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NUNAVUT WATER BOARD

NUNAVUT IMALIRIYIN KATIMAYINGI

**Water Licence Application
Supplementary Questionnaire
for Municipalities**

INTERNAL	
PC	<input checked="" type="checkbox"/>
LA	<input checked="" type="checkbox"/>
OM	<input type="checkbox"/>
TA	<input type="checkbox"/>
BS	<input type="checkbox"/>
ST	<input type="checkbox"/>
ED	<input type="checkbox"/>
CEO	<input type="checkbox"/>
BRD	<input type="checkbox"/>
EXT.	<input type="checkbox"/>

I. GENERAL

1. Date: May 6, 2002
2. Applicant: Hamlet of Rankin Inlet, Rankin Inlet, Nunavut
3. Contacts:
Name of Contact: Ron Roach
Position: Senior Administrative Officer
Telephone: 867-645-2895
Fax: 867-645-2146
4. Community Status:

☐ Village
☐ Town
☐ City
☒ Hamlet
☐ Settlement Corporation
5. Indicate the status of the municipality's licence on the date of the application.

☐ New Application
☒ Renewal - Water Licence # No. N6L4-0779

II. ATTACHMENTS

1. Attach current or up-to-date detailed map(s) showing the locations of the:
 - a. raw water intake;
 - b. water storage and treatment facilities;
 - c. fuel and chemical storage;
 - d. sewage treatment facilities (lagoon, honey bag pit, wetland);
 - e. wastewater treatment area and discharge outlets;
 - f. solid waste disposal areas and drainage patterns;
 - g. hazardous waste disposal area;
 - h. transportation access routes;
 - i. existing water bodies/courses and any changes to these water bodies/courses that have or may occur as a result of water use or waste disposal facilities, locations of environmental monitoring sites. (Outline drainage basin);
 - j. Traditional use areas outlined on site map and areas around the community used for recreation, camping, fishing, etc.
 - k. abandoned and/or restored water treatment, sewage, and solid waste disposal facilities.

Are maps attached? ☐ Yes ☒ No

If no, please indicate when they will be available.

Indicate which organization has provided the various maps or diagrams.

The Hamlet of Rankin Inlet will be submitting maps and diagrams at their earliest convenience. Lyne Toner received maps from Amil Lindsay and she will be forwarding them to the Nunavut Water Board.

III. WATER SUPPLY

Water Source

1. Type of source

☒ Lake
☐ River
☐ Well
☐ Other

2. Name of water source and alternative, if any.

Primary Source: Nipisar Lake

Secondary Source: Not Applicable

3. Usual break-up & freeze-up period:

Break-up: June

Break-up: October

Water Intake

1. Please provide short descriptions for the following:

- a. Freshwater intake facility

The freshwater intake facility is the Nipissar Lake Pump-House. It has two intake screens each with a submersible pump/motor assembly. Those units operate on a lead/lag operation, pumping directly to Williamson Lake Pump house, our water treatment and storage facility. The pumps' operation is determined by tank levels at Williamson Lake. Tempered (heated) water is injected back into the discharge line via a return line, for freezing protection. An aerator operated on a timed basis, to maintain an opening in the lake's ice cover, in order to keep the lake aerated.

- b. Operating capacity of pumps used

The installed pumps are Grundfos submersible type pumps. Each pump is designed to pump 72 m³/hr (2701GPM) with (115 ft.) head pressure.

c. Intake screen size

The facility has two intake screens of 250 mm diameter each, with the submersible installed within. The pumps pump into 100 mm discharge mains.

Water Storage

1. Type of water storage facility. (check where applicable)

☐ Reservoir/ Pond
☒ Storage Tank
☐ None
☐ Other

Other

Description:

2. If "reservoir" checked:

Is the reservoir lined?

Not Applicable

What type of liner?

Not Applicable

When was it installed?

Not applicable

Water Treatment

1. Indicate the quality of the water.

Summer:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Fall:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Winter:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor
Spring:	<input checked="" type="checkbox"/> good	<input type="checkbox"/> fair	<input type="checkbox"/> poor

3. Describe.

Water is treated using chlorination and fluoridation. Chlorine and fluoride levels are checked daily. In addition, preliminary testing for bacteria is done in-house by the Utilidor Operator,. Samples are also submitted to the Health Board in town for testing on a bi-weekly basis.

