P.O. Box 119
Gjoa Haven, NT X0E 1J0
Tel: (867) 360-6338
Fax: (867) 360-6369

kNK5 wmoEp5 vtmpq
NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

Hamlet of Kimmirut

Municipal Questionnaire for Water Licence Application

Renewal of Water Licence # N5l4-1441

TABLE OF CONTENTS

I. GENERAL

1. Date: *April 5, 2002*

2. Applicant: *Hamlet of Kimmirut*
   Municipality and Region

3. Contacts: *David Parker- Snr. Municipal Planning Engineer*
   Name of Contact

   Government of Nunavut – Community Government and Transportation
   Position

   (867) 975-5311 Telephone # *(867) 979-5811* Fax #

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 # N5l4-1441

II. ATTACHMENTS

1. Attach current or up-to-date detailed map(s) showing the locations of the:

   a. raw water intake; *(Figure 1)*
   b. water storage and treatment facilities; *(Figure 1)*
   c. fuel and chemical storage; *(Figure 2b)*
   d. sewage treatment facilities (lagoon, honey bag pit, wetland); *(Figure 2b)*
   e. wastewater treatment area and discharge outlets*(Figure 2a)*;
   f. solid waste disposal areas and drainage patterns; *(Figure 2)*
   g. hazardous waste disposal area; *(Figure 2)*
   h. transportation access routes; *(Figure 1)*
   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); *(Figures 1, 2a)*
   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. *(N/A)*

   Are maps attached? ✔ Yes *(Appendix A)* __ No

   If no, please indicate when they will be available.

Indicate which organization has provided the various maps or diagrams.
- *Dillon Consulting Limited*

III. WATER SUPPLY

Water Source

1. Type of source: ✔ Lake ___ River ___Well ___ Other _____

2. Name of water source and alternative, if any.
3.

Lake Fundo
Pimary Source Secondary Source

3. Usual break-up & freeze-up period: *June* *November*
Break-up Freeze-up

Water Intake

1. Please provide short descriptions for the following:

a. Freshwater intake facility
- *consists of a pumphouse constructed in 1995 located on the eastern shore of Fundo Lake. It includes truckfill pumps, a loading arm, a generator and related equipment.*

b. Operating capacity of pumps used
*****To be provided by Hamlet*

c. Intake screen size
*****To be provided by Hamlet*

Water Storage

1. Type of water storage facility. (check where applicable)
___ Reservoir/Pond ___ Storage tank ___ None ___

✔ Other *Lake Fundo* Description: *Lake Fundo is the community's main source of potable water. It has an estimated storage volume of 6,783,000 m3. The lake is intended to be the community's long-term water supply.*

2. If "reservoir" checked:

Is the reservoir lined? ___ Yes ___ No

What type of liner? _____ When was it installed?

Water Treatment

1. Indicate the quality of the water.

Summer:	✔ good	___ fair	___ poor
Fall:	✔ good	___ fair	___ poor
Winter:	✔ good	___ fair	___ poor
Spring:	✔ good	___ fair	___ poor

2. Describe.

To date, no water quality sampling has been conducted. The Hamlet relies on the feedback (colour, taste, etc.) from the community as to the condition of the water.

3. Type of water treatment.

___ Filtration and chlorination
✔ Chlorination only
___ None
___ Other Description

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			
TRUCKED	475	100	47500
		TOTAL	

*****To be provided by the Hamlet***

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.

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

Identification

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

The sewage discharge area consists of a small depression in the landscape that is located just off the access road. There is a short retention time before the sewage travels over a sinuous, cascading landscape (about 300m) into the ocean (Figure 2a).
The current sewage discharge area has reached it's space capacity and the Hamlet has completed some preliminary work relating to the selection of an alternative site.

***Lagoon** (if applicable)*

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

___Yes ___ No

If yes, describe

Mechanical System *(if applicable)*

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

2. Are sludges produced ?
   __ Yes __ No
   If yes, describe how the sludges are disposed of:

Wetland *(if applicable)*

1. Describe the Wetland wastewater treatment system.

This does not apply to the current sewage disposal site. Please see ***"Modifications, p. 8",*** *of this document for details on the wetland treatment of the proposed site.*

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:
   The Hamlet has deposited honey bags at the landfill over the duration of the licence. However, honey buckets are currently not being used.

