



SCREENING DECISION REPORT NIRB FILE No.: 18UN045

NPC File No.: 148924

September 4, 2018

Following the Nunavut Impact Review Board's (NIRB or Board) assessment of all materials provided, the NIRB is recommending that a review of Nunavut Excavating 2007 Inc.'s "Soil and Water Treatment Facility – Cambridge Bay" project proposal is not required pursuant to paragraph 92(1)(a) of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (*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 accept 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)* and are confirmed by s. 23 of the *NuPPAA*:

Nunavut Agreement, Article 12, Section 12.2.5: 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.

The purpose of screening is provided for under s. 88 of the *NuPPAA*:

NuPPAA, s. 88: 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 s. 89(1) of *NuPPAA*:

NuPPAA, s. 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 s. 89(2) of the *NuPPAA* provides that the considerations set out in paragraph 89(1)(a) prevail over those set out in paragraph 89(1)(b) of the *NuPPAA*.

As set out under s. 92(1) of the *NuPPAA*, upon conclusion of the screening process, the Board must provide its written report the Minister:

NuPPAA, s. 92(1): The Board must submit a written report to the responsible Minister containing a description of the project that specifies its scope and indicating that:

- (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.

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 pursuant to paragraph 92(2)(a) of *NuPPAA* as follows:

NuPPAA, s. 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 July 31, 2018 the Nunavut Impact Review Board (NIRB or Board) received a referral to screen Nunavut Excavating 2007 Inc.'s (the Proponent) "Soil and Water Treatment Facility – Cambridge Bay" project proposal from the Nunavut Planning Commission (NPC or Commission), which noted that the project proposal is outside the area of an applicable regional land use plan.

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 s. 87 of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (*NuPPAA*), the NIRB commenced screening this project proposal and assigned it file number **18UN045**.

PROJECT OVERVIEW & THE NIRB ASSESSMENT PROCESS

1. Project Scope

The proposed "Soil and Water Treatment Facility – Cambridge Bay" project is located within the Kitikmeot region, within the boundaries of the Hamlet of Cambridge Bay. The Proponent intends to conduct a soil and water remediation program of hydrocarbon contaminated soils and water for the Municipality of Cambridge Bay. The facility will operate from September 2018 to September 2024 at which point the operation would be re-evaluated with the Hamlet.

As required under s. 86(1) of the *NuPPAA*, the Board accepts the scope of the Soil and Water Treatment Facility – Cambridge Bay project as set out by Nunavut Excavating 2007 Inc. in the proposal. The scope of the project proposal includes the following undertakings, works, or activities:

- Operation, maintenance, and eventual decommissioning of a lined engineered cell consisting of three (3) sub-cells adjacent to the Municipality's Landfill;
 - One (1) 50 metre (m) by 40 m sub-cell for remediating soil contaminated with petroleum;
 - One (1) sub-cell to store up to 170 cubic metres (m³) of water for remediation of water and/or snow contaminated with petroleum;
 - One (1) 19 m by 14 m sub-cell for temporary storage of containerized hazardous wastes;
- Collection, storage, and treatment of hydrocarbon contaminated soil from the Municipality of Cambridge Bay;
- Testing of treated soil as required with eventual use as cover for the hamlet landfill or repurposed as permitted once soil levels reach established regulatory limits;
- Collection, storage, and treatment of contaminated snow/water from the Municipality of Cambridge Bay. Treatment to be completed by onsite water treatment plant with treated water to be stored in above ground storage tank(s). Treated water to be eventually used as either a moisture amendment in the soil remediation cell or released to the environment once it meets discharge criteria;
- Any soil or water not meeting discharge/reuse criteria would be transported off site for disposal at a suitable facility;

- Collection, sorting, storage, and eventual transportation of hazardous containerized waste to an authorized facility for final disposal;
- Installation of shallow groundwater monitoring wells around the engineered cell to be sampled annually;
- Installation of shed at the engineered cell for storage of supplies, documentation and health and safety equipment; and
- Use of accommodations and facilities in Cambridge Bay.