Twice yearly, complete chemical and microbiological tests are done by an independent laboratory. The latest, done by Enviro-Test labs in Winnipeg was done in January 2002, using samples collected on January 9,2002.

4. Type of water treatment.

- ☐ Filtration and chlorination
☐ Chlorination only
☐ None
☒ Other Fluoridation and Chlorination

Water Use And Distribution

1. Volume of water use:

Distribution	Estimated number of people on the system A	Estimated average water consumption (Litres/capita/day) B	Total water consumption (Litres/day) A x B
Piped	2400	320	770,000
Trucked	20	400	8,000
Total			778,000

General Condition of the water supply facilities

1. General condition of the:

a. Water supply facility

☒ Satisfactory ☐ Unsatisfactory

If unsatisfactory, explain.

b. Storage facility

☒ Satisfactory ☐ Unsatisfactory

If unsatisfactory, explain.

c. Distribution system

☒ Satisfactory ☐ Unsatisfactory

If unsatisfactory, explain.

Modifications

1. Are there any changes *planned* for the water supply system?

☐ No ☒ Yes

If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

One major change is planned for the water supply system. It is the upgrading of a portion of the distribution network, in an older part of the town. The change is an attempt to upgrade old and deteriorating piping and fittings, as well as moving access vaults to more convenient locations.. It is also meant to include more residents to the Utilidor. These plans are still in the design stage, and no implementation schedule has been determined yet.

2. Does the community believe changes needed to the water supply, storage or treatment facilities? Describe.

No.

Identification

1. Are there signs identifying drinking water sources presently used by the municipality?

☒ Yes ☐ No

IV. SEWAGE DISPOSAL

1. What type(s) of sewage treatment does the community have?

☐ Lagoon
☒ Mechanical system
☐ Wetland
☐ Honey bag
☐ Combination/Other: describe

Lagoon (if applicable)

1. Has there been any operating problems with the lagoon?

Not Applicable

If yes, describe

Mechanical System (if applicable)

1. Describe (type, specifications, operation and maintenance program for the mechanical wastewater treatment system).

The sewage collection system consists of three facilities in all. Two Johnston Cove and Nuvuk Lift Stations serve as collection points and both pump flow to the third, Rankin Inlet Waste Water Treatment Plant. Flows from customers go through a sanitary sewer main network into the lift stations.

The WWTP is equipped with a rotating drum screen with woven 304 steel wire mesh media of 1000 microns. It is designed to handle flows in the range of 25 L/s to 85 L/s, with 65 L/s being the design peak flow. The screens are pressure washed with hot water several times daily to remove grease buildup. The process is a pretreatment process that separates solids from liquids.

A portion of the Operations and Maintenance Manual has been added for more detailed information.

2. Are sludges produced?

☒ Yes ☐ No

If yes, describe how the sludges are disposed of:

It is taken to the municipal dump and put into a landfill site, which is a fenced area at the existing solid waste disposal site.

Wetland (if applicable)

1. Describe the Wetland wastewater treatment system.

Not Applicable

Honey Bag Pit

1. Does the municipality use a honey bag pit?

☐ Yes ☒ No

If yes, describe the location, drainage, and operation/maintenance of the site:

Commercial, Industrial and/or Hazardous Wastes

1. Are there any sources of commercial or industrial *liquid* waste being discharged or deposited to the wastewater treatment system that may affect the quality of the effluent or leachate produced? *(The municipality should be aware that any commercial or industrial discharge has to be approved by the municipality)*

___ Yes ✓ No

If yes, indicate sources, types and quantities.

Sewage Discharge

1. Are fish, shellfish and other wildlife harvested in or near the discharge area ?

___ Yes ✓ No

If yes, indicate species harvested, and level of harvest.

General Condition of the sewage treatment facilities

1. General condition of the:

- a. Sewage collection system

_ Satisfactory ___ Unsatisfactory

If unsatisfactory, explain.

