



An ATCO Frontec and Pan Arctic Inuit Company

Serial No. 2091-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 – Cape Dyer**

References: A. Licence NWB6DYE0409 – Type “B”, Cape Dyer (“DYE-M”),
Nunavut;
B. Letter from NWB dated 26 August 2008.

Dear Ms. Beaulieu:

Please find attached the following items in support of Nasittuq’s application for a new Water Licence for Cape Dyer (“DYE-M”):

- completed Water Licence Application Form for Cape Dyer (“DYE-M”) (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 DYE-M site under the Department of National Defence’s (“DND”) name (Reference “A”) which expires on 28 February 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 DYE-2**

Sewage (blackwater) and greywater are combined in the sewage system. The sewage system comprises a sump, holding tank, and masticating pump within the building train, and a sewage outfall pipe leading to an outfall area on the land. This system has been in place since 1957. In 1995, the site changed from manned to unmanned status. Since then the site is visited by LSS-Q (Iqaluit) 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.

Sewage is not discharged daily. When the sewage tank nears or reaches capacity, the sewage is discharged out the sewage outfall pipe to the designated outfall area. Up to 10 m³ is discharged at one time from two to five times a year, depending on the number of people that have visited the site. When the site is ramped up, sewage may be discharged once a week.

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 DYE-2, the end of the sewage outfall pipe, as shown in the attached site plan (Annex B to the Exploration/Remote Camp Supplementary Questionnaire).

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.

2. Raw Water Intake and Monitoring Point DYE-1

Water use varies depending on the number of people on-site from 0 m³/day (unmanned status) to a maximum of 3 m³/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.

Please note that water is not drawn daily from the water lake or meltwater source. The site has three 10 m³ (10,000 liter) raw water tanks. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tanks with water from the water lake or meltwater source.

In order to fill up the three water tanks in one day and in order to meet the peak seasonal demand of a ramped up site, potentially at full capacity, Nasittuq requests a licence that allows the drawing of 30 m³/day (30,000 liters/day) up to four times in a month. This totals 120 m³ (120,000 liters) in a 31-day month. This is less than half of the water usage currently allowed (310 m³ in a 31-day month, drawn at 10 m³/day) by the site's Licence NWB6DYE0409 – Type "B". Please note that the filling of the water tanks up to three times in a month is only a potential seasonal occurrence if the site is at full capacity. When the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and the raw water tanks may be filled up to three times during the entire period between October and April.

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, DYE-1, is the flow meter installed inside the building train in the fill line to the raw water tanks and is not at the intake at the water lake itself. The flow meter was installed at this location 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 liter. 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 liters. 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.

Yours sincerely,
NASITTUQ CORPORATION


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 Cape Dyer ("DYE-M")
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	2. ADDRESS OF CORPORATE OFFICE IN CANADA (if applicable) <u>Same</u> Phone: _____ Fax: _____ e-mail: _____
3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the Undertaking) DYE-M (Cape Dyer) is in Nunavut at the extreme eastern edge of Baffin Island at Cape Dyer. Sheer cliffs of over 610 m are the predominant feature. The site consists of the summit (725 m above sea level) and the lower site on the north side of Sunneshine Fiord. The summit is the location of the radar, site buildings, and helipad. The lower site is the location of the beach tanks and an abandoned airstrip which may be useable. The summit and lower site are connected by a road. DYE-M is 462 km NNE of Iqaluit. The closest source of support is LSS-Q, the Logistics Support Site in Iqaluit. Flight time from LSS-Q is 2 hours, 40 minutes by helicopter under normal conditions. See Annex A for the DYE-M Site Plan Drawings (Serial H-C75/2-8400-101, Serial H-C75/2-8400-102, Serial H-C75/2-8400-103, and Serial H-C75/2-8400-104). Latitude: (66°40'05"N) Longitude: (61°21'13"W) NTS Map Sheet No. <u>N.A.</u> Scale: <u>N.A.</u>	
4. DESCRIPTION OF UNDERTAKING (attach plans and drawings) DYE-M is a Long Range Radar Site (LRR) for the North Warning System (NWS). DYE-M 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 4 to 22 personnel on-site due to seasonal project activity and occasional Third Party visitors. DYE-M 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.	

4. DESCRIPTION (continued)

See Annex A for the DYE-M Site Plan Drawings (Serial H-C75/2-8400-101, Serial H-C75/2-8400-102, Serial H-C75/2-8400-103, and Serial H-C75/2-8400-104).

