



*An ATCO Frontec and Pan Arctic Inuit Company*

Serial No. 2092-CNC

30 September 2008

Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, Nunavut  
X0B 1J0

Attention: Ms. Phyllis Beaulieu

**Subject:** Application for New Water Licence – Brevoort Island

**References:** A. Licence NWB6BAF0409 – Type “B”, Brevoort Island (“BAF-3”),  
Nunavut;  
B. Letter from NWB dated 26 August 2008.

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Dear Ms. Beaulieu:

Please find attached the following items in support of Nasittuq’s application for a new Water Licence for Brevoort Island (“BAF-3”):

- completed Water Licence Application Form for Brevoort Island (“BAF-3”) (Attachment 1);
- completed Exploration/Remote Camp Supplementary Questionnaire (Attachment 2);
- Inuktitut and English Summary of Project (Attachment 3);
- cheque for the Application Fee of \$30.00 (Attachment 4); and
- cheque for the Water Use Fee of \$30.00 (Attachment 5).

Currently there is a licence in place for the BAF-3 site under the Department of National Defence’s (“DND”) name (Reference “A”) which expires in 2009. The application for the licence was prepared by Nasittuq; however, in error, we submitted the application with DND as the Licensee instead of Nasittuq. This current application is submitted to correct this oversight, as recommended by the Nunavut Water Board (“NWB”) in the Reference “B” letter.

The following highlights some areas of particular interest for this application, which we feel are appropriate for this new licence, or which we have noted while administering the current licence:

1. **Sewage Handling System and Effluent Sampling Point CDL-2**

The sewage (blackwater) and greywater are both handled by a tertiary wastewater treatment system called Cycle-Let® located in the sewage treatment plant at BAF-3. This system is described in the Exploration/Remote Camp Supplementary Questionnaire. In short, this system treats sewage to the point where the end product is water. After treatment, the system recovers this water for toilets and urinals, with excess discharged to an outfall. The sewage treatment system is monitored by on-site personnel and is maintained by the Original Equipment Manufacturer (“OEM”) on a quarterly basis to ensure that it is functioning within specification. The current licence at Reference “A” requires that the effluent be sampled in the months of May through August inclusive, with the parameters to test for also stated in the license. We are requesting that these tests be conducted quarterly throughout the year, as we believe that this will give a better indication that the system as a whole is in fact functioning within specification. Although the effluent is essentially water, we agree that the parameters to be sampled for should be the same as those required by the current license. The location of the system and the sample point CDL-2 are shown on the attached site plan (Annex B to the Exploration/Remote Camp Supplementary Questionnaire).

2. **Raw Water Monitoring Point CDL-1**

As per the attached site plan (Annex B to the Exploration/Remote Camp Supplementary Questionnaire), we wish to confirm that the monitoring point for water intake, CDL-1, is at the raw water storage tank, and not at the water lake itself. The water meter we have installed is inside the building on the raw water fill line. The meter is installed here for ease of reading and maintenance. We trust this is acceptable.

3. **Emergency Response and Spill Reporting**

Nasittuq requests the NWB issues the new licence requiring spill reports based on the minimum reportable quantities of Schedule B of the Spill Contingency Planning and Spill Reporting Regulations as shown on the web site of the Nunavut Department of the Environment. The existing licence calls for the reporting of all spills. Nasittuq’s current policy is to have our site staff report all spills internally, regardless of volume, as shown in Nasittuq’s Spill Contingency Plan (Annex D to the Exploration/Remote Camp Supplementary Questionnaire). Our Engineering Department uses this information to determine if there are any deficiencies in the Petroleum, Oil & Lubricants (POL) system, e.g. pressure relief valves required or not working, flex hoses which may be weeping indicating they

require replacement, etc. As a result, we have spill reports for as little as 0.1 litres. Upon further review of the Spill Contingency Planning and Spill Reporting Regulations, Nasittuq notes that spills are to be reported as per Schedule B. As an example, the reportable limit for flammable liquids is 100 litres. By following the minimum reportable quantities of Schedule B, Nasittuq will be in compliance to the standards set by the Nunavut Department of the Environment.

Nasittuq has noted as per Section 76 of the Act, when applying for a new water licence, "The Board **may** require an applicant, a licensee or a prospective assignee to furnish and maintain security with the Minister in the form, of the nature, subject to such terms and conditions and in an amount prescribed by, or determined in accordance with, the regulations or that is satisfactory to the Minister." Nasittuq is the Agent under Contract to Public Works and Government Services Canada ("PWGSC") for the Operation and Maintenance of the North Warning System ("NWS"). This work is performed on DND property for which Nasittuq has care and custody for the duration of the Contract. Nasittuq understands that the NWS will continue to operate at least until 2030. Full ownership and responsibility for final disposition/reclamation of these NWS sites remains with the Department of National Defence.

Nasittuq believes that the North Warning System Contract itself provides the security required by the Board. Specifically, the North Warning System Contract provides security in the form of definitions of liability and subsequent insurance requirements for the Contractor ("Nasittuq") and also provides for Guarantors in the event of "Default of Contract" by the Contractor.

The NWS Contract is very specific in terms of Nasittuq's legal requirements and limitations of liability related to Government Property. Nasittuq is required to maintain insurance policies to cover liabilities for each occurrence (not less than) as follows:

- a) One Hundred Million Dollars (\$100,000,000) (Environmental ) for losses, injuries, damages, expenses, charges and Costs resulting from environmental damages; and
- b) Sixty Million Dollars (\$60,000,000) (Property) for loss or damages of Government Property.

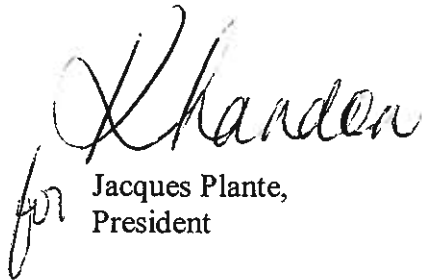
The Cover Notes are provided to PWGSC on an annual basis for their review and approval. Nasittuq would be pleased to provide them to the Board upon request. Nasittuq believes that such insurance provides the necessary security guarantee required by the Minister in granting the licences.