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
July 31, 2018	Receipt of project proposal and referral from the NPC
July 31, 2018	Information request
August 16, 2018	Proponent responded to information request
August 16, 2018	Scoping pursuant to s. 86(1) of the <i>NuPPAA</i>
August 16, 2018	Public engagement and comment request
August 27, 2018	Receipt of public comments

4. Public Comments and Concerns

Notice regarding the NIRB's screening of this project proposal was distributed on August 16, 2018 to community organizations in Cambridge Bay, 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 the NIRB's *proposed* project-specific terms and conditions, and provide the Board with any comments or concerns by August 27, 2018 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.

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

Government of Nunavut

- Recommended that the Proponent ensure that the project is aligned with the Nunavut Waste Management Strategy or other major waste management programs in Nunavut.

- Recommended that the Proponent briefly describe the environmental conditions of exiting landfill site where project will be located and confirm if the existing hazardous waste storage area will be transferred to the new facility.
- Recommended that the Proponent provide the rationale for the selected capacity of the soil and water treatment facility.
- Recommended that the Proponent reference and confirm adherence to regulatory standards that define criteria for site selection, setbacks from other facilities, design, construction, operation and closure of the soil and water treatment facility.
- Recommended that the Proponent provide information on Inuit employment opportunities.
- Recommended that the Proponent estimate the volumes of filtrate, contaminated runoff and snowmelt from the land farm and the hazardous waste storage area and how it will be collected, treated and disposed of.
- Recommended that the Proponent provide a plan and description for the site remediation upon project closure.
- Noted that an updated 2014 version of Environmental Guideline for Contaminated Site Remediation vs the 2003 version cited in the Operations and Maintenance Plan is available.
- Recommended that the Proponent have an additional spill kit and to clearly outline their locations within the facility.
- Recommended that the Proponent provide clarification on whether or not a bermed area for cleaning of equipment used in the landfarm operations will be present within the facility area.
- Recommend the Proponent outline the plan for training employees in spill response and the designated contacts responsible
- Recommend the Proponent increase the frequency of sampling groundwater to a minimum of once per season.
- Noted that updates to the Spill Contingency Plan are needed to reference relevant guidelines (e.g., Environmental Guideline for Management of Contaminated Sites; Contaminated Site Remediation; Industrial Waste Discharges into Municipal Waste and Sewage Treatment Facilities; and General Management of Hazardous Waste.

Crown Indigenous Relations and Northern Affairs Canada

- No comments or additional terms and conditions to offer at this time.

Environment and Climate Change Canada

- Recommends that the Proponent add the *Fisheries Act* s.36(3) under the Regulation or Guideline section of Table 1 in their Spill Contingency Plan.
- Recommends that the location of groundwater wells should be included in the pre-planning stages and include a background or reference location.
- Recommends that the sampling frequency for groundwater wells be reconsidered to include multiple samples collected throughout the year to capture potential negative impacts from the leachate.
- Recommends that the Proponent establish water quality thresholds that would trigger management actions in the event of declining surface and/or groundwater quality.
- Recommends that the Proponent retain monitoring data and laboratory reports, compare results against baseline conditions and threshold values, identify trends and exceedances, and manage adaptively if needed.

- Recommends that the Proponent use appropriate water control measures (e.g., grading, ditches, pond) to minimize water infiltration/runoff from the facility if necessary.
- Recommends that hazardous waste management (e.g., screening/acceptance, storage, secondary containment, and disposal) be considered and described by the Proponent.
- Recommends that the Proponent consult the Solid Waste Management for Northern and Remote Communities (Environment and Climate Change Canada, 2017) guidance document for best practices of hazardous waste management and additional resources on this topic. It is available at: <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/municipal-solid/environment/northern-remote-communities.html>
- Recommends that the Proponent provide contingency measures in the Emergency Response Plan and the Spill Contingency Plan to manage wastes in the event of operational upset.

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.

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 s. 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 geographic area for the proposed project is within the municipal boundaries of Cambridge Bay, approximately 650 m northeast of the municipality and adjacent to the community's landfill. The proposed activities are not likely to take place within habitat for far-ranging terrestrial wildlife species such as caribou and muskox; however, due to the ongoing traffic, ground disturbance and onsite construction activities, the project location would likely overlap with the range of small mammals and migratory and non-migratory birds. As the proposed project would involve construction of new engineered cells for receipt, storage and treatment of petroleum hydrocarbon contaminated soils, and include truck haulage of treated soils from the facility to the community landfill for use as cover materials once it has been cleared for use, there is potential for project activities to impact terrestrial wildlife, particularly small mammals with limited home range proximal to the project area.

