project because the quantity of water in the license would more than double to 175,000 cubic metres.

Pursuant to Article 12, Sections 12.4.1 and 12.4.4 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (Nunavut Agreement) and section 87 of the *Nunavut Planning and Project Assessment Act* (NuPPAA), the NIRB commenced screening this project proposal and assigned it file number 17WN058.

PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

1. Project Scope

The proposed “3AM-ARV1016 Water Reservoir Cell #3” project is located in the Kivalliq region, within the municipal boundaries of the Hamlet of Arviat. The Proponent intends to construct and operate a new water treatment plant and drinking water storage reservoir (Cell #3) for the Hamlet of Arviat as well as increase the amount of water required to meet the demands of a growing community. Equipment mobilization is proposed to take place in summer 2017, with construction and operations proposed to begin in 2018. The project anticipated to meet the Hamlet’s water needs until 2038.

As required under subsection 86(1) of the NuPPAA, the Board accepts the scope of the 3AM-ARV1016 Water Reservoir Cell #3 project as set out by GN-CGS in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Construction supplies brought in to Arviat via sealift;
- Construction of a new water treatment facility, containing a reconditioned pump house and a new pump house, a treated water storage tank, and a wastewater storage tank;
- Construction of a new 103,427 cubic metre (m³) water storage reservoir (Cell #3) and excavated material to be used for berm construction;
- Use of heavy equipment for construction and use of approximately 110,000 litres (L) of diesel fuel which would be sourced locally via fuel truck;
- Addition of new fencing, berms, drainage ditches, and seasonal overland pipe to extend existing structures;
- Water retrieval from current source, Wolf Creek increasing from the previously approved withdrawal rates of 81,000 m³ to approximately 175,000 m³ annually;
- Treatment of water in the water treatment facility using strainers, pressure media filtration, cartridge filtration, ultraviolet disinfection, chlorine disinfection, flocculation if necessary, and fluoridation;
- Storage of approximately 800 L of granular calcium hypochlorite and 300 L of hydrofluosilicic acid for water treatment stored on site;
- Use of Hamlet’s water and sewage trucks to fill and empty storage tanks in treatment facility, accessing site by existing Hamlet road and new proposed truck turn-around space;
- Deposition of treatment wastewater in the community sewage lagoon;

- Storage of approximately 36,253 L of fuel onsite for heating and for the back-up generator which would be sourced locally by fuel truck; and
- Proper handling of fuels, chemicals, and waste (Operation and Maintenance Plans, Environmental Management Plan, and Environmental Contingency Plans provided).

2. Inclusion or Exclusion to Scoping List

The NIRB has identified no additional works or activities in relation to the project proposal. As a result, the NIRB proceeded with screening the project based on the scope as described above.

3. Key Stages of the Screening Process

The following key stages were completed:

Date	Stage
May 18, 2017	Receipt of project proposal and positive conformity determination (Keewatin Regional Land Use Plan) from the NPC
May 23, 2017 & June 6, 2017	Information request(s)
June 12, 2017	Proponent responded to information request(s)
June 14, 2017	Scoping pursuant to subsection 86(1) of the NuPPAA
June 14, 2017	Public engagement and comment request
July 5, 2017	Receipt of public comments
July 13, 2017	Proponent provided with an opportunity to address comments/concerns raised by public
July 24, 2017	Ministerial extension requested from the Minister of Indigenous and Northern Affairs
August 21, 2017	Proponent responded to comments/concerns raised by public

4. Public Comments and Concerns

Notice regarding the NIRB's screening of this project proposal was distributed on June 14, 2017 to community organizations in Arviat, as well as to relevant federal and territorial government agencies, Inuit organizations and other parties. The NIRB requested that interested parties review the proposal and provide the Board with any comments or concerns by July 5, 2017 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; if so, why;
- Whether the project proposal is of a type where the potential adverse effects are highly predictable and mitigable with known technology, (please provide any recommended mitigation measures); and

- Any matter of importance to the Party related to the project proposal.