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

- | | |
|---|--|
| ☐ Industrial | ☐ Agricultural |
| ☐ Mining and Milling (includes exploration/drilling) | ☐ Conservation |
| ☒ Municipal (includes camps/lodges) | ☐ Recreational |
| ☐ Power | ☐ Miscellaneous (describe below): |

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

6. WATER USE

- | | |
|---|--|
| ☒ To obtain water | ☐ Flood control |
| ☐ To cross a watercourse | ☐ To divert a watercourse |
| ☐ To modify the bed or bank of a watercourse | ☐ To alter the flow of, or store, water |
| ☐ Other (describe): | |

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

- Water use ☒ 100m³/day or less *
- ☐ Greater than 100m³/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 m³/day (unmanned status) to a maximum of 3 m³/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 trucked either from the water lake (located at the end of the water lake road at the summit) or from the first level area below the summit where meltwater which runs through a culvert beneath the main road. This road is the first road to be cleared of snow in the spring.

Please note that water is not drawn daily from the water lake or meltwater source. The site has three 10 m³ (10,000 liter) raw water tanks. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tanks with water from the water lake or meltwater source.

In order to fill up the three water tanks in one day and in order to meet the peak seasonal demand of a ramped up site, potentially at full capacity, Nasittuq requests a licence that allows the drawing of 30 m³/day (30,000 liters/day) up to four times in a month. This totals 120 m³ (120,000 liters) in a 31-day month. This is less than half of the water usage currently allowed (310 m³ in a 31-day month, drawn at 10 m³/day) by the site's Licence NWB6DYE0409 – Type "B". Please note that the filling of the water tanks up to three times in a month is only a potential seasonal occurrence if the site is at full capacity. When the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and the raw water tanks may be filled up to three times during the entire period between October and April.

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, DYE-1, is the flow meter installed inside the building train in the fill line to the raw water tanks and is not at the intake at the water lake itself. The flow meter was installed at this location for ease of reading and maintenance. We trust this is acceptable.

7. QUANTITY OF WATER (continued)

Water returned to source:

0 m³/day

Quality returned:

While no raw water or unused treated water is returned to the water sources (the water lake and meltwater source), sewage (blackwater) and greywater are discharged to the environment via a sewage outfall pipe. 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 - Sewage (blackwater) and greywater are combined in the sewage system. The sewage system comprises a sump, holding tank, and masticating pump within the building train, and a sewage outfall pipe leading to an outfall area on the land. This system has been in place since 1957. 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.

Sewage is not discharged daily. When the sewage tank nears or reaches capacity, the sewage is discharged out the sewage outfall pipe to the designated outfall area. Up to 10 m³ is discharged at one time from two to five times a year, depending on the number of people that have visited the site. When the site is ramped up, sewage may be discharged once a week.

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 DYE-2, the end of the sewage outfall pipe, as shown in Annex A DYE-M Site Plan Drawing (Serial No. H-C75/2-8400-104).

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.

- ☒ 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 32 m³ for a year that included a ramped up site at capacity for two months. 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 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.

8. WASTE (continued)

- | | |
|---|---|
| ☒ Hazardous | - Hazardous waste is retrograded to a licensed disposal facility located outside of Nunavut every one or two years. |
| ☒ 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. |
| ☒ Waste oil | - Waste oil is retrograded to a licensed disposal facility located outside of Nunavut every one or two years. |
| ☒ Greywater | - Sewage (blackwater) and grey water are both handled by a tertiary wastewater treatment system. See "Sewage" description above. |
| ☐ Sludges | |
| ☐ 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 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)

PRESIDENT
Title (Print)

Jacques Plante 30 SEPT 2008
Signature Date

For Nunavut Water Board office use only

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

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

Annex A

DYE-M Site Plan Drawings

- Serial H-C75/2-8400-101
- Serial H-C75/2-8400-102
- Serial H-C75/2-8400-103
- Serial H-C75/2-8400-104



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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
☒ Multi Year:

Start and completion dates: _____

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?

DYE-M is a Long Range Radar Site (LRR) for the North Warning System (NWS). DYE-M 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 4 to 22 personnel on-site due to seasonal project activity and occasional Third Party visitors.

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

DYE-M was built in the 1950's as one of the Distant Early Warning Line (DEW Line) radar sites which stretched from Alaska to Greenland. In the 1980's, the DEW Line in Canada evolved into the North Warning System (NWS) with radar sites extending from the Yukon across the Arctic and down the Labrador coast. DYE-M was modernized as part of this transition. On 31 October 1995, the site changed 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.

DYE-M is a Long Range Radar (LRR) site. DYE-M'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.