In the interest of expediting this process, we would like to meet with you in your offices to review this application, to answer any questions you may have at that time, and also clarify any term or condition of the Licence to ensure its effective administration. We will be contacting you shortly to arrange this meeting. In the meantime, if you have any

questions or comments, you can contact Mr. Scott Charland, Senior Manager, Planning & Design at (613) 787-9626, or by email at [scott.charland@nasittuq.com](mailto:scott.charland@nasittuq.com).

Yours sincerely,

**NASITTUQ CORPORATION**

for Jacques Plante,  
President

cc: Sr. Manager, Planning and Design, Sr. Manager, Contracts and Supply Chain, Sr. Manager, Maintenance, CFO and Contracts

**Attachments:**

1. Water Licence Application Form for Brevoort Island ("BAF-3")
2. Exploration/Remote Camp Supplementary Questionnaire
3. Inuktitut and English Summary of Project
4. Cheque for the Application Fee, payable to the Receiver General for Canada, in the amount of \$30.00
5. Cheque for the Water Use Fee, payable to the Receiver General for Canada, in the amount of \$30.00.



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NUNAVUT IMALIRIYIN KATIMAYINGI  
NUNAVUT WATER BOARD  
OFFICE DES EAUX DU NUNAVUT

## WATER LICENCE APPLICATION FORM

Application for: (check one)

☒ New      ☐ Renewal      ☐ Amendment      ☐ Assignment      ☐ Cancellation

**LICENCE NO:**  
(for NWB use only)

**1. NAME AND MAILING ADDRESS OF APPLICANT/LICENSEE**

Nasittuq Corporation  
Suite 100, 170 Laurier Avenue West  
Ottawa, Ontario, K1P 5V5  
Attention: Mr. Jacques Plante,  
President, Nasittuq Corporation and  
Project Director, North Warning System Project

Phone: (613) 234-9033 ext.833  
Fax: (613) 234-2671  
e-mail: [jacques.plante@nasittuq.com](mailto:jacques.plante@nasittuq.com)

**2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable)**

Same

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

e-mail: \_\_\_\_\_

**3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking)**

BAF-3 is located near the southern end of Brevoort Island, off the east coast of Baffin Island, Nunavut. The site is 366 m above sea level and covers 2524 acres of land. BAF-3 is 250 km northeast of Iqaluit. The closest source of support is LSS-Q, the Logistics Support Site in Iqaluit. Flight time from LSS-Q is 1 hour 15 minutes by helicopter under normal conditions. A helipad is located on-site, as well as an airstrip.

See Annex A for the BAF-3 Site Plan Drawings (Serial H-B199/2-8400-101 and Serial H-B199/2-8400-102).

Latitude: (63°20'24"N) Longitude: (64°08'40"W)

NTS Map Sheet No. N.A. Scale: N.A.

**4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)**

BAF-3 is a Long Range Radar Site (LRR) for the North Warning System (NWS). BAF-3 is an unmanned site, but it is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. During the months of May to September there may be an average of 14 to 30 personnel on-site due to seasonal project activity, including clean-up and remediation of a fuel spill from 2007, and occasional Third Party visitors.

BAF-3 is one of 11 LRRs of the North Warning System (NWS). The Prime Mission of the radar sites is to gather information about any airborne activity within their coverage area. The LRRs are located across the Yukon, Northwest Territories, Nunavut, and down the Labrador coast. The facilities are remotely monitored and controlled from North Bay on a 24/7 basis. The information they receive is automatically sent to the Canadian Air Defence Sector located at 22 Wing, CFB North Bay over a long-haul satellite communications network.

See Annex A for the BAF-3 Site Plan Drawings (Serial H-B199/2-8400-101 and Serial H-B199/2-8400-102).

5. **TYPE OF PRIMARY UNDERTAKING** (A supplementary questionnaire must be submitted with the application for undertakings listed in "bold")

- |                                                                             |                                                          |
|-----------------------------------------------------------------------------|----------------------------------------------------------|
| <input type="checkbox"/> Industrial                                         | <input type="checkbox"/> Agricultural                    |
| <input type="checkbox"/> Mining and Milling (includes exploration/drilling) | <input type="checkbox"/> Conservation                    |
| <input checked="" type="checkbox"/> Municipal (includes camps/lodges)       | <input type="checkbox"/> Recreational                    |
| <input type="checkbox"/> Power                                              | <input type="checkbox"/> Miscellaneous (describe below): |

See Schedule II of *Northwest Territories Waters Regulations* for Description of Undertakings

6. **WATER USE**

- |                                                                     |                                                                |
|---------------------------------------------------------------------|----------------------------------------------------------------|
| <input checked="" type="checkbox"/> To obtain water                 | <input type="checkbox"/> Flood control                         |
| <input type="checkbox"/> To cross a watercourse                     | <input type="checkbox"/> To divert a watercourse               |
| <input type="checkbox"/> To modify the bed or bank of a watercourse | <input type="checkbox"/> To alter the flow of, or store, water |
| <input type="checkbox"/> Other (describe):                          |                                                                |

7. **QUANTITY OF WATER INVOLVED** (cubic metres per day including both quantity to be used and quantity to be returned to source)

- Water use ☒ 100m<sup>3</sup>/day or less \*
- ☐ Greater than 100m<sup>3</sup>/day; if greater, indicate quantities to be used for each purpose (camp, drilling, etc.)

\* Water use varies depending on the number of people on-site, i.e. from 0 m<sup>3</sup>/day (unmanned status) to a maximum of 3 m<sup>3</sup>/day (height of seasonal activity, ramped up site at full capacity). The seasonal activity from May to September varies from year to year; one season may have no projects, while the next season's projects may have the site at full capacity. Water is pumped through a water pipeline from the water lake. Water is trucked only if the pipeline is unserviceable.

