Nuna Burnside Engineering and Environmental Ltd. 15 Townline Orangeville ON L9W 3R4 Canada
telephone 519-941-0342 **fax** (519) 941-8120 **web** info@nunaburnside.com

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March 19, 2010

Mr. Wayne Thistle, C.E.T.
Regional Projects Manager
Department of Community & Government Services
Kivalliq Region, Government of Nunavut
PO Bag 002
Rankin Inlet, NU X0C 0G0

Dear Wayne:

Re: Type "A' Water Licence Application
NWB File 3AM-GRA
Water Supply and Sewage
Hamlet of Rankin Inlet
File No.: N-O 14850

1.0 Introduction

There are a number of issues related to the water supply system operated by the Government of Nunavut (GN) on behalf of the Hamlet of Rankin Inlet as outlined in the Water Licence Application Completeness Check and discussed in the Technical Meeting teleconference held March 3, 2010.

As discussed during the teleconference some issues can be resolved based on the information currently available and others cannot.

It is recommended that those issues that cannot be resolved without further study and engineering action be included as "Conditions" in the new water license with a timeline requirement to achieve compliance.

2.0 Water Intake – DFO Issues

The GN has searched their archives and indicates there is very little available information regarding the actual as-built details of the intake. A copy of a sketch of the system is attached. The GN indicates the intake screen size is 1" x ¼".

At present there is insufficient information regarding the details of the intake and the fish populations in the lake to determine if the intake is in compliance with DFO requirements.

We suggest the license be issued with the following conditions:

- By December 31, 2010, provide the required fishery assessment and as-built details of the water intake from Nipissar Lake to determine compliance with the DFO document "Freshwater Intake End-of-Pipe Fish Screen Guideline". If the intake is not in compliance provide an action plan, including agency consultation, to bring the intake into compliance by December 31, 2011.

3.0 Water Usage and Nipissar Lake Drawdown

As outlined in the license application there are some discrepancies in the volumes reported related to water usage and distribution. There is also significant evidence to indicate Nipissar Lake is not large enough to be a sustainable water supply as the Hamlet grows. To address these issues in August 2009 the GN issued a Request For Proposal (RFP) for a Water Supply Capacity, Consumption and Conservation Study. The Scope of Work included:

a. Is Nipissar Lake an adequate source of water for the community of Rankin Inlet, currently, and in the future?
b. When will Nipissar Lake fail to be adequate?
c. What is the water usage on a per capita basis, in Rankin Inlet?
d. Why is the water usage, per capita, what is it?
- *How much water is lost through bleeders?*
- *How much water is lost through distribution system leaks?*

e. How can the GN/Municipality of Rankin Inlet undertake to reduce the amount of water usage?
- *How does currently metering and billing practises affect water use?*
- *How can the number of bleeders be reduced?*
- *How can system leaks be managed?*

The Scope outlined the following methodology:

1. Assess

- *The capacity of the water supply servicing the Hamlet of Rankin Inlet.*

  a) Complete a survey of the existing shore line of Nipissar Lake.
  b) Determine Nipissar Lake volume loss compared to Bathymetry and Topographical Survey that was completed in 1995.
  c) An assessment of climate variables affecting the Nipissar Lake watershed capacity.
  d) A review of historical precipitation and evapo-transpiration rates to establish if the current volume reduction of Nipissar Lake is a result of climatic variables or municipal consumption/wastage.

- *The consumption of water in Rankin Inlet, taking into consideration the specific demographic dynamic of the community and the unique climate in which Rankin Inlet is situated.*

  e) Compile existing pumphouse metering data and general consumption data, and graphically present trends.

f) Identify abnormalities in residential and commercial meter readings.
g) Review historical and current consumption data to determine if Nipissar Lake is an adequate water source for the community.
h) Current and future development being undertaken in Rankin Inlet and its anticipated effect on consumption.

- *Recommend means by which water can be conserved.*

2. Report

The final deliverable for the assessment criteria in 1, above, shall be a report (submitted at 50% and 100% complete) which outlines the findings of the assessments undertaken by the consultant. Proponents shall give a detailed proposal on the scope of their report as it relates to their proposed methodology in item 1, above.

3. Leak Detection Equipment Report and Training

The Department of Community and Government Services has an interest in purchasing leak detection equipment and training Operations and Maintenance (O&M) Staff in its use. Services of a consultant are required to:

i. Review the water distribution system in Rankin Inlet and prepare a report outlining the type of equipment available and recommending suitable equipment for purchase.
ii. Develop specifications (for use in tendering) for supply of equipment presented in report (after approval by GN).

This project was awarded to FSC Architects and Engineers and is in progress.

Until this work is complete the need for a new or supplemental water supply and related engineering cannot be determined.

We suggest the licence be issued with the following conditions:

- By December 31, 2010, provide an assessment of the water supply capacity of Nipissar Lake and a detailed assessment of Hamlet water supply requirements for the future. Outline a detailed plan for the required engineering and development of a new or supplemental water supply. Following the necessary agency consultation and approvals, conduct the necessary engineering improvements by December 31, 2011.