The following is a summary of the comments and concerns received by the NIRB:

Environment and Climate Change Canada (ECCC)

- Has no comments regarding the project proposal.

Fisheries and Oceans Canada (DFO)

- The project application does not contain sufficient information to determine whether the proposed activities could result in serious harm to fish, and recommended the Proponent complete a request for review form in order for DFO to complete the review of the proposal.
- Proponent is required to comply with the *Fisheries Act* and recommended to follow DFO's guidance tool.

Indigenous and Northern Affairs Canada (INAC)

- Noted its inability to offer comments on whether the proposed project is likely to arouse significant public concern since the project application does not contain detailed records of community consultation activities undertaken to discuss potential community concerns regarding the proposed activities.
- The proposed project has the potential to cause permafrost degradation, and recommended the Proponent provide clarification on its plan to incorporate permafrost protection measures during construction.

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

No concerns or comments were received with respect to Inuit Qaujimaningit or traditional and community knowledge in relation to the proposed project.

6. Proponent's Response to Public Comments and Concerns

The following is a summary of the Proponent's response to concerns as received on August 21, 2017:

- In response to concerns that the project application does not contain sufficient information to determine whether the proposed activities could result in serious harm to fish, the Proponent highlighted the following:
 - The expansion of the raw water storage along with the construction of Cell #3 and the new water treatment plant does not change the location or configuration of the current community water intake at Wolf Creek;
 - The floating intake with a fish screen is positioned in Wolf Creek seasonally and the estimated water withdrawal rates would be at a level that will not cause any significant detectable changes to the Wolf Creek ecosystem; and
 - Indicated that a "Request for Review" will be submitted to DFO by August 25, 2017.
- In addressing concerns regarding the lack of detailed records of community consultation, the Proponent noted the following:

- A public hearing was held on October 19, 2010, and more recently on March 16, 2017 for the update of the community plan, which is currently in progress (not yet published); and
- Noted that if there was significant community concern on the location of the third reservoir cell, the item would not have been part of two (2) consecutive community plans in moving ahead with the proposed project.
- In response to concerns regarding permafrost degradation as a result of project activities, the Proponent indicated the following:
 - Permafrost impacts will be mitigated by excavating and installing liners as quickly as possible, in order not to allow the ground to thaw; and
 - Proponent will work with its consultant and contractors to determine the most effective schedule to minimize the risk of permafrost degradation while completing the project within the 2018 construction season.

7. Time of Report Extension

As a result of the time required to allow the Proponent to respond to parties' concerns regarding the proposed activities, the NIRB was not able to provide its screening decision report to the responsible Minister within 45 days as required by Article 12, Section 12.4.5 of the Nunavut Agreement and subsection 92(3) of the NuPPAA. Therefore, on July 24, 2017 the NIRB wrote to the Minister of Indigenous and Northern Affairs, seeking an extension to the 45-day timeline for the provision of the Board's Report.

ASSESSMENT OF THE PROJECT PROPOSAL IN ACCORDANCE WITH PART 3 OF NUPPAA

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.

Accordingly, the assessment of impact significance was based on the analysis of those factors that are set out under section 90 of the NuPPAA. The Board took particular care to take into account Inuit Qaujimaningit, traditional 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:

1. *The size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts.*

The proposed project would occur in a small geographical area of approximately 0.1 square kilometres (km²) near the existing Hamlet of Arviat's water reservoir cell. The reservoir cell would be located to the west-northwest of the community, adjacent to two (2) existing cells located next to a road leading outside of town. The Proponent has indicated that the specific area where the new water reservoir cell (#3) and new water treatment plant would be constructed has previously been disturbed by municipal activities, and that there is limited vegetation within the area to serve as a potential attractant to any known terrestrial wildlife, including ungulate populations. Further, due to the proposed activities occurring in a

previously disturbed location, consistent human interaction with terrestrial wildlife species, including wildlife habitats is unlikely, although there is potential for project activities to impact small mammals, including migratory birds and non-migratory birds habituated to the project area, and potentially alter their migratory patterns.