Please note that water is not drawn daily from the water lake. The site has two 854 m<sup>3</sup> (854,000 liters) raw water tanks; only one tank is in use for raw water storage. At capacity, the water level in the tank is 23 feet high. There is approximately 37,000 liters per foot of water. The water is used by site personnel and is also part of the site's fire suppression system. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tank.

The highest water usage when the site is at full capacity would typically be 31 days of 3 m<sup>3</sup>/day for a total of 93 m<sup>3</sup>/month. This is equivalent to 2.5 feet of water. The tank is filled at various levels as required and as time permits.

The site's current Licence NWB6BAF0409 – Type "B" allows the drawing of 10 m<sup>3</sup>/day every day which is 310 m<sup>3</sup> in a 31-day month. Nasittuq requests a licence that allows the drawing of up to 310 m<sup>3</sup> (equivalent to 8 ft 4 inches of water) each month. Based on a full capacity site using 2.5 feet of water a month, this will allow site staff the option of longer intervals between filling the tank, i.e. they will be able to fill the tank after one month (2.5 feet water used) or two months (5 feet water used). Please note that when the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and no pumping may occur during the entire period between October and April.

The lowest level allowed for the tank is approximately 260 m<sup>3</sup>. In order to fill the tank from this lowest allowed level, Nasittuq requests a licence that also allows the drawing of 594 m<sup>3</sup>/day (594,000 liters) once in a year. Please note that the filling of the water tank from the lowest allowed level is a worst case scenario and is not expected to be a regular occurrence.

In the event that the second tank is put back into use for raw water storage, Nasittuq requests a licence that also allows the drawing of 854 m<sup>3</sup> (854,000 liters) to fill the second tank.

Nasittuq requests a licence that requires the recording of the daily quantity of raw water drawn from the water lake. We wish to confirm that the monitoring point for the water intake, BAF-1, is the flow meter installed inside the heated water storage building in the fill line to the raw water tank and is not at the intake at the water lake itself. The flow meter is installed at this location for ease of reading and maintenance.

## 7. QUANTITY OF WATER INVOLVED (continued)

### Water returned to source:

0 m<sup>3</sup>/day

### Quality returned:

While no raw water or unused treated water is returned to the water sources (the water lake), sewage (blackwater) and greywater are discharged to the environment via a sewage septic system. Please see "Sewage" in Item 8 below for more information.

## 8. WASTE (for each type of waste describe: composition, quantity (cubic metres per day), methods of treatment and disposal, etc.)

- ☒ Sewage - The sewage collection and disposal system meets the requirements set by the Department of National Defence when the site was built in the mid 1980's (ref: Operation and Maintenance Manual for Brevoort Long Range Radar Site, Volume 1 – Site Infrastructure, 261.E10 Sewage and Disposal, dated 1988-12-01, Issued by the Department of National Defence.) Sewage (blackwater) and greywater are collected and combined in the sewage septic tank which is a three compartment tank with a hydraulic capacity of 6000 liters per day. The effluent from the septic tank discharges out the outfall pipe onto the designated outfall area.

In 1995, the site changed from manned to unmanned status. Since then the site is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. Little sewage is generated during these visits. During the months of May to September the site may be returned to manned status (ramped up) to support project activity. The amount of sewage depends on the number of people on-site.

The site has one incinerating toilet which reduces sewage to ash; the ash is disposed of in the approved landfill. The incinerating toilet's cycling time (interval between usage) does not make it practical to support anything but a short site visit by a few staff. It is primarily in place in case the site fails in the winter and freezes. Under these conditions, a small crew would be dispatched to the site to restore power and thaw the site. The incinerating toilet would be used until the sewage system was thawed and returned to a serviceable state. It cannot meet the demands of a ramped up site.

We request the sewage effluent sampling be done during the month when the site is ramped up when there is active discharge, or a minimum once annually during those years when there is no ramp-up. The sampling point is BAF-2, the end of the outfall pipe, as shown in **Annex A** BAF-3 Site Plan Drawing (Serial No. H-B199/2-8400-102).

Sewage effluent samples will be analyzed for:

- Biochemical Oxygen Demand (BOD), total suspended solids (TSS), fecal coliforms, pH, phenols, and oil & grease;
- total arsenic, total copper, total iron, total mercury, total zinc, sulphate, total cadmium, total chromium, total lead, and total nickel; and
- nitrate-nitrite, sodium, magnesium, conductivity, ammonia nitrogen, potassium, and calcium.

- ☒ Solid Waste - Nonhazardous, combustible solid waste is typically paper, paper products, cardboard, rags, kitchen waste, etc. The quantity depends on the number of people on-site and the amount of this type of waste generated by project activity during a given year, but an estimate would be 148 m<sup>3</sup> for a year that included a ramped up site at capacity for four months. This is the situation at BAF-3 as clean-up and remediation of a fuel spill from 2007 occurs each summer. This type of solid waste will be incinerated by an incinerator. Ash from the incinerator will be disposed of in the approved landfill. Nasittuq will strive to achieve compliance with the Canada-Wide Standards for Mercury Emissions and Canada-Wide Standards for Dioxins and Furans by separating

**8. WASTE (continued)**

out and not incinerating waste that may generate hazardous emissions such as treated wood, plastics, rubber, electrical wire, hazardous materials, and articles containing hazardous materials.

Nonhazardous, noncombustible solid waste will be disposed of in the approved landfill.