- b. Discharge control system

✓ Satisfactory ___ Unsatisfactory

If unsatisfactory, explain.

- c. Dams, diversion dykes, berms

Not Applicable

If unsatisfactory, explain.

Modifications

1. Are there any changes *planned* in the sewage treatment facilities?

☐ No ☒ Yes

If yes, please attach a **copy** of the plan, or describe changes. Provide information on the implementation schedule.

There is one **modification** planned for the sewage treatment facilities. A new treatment plant with a higher level of treatment capability **is being** designed. At this stage, samples are being collected weekly and are being sent to Taiga Labs for testing, **as** well as operational flows are being recorded. The consultants will use this data to determine design capacity and appropriate treatment methods.

2. Does the municipality or residents believe changes are needed to the sewage treatment facilities? Describe.

The Hamlet Council concerned that raw sewage is discharged to the ocean, but the Department of Public Works has **told the Council** it is done at acceptable rate.

Abandonment and Restoration

1. List and describe **abandoned** or restored sewage treatment facilities.

None.

Identification

Are there signs **identifying** past and present sewage disposal sites?

☒ Yes ☐ No

V. SOLID WASTE DISPOSAL

1. Briefly describe how solid wastes are collected and delivered to the disposal area.

Hamlet has two garbage trucks that work on a schedule and collect and bring garbage to the dump.

2. Is the solid waste site fenced? ☒ Yes ☐ No

3. Is the fence adequate? ☐ Yes ☒ No

If no, describe

Fence is beginning to fall down. A fence will be constructed around the new solid waste site.

Waste Reduction

1. Does the municipality burn garbage?

☐ Yes ☒ No

If yes, describe how and when this is done.

2. Has the municipality considered measures for waste reduction such as recycling or reuse?

☐ Yes ☒ No

If yes, describe

Animal Carcasses Pit

1. Does the municipality have an area for the disposal of animal carcasses ?

☒ Yes ☐ No

If yes, describe the location, drainage and operation/maintenance of the site

The spot is located at the back of the dump. When an animal is disposed of it is covered in dirt.

Waste Oil Pit

1. Describe the waste oil storage area.

Do not have an area for this. Almost all waste oil is used by a local contractor to burn in his waste oil furnace. The remaining waste oil is shipped out of the hamlet since there are no other facilities available to dispose of it.

Bulky Scrap Metal Waste Disposal Area

1. Does the municipality have a scrap metal or bulky waste disposal area?

☒ Yes ☐ No

If yes, briefly describe its location and operation plan.

There is an area set aside for metal, but no operation plan in place.

Commercial, Industrial and/or Hazardous Wastes Disposal Area

1. Are there any commercial or industrial waste being discharged or deposited in the solid waste disposal area?
(The municipality should be aware that any discharge of commercial or industrial waste has to be approved by the municipality)

☐ Yes ☒ No

If yes, please indicate sources, types and quantity.

2. Will the municipality use a hazardous waste storage area?

☐ Yes ☒ No

If yes, describe its:

- a. Location
- b. Structure
- c. Operation and maintenance (describe special handling/disposal methods for these wastes)

General Condition of the Solid Waste Disposal Area

1. Comment on the general conditions of the:

- a. Solid waste disposal area

☐ Satisfactory ☒ Unsatisfactory

If unsatisfactory, explain.

The dump site has not been maintained since it was opened about fifteen to twenty years ago.

Modifications

1. Are there any changes planned for the solid waste disposal area?

☐ No ☒ Yes

If yes, attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

The Hamlet is looking to open a new dump within the next two years. A study was done in 1997 by Stanley and NorthTech Consulting that identified a spot for the dump. The community was consulted about the site. The Hamlet will be doing an RFP to hire a consultant to review this plan with the community again to ensure that the Nunavut Water Board and NIRB licences are filled out and approval is received before any work is done.

2. Are changes needed to the solid waste disposal area? Describe.

The current solid waste disposal site does not meet current standards, such as Nav Canada's 3 km setback from an airstrip and Department of Health's 450 m setback from residential dwellings. The community also believes that the site is impeding on their use and enjoyment of the surrounding coastal area.