DYE-M (Cape Dyer) is in Nunavut at the extreme eastern edge of Baffin Island at Cape Dyer. Sheer cliffs of over 610 m are the predominant feature. The site consists of the summit (725 m above sea level) and the lower site on the north side of Sunneshine Fiord. The geographical coordinates are: 66 40' 05" N and 61 21' 13" W.

DYE-M is located on the eastern edge of a mountainous peninsula. The terrain is rugged and boulder strewn with very little soil, consisting of mostly silt. Vegetation on the upper site is sparse, consisting of grass, wildflowers, mosses, and lichen. Vegetation at the lower site is more abundant consisting of wildflowers, creeping willows, and sedges. Several small ice fields exist within five miles of the site. The sheer cliffs, some over 610 m high, along the coast line are the most prominent features of the site.

9. Continued.

Caribou are occasionally seen at the lower site, and periodically polar bears are encountered at both the summit and lower site, particularly during the start of the open water season when they are forced ashore by the break-up of the land-fast ice. Cape Dyer is a major denning area for polar bears on south eastern Baffin. Arctic foxes are often seen in the region and near the site.

The coastal waters are important habitat to walrus, seals and many species of whales and porpoises. Walrus are thought to overwinter along the edge of fast ice and in the pack ice off southeastern Baffin Island. Both walrus and seals are hunted in the fiords around Cape Dyer by hunters of neighbouring communities. The offshore waters of the Davis Strait provide important breeding and migration areas for the hooded seal. Historical evidence and scientific data indicates that Bowhead whales occur in the Davis Strait, Baffin Bay and Cumberland Sound. During the fall and early winter, bowhead whales migrate southward along the east coast of Baffin Island to the Cumberland Sound region. Also during this time, there is a migration of narwhals south along the east coast of Baffin Island to their overwintering areas in the Davis Strait and west Greenland.

The Meta Incognita Peninsula contains a relatively high density of peregrine falcon and gyrfalcon nests. Colonies of 6,000 and 50,000 fulmars are located respectively at Exeter Sound to the south and Scott Inlet to the north of the site. The Canadian Wildlife Service has recognized western Baffin Bay as a key migratory bird habitat site. This area contains millions of seabirds including the following species: blacklegged kittiwake, thick-billed murre and black guillemot. Colonies of Sabine's gull can be found south and west of the site.

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** DYE-M Site Plan Drawings (Serial H-C75/2-8400-101, Serial H-C75/2-8400-102, Serial H-C75/2-8400-103, and Serial H-C75/2-8400-104) and attached **Annex C** DYE-M Aerial Photo.

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

☒ [X] Crown Lands	Permit Number (s)/Expiry Date: <u>Not applicable</u>
☐ Commissioners Lands	Permit Number (s)/Expiry Date: _____
☐ Inuit Owned Lands	Permit Number (s)/Expiry Date: _____

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

The closest communities are:

- Broughton Island, 152 km (94 miles) to the northwest;
- Pangnirtung, 201 km (125 miles) to the southwest; and
- Iqaluit, 462 km (289 miles) to the southsouthwest. Flight time from LSS-Q is 2 hours, 40 minutes by helicopter under normal conditions.

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. For permanent and seasonal work, job openings are posted in a variety of ways including ads in northern newspapers and on Nasittuq's website.

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 in the C&E Maintenance Shop:

- the POL (petroleum, oil, lubricants) Spill Kit; and
- the Chemical Spill Kit.

The locations are shown on **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

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.

Tank Size	LOC ID	Actual Capacity*	Location	Type of fuel
69,200L	DYEW22J	64,860L	Power Plant	PGS
69,200L	DYEW22K	64,860L	Power Plant	PGS
69,200L	DYEW22I	64,860L	Power Plant	PGS
946,300L	DYEW20A	800,316L	Summit	Aviation/PGS
69,200L	DYEW20B	64,860L	Helipad	Aviation
91,000L	DYEW20G	85,540L	Beach	Aviation/PGS
91,000L	DYEW20H	85,540L	Beach	Aviation/PGS
91,000L	DYEW20I	85,540L	Beach	Aviation/PGS
91,000L	DYEW20J	85,540L	Beach	Aviation/PGS
91,000L	DYEW20K	85,540L	Beach	Aviation/PGS
91,000L	DYEW20L	85,540L	Beach	Aviation/PGS
91,000L	DYEW20M	85,540L	Beach	Aviation/PGS
91,000L	DYEW20N	85,540L	Beach	Aviation/PGS
91,000L	DYEW20O	85,540L	Beach	Aviation/PGS
91,000L	DYEW20P	85,540L	Beach	Aviation/PGS
91,000L	DYEW20Q	85,540L	Beach	Aviation/PGS
SUMMIT TOTAL		1,059,756L		
BEACH TOTAL		940,940L		
TOTAL:		2,000,696L		

The total volume of usable fuel on site is 2,000,696L.