2. *The ecosystemic sensitivity of that area.*

The proposed project would occur near the existing Hamlet of Arviat's water reservoir cell and neither the Proponent nor commenting parties has identified the project site as having any particular ecosystemic sensitivity. Further, it is not expected that any existing ecosystemic features in the area would be subjected to additional environmental stressors or impacts beyond those already occurring and managed within the project area. However, this area has been identified as having value and priority to the local community for:

- Community travel route,
- Fresh water intake area,
- Vegetation, and
- Bird species.

3. *The historical, cultural and archaeological significance of that area.*

The project proponent has indicated there are no known archaeological/paleontological sites within the vicinity of the project area. As well, during the commenting period no parties specifically identified any known areas of historical, cultural and archaeological significance associated with the project area. Further, as the proposed activities would occur within an area that has been previously disturbed due to previous and existing municipal activities, it is unlikely that the proposed activities would interact with any cultural resources or archeological sites in the area. Should the project be approved to proceed, the Proponent would be required to contact the Government of Nunavut – Department of Culture and Heritage if any sites of historical, cultural, or archaeological significance are encountered.

4. *The size of the human and the animal populations likely to be affected by the impacts.*

The proposed project would occur within the municipality of Arviat, as such, resident human populations are likely to be affected by project impacts. No specific animal populations have been identified by the Proponent, or commenting parties, as likely to be affected by potential project impacts.

Although no significant public concerns were raised during the public commenting period, the NIRB notes that the close proximity of the proposed activities to the public road used by community of Arviat and an area used by residents for recreational/traditional pursuits could potentially contribute to public concern developing. A term and condition has been recommended to direct engagement with the community, hunters and trappers organization and interested parties, as well as the posting of public notices to ensure residents are aware of the construction activities being or to be conducted.

5. *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.*

As the “3AM-ARV1016 Water Reservoir Cell #3” project would involve the construction of a new water reservoir cell (#3) and new water treatment plant near an existing community water storage reservoir, the nature of potential impacts is considered to be well-known. Potential adverse effects are likely to be of low magnitude, infrequent, mitigable, and reversible should they occur considering the operational contingencies to be put in place and the mitigation measures that would be adhered to during the construction and operation of the facilities by the Proponent.

6. *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.*

The proposed project would occur in an area with some history of development, however, past activities have been primarily associated with different municipal undertakings such as quarry activities (GN-CGS’ “Arviat Quarry 2”, NIRB File No. 14QN038; and GN-CGS’ “Hamlet of Arviat Quarry, NIRB File No. 06QN005); and road construction (Arviat Inuit Enterprises’ “Right of Way”, NIRB File No. 12AN003; and Hamlet of Arviat’s “Maguse Road Project”, NIRB File No. 04WN116). The proposed project could contribute cumulatively to soil and water contamination, dust dispersion, fuel spills, and outflow of waste water; however the result of the implementation of the proposed activities, and other projects occurring the region have been considered in the development of the NIRB’s recommendations. No other projects are expected to occur in the project area defined for this project proposal, and no concerns of cumulative impacts were raised during the assessment.

7. *Any other factor that the Board considers relevant to the assessment of the significance of impacts.*

No other specific factors have been identified as relevant to the assessment of this project proposal.

Views of the Board

In considering the factors as set out above in the screening of the project proposal, the NIRB has identified a number of issues below and respectfully provide the following views regarding whether or not the proposed project has the potential to result in significant impacts. In addition, the NIRB has proposed terms and conditions that would mitigate the potential adverse impacts identified.

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: 1-4.

Ecosystem, wildlife habitat and Inuit harvesting activities:

Issue 1: Potential negative impacts to small mammals, migratory birds, non-migratory birds, and their associated habitats due to increased noise generated from ground disturbance activities, including excavation, construction of the water reservoir cell and new water treatment plant, and overland transportation of equipment using trucks.