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, shell fish 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.
   Not appropriate for the current site. Discharge flows for 300m directly into the ocean.

c. Dams, diversion dykes, berms

__ Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

Not applicable to the current site.

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. *See Figure 3 & 4 for geographic location and Figure 5 for detailed site plan (Appendix B). As soon as the weather permits(early July 2002).*

2. Does the municipality or residents believe changes are needed to the sewage treatment facilities? Describe. *Yes, there are concerns about the 1994 plan to expand residential housing around the existing site. The community requested options for relocation of the site.*

Abandonment and Restoration

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

Refer to original attachment maps.

To date, there are no abandoned or restored sewage treatment facilities. However, there are plan to relocate the current site. The Hamlet retained Dillon in 1999 to complete a closure plan for the current site.

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.

Solid waste is collected five days a week and deposited at the solid waste site (2500m^2). Wastes are compacted monthly using a Caterpillar loader.

2. Is the solid waste site fenced? ☑ Yes __ No

3. Is the fence adequate? __ Yes ☑ No

If no, describe

A fence partially encloses the solid waste dump.

Waste Reduction

1. Does the municipality burn garbage ?

☑ Yes __ No

If yes, describe how and when this is done.

Garbage is collected 3 times a week and burned at the end of the day.

2. Has the municipality considered measures for waste reduction such as recycling or reuse?
__✔__Yes __ No

If yes, describe
The Hamlet was successful in implementing a pop can recycling program but it has been discontinued.

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

Waste Oil Pit

1. Describe the waste oil storage area.
Waste Oil is dumped into open 45 L drums and burned.

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.
Scrap metal and bulky waste disposal area is on the eastern side of the dump about 150 feet away from the solid waste disposal site (Figure 2b).

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.

*See **"Waste Oil pit"** above.*

2. Will the municipality use a hazardous waste disposal area?
__✔__ Yes ___ No
If yes, describe its:

a. Location
Near the present scrap metal dump (Figure 2b).

b. Structure
Metal storage container.

c. Operation and maintenance (describe special handling/disposal methods for these wastes)
Once the metal storage container is full, the Hamlet would like to ship it down south to a proper hazardous waste disposal facility although this has yet to be required.

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.

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.

Proposed changes include the relocation of the current site to the proposed sewage wetland treatment (Figure 3, 4 & 5)

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

Based on the future expansion of residences and that the existing site has been in use since 1970, the community feels that relocation of a new site is required.

Abandonment and Restoration

1. List and describe abandoned or restored solid waste facilities.

Indicate their location on a map.

There are no current abandoned of restored solid waste facilities. However, like the sewage disposal site, the Hamlet retained Dillon Consulting (1999) to complete closure plans for the abandonment and restoration of the current solid waste site.

Identification

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: Sept 11/ 2000

___ Municipal and Community Affairs Date: _____

___ Other: Date: _____

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

✔ Yes ___ No

If yes, describe.

As required by the previous licence, the Hamlet calls a 1(800) 24 Hour Spill Report Line in the event of a spill. In addition, the Hamlet's wildlife officer also reports spills.

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

___ Yes ___ No

If yes, describe.

The Hamlet calls the Sustainable Development Officer in Kimmirut, files a report and cleans up the spills with "mop up" clothes that are always available at the Co-op.

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.
Samples are taken from the water truck and selected houses and delivered to the local nurse. Samples are then shipped to Iqaluit for analysis.

b. Briefly describe any monitoring done for wastewater effluent and leachate.
None.

c. Who is responsible for water sampling ?

Name: *Mikidjuk Luta*

Position: *Acting Building Maintainer*

Telephone #: *(867) 939-2256*

Fax # : *(867) 939-2256*

Level of training: *Trained in water and sanitation courses.*

d. Recognized laboratory performing analysis of samples.

Name: *Public Health and Social Services – Environmental Health Officer*

Address:

Telephone #: *(867) 975-4815*

Fax #:

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.