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

Other items such as batteries, aerosols, and cleaning products are stored in the Building Train A and in the buildings where they are used. Drums of oil and glycol are stored in the C&E maintenance shop and a limited number of cylinders are stored in the HVS Building as shown on **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

There are two water sources:

- the water lake (located at the end of the water lake road at the summit). See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-103); and
- the meltwater water source, located on the first level area below the summit where meltwater which runs through a culvert beneath the main road. This road is the first road to be cleared of snow in the spring. See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-102).

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

[X] Domestic Use: up to 3 cubic metres/day _____ Water Source: Water Lake
during ramp up with site at full capacity _____ and
_____ meltwater water source

☐ 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 from a natural fresh water lake is pumped into a water truck, then transferred to the site's raw water tanks. There is a screen on the water intake. Alternatively, water from the meltwater water source is pumped into a water truck and transferred to the site's raw water tanks. The main road is the first road to be cleared of snow in the spring. There is a screen on the water intake.

Water use varies depending on the number of people on-site, i.e. from 0 m³/day (unmanned status) to a maximum of 3 m³/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.

Please note that water is not drawn daily from the water lake or meltwater source. The site has three 10 m³ (10,000 liter) raw water tanks. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tanks with water from the water lake or meltwater source.

In order to fill up the three water tanks in one day and in order to meet the peak seasonal demand of a ramped up site, potentially at full capacity, Nasittuq requests a licence that allows the drawing of 30 m³/day (30,000 liters/day) up to four times in a month. This totals 120 m³ (120,000 liters) in a 31-day month. This is less than half of the water usage currently allowed (310 m³ in a 31-day month, drawn at 10 m³/day) by the site's Licence NWB6DYE0409 – Type "B". Please note that the filling of the water tanks up to three times in a month is only a potential seasonal occurrence if the site is at full capacity. When the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and the raw water tanks may be filled up to three times during the entire period between October and April.

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, DYE-1, is the flow meter installed inside the building train in the fill line to the raw water tanks and is not at the intake at the water lake itself. The flow meter was installed at this location for ease of reading and maintenance. We trust this is acceptable.

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	

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?

Raw (untreated) water is stored in three 10,000 liter tanks next to the monitoring point, DYE-1 (the flow meter in the fill line to the raw water tanks). See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

Treated drinking water is piped directly to water taps.

WASTE TREATMENT AND DISPOSAL

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

☒ Camp Sewage (blackwater)

Sewage (blackwater) and greywater are combined in the sewage system. The sewage system comprises a sump, holding tank, and masticating pump within the building train, and a sewage outfall pipe leading to an outfall area on the land. This system has been in place since 1957. 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.

Sewage is not discharged daily. When the sewage tank nears or reaches capacity, the sewage is discharged out the sewage outfall pipe to the designated outfall area. Up to 10 m³ is discharged at one time from two to five times a year, depending on the number of people that have visited the site. When the site is ramped up, sewage may be discharged once a week.

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 DYE-2, the end of the sewage outfall pipe, as shown in **Annex B DYE-M Site Plan Drawing** (Serial No. H-C75/2-8400-104).

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.

☒ Camp Greywater

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

32. Continued.

☒ 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 32 m³ for a year that included a ramped up site at capacity for two months. 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 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.

☒ 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.

☒ 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:

- 11 drums Waste oil
- 2 drums Waste glycol
- 5 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.

☒ 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 will be a forced air incinerator which reduces the waste to ash. The operation and maintenance of the incinerator will meet the criteria in the draft note entitled Incineration by the Nunavut Department of Environment forwarded from Mr. Bernie MacIsaac, Manager Field Operations, INAC-NRO, Iqaluit NU to Mr. Jacques Plante, Nasittuq Corp., Ottawa ON. As stated above in Item 32 Solid Waste, only waste that will not generate hazardous emissions will be incinerated. Typically this will be waste such as paper, paper products, cardboard, rags, kitchen waste, etc.

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 will be a new method for the treatment of solid waste. However, Nasittuq will select an incinerator that will work in cold climates, such as the Smart Ash which is U.S. EPA approved for small batch incineration.

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-Eyrettechnics 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*
- ✓ NWSRTA – *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
- ✓ 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*