Board views: As discussed above in the assessment of factors relevant to this project proposal, the potential for impact(s) is applicable to a small geographic area encompassing the footprint of the Hamlet of Arviat's existing water reservoir cell, which already included two (2) cells adjacent to a public road to the west-northwest of the community. The probability of impacts occurring is considered to be low, with potential negative effects anticipated to be low in magnitude, and it is unlikely that the proposed facilities and associated construction, including operations, would interact significantly with any terrestrial wildlife species and wildlife habitats in the area. However, small mammals and non-migratory birds with limited home range size habituated to project area may be affected by ground disturbance activities, including noise from vehicular movement and waste materials generated from construction activities and facility operations. Specific operational restrictions regarding overland travels, as well as waste management and wildlife management protocols are expected to mitigate any potential negative impacts to terrestrial wildlife and migratory and non-migratory birds within and around the vicinity of the project area.

The Proponent would also be required to follow the *Migratory Birds Convention Act*, *Migratory Birds Regulations*, *Species at Risk Act*, the *Wildlife Act (Nunavut)*, and the *Arctic Waters Pollution Prevention Act* (see Regulatory Requirements section).

Recommended Mitigation Measures: It is recommended that the potential negative impacts to terrestrial wildlife species, migratory and non-migratory birds may be mitigated by measures such as requiring the Proponent to employ general wildlife avoidance measures and best management practices, as well as following mitigation protocols outlined within the various operational management plans. The following terms and conditions are recommended to mitigate the potential negative impacts: 6, 7, 14 through 17 and 20.

Issue 2: Potential negative impacts to surface water quality and quantity, marine quality, and fish and fish habitat from the increase in water withdrawal activities, potential contamination from accidental fuel spills, waste disposal, and sediment runoff during construction and excavation activities, and the potential increase in dust from project activities.

Board views: There is potential for project related activities to cause the release of deleterious substances or contaminants into the aquatic environment, which may subsequently induce changes to water chemistry and consequently affect fish health and fish habitats. Further, the increase in water withdrawal activities may also cause potential negative effects to Wolf Creek and the associated fish and fish habitat. The Proponent has indicated that the expansion of the raw water storage with the construction of Cell #3 and the construction of the new water treatment plant would not change the location or

configuration of the current community water intake at Wolf Creek, and further clarified that the estimated water withdrawal rate will not cause any detectable changes to Wolf Creek. The Proponent has also submitted a comprehensive Environmental Management Plan, which outlines appropriate measures and protocols for managing the aquatic ecosystem in response to solid wastes, sewage, fuel spills and waste water from the proposed facilities. The potential for negative impacts to the aquatic environment are considered to be of low magnitude, infrequent in occurrence and reversible in nature.

The water withdrawal activities would require a licence from the Nunavut Water Board. Further, the Proponent would be required to follow the *Arctic Waters Pollution Prevention Act*, *Fisheries Act*, *The Nunavut Waters and Nunavut Surface Rights Tribunal Act*, *the Transportation of Dangerous Goods Regulations*, and *Transportation of Dangerous Goods Act* (see Regulatory Requirements section).

Recommended Mitigation Measures: It is recommended that the potential negative impacts would be mitigated by measures requiring the Proponent to implement suitable erosion and sediment suppression measures to prevent sediments from entering any waterbody. Additional measures such as the use of secondary containment and locating all fuel and other hazardous materials a minimum distance from any water body are expected to reduce impacts to the surrounding waterbodies and protect local fisheries. The following terms and conditions are recommended to mitigate the potential negative impacts from the proposal: 5, 8 through 13 and 19.

Issue 3: Potential negative impacts to ground stability, vegetation health, soil quality, terrain, and permafrost from ground based activities, such as excavation, construction, fuel storage and overland transportation.

Board views: The use of heavy equipment for ground excavation may result in permafrost disturbance and soil compaction or rutting, which could subsequently contribute to soil erosion during snow melt in late spring and early summer. There is also the potential for impacts to vegetation health and soil quality from construction activities on site and potential fuel or chemical spills. However, it is noted that the activities are applicable to a small geographic area and the potential for negative impacts to ground stability, vegetation health, soil quality, terrain, and permafrost are considered to be of low magnitude, infrequent in occurrence and reversible in nature. The Proponent has committed to ensuring that permafrost impacts would be mitigated during construction by installing a liner on the ground quickly as to not allow the ground to thaw. In addition, the Proponent has also committed to undertaking proper monitoring of the proposed facility in order to minimize impacts of the facility on permafrost, vegetation, soil quality and the surrounding environment.