2. *The ecosystemic sensitivity of that area.*

The proposed project would occur in an area with no particular identified ecosystemic sensitivity.

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

The proposed project would occur within the municipality of Cambridge Bay, and neither the project Proponent nor commenting parties indicated that there are any known areas of historical, cultural and archaeological significance associated with the project 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 historical sites 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; as such, human populations are likely to be affected by project impacts. Although no public concerns were raised during the public commenting period, the NIRB notes that the proximity of the proposed activities to the community of Cambridge Bay and to an area used by residents could potentially contribute to public concern developing. A term and condition has been recommended to direct engagement with the community, Hunters and Trappers Organization (HTO) and posting of public notices to ensure residents are aware of the development activities being or to be conducted.

No specific animal populations have been identified as likely to be affected by potential project impacts.

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 “Soil and Water Treatment Facility – Cambridge Bay” project is a proposed infrastructure development project, the nature of potential impacts is considered to be well-known, with potential for localized impacts to the biophysical environment that are mitigable with due care.

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 is located in the same area as Kitnuna Environmental Limited’s “Cambridge Bay Soil and Water Treatment Facility” project (NIRB File No.: 16XN034). Potential for cumulative impacts to wildlife and migratory and non-migratory birds resulting from the construction, operation and maintenance of these soil and water treatment facilities has been identified and considered in development of the recommended mitigation measures set out in the following section.

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.

Issue 1: Potential negative impacts to small mammals, migratory and non-migratory birds, and their habitat due to exposure to contaminated soils and water and from increased noise from transportation and construction activities.

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 in a previously disturbed area near the municipal landfill and sewage lagoon; however, migratory birds and small mammals with limited home ranges that overlap the project area may be affected by ground disturbance, noise from vehicular movement and hazardous waste materials generated from construction activities and facility operations. The Proponent has committed to ensuring that project activities would only take place within an existing industrial area and as such it is expected that no impacts on terrestrial wildlife or migratory birds proximal to the project location will occur. Operational restrictions regarding overland travel and landfarm operations, including waste management and wildlife management, are expected to mitigate any potential adverse impacts to terrestrial wildlife and migratory and non-migratory birds.

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

Recommended Mitigation Measures: It is recommended that the potential negative impacts be mitigated by measures such as requiring the Proponent to comply with recommended waste storage and wildlife management measures as well as operational restrictions pertaining to treatment of contaminated soils. The following terms and conditions are recommended to mitigate the potential adverse impacts: 6, 9, 19 through 21.

Issue 2: Potential negative impacts to vegetation health and soil quality, and water resources from fuel and hazardous waste materials at site during construction activities and operation of facility.

Board views: The potential for negative impacts is applicable to a small geographic area within in a previously disturbed area near the municipal landfill and sewage lagoon; however, land-based activities such as construction, vehicular movement, and facility operations could generate hazardous waste materials onsite which may subsequently contaminate the surrounding soils and vegetation with heavy metals and hydrocarbons. The Proponent has committed to proper treatment and disposal of hazardous waste materials, including undertaking environmental monitoring of the proposed site to minimize impacts of the facility on soil quality and the environment.

The Proponent would require a water licence from the Nunavut Water Board prior to discharge of waste water generated from the facility (see *Regulatory Requirements* section).

Recommended Mitigation Measures: Operational procedures for storage and transfer of fuels, including waste management, would reduce the risk of uncontrolled releases of deleterious substances into the natural environment. In addition, the following terms and conditions are recommended to mitigate the potential adverse impacts to surrounding environment from project activities: 5, 7, 8, 10 through 18; and 22 through 25.

Issue 3: Potential negative impacts to fish population, and water quality from contaminated runoff and fuel spills, or discharge of untreated effluents.