- |                                                             |                                                                                                                                           |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Hazardous               | - Hazardous waste is retrograded to a licensed disposal facility located outside of Nunavut every one or two years.                       |
| <input checked="" type="checkbox"/> Bulky Items/Scrap Metal | - These items are stored on a pallet line and retrograded for disposal outside of Nunavut as required, typically every two to four years. |
| <input checked="" type="checkbox"/> Waste oil               | - Waste oil is retrograded to a licensed disposal facility located outside of Nunavut every one or two years.                             |
| <input checked="" type="checkbox"/> Greywater               | - Sewage (blackwater) and grey water are both handled by the sewage system described above. Please see "Sewage" above.                    |
| <input type="checkbox"/> Sludges                            |                                                                                                                                           |
| <input type="checkbox"/> Other describe:                    |                                                                                                                                           |

**9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)**

**Not applicable. Department of National Defence property.**

**Land Use Permit**

DIAND ☐ Yes ☐ No If no, date expected \_\_\_\_\_

Regional Inuit Association ☐ Yes ☐ No If no, date expected \_\_\_\_\_

Commissioner ☐ Yes ☐ No If no, date expected \_\_\_\_\_

**10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)**

Nasittuq Corp., North Warning System (NWS) Project, has maintained an Environmental Management System (EMS) registered to the ISO 14001:2004 EMS standard since 2006. As part of its EMS, Nasittuq completed a systematic review of the activities required to operate and maintain the North Warning System sites and identified those activities which could have an impact on the environment. For each such activity, Nasittuq identified the potential negative environmental impacts and associated preventive and mitigative measures. These measures include implementation of company policies, plans, and procedures; training – both company developed courses and on-the-job training to ensure employees know their responsibilities; and annual audits of site activities to ensure company requirements are followed. As well, Nasittuq continuously reviews legal and other requirements to ensure that activities are conducted in accordance with current acts and regulations.

Nasittuq Corp.'s main environmental document is the Environmental Protection Plan (EPP). The EPP contains Nasittuq's Environmental Policy which states Nasittuq's commitment to environmental stewardship and outlines Nasittuq's contractual requirements with the Department of National Defence and the responsibilities of Nasittuq employees and subcontractors. The EPP states procedures for environmental practices at NWS sites in the following areas: wildlife; heritage resource protection; water supply management and treatment; vehicle movement and maintenance; roads, ground, and helipads; solid waste management; waste water management; hazardous materials

**10. PREDICTED ENVIRONMENTAL IMPACTS (continued)**

management; halocarbon management; waste hazardous materials management; spill contingency plan; and environmental assessments. As well, background information is provided in the form of: NWS site descriptions, legal and other requirements, environmental aspects and impacts, and regional environments and wildlife, including species at risk.

While the regular operation and maintenance (day-to-day) activities of the NWS and the prevention/mitigation of potential environmental impacts are addressed by the EMS and EPP, one-time Additional Work Requirement (AWR) projects undergo an environmental assessment during the design phase to identify the unique impacts and required preventive/mitigative measures to be applied for the duration of the project.

NIRB Screening ☐ Yes ☐ No If no, date expected \_\_\_\_\_  
Not applicable.

**11. INUIT WATER RIGHTS**

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

**The project will not substantially affect the quality, quantity, or flow of water through Inuit Owned Lands.**

**12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)**

Nasittuq Corporation  
Suite 100, 170 Laurier Avenue West  
Ottawa, ON K1P 5V5  
(Contractor for the operation and maintenance of the North Warning System)

**13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)**

Initial Environmental Evaluation of the North Warning System Project Eleven Long Range Radar Sites and the Short Range Radar Development Site, Volume One. Monenco-Eyrettechnics Group, October 1987  
(attached as **Annex B**).

**14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN**

Supplementary Questionnaire (where applicable: see section 5) ☒ Yes ☐ No If no, date expected \_\_\_\_\_

Inuktitut and/or Inuinnaqtun/English Summary of Project ☒ Yes ☐ No If no, date expected \_\_\_\_\_

Application fee of \$30.00 (Payee Receiver General for Canada) ☒ Yes ☐ No If no, date expected \_\_\_\_\_

Water Use fee of \$30.00 (unless otherwise indicated in Section 9 of the *NWT Waters Regulations*; Payee Receiver General for Canada)

☒ Yes ☐ No If no, date expected \_\_\_\_\_

15. **PROPOSED TIME SCHEDULE** (unless otherwise indicated, the NWB will consider the application for a five (5) year term)

☐ one year or less (or) ☒ Multi Year

Start Date: 1950's Completion Date: 2030

JACQUES PLANTE  
Name (Print) *JP*

PRESIDENT  
Title (Print)

*Shandon*  
Signature

30 SEPT. 2008  
Date

For Nunavut Water Board office use only

APPLICATION FEE Amount: \$ \_\_\_\_\_ Pay ID No.: \_\_\_\_\_

WATER USE DEPOSIT Amount: \$ \_\_\_\_\_ Pay ID No.: \_\_\_\_\_

## **Annex A**

### **BAF-3 Site Plan Drawings**

- Serial H-B199/2-8400-101
- Serial H-B199/2-8400-102



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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI  
OFFICE DES EAUX DU NUNAVUT

## EXPLORATION/ REMOTE CAMP SUPPLEMENTARY QUESTIONNAIRE

**Applicant:** Nasittuq Corporation **Licence No:** \_\_\_\_\_  
(For NWB Use Only)

### ADMINISTRATIVE INFORMATION

1. Environment Manager: Scott Charland Tel: 613-234-9033 ext. 626 Fax: 613-234-2671  
E-mail: scott.charland@nasittuq.com
2. Project Manager: Jacques Plante Tel: 613-234-9033 ext. 833 Fax: 613-234-2671  
E-mail: jacques.plante@nasittuq.com
3. Does the applicant hold the necessary property rights? No.
4. Is the applicant an 'operator' for another company (i.e., the holder of the property rights)? If so, please provide letter of authorization.