The Proponent would be required to follow the *Transportation of Dangerous Goods Regulations*, *Transportation of Dangerous Goods Act* and the *Canadian Environmental Protection Act* (see Regulatory Requirements section).

Recommended Mitigation Measures: It is recommended that the potential negative impacts to the terrestrial environment, particularly for ground stability, permafrost, vegetation and surface soils would be mitigated by requiring the Proponent to adhere to operational restrictions for overland transport, remove all garbage onsite and undertake restoration of the lands used upon abandonment of site. The Board recommends terms and conditions 18, 19, 21 and 22.

Issue 4: Potential negative impacts to ambient air quality from fugitive dust and emissions generated from construction activities and use of heavy equipment.

Board views: There is potential for negative impacts to ambient air quality due to dust generated from construction activities and engine emissions from the use of heavy equipment, which will be limited to a small geographical area within the project site and with a low probability of extending beyond the project area. The potential negative impacts to air quality are considered to be of low magnitude, short-term, and reversible. The Proponent has committed to follow vehicular speed limits to manage dust around the site.

Recommended Mitigation Measures: It is recommended that the potential negative impacts to air quality would be mitigated by measures such as requiring the Proponent to adhere to implementing dust management strategies and ensuring that engine idling is minimized. The Board recommends the following term and condition to mitigate the potential negative impacts to air quality: 20.

Issue 5: Potential negative impacts to public and traditional land use activities in the area due to construction and operations of new municipal facilities and transportation of personnel and equipment to and from the project site.

Board Views: The Proponent has indicated that the proposed activities would take place within the municipal boundaries of Arviat, and due to the site's close proximity to the municipality, it is unlikely that the specific project site would be used for any traditional activities, including wildlife harvesting. As the project area is adjacent to a road used by Arviat residents to access public areas outside of the municipality, a term and condition has been recommended to ensure no impacts to public access occur during project activities.

Recommended Mitigation Measures: Term and condition 23 is recommended to ensure that the affected communities and organizations are informed about the project proposal and term and condition 25 has been recommended to ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities in the area. In addition, terms and conditions 14 through 17 have been recommended to minimize interference with the movements of terrestrial wildlife and nesting/breeding birds.

Socio-economic effects on northerners:

Issue 6: Potential for negative impacts to historical, cultural and archaeological sites from construction activities and the development of the new treatment facility and additional water storage reservoir.

Board Views: The geographic area for the project proposal would encompass a small area adjacent to an existing water reservoir footprint and existing municipal activities, as such it is unlikely that the Proponent would come into contact with any archaeological sites, or would interact significantly with any known archaeological and paleontological resources in the area. Should the project be approved to proceed the Proponent would be required to contact the Government of Nunavut – Department of Culture and Heritage when encountering any historical sites and is required to follow the *Nunavut Act* (as recommended in Regulatory Requirements section).

Recommended Mitigation Measures: Term and condition 23 is recommended to ensure that available Inuit Qaujimaningit can inform project activities, and reduce the potential for negative impacts occurring to any additional historical sites.

Issue 7: Potential positive impacts to the local community from increasing water volume to meet the demands of the community and from contracting opportunities for local businesses.

Board Views: The Proponent has indicated that the completion of the proposed project would increase the amount of daily water volume for community use, which is considered a positive impact to the local community. Further, the Proponent has committed to publishing a construction work tender to provide business contracting opportunities for local business firms.

Recommended Mitigation Measures: Terms and conditions 23 and 24 have been recommended to ensure the Proponent continues to inform the community of the construction activities as well as provide community members with information to ensure a successful business contracting and local hiring opportunities.

Significant public concern:

Issue 8: No significant public concern was expressed during the public commenting period for this file.

