P.O. Box 119
Gjoa Haven, NU X0B 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

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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: _____
   [X] 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
- [X] Other: National Defence Long Range Radar Site and Logistics Support Site

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

Hall Beach (FOX-M) is staffed with an average site population of 18 to 22 people per day during the year, but numbers swell during the summer due to seasonal construction and occasional large groups of Third Party visitors.

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

FOX-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. FOX-M was modernized as part of this transition. Over the years, the Prime Mission of the radar sites remains unchanged: to detect airborne objects within the Arctic surveillance area.

FOX-M has been manned since the 1950's. It consists of a Long Range Radar (LRR) site and a Logistics Support Site (LSS). The LSS is a dispatch center for the unmanned LRR FOX-3 and for eight (8) Short Range Radar sites. FOX-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.

FOX-M is located in Nunavut on the Melville Peninsula. It is on a small point of land on the eastern side of a broad coastal plain which extends from Foxe Basin to Hall Lake, 32.2 kilometers to the west. The geographical coordinates are: 68° 45' 35" N, 81° 11' 41" W.

The main portion of the site is set atop a knoll, about 5 m above sea level, consisting of material similar to that of the surrounding territory, which appears to be an emerging gravel studded sea bottom. Surface materials consist of sand, gravel, cobbles and angular shingle-like fragments. Low areas feature a veneer of organic muds and silts. The shallow wetlands of the coastal plain are almost completely covered by grasses, sedge, and wildflowers. Site structures are the most prominent features in the area.

9. continued

The shallow wetlands of the coastal plain provide breeding habitat for many species of birds. Gyrfalcons, snowy owls, and rough-legged hawks have been seen at FOX-M. Eider duck, snow bunting, and arctic terns have nested in the area. The most common shorebirds near the site are red phalarope, Baird's sandpiper, and plovers.

On the tundra of the Melville Peninsula caribou, arctic fox, arctic hares, and the occasional polar bear have been seen.

In Foxe Basin, seals, walrus, and beluga whales have been seen. Hall Lake and most lakes in the regions support lake trout and arctic char.

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** FOX-M Site Plan Drawings (Serial H-H11/2-8400-101 and Serial H-H11/2-8400-106) and attached **Annex C** FOX-M Aerial Photo.

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

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

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

Hall Beach, Nunavut, is 3 km north of FOX-M by road.

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

Not applicable. FOX-M has existed at this location since the 1950's, and its prime mission work is unchanged. The local community, Hall Beach, is familiar with the radar site. Some Hall Beach residents work at the site as Nasittuq employees, and FOX-M has service agreements with Hall Beach under which site staff provide services such as vehicle repairs.

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.)
- [X] 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 LSS building:
- the POL (petroleum, oil, lubricants) Spill Kit; and
- the Chemical Spill Kit.

The location is shown on **Annex B** FOX-M Site Plan Drawing (Serial H-H11/2-8400-101).

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.

For FOX-M use only				
Tank Size	**LOC ID**	**Actual Capacity***	**Location**	**Type of fuel**
946,300L	HALW22A	800,316L	Summit	PGS
946,300L	HALW22B	800,316L	Summit	PGS
50,000L	HALW22J	47,000L	Power Plant	PGS
50,000L	HALW22K	47,000L	Power Plant	PGS
18,900L	HALW22I	17,766L	Apron	PGS
For FOX-M (Aviation), FOX-3, CAM-FA & CAM-5A use only				
69,200L	HALW20D	64,860L	Apron	Aviation
69,200L	HALW20E	64,860L	Apron	Aviation
946,300L	HALW20B	800,316L	Beach	Aviation
946,300L	HALW20F	800,316L	Beach	Aviation
BEACH TOTAL		1,600,632L		
APRON TOTAL		147,486L		
SITE TOTAL:		3,572,470L		

Tanks: The total volume of usable fuel on site is 3,572,470.

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

Other items such as batteries, aerosols, and cleaning products are stored in the Logistical Redistribution Center warehouse and in the buildings where they are used. Drums of oil and glycol are stored in Warehouse 4. Cylinders such as acetylene and oxygen are stored outside secured to metal skids along the south wall of the LSS building. See **Annex B** FOX-M Site Plan Drawings (Serial H-H11/2-8400-101 and Serial H-H11/2-8400-106).