Abandonment and Restoration

1. List and describe abandoned or restored solid waste facilities.
Indicate their location on a map.

None.

Identification

1. Are there signs identifying past and present solid waste disposal sites ?

☒ Yes ☐ No

VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by:

☒ Indian and Northern Affairs Inspector Date: 2000/07/27
☐ Community Government and Transportation Date: _____
☐ Other: Date: _____

2. Is there a system in place for reporting spills?

☒ Yes ☐ No

If yes, describe.

If anybody sees a spill it is reported to the Hamlet who would go and investigate it with the Department of Sustainable Development.

3. Is there a contingency plan for clean up of spills?

☒ Yes ☐ No

If yes, describe.

Spill kits are available in the community. Emergency containment packs are available from the Canadian Coast Guard. The spill would be contained and the contaminated soil would be removed. Lime would be spread onto the ground where the spill occurred.

4. Have any spills occurred in the past five years?

☐ Yes ☒ No

If yes, describe and show on a map the locations of the spills. What action has been taken to clean the affected areas?

Monitoring Program

1. Is water sampling and analysis done ?

☒ Yes ☐ No

If Yes, answer the questions a to e

a. Briefly describe how samples are taken and sent to the laboratory.

There are currently three levels of water monitoring being performed:

- i. Health Board analysis. Samples are taken by the Utilidor Systems Operator, and sent to the Health Board for analysis.
- ii. In-House checks. Utilidor Operator takes samples every day and tests for chlorine and fluoride content. Also does a basic biological test, which would indicate coliform presence.
- iii. Complete chemical and microbiological analysis. Samples are taken under the instructions from a recognized laboratory. Two samples of treated and two samples of untreated. One of the samples is collected in a plastic bottle. These complete tests are done twice yearly, once in the winter and once in summer. The last winter test was done by Enviro-Test Laboratories, Winnipeg, Manitoba, R3E 3L5, Tel: (204) 945-3705, Fax: (204) 945-0763.

b. Briefly describe any monitoring done for wastewater effluent and leachate.

There is currently no wastewater effluent monitoring being done on a regular basis.

c. Who is responsible for water sampling?

Name: Amil Lindsay
Position: Utilidor Systems Manager
Telephone #: 867-645-8158
Fax #: 867-645-8197
Level of training: B.Sc. Mechanical Engineering

d. Recognized laboratory performing analysis of samples.

Name: Taiga Environmental Laboratory

Address: 4601-52 Avenue, Yellowknife, NWT
Telephone #: 867-669-2788
Fax: 867-669-2718

- e. Are any changes planned in the water quality-monitoring program?

___ Yes √ No

If yes, describe.

VII. PUBLIC CONCERNS

1. What concerns does the municipality or residents have regarding the municipal water supply or waste disposal facilities? List the concerns and describe what steps have been taken to address those concerns.

The Hamlet and the community has a major concern with the location of the present dump. It is located close to town and security is very weak. People are constantly going through the dump and ripping open garbage bags and making a mess. The fencing is falling down and the dump is the first thing you see flying into the community.

VIII. PUBLIC HEALTH *(Help may be obtained from the Regional Environmental Health Officer if you have difficulty with this section.)*

1. Date: April 29, 2002
2. Municipality: Rankin Inlet
3. Contact: Wanda Poirier
Telephone #: 867-645-2171
Fax #: 867-645-2409
4. Have there been any problems or health/environmental concerns with drinking water ?

___ Yes √ No

If yes, describe

5. Have there been any problems or health/environmental concerns with sewage disposal/treatment?

___ Yes √ No

If yes, describe

6. Have there been any problems or health/environmental concerns with solid waste disposal?

☒ Yes ☐ No

If yes, describe

Same as stated earlier.

Monitoring Program

1. Does the Regional Health Board perform water quality sampling?
☐ No ☒ If Yes, answer questions (a) to (e)

- a. Briefly describe the sampling methodology.

DPW takes the samples and the Health Board does the testing.