Board views: The Proponent has noted that the proposed project would take place within an existing industrial area, and as such it is unlikely that the proposed activities would interact significantly with any fish bearing streams or result in discharge of deleterious substances into the shore area or disturb any waterbodies proximal to the project area. However, contaminated runoff from melted snow, including waste water from treatment plant, could enter nearby streams and adversely affect the health of aquatic biota including fish populations if not properly contained. Management of the wastes at site, including contact water, would be regulated through a Type “B” water licence, and the Proponent has committed to ensuring that effluent generated from the proposed facility would meet acceptable thresholds for contaminants prior to discharge of waste water into the natural environment, and that proper water quality monitoring would be undertaken to ensure no adverse effects on the environment.

Recommended Mitigation Measures: It is recommended that the potential negative impacts be mitigated by measures such as requiring the Proponent to implement suitable erosion and sediment control measures, to prevent entry of sediments and contaminated runoff into surrounding waterbodies, and to comply with procedures for proper waste management: terms and conditions 8, 18, and 23.

Issue 4: Potential negative impacts to ambient air quality due to offsite migration of fugitive dust from project activities.

Board views: The potential for generation of fugitive dust is applicable to a small geographic area along the access route from haul truck traffic and from construction and operation activities. The potential adverse effects due to dust generation are anticipated to be low in magnitude, infrequent and reversible. Further, the Proponent has committed to maintaining soil moisture for the duration of the project to ensure no fugitive dust migration offsite.

Recommended Mitigation Measures: It is recommended that the potential negative impacts to air quality be mitigated by measures such as requiring the Proponent to take appropriate dust suppression measures when undertaking construction and operation activities including soil turning/removal during treatment. Term and condition 17 has been recommended to address any potential air quality issues that may arise from project activities.

Issue 5: Potential negative impacts to public and traditional land use activities in the area due to transportation of personnel and equipment to the site, and subsequent construction and operation of the proposed facility.

Board Views: The Proponent has indicated that the proposed project would take place within the municipality of Cambridge Bay, and that, due to the current use of the project area for industrial activities, it is unlikely that the specific project site would be used for any traditional activities. However, as the area is currently used by residents of Cambridge Bay as a public road, a term and condition has been recommended to provide an update to the community and ensure minimal impacts to public access of the area occur.

Recommended Mitigation Measures: Term and condition 26 has been recommended to ensure that project activities do not interfere with Inuit wildlife harvesting or traditional land use activities in the area.

Socio-economic effects on northerners:

Issue 6: Potential for negative impacts to historical, cultural and archaeological sites from construction activities.

Board Views: Since the geographic area for the proposed project would encompass an existing industrial area, it is unlikely that the Proponent may come into contact with any archaeological sites or would interact significantly with any known archaeological and palaeontological resources in the area. In addition, the Proponent has specifically committed to ensuring that no land clearing activities would occur within the area, and that it would ensure that the proposed facility is constructed and operated in a manner that will have no impacts on heritage resources near the project area.

Recommended Mitigation Measures: The Proponent is required to follow the *Nunavut Act* (as recommended in Regulatory Requirements section). Further, term and condition 26 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.

Significant public concern:

Issue 7: 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 project activities. In addition, it is recommended that the Proponent consider hiring local people for the project activities.

Recommended Mitigation Measures: Terms and conditions 26 and 27 are recommended to ensure that the affected community and organizations are informed about the project proposal, to mitigate any concerns that may arise from the project activities and for the Proponent to consider hiring locally.

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. Nunavut Excavating 2007 Inc. (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 (NPC File No.: 148924) and the NIRB (Online Application Form, August 16, 2018); including the Operations and Maintenance Plan, Spill Contingency Plan, Waste Management Plan, Emergency Response Plan and Environmental Protection Plan (July 31, 2018).
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. 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.
8. 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.
9. The Proponent shall store all fuel and chemicals in such a manner that they are inaccessible to wildlife.
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.
11. The Proponent shall use drip pans or other equivalent device when refueling equipment. The Proponent shall also use secondary containment or a surface liner (e.g., self-supporting insta-berms and fold-a-tanks) at all refueling stations.
12. 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 vehicle maintenance areas and at drill sites.
13. The Proponent shall remove and treat hydrocarbon contaminated soils on site or transport them to an approved disposal site for treatment.
14. 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.