4.0 Sewage Treatment System

The sewage treatment system consists of a rotating drum screen which provides primary treatment. The primary effluent discharges via gravity to the subsurface marine environment. To date, no significant environmental impacts have been noted in the marine environment, however, no detailed scientific studies have been undertaken.

In recent years the GN has undertaken a detailed design for a new facility. A new facility was deemed cost prohibitive both due to capital costs and O&M costs.

Currently design changes are being developed to improve the screening and reduce solids and BOD in the effluent.

In addition, the GN issued an RFP for a Wastewater Study in November 2009. The scope of work included:

The services of a consultant are required to:

- *Assess any environmental impact on marine life as a result of the Rankin Inlet Sewage Treatment Plant effluent discharge.*
- *A risk assessment of the receiving waters and a determination of the Dilution Factor in the discharge area.*

Note that the above assessments should include, but not be limited to the following:

- *Velocity of current and dispersion area should be recorded at the outfall discharge area.*
- *Water samples should be taken and tested at the discharge and the surrounding area of the outfall.*
- *Samples of the marine environment, vegetation and fish, should be collected and tested for abnormalities.*
- *Data collection should be over multiple years based on the proponent's knowledge and experience in the industry.*

Report

The final deliverable for the assessment above shall be a report (submitted at 50% and 100% complete) which outlines the findings of the assessments undertaken by the consultant. Proponents shall give a detailed proposal on the scope of their report as it relates to their proposed methodology.

BOD Testing Equipment Report and Training

The Department of Community and Government Services has an interest in purchasing BOD testing equipment and training Operations and Maintenance (O&M) Staff in its use. Services of a consultant are required to:

- *Review the existing system in Rankin Inlet and prepare a report outlining the types of equipment available and recommend suitable equipment to carry out on-going BOD monitoring.*
- *Develop specifications (for use in tendering) for supply of equipment presented in report (after approval by GN).*
- *Development of a training plan to train O&M staff to effectively utilize the testing equipment.*

The project was awarded to a marine consultant and is currently in progress. It is noted that sewage disposal into the marine environment is not part of the mandate of the NWB, however, due to the potential for impacts to areas under the jurisdiction of the NWB we suggest the licence include the following conditions:

- By December 31, 2010, provide a detailed description of all engineering modifications conducted in 2009 and the results of the Waste Water Study including proposed action and timelines.

Also provide:

- a comparison of water intake vs. sewage discharge volumes and provide an explanation for any discrepancy
- the potential for increased concentrations of effluent and the potential impacts to the environment due to implemented or proposed water conservation strategies that will reduce the level of dilution currently observed.

5.0 Other Issues

The remaining issues, recommendations and comments will be addressed in amendments to the application and the various supporting documents (O&M plans, Environmental Engineering Contingency Plan, Environmental Monitoring Program and QA/QC Plan, etc.).

Comments were provided by INAC identifying data missing from the Annual Reports. The reports were prepared using information from GN archives and data provided by various agencies. To the best of our knowledge no other data is available to include in the reports.

Going forward we expect that the data required by the licence will be more diligently collected and included in future Annual Reports.

6.0 Solid and Hazardous Waste Disposal

Discussions with GN staff indicate that there is no formal written agreement between the GN and the Hamlet regarding the disposal of solid waste and hazardous waste generated by the water supply system and sewage treatment system operated by the GN on behalf of the Hamlet. The following wastes may be generated by these GN licensed facilities:

- Municipal Non-hazardous Solid Waste – general garbage and materials discarded during operations. Currently collected by the Hamlet for disposal at the landfill.

- Hazardous Solid and Liquid Wastes – items such as batteries, waste oil, residual disinfectants, and other materials unsuitable for disposal in the Hamlet landfill. Currently collected by the Hamlet for storage at the appropriate hazardous waste storage area prior to disposal along with the Hamlet's hazardous waste.

- Sewage Sludge – solids screened from the sewage treatment plant. Currently collected by the Hamlet and disposed of at the landfill in accordance with the requirements of the licence for the landfill.

Since the GN does not have any capabilities for the handling, haulage and disposal of solid and hazardous waste generated from the operation of the water supply and sewage treatment facilities on behalf of the Hamlet it makes practical sense that the on-going practice of the Hamlet handling these wastes continue.

We recommend that the GN develop a written agreement with the Hamlet that can be referenced in both the GN water licence and the Hamlet water licence specifying the handling and fate of solid and hazardous waste.

Ideally, this should be done immediately and included as part of the licence application rather than as a Condition of the licence.

7.0 Summary

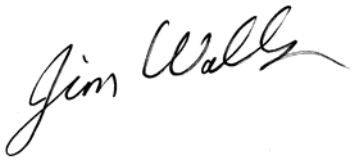
We trust this addresses the issues of concern identified by the various agencies and reviewers.

The amended application and supporting documents will be forwarded under separate cover.

If you have any questions or comments, please contact the undersigned.

Yours truly,

Nuna Burnside Engineering and Environmental Ltd.



Jim Walls, P.Geo.
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