Please see attached **Annex A** which contains the authorization in:

- a. the letter dated 06 December 2007, Serial No. NWS-0757, to Ms Dionne Fillatrault, Director of Licensing, Nunavut Water Board from Ms Nancy Morin, Supply Team Leader/NWS Contract Authority, North Warning System.  
The second paragraph explains that Nasittuq was awarded a contract by Canada to operate and maintain the North Warning System (NWS) in November 2001 and that "possession, care, custody and control over the NWS passed from Canada to Nasittuq"; and
- b. Article A2 Infrastructure and Scope of Work for the North Warning System Operation and Maintenance (excerpt from Contract Serial No. W8485-98RH01/01-NX).  
Paragraph 3 states "As of the Effective Date {of the contract}, possession and control over the North Warning System as defined in the SOW {Statement of Work} shall pass from the Crown over to the Contractor who shall have care and custody of the same."

5. Duration of the Project

☐ One year or less      Start and completion dates: \_\_\_\_\_  
☒ Multi Year:

If Multi-Year indicate proposed schedule of on site activities  
Start: 1950's Completion: 2030

## CAMP CLASSIFICATION

### 6. Type of Camp

- ☐ Mobile (self-propelled)
- ☐ Temporary
- ☐ Seasonally Occupied: \_\_\_\_\_
- ☐ Permanent
- ☒ Other: National Defence Long Range Radar Site.

### 7. What is the design, maximum and expected average population of the camp?

BAF-3 is a Long Range Radar Site (LRR) for the North Warning System (NWS). BAF-3 is an unmanned site, but it is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. During the months of May to September there may be an average of 14 to 30 personnel on-site due to seasonal project activity, including clean-up and remediation of a fuel spill from 2007, and occasional Third Party visitors.

### 8. Provide history of the site if it has been used in the past.

BAF-3 is a modern site built in the 1980's. It was built in the same location as an abandoned United States Air Force (USAF) relay station. BAF-3 is part of the North Warning System (NWS) with radar sites extending from the Yukon across the Arctic and down the Labrador coast. On 31 October 1995, the site transitioned from manned to unmanned status. Over the years, the Prime Mission of the radar sites remains unchanged: to detect airborne objects within the Arctic surveillance area.

BAF-3 is a Long Range Radar (LRR) site. BAF-3's facilities include site buildings with their integral mechanical and electrical systems, power generation system, fuel tanks, radar, antennas, satellite ground terminals, weather equipment, and roads.

## CAMP LOCATION

### 9. Please describe proposed camp location in relation to biogeographical and geomorphological features, and water bodies.

BAF-3 is located near the southern end of Brevoort Island, off the east coast of Baffin Island, Nunavut. The site is 366 m above sea level and covers 2524 acres of land. BAF-3 is 250 km NE of Iqaluit. The geographical coordinates are: 63° 20' 24" N, 64° 08' 40" W.

Brevoort Island is 40 km long and 10 km wide. It is an irregular, hilly island consisting of mostly igneous or metamorphic bedrock overlain in places by stony, sandy, glacial fill intermixed with fluvial and marine deposits. Water and wind generated erosion move the poorly-developed, thin, mineral soil into valleys and hollows, leaving slopes and hilltops bare. There is a general paucity of vegetation, much of the ground being barren or covered with a thin veneer of lichen.

9. Continued.

Land mammals are not abundant on Brevoort Island. Lemmings and arctic hare have been reported. Polar bears use coastal portions of the island extensively in winter and there is evidence of denning and the presence of young on the south side of the island. A few caribou, arctic foxes, and arctic wolves may come and go across the frozen Robinson Sound, but they are not thought to be resident on the island.

Marine mammals are more numerous than land mammals at Brevoort Island. Walrus make use of the straits between Brevoort Island and the Lemieux Islands to the east. Walrus are present in the area all summer and a large scale movement into the Lemieux Islands occurs in mid-September. Other marine mammals occurring in waters around Brevoort Island include harp seal, ringed seal, and bearded seal. Scattered whale sightings, including records of bowhead, minke, and beluga have been reported.

Bird life on and around Brevoort Island is limited. Nesting colonies of glaucous gulls has been reported. Nesting by black guillemot is suspected on the southeastern end of Brevoort Island.

10. How was the location of the camp selected? Was the site previously used? Was assistance from the Regional Inuit Association Land Manager sought? Include maps and/or aerial photographs.

The location of the site was based on the National Prime Mission (National Defence) requirements.

See attached **Annex B** BAF-3 Site Plan Drawings (Serial H-B199/2-8400-101 and Serial H-B199/2-8400-102) and **Annex C** BAF-3 Aerial Photo.

11. Is the camp or any aspect of the project located on:

|                                                       |                                                      |
|-------------------------------------------------------|------------------------------------------------------|
| <input checked="" type="checkbox"/> [ X ] Crown Lands | Permit Number (s)/Expiry Date: <u>Not applicable</u> |
| <input type="checkbox"/> Commissioners Lands          | Permit Number (s)/Expiry Date: _____                 |
| <input type="checkbox"/> Inuit Owned Lands            | Permit Number (s)/Expiry Date: _____                 |

12. Closest Communities (direction and distance in km):

The closest community is Iqaluit, 250 km (156 miles) to the southwest.

13. Has the proponent notified and consulted the nearby communities and potentially interested parties about the proposed work?

Not applicable. The site is unmanned and is visited by Nasittuq employees based in LSS-Q, Iqaluit. Employees, permanent and seasonal, include Iqaluit residents and northern hires from other communities.

14. Will the project have impacts on traditional water use areas used by the nearby communities?  
Will the project have impacts on local fish and wildlife habitats?

No.

## PURPOSE OF THE CAMP

15. ☐ Mining (includes exploration drilling)  
☐ Tourism (hunting, fishing, wildlife observation, adventure/expedition, etc.)  
☒ Other National Prime Mission (National Defence radar site)  
(therefore questions # 16 to 22 are not applicable.)