Landfarm Operations

15. The Proponent shall treat only petroleum and hydrocarbon contaminated soils at the landfarm facility. Materials contaminated with other substances such as glycol and heavy metals are not to be stored at the landfarm and must be disposed of at an authorized facility.
16. The Proponent shall ensure that it meets the required standards as set out in the Nunavut Water Board's Water Licence for this project prior to any discharge of water collected in the retention cell(s).
17. The Proponent shall take appropriate dust suppression measures when conducting soil turning and removal.

18. All operations personnel shall be adequately trained prior to commencement of landfarm operations, and shall be made aware of all operational guidelines and Proponent commitments relating to the Project.

Wildlife - General

19. The Proponent shall not harass wildlife. This includes persistently worrying or chasing animals, or disturbing large groups of animals. The Proponent shall not hunt or fish, unless proper Nunavut authorizations have been acquired.
20. 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

21. 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

22. 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.
23. 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.

Restoration of Disturbed Areas

24. The Proponent shall remove all garbage, fuel and equipment upon abandonment.
25. The Proponent shall complete all clean-up and restoration of the lands used prior to the end of abandonment of site.

Other

26. 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.
27. The Proponent should, to the extent possible, hire local people and access local services where possible.

MONITORING AND REPORTING REQUIREMENTS

In addition, the Board is recommending the following:

Update to Plans

1. Prior to the start of project activities, the Proponent shall submit an updated Spill Contingency Plan, Environmental Protection Plan; Operations and Maintenance Plan and Emergency Response Plan to the Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Environment and Climate Change Canada (ECCC) and the Government of Nunavut, Department of Environment (GN-DOE). These plans should show how issues raised by ECCC and GN-DOE were addressed and resolved through the subsequent water licensing process. The Proponent is encouraged to consult with the ECCC, GN-DOE and the NWB on the requirements in these plans.

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 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 Cambridge Bay, phone: (867) 983-4167).

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 of Waste/Dangerous Goods and Waste Management

8. Environment and Climate Change Canada recommends that all hazardous wastes, including waste oil, receive proper treatment and disposal at an approved facility.
9. 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.

Nunavut Water Board

The Nunavut Water Board impose mitigation measures, conditions and monitoring requirements pursuant to the Water Licence, which require the Proponent to respect the pre-existing industrial waste storage area, as well as management of hazardous wastes materials in proximity to the town. These mitigation measures, conditions and monitoring requirements should be in regard to use of water, snow and ice; waste disposal; access to infrastructure; spill contingency planning; abandonment and restoration planning.

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>).
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/>).

Other Applicable Guidelines

8. The *Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils* (Science Applications International Corporation Canada, March 2006) provide information as it relates to the future operations of the landfarming activities.
9. Solid Waste Management for Northern and Remote Communities (Environment and Climate Change Canada, 2017) guidance document for best practices of hazardous waste management. <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/municipal-solid/environment/northern-remote-communities.html>.
10. Environmental Guideline for the Management of Contaminated Sites, Department of Environment, Government of Nunavut, Revised December 2014 (https://www.gov.nu.ca/sites/default/files/contaminated_sites_remediation_2014.pdf).
11. Environmental Guideline for Contaminated Site Remediation, Department of Environment, Government of Nunavut; Revised March 2009 (<https://www.gov.nu.ca/sites/default/files/Guideline%20Contaminated%20Site%20Remediation.pdf>).
12. Environmental Guideline for the General Management of Hazardous Waste, Government of Nunavut, Revised October 2010 (https://www.gov.nu.ca/sites/default/files/Guideline%20-%20General%20Management%20of%20Hazardous%20Waste%20%28revised%20Oct%202010%29_0.pdf).

CONCLUSION

The foregoing constitutes the Board's screening decision with respect to the Nunavut Excavating 2007 Inc.'s "Soil and Water Treatment Facility – Cambridge Bay". The NIRB remains available for consultation with the Minister regarding this report as necessary.

Dated September 4, 2018 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.

¹ P.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*², 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*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

² s. 51(1)

³ P.C. 2001-1111 14 June, 2001

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.