- b. Briefly describe any monitoring of wastewater effluent and leachate.

None. The Health Board only performs bacteriological testing on drinking water.

- c. Who is responsible for sampling?

Name: Don Morley
Position: Utilidor Operator
Telephone #: 867-645-2708
Fax #: 867-645-8197
Level of training:

- d. Recognized laboratory performing analysis of samples.

Wanda Poirier performs the analysis herself.

Name: Wanda Poirier
Address: Rankin Inlet
Telephone #: 867-645-2171
Fax #: 867-645-2409

- e. Are any changes planned in the water quality-monitoring program?

☐ Yes ☒ No

If yes, describe.

IX. TECHNICAL INFORMATION *(Assistance may be obtained from the Regional Community Government (CG&T) office if you have difficulty with this section).*

1. Date: April 25, 2002
2. Municipality: Rankin Inlet
3. Contact: Wade Lovell
Telephone #: 867-645-8100
Fax #: 867-645-8141
4. Population (according to most recent census results): 2058 (1996)
5. Estimated growth rate over next 5 years: 2.37% per year.
6. Has any baseline data collection and evaluation been undertaken with respect to the physical, biological, and chemical characteristics of the main water bodies in the area?

☐ Yes ☒ No

If yes, provide a summary of program details or site title, authors, cities, and dates:

Prepared by

Title

Completion Date

If no, are such studies being planned?

☒ No ☐ Yes (If yes, when and by whom):

7. Have Elders been consulted in the collection of baseline data on main water bodies in the area?

☒ No ☐ Yes

If yes, specify

The Hamlet Council was involved throughout studies and the development of water use structures in the community. However, there was no specialized consultation with elders.

8. Has any baseline data collection and evaluation been undertaken with respect to the various biophysical components of the environment potentially affected by the project?

☒ No ☐ Yes

If yes, provide details below.

If no, are such studies being planned?

☒ No ☐ Yes.

If yes, specify:

Attachments

1. Attach detailed plan or drawing(s) of the present *solid waste disposal area*. Include the following information:
 - a. details of pond size and elevation;
 - b. details of all retaining structures (dimensions, materials of construction, etc.);
 - c. details of the drainage basin, and existing and proposed drainage modifications;
 - d. details of all decant, siphon mechanisms etc., including sewage treatment facilities;
 - e. details regarding direction and path of wastewater flow from the area;
 - f. distance from watercourses and fish bearing waters;
 - g. location and construction of liners;
 - h. leachate and groundwater collection systems; and
 - i. control structures.
2. Attach detailed plan or drawing(s) of the present *sewage treatment system*. The drawing(s) should include the following:
 - a. details of all retaining structures (dimensions, materials of construction, etc.);
 - b. details of the drainage basin, and existing and proposed drainage modifications;
 - c. details regarding direction and path of wastewater flow from the area;
 - d. indications of the distance from watercourses and fish bearing waters;
 - e. all sources of seepage presently encountered near these areas, including volumes (m^3/day) and directions.
 - f. The volume of seepage flow (m^3 / day); and
 - g. The direction of each flow.
3. Are drawings for the **solid** waste disposal area and sewage treatment system attached?
☐ Yes ☒ No

If Yes, who has provided them ?

If no, indicate when they will be available.

Hydrology

1. Effects on surface water flow:

Are any stream channels altered? ☐ Yes ☒ No

Is the natural storage or water level of any lake or pond changed? ☐ Yes ☒ No

Are there changes in water flow downstream of the project? ☐ Yes ☒ No

Is a storage reservoir created in a natural channel? ☐ Yes ☒ No

If yes to any of the above, briefly describe the expected change in flow or storage:

2. Drainage Area:

What is the drainage area?

18 km²

What is the average elevation of the drainage basin?

13 m

Is the drainage basin outlined on an attached map?

☐ Yes ☒ No

Describe the drainage basin characteristics, (vegetation, general soil type, lakes, swamps and permafrost areas, etc.)

3. Channel characteristics:

Is the course of any channel changed?

☐ Yes ☒ No

If yes, describe measures to maintain stream bed and bank stability.