Board Views: Follow up consultation and involvement of local community members is expected to mitigate any potential for public concern resulting from the project activities. Further it is noted that the Proponent has committed to consulting with local community members during the construction and the operation of the new water treatment plant and new drinking water storage reservoir for the community.

Recommended Mitigation Measures: Term and condition 23 is recommended to ensure that the affected community and organizations are informed about the project proposal, and to provide the Proponent with an opportunity to proactively address or mitigate any concerns that may arise from the project activities findings. Term and condition 24 is

recommended to ensure that the Proponent provide community members with information to ensure a successful local hiring opportunity.

Technological innovations for which the effects are unknown:

No specific issues have been identified associated with this project proposal.

In considering the above factors and subject to the Proponent's compliance with 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. Government of Nunavut – Community and Government Services (the Proponent) shall maintain a copy of the Project Terms and Conditions at the site of operation at all times.
2. The Proponent shall forward copies of all permits obtained and required for this project to the Nunavut Impact Review Board (NIRB) prior to the commencement of the project.
3. The Proponent shall operate in accordance with all commitments stated in correspondence provided to the Nunavut Planning Commission (Application to Determine Conformity, May 18, 2017), and the NIRB (Online Application Form, June 12, 2017, including the Proponent Response to Comments, August 21, 2017).
4. The Proponent shall operate the site in accordance with all applicable Acts, Regulations and Guidelines.

Water Use

5. The Proponent shall not use water, including constructing or disturbing any stream, lakebed or the banks of any definable water course unless approved by the Nunavut Water Board.

Waste Disposal

6. The Proponent shall keep all garbage and debris in bags placed in a covered metal container or equivalent until disposed of at an approved facility. All such wastes shall be kept inaccessible to wildlife at all times.

Fuel and Chemical Storage

7. The Proponent shall store all fuel and chemicals in such a manner that they are inaccessible to wildlife.
8. Unless otherwise authorized by the Nunavut Water Board, the Proponent shall locate all fuel and other hazardous materials a minimum of thirty-one (31) metres away from the high water mark of any water body and in such a manner as to prevent their release into the environment.

9. The Proponent shall ensure that re-fueling of all equipment occurs a minimum of thirty-one (31) metres away from the high water mark of any water body, unless otherwise authorized by the Nunavut Water Board.
10. The Proponent shall use adequate secondary containment or a surface liner (e.g., self-supporting insta-berms and fold-a-tanks) when storing barreled fuel and chemicals at all locations.
11. The Proponent shall ensure that appropriate spill response equipment and clean-up materials (e.g., shovels, pumps, barrels, drip pans, and absorbents) are readily available during any transfer of fuel or hazardous substances, at all fuel storage sites, at all refuelling stations, at vehicle maintenance areas and at drill sites.
12. The Proponent shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment.
13. The Proponent shall ensure that all personnel are properly trained in fuel and hazardous waste handling procedures, as well as spill response procedures. All spills of fuel or other deleterious materials of any amount must be reported immediately to the 24 hour Spill Line at (867) 920-8130.

Wildlife - General

14. The Proponent shall ensure that there is no damage to wildlife habitat in conducting this operation.
15. The Proponent shall not harass wildlife. This includes persistently circling, chasing, pursuing or in any other way harass wildlife, or disturbing large groups of animals.
16. The Proponent shall ensure that all project personnel are made aware of the measures to protect wildlife and are provided with training and/or advice on how to implement these measures.

Migratory Birds and Raptors Disturbance

17. The Proponent shall not disturb or destroy the nests or eggs of any birds. If nests are encountered and/or identified, the Proponent shall take precaution to avoid further interaction and or disturbance (e.g., a 100 metres buffer around the nests). If active nests of any birds are discovered (i.e., with eggs or young), the Proponent shall avoid these areas until nesting is complete and the young have left the nest.

Ground Disturbance

18. 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.
19. The Proponent shall implement suitable erosion and sediment suppression measures on all areas before, during and after conducting activities in order to prevent sediment from entering any waterbody.
20. All construction and road vehicles must be fitted with standard and well-maintained noise suppression devices and engine idling is to be minimized.