There have been concerns about the location of sewage and waste disposal facilities being so near to the future expansion of community residences. The Community Government and Transporation (Iqaluit) retained Dillon Consulting to conduct a preliminary planning and selection of an alternate site location for a new sewage and solid waste and disposal facilities.
The result of that study identified Site 8 as the best balanced choice. To date, a road has been built to this site but no construction of the new facilities has begun.

VIII. PUBLIC HEALTH

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

1. Date: *October 31, 2000*

2. Municipality: *Kimmirut, NU*

4. Contact: *Philip*
(Environmental Health Officer Contact)

Telephone #: *(867) 979-4815*

Fax # : _____

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

The present sewage lagoon is located close to a creek and on a higher elevation. Please see ***" Sewage Disposal" Section IV, page 6*** *for the description of current lagoon.*

6. Have there been any problems or health/environmental concerns with solid waste disposal?
✔ Yes ___ No

If yes, describe
Household wastes and refuse have blown into nearby Lake Fondu and the ocean (Westborne Bay).

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.
The Hamlet checks for chlorine on a daily basis. Once a month, samples are taken from the water truck and selected houses and taken to the local nurse. Samples are then shipped to the Environmental Health Officer in Iqaluit for analysis. Once samples are collected and sent to Iqaluit, they undergo a membrane filtration method to test for coliforms.

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

c. Who is responsible for sampling ?
Name: *Mikidjuk Luta*

Position: *A/Building Maintainer*

Telephone #: *(867) 939-2256*

Fax # : *(867) 939-2256*

Level of training: *Foreman's training is completed.*

d. Recognized laboratory performing analysis of samples.

Name: *Public Health and Social Services - EHO*

Address:

Telephone #: (867) 975-4815

Fax # :

e. Are any changes planned in the water quality monitoring program?
__ Yes ___✔ No
If yes, describe.

IX. TECHNICAL INFORMATION –EXISTING SEWAGE AND SOLID WASTE SITE

(Assistance may be obtained from the Regional Community Government (CG&T) office if you have difficult with this section).

1. Date: *February 2002*

2. Municipality: *Kimmirut, NU*

3. Contact: *David Parker*
(Community Government and Transportation – Senior Municipal Planning Engineer)

Telephone # *(867) 975-5311*

Fax # *(867) 979-5811*

4. Population (according to most recent census results): *440 (based on 1999 Nunavut Bureau of Statistics population estimates - Appendix)*

5. Estimated growth rate over next 5 years: *1.1 % (based on 2002 -2007 Nunavut Bureau of Statistics population projections – Appendix)*

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.

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.

Prepared by	Title	Completion Date
Current Sewage and Solid Waste Site		
Dillon Consulting Limited	Sewage & Solid Waste Site Selection Kimmirut, NT	February 1999
Dillon Consulting Limited	Sanitary Site - Environmental Health And Closure Plan *(Appendix - Figure 3)*	March 2000
Proposed Sewage and Solid Waste Site		
Dillon Consulting Limited	Sewage & Solid Waste Site Selection Kimmirut, NT	February 1999
Dillon Consulting Limited	Kimmirut Sewage Treatment Site Assessment	October 2001

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: *(See Figure 1, 2a &b)*

   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 *(locations only)* ___ No

If Yes, who has provided them ?
Dillon Consulting Limited

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:
The storage reservoir is, in fact, Lake Fundo. The Hamlet obtains water directly from the lake and delivers it to the residences.

2. Drainage Area:
What is the drainage area? 1 km^2
What is the average elevation of the drainage basin? 500 metres
Is the drainage basin outlined on an attached map? ✔ Yes __ No *(Figure 2a)*

Describe the drainage basin characteristics, (vegetation, general soil type, lakes, swamps and permafrost areas, etc.)
Refer to ***Section IV – Sewage Disposal- Discharge Area***

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? 5 m^3/day.

2. Is water drawn from the source ___ intermittently ✔ continuously

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

4. For what period is it drawn (days/weeks/months)? *Seven times/week*

5. What is the rate of flow of source (if river) or **size** (if lake)? *6, 783, 000 m^3*

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

Kimmirut is a small community (population of 400) therefore the amount of water drawn from Lake Fundo will have minimal effects on the water levels.