16. Activities (check all applicable)

**Not applicable – not a mining camp.**

- ☐ Preliminary site visit  
☐ Prospecting  
☐ Geological mapping  
☐ Geophysical survey  
☐ Diamond drilling  
☐ Reverse circulation drilling  
☐ Evaluation Drilling/Bulk Sampling (also complete separate questionnaire)  
☐ Other: \_\_\_\_\_

17. Type of deposit (exploration focus):

**Not applicable – not a mining camp.**

- ☐ Lead Zinc  
☐ Diamond  
☐ Gold  
☐ Uranium  
☐ Other: \_\_\_\_\_

## DRILLING INFORMATION

18. Drilling Activities

**Not applicable – not a mining camp.**

- ☐ Land Based drilling  
☐ Drilling on ice

19. Describe what will be done with drill cuttings?

**Not applicable – not a mining camp.**

20. Describe what will be done with drill water?

**Not applicable – not a mining camp.**

21. List the brand names and constituents of the drill additives to be used? Includes MSDS sheets and provide confirmation that the additives are non-toxic and biodegradable.

**Not applicable – not a mining camp.**

22. Will any core testing be done on site? Describe.

**Not applicable – not a mining camp.**

## **SPILL CONTINGENCY PLANNING**

23. The proponent is required to have a site specific Spill Contingency Plan prepared and submitted with the application. This Plan should be prepared in accordance with the *NWT Environmental Protection Act, Spill Contingency Planning and Reporting Regulations, July 22, 1998* and *A Guide to the Spill Contingency Planning and Reporting Regulations, June 2002*. Please include for review.

Nasittuq's Spill Contingency Plan is attached as **Annex D**.

24. How many spill kits will be on site and where will they be located?

Two (2) spill kits are on-site:

- the POL (petroleum, oil, lubricants) Spill Kit is located in the Air Terminal Building; and
- Chemical Spill Kit is located in the Technical Services Module.

The locations are shown on the **Annex B** BAF-3 Site Plan Drawings (Serial H-B199/2-8400-101 and Serial H-B199/2-8400-102).

25. Please describe the types, quantities, and method of storage of fuel and chemicals on site, and provide MSDS sheets.

Jet A1 is the fuel used on-site. Jet A1 fuel tanks and locations are listed below.

| <b>Tank Size</b>    | <b>LOC ID</b> | <b>Actual Capacity*</b> | <b>Location</b> | <b>Type of fuel</b> |
|---------------------|---------------|-------------------------|-----------------|---------------------|
| 943,600L            | BREW22A       | 798,286L                | Summit          | Aviation/PGS        |
| 307,300L            | BREW22B       | 259,976L                | Summit          | Aviation/PGS        |
| 943,600L            | BREW22C       | 798,286L                | Beach           | Aviation/PGS        |
| 653,700L            | BREW22D       | 553,030L                | Beach           | Aviation/PGS        |
| 9,000L              | BREW22F       | 8,460L                  | Summit          | PGS                 |
| 46,000L             | BREW20A       | 43,240L                 | Helipad         | Aviation            |
| <b>SUMMIT TOTAL</b> |               | 1,109,962L              |                 |                     |
| <b>BEACH TOTAL</b>  |               | 1,351,316L              |                 |                     |
| <b>TOTAL:</b>       |               | 2,461,278L              |                 |                     |

Tanks: The total volume of usable fuel on site is 2,461,278L.

See **Annex E** for the Jet A1 MSDS.

25. Continued.

Other items such as batteries, aerosols, and cleaning products are stored in the Technical Services Module and in the buildings where they are used. Drums of oil and glycol are stored in the Technical Services Module, while cylinders are stored in the Garage. See **Annex B** BAF-3 Site Plan Drawing (Serial H-B199/2-8400-102).

## WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

The water source is the lake. See **Annex B** BAF-3 Site Plan Drawing (Serial H-B199/2-8400-101).

27. Estimated water use (in cubic metres/day):

☒ Domestic Use: up to 3 cubic metres/day \_\_\_\_\_ Water Source: Water Lake  
during ramp up with site at full capacity  
☐ Drilling: \_\_\_\_\_ Water Source: \_\_\_\_\_  
☐ Other: \_\_\_\_\_ Water Source: \_\_\_\_\_

28. Describe water intake for camp operations? Is the water intake equipped with a mesh screen to prevent entrapment of fish? (see *DFO 1995, Freshwater Intake End-of-Pipe Fish Screen Guideline*) Describe:

Water use varies depending on the number of people on-site, i.e. from 0 m<sup>3</sup>/day (unmanned status) to a maximum of 3 m<sup>3</sup>/day (height of seasonal activity, ramped up site at full capacity). The seasonal activity from May to September varies from year to year; one season may have no projects, while the next season's projects may have the site at full capacity. Water is pumped through a water pipeline from the water lake. Water is trucked only if the pipeline is unserviceable. There is a screen on the water intake.

Please note that water is not drawn daily from the water lake. The site has two 854 m<sup>3</sup> (854,000 liters) raw water tanks; only one tank is in use for raw water storage. At capacity, the water level in the tank is 23 feet high. There is approximately 37,000 liters per foot of water. The water is used by site personnel and is also part of the site's fire suppression system. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tank.

The highest water usage when the site is at full capacity would typically be 31 days of 3 m<sup>3</sup>/day for a total of 93 m<sup>3</sup>/month. This is equivalent to 2.5 feet of water. The tank is filled at various levels as required and as time permits.

The site's current Licence NWB6BAF0409 – Type "B" allows the drawing of 10 m<sup>3</sup>/day every day which is 310 m<sup>3</sup> in a 31-day month. Nasittuq requests a licence that allows the

28. Continued.

drawing of up to 310 m<sup>3</sup> (equivalent to 8 ft 4 inches of water) each month. Based on a full capacity site using 2.5 feet of water a month, this will allow site staff the option of longer intervals between filling the tank, i.e. they will be able to fill the tank after one month (2.5 feet water used) or two months (5 feet water used). Please note that when the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and no pumping may occur during the entire period between October and April.