Restoration of Disturbed Areas

21. The Proponent shall remove all garbage, fuel and equipment upon completion of construction activities and abandonment.
22. The Proponent shall complete all clean-up and restoration of the lands used prior to abandonment of site.

Other

23. The Proponent should engage with local residents regarding planned activities in the area and should solicit available Inuit Qaujimaningit and information regarding current recreational and traditional usage of the project area which may inform project activities. Posting of translated public notices and direct engagement with potentially interested groups and individuals prior to undertaking project activities is strongly encouraged.
24. The Proponent should, to the extent possible, hire local people.
25. The Proponent shall ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities.

OTHER NIRB CONCERNS AND RECOMMENDATIONS

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

Change in Project Scope

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

Bear and Carnivore Safety

2. 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: http://www.enr.gov.nt.ca/sites/default/files/web_pdf_wd_bear_safety_brochure_1_may_2015.pdf.
3. 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.
4. 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 Arviat, phone: 867-857-3169).

Species at Risk

5. 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

6. 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.
7. 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://www.ec.gc.ca/paom-itmb/>.

Transport and Management of Dangerous Goods

8. Environment and Climate Change Canada recommends that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.

Nunavut Water Board

9. The Nunavut Water Board impose mitigation measures, conditions and monitoring requirements pursuant to the Water Licence, which require the Proponent to respect the sensitivities and importance of water in the area. These mitigation measures, conditions and monitoring requirements should be in regard to use of water, snow and ice; waste disposal; spill contingency planning; abandonment and restoration planning; and monitoring programs.

Indigenous and Northern Affairs Canada – Water Resources Division

10. INAC – Water Resources Division should consider the importance of conducting regular inspections, pursuant to the authority of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, while the project is in operation. Inspectors should focus on ensuring the Proponent is in compliance with the conditions imposed through the Water Licence.

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* and *Migratory Birds Regulations* (<http://laws-lois.justice.gc.ca/eng/acts/M-7.01/>).
4. The *Species at Risk Act* (<http://laws-lois.justice.gc.ca/eng/acts/S-15.3/index.html>). 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>) contains provisions to protect and conserve wildlife and wildlife habitat, including specific protection measures for wildlife habitat and species at risk.
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 Regulations* (<http://www.tc.gc.ca/eng/tdg/clear-tofc-211.htm>), *Transportation of Dangerous Goods Act* (<http://laws-lois.justice.gc.ca/eng/acts/t-19.01/>), and the *Canadian Environmental Protection Act* (<http://laws-lois.justice.gc.ca/eng/acts/C-15.31/>). The Proponent must ensure that proper shipping documents accompany all movements of dangerous goods. The Proponent must register with the Government of Nunavut, Department of Environment Manager of Pollution Control and Air Quality at 867-975-7748.
8. The *Canadian Aviation Regulations* (<https://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>).
9. The *Arctic Waters Pollution Prevention Act* (<http://laws-lois.justice.gc.ca/eng/acts/A-12/>).

CONCLUSION

The foregoing constitutes the Board's screening decision with respect to the Government of Nunavut – Community and Government Service "3AM-ARV1016 Water Reservoir Cell #3". The NIRB remains available for consultation with the Minister regarding this report as necessary.

Dated September 19, 2017 at Whale Cove, NU.



Elizabeth Copland, 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 (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 2017