Water Intake (Please see Page 3)

1. Please provide short descriptions of the following:
   a. freshwater intake facility
   SUBMERSIBLE PUMP, HEAT TRACED, INSULATED INTAKE LINE

   b. operating capacity of the pumps
   300 gal/min.

   c. intake screen size
   Small (what size exactly)
   25 cm. DIAMETER
   ≈ 5 mm MESH OPENING.

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?
   Length:_____ Width: _____ Height:
   U/S slope: _____ D/S slope: _____

3. Does the proposed dam create a reservoir in a natural watercourse?
   ___ Yes ___No
   If yes, what is the storage capacity and surface area of the reservoir?
   _____ m^3 _____ ha.

4. Will the dam or dyke affect fish migration or movement ?
   ___ Yes ___ No
   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. ___1000_____ L/min

2. What is the capacity of the water storage facility._____ m^3

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.

Currently, there is no water treatment facility. The water is pumped from Fundo lake directly into the water trucks where chlorine is added. The water is then delivered directly to the residences.

Please see Appendix C for the latest (Oct 2000) environmental health assessment.

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
   The current site does not act as a lagoon. It is a sewage discharge area where discharge flows into the receiving environment.
   Pre-treatment (if applicable): ___ screening ___ maceration
   Lagoons (if applicable): ___ anaerobic ___ aerobic ___facultative

2. Indicate the capacity of the sewage treatment facility_____ m^3

3. Based on current population projections, the facility will meet the needs of the community until the year ___*2000 (it has reached capacity)*___ .

4. Average depth of the wastewater lagoon _____ m. (N/A)

5. What is the design freeboard? _____ m. (N/A)

6. Indicate the retention time of the sewage while in the treatment facility_____ days. (N/A)

7. Indicate the estimated rate of discharge of wastewater_____ L/sec.

8. Indicate the location of the discharge point___*(see Figure 2b-"sewage discharge area"*___.

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) ? _____

10. Are there any changes planned in the sewage disposal facilities?
    ___ No ✔ Yes ***(see details on proposed site, next section)***
    If yes, attach a copy of the plan or indicate changes and include an implementation schedule.

    Include excerpt from MACA Capital Plan if available.

Solid Waste Disposal

1. Indicate the capacity of the disposal area _____ m^3 (N/A)

2. The *average* depth of the solid waste disposal site _____ m.(N/A)

3. The current facility will meet community needs until the year _____. (N/A)

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. No measures have been taken to decrease amount of runoff entering the waste disposal area.

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

Source	Volume
Runoff	*less than 41.2 cm of total precipitation.*

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. *(see next section on proposed site)*
   Include excerpt from MACA Capital Plan if available.

Other

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

   It has been recommended by Environment Canada (letter dated June 29, 2001) that the Hamlet has exceeded their water withdrawal limit of 20,000 m^3 on the expiring licence. EC recommends placing a 30,000 m^3/ year withdrawal limit.

X. TECHNICAL INFORMATION – PROPOSED SEWAGE AND SOLID WASTE SITE

(Assistance may be obtained from the Regional Community Government (CG&T) office if you have difficult with this section).

1. Date: *February 2002*

2. Municipality: *Kimmirut, NU*

3. Contact: *David Parker*
(Community Government and Transporation Representative)

Telephone # *(867) 975-5311*

Fax # *(867) 979-5811*

4. Population (according to most recent census results): *440 (based on 1999 Nunavut Bureau of Statistics population estimates - Appendix)*

5. Estimated growth rate over next 5 years: *1.1 % (based on 2002 -2007 Nunavut Bureau of Statistics population projections – Appendix)*

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
Dillon Consulting Limited	Kimmirut Sewage Treatment Site Assessment	October 2001

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.

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.

Prepared by	Title	Completion Date
Proposed Sewage and Solid Waste Site		
Dillon Consulting Limited	Sewage & Solid Waste Site Selection Kimmirut, NT	February 1999
Dillon Consulting Limited	Kimmirut Sewage Treatment Site Assessment	October 2001

If no, are such studies being planned?