The lowest level allowed for the tank is approximately 260 m<sup>3</sup>. In order to fill the tank from this lowest allowed level, Nasittuq requests a licence that also allows the drawing of 594 m<sup>3</sup>/day (594,000 liters) once in a year. Please note that the filling of the water tank from the lowest allowed level is a worst case scenario and is not expected to be a regular occurrence.

In the event that the second tank is put back into use for raw water storage, Nasittuq requests a licence that also allows the drawing of 854 m<sup>3</sup> (854,000 liters) to fill the second tank.

Nasittuq requests a licence that requires the recording of the daily quantity of raw water drawn from the water lake. We wish to confirm that the monitoring point for the water intake, BAF-1, is the flow meter installed inside the heated water storage building in the fill line to the raw water tank and is not at the intake at the water lake itself. The flow meter is installed at this location for ease of reading and maintenance.

29. Will drinking water quality be monitored? What parameters will be analyzed and at what frequency?

Yes, the drinking water quality is monitored on a quarterly basis and monthly basis when site is ramped up. Bacteriological water test is performed at two locations on site to be determined by site technicians. Both samples are taken from regular consumption and food preparation areas. The bacteriological tests check the water for *E. coli* and Total Coliforms. A Heterotrophic Plate Count (HPC) is also done. All must pass for the water to be consumed.

On an annual basis a chemical water sample analysis is performed by an outside testing facility. Two samples are taken: one from the water source (lake) and one from a point of consumption inside the building. The samples are shipped to a testing facility where they test for the physical and chemical water properties listed below.

Physical and Chemical Parameters:

|                        |                   |                               |
|------------------------|-------------------|-------------------------------|
| Alkalinity             | Hardness          | Phenols                       |
| Ammonia                | Hydrogen sulphide | Potassium                     |
| BOD5                   | Iron              | Sodium                        |
| Calcium                | Magnesium         | Sulphate                      |
| Chloride               | Manganese         | Tannin and lignin             |
| Colour                 | Nitrate           | Total Dissolved Solids        |
| Conductivity           | Nitrite           | Total Kjeldahl Nitrogen (TKN) |
| Chemical Oxygen Demand | PCBs              | Turbidity                     |
| Fluoride               | pH                |                               |

29. Continued

Bacteriological Parameters:

|                    |                                 |
|--------------------|---------------------------------|
| <i>E. coli</i>     | Heterotrophic Plate Count (HPC) |
| Fecal streptococci | Total and Fecal coliforms       |

30. Will drinking water be treated? How?

The drinking water is treated by sediment filters, granular activated carbon filters and an ultraviolet (UV) filtration system.

31. Will water be stored on site?

The site has two 854 m<sup>3</sup> (854,000 liters) raw water tanks; only one tank is in use for raw water storage. See **Annex B** BAF-3 Site Plan Drawing (Serial H-B199/2-8400-102).

Drinking water is piped directly to water taps.

## WASTE TREATMENT AND DISPOSAL

32. Describe the characteristics, quantities, treatment and disposal methods for:

[ X ] Camp Sewage (blackwater)

The sewage collection and disposal system meets the requirements set by the Department of National Defence when the site was built in the mid 1980's (ref: Operation and Maintenance Manual for Brevoort Long Range Radar Site, Volume 1 – Site Infrastructure, 261.E10 Sewage and Disposal, dated 1988-12-01, Issued by the Department of National Defence.) Sewage (blackwater) and greywater are collected and combined in the sewage septic tank which is a three compartment tank with a hydraulic capacity of 6000 liters per day. The effluent from the septic tank discharges out the outfall pipe onto the designated outfall area.

In 1995, the site changed from manned to unmanned status. Since then the site is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. Little sewage is generated during these visits. During the months of May to September the site may be returned to manned status (ramped up) to support project activity. The amount of sewage depends on the number of people on-site.

The site has one incinerating toilet which reduces sewage to ash; the ash is disposed of in the approved landfill. The incinerating toilet's cycling time (interval between usage) does not make it practical to support anything but a short site visit by a few staff. It is primarily in place in case the site fails in the winter

and freezes. Under these conditions, a small crew would be dispatched to the site to restore power and thaw the site. The incinerating toilet would be used until the sewage system was thawed and returned to a serviceable state. It cannot meet the demands of a ramped up site.

We request the sewage effluent sampling be done during the month when the site is ramped up when there is active discharge, or a minimum once annually during those years when there is no ramp-up. The sampling point is BAF-2, the end of the outfall pipe, as shown in **Annex B** BAF-3 Site Plan Drawing (Serial No. H-B199/2-8400-102).

Sewage effluent samples will be analyzed for:

- a) Biochemical Oxygen Demand (BOD), total suspended solids (TSS), fecal coliforms, pH, phenols, and oil & grease;
- b) total arsenic, total copper, total iron, total mercury, total zinc, sulphate, total cadmium, total chromium, total lead, and total nickel; and
- c) nitrate-nitrite, sodium, magnesium, conductivity, ammonia nitrogen, potassium, and calcium.

☒ [ X ] Camp Greywater

Grey water and sewage (blackwater) are both handled by the sewage system described above. Please see "Camp Sewage (blackwater)" above.

☒ [ X ] Solid Waste

Nonhazardous, combustible solid waste is typically paper, paper products, cardboard, rags, kitchen waste, etc. The quantity depends on the number of people on-site and the amount of this type of waste generated by project activity during a given year, but an estimate would be 148 m<sup>3</sup> for a year that included a ramped up site at capacity for four months. This is the situation at BAF-3 as clean-up and remediation of a fuel spill from 2007 occurs each summer. This type of solid waste will be incinerated by an incinerator (as described in Item 33). Ash from the incinerator will be disposed of in the approved landfill. Nasittuq will strive to achieve compliance with the Canada-Wide Standards for Mercury Emissions and Canada-Wide Standards for Dioxins and Furans by separating out and not incinerating waste that may generate hazardous emissions such as treated wood, plastics, rubber, electrical wire, hazardous materials, and articles containing hazardous materials.