4. Will the cross-section of any watercourse be changed?

☐ Yes ☒ No

If yes, describe the change and its effect on the flow capacity of the channel.

Water Supply

1. What is the rate of withdrawal from the source?

806 m³/day

2. Is water drawn from the source

☐ intermittently

☒ continuously

3. If it is drawn intermittently, during what month(s) is it drawn?

Not Applicable

4. For what period is it drawn (days/weeks/months)?

365 days

5. What is the rate of flow of source (if river) or size (if lake)?

The lake has a 1,400,000 m³ storage capacity and 600,000 m³ per year of recharge.

6. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn.

None. The lake will continue as it has for the last 30 years.

Water Storage

1. Is a dam or dyke being used to store or alter the flow of water?

☐ Yes ☒ No

2. What are the dimensions of the dam or dyke?

Not Applicable

3. Does the proposed dam create a reservoir in a natural watercourse?

Not Applicable

If yes, what is the storage capacity and surface area of the reservoir?

4. Will the dam or dyke affect fish migration or movement ?

Not Applicable

If yes, describe all measures for compensation of fish habitat lost due to the dam or dyke, and mitigation for fish migration or movement.

Water Treatment

1. Indicate the capacity of the treatment facility. 1200 L/min

2. What is the capacity of the water storage facility.

3364 m³

3. Describe the method of water treatment (i.e., backwash, flocculation, sedimentation, chemicals used), and provide the results of the most recent bacteriological and chemical analysis. Attach a diagram, if possible.

Water is treated by chlorination using gas chlorinators. In addition, a fluoridation system also injects hydrofluosilicic acid directly into the water.

4. Are there any changes planned in the water treatment facilities?

☒ No ☐ Yes

If yes, attach a copy of the plan or indicate changes and include an implementation schedule. Include excerpt from MACA Capital Plan if available.

Sewage Disposal

1. Indicate the level of sewage treatment:

☒ primary
☐ secondary
☐ tertiary

Pre-treatment (if applicable):

☒ screening
☐ maceration

Lagoons (if applicable):

Not Applicable

2. Indicate the capacity of the sewage treatment facility

The WWTP is designed to reasonably handle all incoming flows and not discharge untreated effluent.

3. Based on current population projections, the facility will meet the needs of the community until the year

2017

4. Average depth of the wastewater lagoon

Not Applicable

5. What is the design freeboard
Not Applicable
6. Indicate the retention time of the sewage while in the treatment facility
Not Applicable
7. Indicate the estimated rate of discharge of wastewater
9.3 L/sec
8. Indicate the location of the discharge point
500 meters into Hudson Bay
9. Is the discharge:
☐ seasonal
☒ continuous
If the discharge is seasonal, during what month(s) is it done_
What is the duration of the discharge (days/weeks/months)
All year
10. Are there any changes planned in the sewage disposal facilities?
☒ No ☐ Yes

If yes, attach a copy of the plan or indicate changes and include an implementation schedule.
Include excerpt from MACA Capital Plan if available.

Ferguson Simek Clark is partaking in an ongoing study to examine the characteristics of untreated wastewater generated by the hamlet. The purpose is to determine if future investment of secondary treatment is worth while and necessary.

Solid Waste Disposal

1. Indicate the capacity of the disposal area.
352,700 m³
2. The *average* depth of the solid waste disposal site.

3.3 m

3. The current facility will meet community needs until the year
2005

4. Do any natural watercourse enter the solid waste disposal area? What methods are used to decrease the amount of runoff water entering these areas?

No/None

5. Indicate the volume of water that may enter these areas from any source(s) and attach all pertinent details of the diversions.

Source: Not Applicable
Volume: Not Applicable

6. Please describe any diversions of watercourses:

None

7. Are there any changes planned in the solid waste disposal facilities?
☐ No ☒ Yes

If yes, attach a copy of the plan or indicate changes and include an implementation schedule.
Include excerpt from MACA Capital Plan if available.

Same as stated earlier in Section V, question 1, under Modifications.

Other

1. Describe any additional details on the existing municipal facilities which should be considered by the Nunavut Water Board during its review.