__ No __Yes.

If yes, specify:

Attachments

1. Attach detailed plan or drawing(s) of the **proposed** *solid waste disposal area*. Include the following information: *(See Figure 3, 4 & 5)*

   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 **proposed** *sewage treatment system*. The drawing(s) should include the following: *(See Figures 3, 4 & 5)*

   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;
   h. all sources of seepage presently encountered near these areas, including volumes (m^3/day) and directions.
   i. The volume of seepage flow (m^3 / day); and
   j. The direction of each flow.

3. Are drawings for the solid waste disposal area and sewage treatment system attached?
✔ Yes *(locations only)* ___ No

If Yes, who has provided them ?
Dillon Consulting Limited

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:
The storage reservoir is, in fact, Lake Fundo. The Hamlet obtains water directly from the lake and delivers it to the residences.

2. Drainage Area:
What is the drainage area? 1 km^2
What is the average elevation of the drainage basin? 50 metres
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.)

Refer to ***Section IV – Sewage Disposal- Discharge Area***

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? 5 m^3/day.

2. Is water drawn from the source ___ intermittently ✔ continuously

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

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

5. What is the rate of flow of source (if river) or size (if lake)? *6, 783, 000 m^3* _____

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

Kimmirut is a small community therefore the amount of water drawn from Lake Fundo will have minimal effects on the water levels.

Water Intake *(See page 3)*

1. Please provide short descriptions of the following:
   a. freshwater intake facility

   b. operating capacity of the pumps
   good

   c. intake screen size
   Small (what size exactly)

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?
   Length:_____ Width: _____ Height:
   U/S slope: _____ D/S slope: _____

3. Does the proposed dam create a reservoir in a natural watercourse?
   ___ Yes ___No
   If yes, what is the storage capacity and surface area of the reservoir?
   _____ m^3 _____ ha.

4. Will the dam or dyke affect fish migration or movement ?
___ Yes ✔ No *(See Dillon, 2001)*
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 *(same as current site section, p. 16)*

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

2. What is the capacity of the water storage facility._____ m^3

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.

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 *(with a secondary wetland treatment)*
Pre-treatment (if applicable): ___ screening ___ maceration
Lagoons (if applicable): ___ anaerobic ___ aerobic ___facultative

2. Indicate the capacity of the sewage treatment facility 5000 m^3

4. Based on current population projections, the facility will meet the needs of the community until the year 2020. *The proposed sewage facility will serve as a temporary storage area for sewage disposal with the intention that flow from the pond will continuously drain downstream through 850m of wetland treatment.*

4. Average depth of the wastewater lagoon _____ m. (N/A)

5. What is the design freeboard? _____ m. (N/A)

6. Indicate the retention time of the sewage while in the treatment facility days. (N/A)

7. Indicate the estimated rate of discharge of wastewater_____ L/sec.

8. Indicate the location of the discharge point *North end of Upper Pond at truckpad (see Figure 5).*

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) ? _____

10. Are there any changes planned in the sewage disposal facilities?
___ No ✔ Yes *(Dillon, 2001)*
If yes, attach a copy of the plan or indicate changes and include an implementation schedule.

Include excerpt from MACA Capital Plan if available.

Solid Waste Disposal

1. Indicate the capacity of the disposal area _____ m^3. (~ 20, 732 m^2)

2. The *average* depth of the solid waste disposal site 3 m.

3. The current facility will meet community needs until the year 2020.

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. If required, a trench can be dug around the solid waste site to divert runoff through the site.

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

Source	Volume
Runoff	*less than 41.2 cm of total precipitation.*

6. Please describe any diversions of watercourses:

None.

7. Are there any changes planned in the solid waste disposal facilities?
___ No ✔ Yes *(Dillon, 2001).*
If yes, attach a copy of the plan or indicate changes and include an implementation schedule. *(Implementation July 2002, Figures 3-5)*
Include excerpt from MACA Capital Plan if available.

Other

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

   Preliminary plans have been conducted regarding sewage and waste disposal areas. Further construction details on the segregation of solid waste and sewage treatment are still required.