Nonhazardous, noncombustible solid waste will be disposed of in the approved landfill.

☒ [ X ] Bulky Items/Scrap Metal

These items are stored on a pallet line and retrograded for disposal outside of Nunavut as required, typically every two to four years.

32. Continued.

☒ [ X ] Waste Oil/Hazardous Waste

These items are retrograded to a licensed disposal facility located outside of Nunavut every one or two years.

An average annual retrograde typically includes:

- 7 drums Waste oil
- 2 drums Waste glycol
- 11 drums Waste fuel
- 1 drum Waste paint
- 1 drum Waste oil filters
- 1 crate Waste batteries, wet, filled with acid
- 1 crate Waste batteries, nonspillable
- 1 cylinder Waste refrigerant gases.

Please note that the waste resulting from the cleanup of the 2007 fuel spill remains on-site for now.

☒ [ X ] Empty Barrels/Fuel Drums

These items are re-used to contain the same liquids.

☐ Other:

33. **Please describe incineration system if used on site. What types of wastes will be incinerated?**

The incinerator is a Consumat Systems Inc. Model C-32P. It is a forced air incinerator designed to handle combustible waste such as paper, cardboard cartons, wood scrap, combustible floor sweepings, and restaurant/cafe/teraria waste.

The general performance characteristics are as follows.

“The incinerator comprises a refractory lined combustion chamber (no grate is required) into which waste is loaded and to which a small supply of air is admitted. The waste is initially heated by an auxiliary burner and undergoes essentially a pyrolysis process. For normal wastes the reaction proceeds automatically without the need for additional fuel. The advantage of this method of primary burning, as opposed to the more usual technique of inducing active combustion by the introduction of large volumes of forced air, is that waste decomposes under quiescent conditions. Consequently carry over of particulate matter, which would subsequently contribute to stack emissions, is minimized.”

“The partial combustion products pass into an after burning secondary chamber, which is mounted immediately above the main combustion chamber.”

33. Continued.

“The gases are admixed with additional air and elevated in temperature to ensure successful burn out of smoke. The gases are cooled before discharge by entrained ambient air.”

(Ref: Operation and Maintenance Manual for Brevoort Long Range Radar Site, Volume 9 – Interior Architectural Systems, 820.E20 Packaged Incinerator, dated 1988-12-01, Issued by the Department of National Defence.)

34. **Where and how will non-combustible waste be disposed of? If in a municipality in Nunavut, has authorization been granted?**

Non-combustible, nonhazardous waste will be disposed of in the approved landfill on-site. Non-combustible, hazardous waste is retrograded to a licensed disposal facility outside of Nunavut every one or two years.

35. **Describe location (relative to water bodies and camp facilities) dimensions and volume, and freeboard for all sumps (if applicable).**

Not applicable.

36. **Will leachate monitoring be done? What parameters will be sampled and analyzed, and at what frequency?**

Not applicable.

## **OPERATION AND MAINTENANCE**

37. **Have the water supply and waste treatment and disposal methods been used and proven in cold climate? What known O&M problems may occur? What contingency plans are in place?**

The water supply has been in use at the site by Nasittuq Corp. for many years and is proven in cold climates.

The sewage treatment and disposal methods have been used on-site by Nasittuq Corp. for many years and are proven in cold climates.

The incinerator has been in use at the site by Nasittuq Corp. for many years and is proven in cold climates.

## ABANDONMENT AND RESTORATION

38. Provide a detailed description of progressive and final abandonment and restoration activities at the site.

Not applicable. The Prime Mission is scheduled to at least 2030. No abandonment or restoration is planned at this time.

## BASELINE DATA

39. Has or will any baseline information be collected as part of this project? Provide bibliography.

- ☒ [ X ] Physical Environment (Landscape and Terrain, Air, Water, etc.)
- ☒ [ X ] Biological Environment (Vegetation, Wildlife, Birds, Fish and Other Aquatic Organisms, etc.)
- ☒ [ X ] Socio-Economic Environment (Archaeology, Land and Resources Use, Demographics, Social and Culture Patterns, etc.)
- ☐ Other: \_\_\_\_\_

Bibliography:

Initial Environmental Evaluation of the North Warning System Project Eleven Long Range Radar Sites and the Short Range Radar Development Site, Volume One.  
Monenco-Eyrotechnics Group, October 1987.

## REGULATORY INFORMATION

40. At a minimum, you should ensure you have a copy of and consult the documents below for compliance with existing regulatory requirements:

- ✓ ARTICLE 13 – *NCLA -Nunavut Land Claims Agreement*
- ✓ NWNSRTA – *The Nunavut Waters and Nunavut Surface Rights Tribunal Act, 2002*
- ✓ *Northwest Territories Waters Regulations, 1993*
- ✓ NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
- ✓ NWB - Interim Rules of Practice and Procedure for Public Hearings
- ✓ RWED – *Environmental Protection Act, R-068-93- Spill Contingency Planning and Reporting Regulations, 1993*
- ✓ RWED A Guide to the Spill Contingency Planning and Reporting Regulations, 2002
- ✓ NWTWB - Guidelines for Contingency Planning
- ✓ *Canadian Environmental Protection Act, 1999 (CEPA)*
- ✓ *Fisheries Act, RS 1985 - s.34, 35, 36 and 37*
- ✓ DFO - Freshwater Intake End of Pipe Fish Screen Guideline
- ✓ NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT

33. Continued.

- ✓ Canadian Council for Ministers of the Environment (CCME); Canadian Drinking Water Quality Guidelines, 1987
- ✓ Public Health Act - Camp Sanitation Regulations
- ✓ Public Health Act - Water Supply Regulations
- ✓ *Territorial Lands Act* and *Territorial Land Use Regulations*; Updated 2000

## Annex B

### BAF-3 Site Plan Drawings

- Serial H-B199/2-8400-101
- Serial H-B199/2-8400-102

## Annex C

### BAF-3 Aerial Photo