Terrestrial Species at Risk ¹	COSEWIC Designation	Schedule of SARA	Government Organization with Primary Management Responsibility ²
Migratory Birds			
Buff-breasted Sandpiper	Special concern	Schedule 1	ECCC
Eskimo Curlew	Endangered	Schedule 1	ECCC
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	ECCC
Harris's Sparrow	Special Concern	Pending	ECCC
Horned Grebe (Western population)	Special Concern	Schedule 1	ECCC
Ivory Gull	Endangered	Schedule 1	ECCC
Peregrine Falcon	Special Concern (<i>anatum-tundrius</i> complex ³)	Schedule 1 - Schedule 3	ECCC
Red Knot (<i>islandica</i> subspecies)	Special Concern	Schedule 1	ECCC
Red Knot (<i>rufa</i> subspecies)	Endangered	Schedule 1	ECCC
Red-necked Phalarope	Special concern	Pending	ECCC
Ross's Gull	Threatened	Schedule 1	ECCC
Rusty Blackbird	Special Concern	Schedule 1	ECCC
Short-eared Owl	Special Concern	Schedule 1	ECCC
Vegetation			
Blanket-leaved Willow	Special Concern	Schedule 1	Government of Nunavut
Felt-leaf Willow	Special Concern	Schedule 1	Government of Nunavut
Porsild's Bryum (Moss)	Threatened	Schedule 1	Government of Nunavut
Arthropods			
Traverse Lady Beetle	Special Concern	Pending	Government of Nunavut
Terrestrial Wildlife			
Caribou (Barren-Ground population)	Threatened	Pending	Government of Nunavut
Dolphin and Union Caribou	Special Concern	Schedule 1	Government of Nunavut
Grizzly Bear (Western Population)	Special Concern	Pending	Government of Nunavut
Peary Caribou	Endangered	Schedule 1	Government of Nunavut
Peary Caribou (High Arctic Population)	Endangered	Schedule 2	Government of Nunavut
Peary Caribou (Low Arctic Population)	Threatened	Schedule 2	Government of Nunavut
Wolverine	Special Concern	Pending	Government of Nunavut
Wolverine (Western population)	Non-active	Pending	Government of Nunavut
Marine Wildlife			
Atlantic Walrus	Special Concern	Pending	DFO
Beluga Whale (Cumberland Sound population)	Endangered	Schedule 2	DFO
Beluga Whale (Eastern High Arctic – Baffin Bay population)	Special Concern	Pending	DFO
Beluga Whale (Eastern Hudson Bay population)	Endangered	Pending	DFO

Beluga Whale (Southeast Baffin Island – Cumberland Sound population)	Endangered	Schedule 2	DFO
Beluga Whale (Western Hudson Bay population)	Special Concern	Pending	DFO
Bowhead Whale (Eastern Arctic population)	Endangered	Schedule 2	DFO
Bowhead Whale (Eastern Canada – West Greenland population)	Special Concern	Pending	DFO
Killer Whale (Northwest Atlantic / Eastern Arctic populations)	Special Concern	Pending	DFO
Narwhal	Special Concern	Pending	DFO
Polar Bear	Special Concern	Schedule 1	Government of Nunavut/DFO
Fish			
Atlantic Cod, Arctic Lakes	Special Concern	Pending	DFO
Atlantic Wolffish	Special Concern	Schedule 1	DFO
Bering Wolffish	Special Concern	Schedule 3	DFO
Blackline Prickleback	Special Concern	Schedule 3	DFO
Fourhorn Sculpin	Special Concern	Schedule 3	DFO
Fourhorn Sculpin (Freshwater form)	Data Deficient	Schedule 3	DFO
Northern Wolffish	Threatened	Schedule 1	DFO
Roundnose Grenadier	Endangered	Pending	DFO
Spotted Whitefish	Threatened	Schedule 1	DFO
Thorny Skate	Special Concern	Pending	DFO

¹ The Department of Fisheries and Oceans has responsibility for aquatic species.

² Environment Canada (EC) 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 Palaeontological 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 Inventory
c)	Construction of linear disturbances, Extractive disturbances, Impounding disturbances and other land disturbance activities	Archaeological/ Palaeontological Inventory or Assessment 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*¹ to issue such permits.

- 2) The permittee/proponent shall not operate any vehicle over a known or suspected archaeological or palaeontological site.

¹ P.C. 2001-1111 14 June, 2001

- 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*², the federal government can make regulations for the protection, care and preservation of palaeontological and archaeological sites and specimens in Nunavut. Under

² s. 51(1)

the *Nunavut Archaeological and Palaeontological Sites Regulations*³, 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.

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

³ P.C. 2001-1111 14 June, 2001

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.