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

The water source is the man-made water reservoir. See **Annex B** FOX-M Site Plan Drawing (Serial H-H11/2-8400-101).

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

[X] Domestic Use: 6 cubic metres/day Water Source: Water Reservoir
[ ] 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 is pumped from the man-made water reservoir to the site water tanks. The water is pumped automatically as the tanks reach a low level. There is a screen on the water intake to prevent entrapment of fish.

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 monthly and annual basis. Each month a 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
Color	Nitrate	Total Dissolved Solids
Conductivity	Nitrite	Total Kjeldahl Nitrogen (TKN)
Chemical Oxygen Demand	PCBs	Turbidity
Fluoride	pH	

Bacteriological Parameters:

E. coli	Heterotrophic plate Count (HPC)
Fecal streptococci	Total and Fecal coliform

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 two large 2,000 gallon tanks next to FOH-1 Raw Water Intake. See **Annex B** FOX-M Site Plan Drawing (Serial No. H-H11/2-8400-101).

Drinking water is piped directly to water taps. It is not stored on-site as the potable water tanks have been decommissioned.

WASTE TREATMENT AND DISPOSAL

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

[X] Camp Sewage (blackwater)

The sewage (blackwater) and grey water at FOX-MAIN are both handled by a tertiary wastewater treatment system, **Cycle-let®** located in the sewage treatment plant which includes the sampling port FOH-2. The system is monitored by on-site personnel and is maintained by CWC Wastewater Services Inc. on a quarterly basis. 60 to 80% of the treated water is recycled as on-site urinal/toilet flush water, with the excess passing to a designated grey water outfall area.

An average of 6 cubic meters per day of sewage (blackwater) and grey water is processed. Of this total, 3.6 to 4.8 cubic meters per day of the treated water is recycled as urinal/toilet flush water and 1.2 to 2.4 cubic meters per day goes to the grey water outfall area.

See **Annex B** FOX-M Site Plan Drawing (Serial H-H11/2-8400-101) for the location of the sewage treatment plant (FOH-2).

[X] Camp Greywater

Grey water and sewage (blackwater) are treated by a tertiary wastewater treatment system. See "Camp Sewage (blackwater)" description above.

[X] Solid Waste

Solid waste is sent to the Hall Beach community landfill twice a week. Approximately 1.7 cubic meters per day of solid waste is generated.

[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 year.

An average annual retrograde typically includes:
- 28 drums Waste oil
- 4 drums Waste glycol
- 10 drums Waste fuel
- 6 drums Waste carbon filters (sewage treatment plant's charcoal filters)
- 3 drums Waste paint
- 2 drums Waste oil filters
- 3 crates Waste batteries, wet, filled with acid
- 5 crates Waste batteries, nonspillable
- 1 cylinder Waste acetylene, dissolved
- 1 to 2 cylinders Waste refrigerant gases
- 2 to 4 cylinders Waste propane
- 0.5 drum Waste aerosols

[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?**

Not applicable.

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 is sent to the Hall Beach community landfill. Non-combustible, hazardous waste is retrograded to a licensed disposal facility outside of Nunavut.

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?

FOX-M is equipped with a tertiary wastewater treatment system located in the sewage treatment plant (FOH-2) which treats both blackwater and greywater. 60 to 80% of the treated water is recycled as on-site urinal/toilet flush water, with the excess passing to a designated grey water outfall area.

Samples of the treated water will be taken four (4) times a year from sampling port FOH-2 (as shown on **Annex B** FOX-M Site Plan Drawing, Serial H-H11/2-8400-101), the final discharge point beyond which Nasittuq no longer controls the quality of the effluent.

Samples will be analyzed for the following parameters:

(a) Biochemical Oxygen Demand (BOD), total suspended solids (TSS), fecal coliforms, pH, phenols, and oil & grease for compliance with the *Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, April 1976*;

(b) total arsenic, total copper, total iron, total mercury, total zinc, sulphate, total cadmium, total chromium, total lead, and total nickel for compliance with the *NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories, 1992*; and

(c) nitrate-nitrite, sodium, magnesium, conductivity, ammonia nitrogen, potassium, and calcium.

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?

Yes, the tertiary wastewater treatment system has been used since it was installed in 1995.

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-Eyretechnics 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
- ✓ 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