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Water Resources Division  
Nunavut Regional Office  
Indian and Northern Affairs Canada  
Iqaluit, NU X0A 0H0

Our File: 9545-3-3KIM / CIDMS 211429

Monday, May 5, 2008

Richard Dwyer  
Licence Administrator  
Nunavut Water Board  
Gjoa Haven, NU X0B 1J0

**Re: 3BM-KIM0207, Hamlet of Kimmirut, Qikiqtani Region, Licence Renewal Application**

Dear Mr. Dwyer:

Indian and Northern Affairs Canada (INAC) reviewed the 3BM-KIM0207 licence renewal application submitted by the Government of Nunavut Department of Community and Government Services (GN-CGS) on behalf of the Hamlet of Kimmirut (the Licensee). The 3BM-KIM0207 licence allows for the use of water and the disposal of waste for municipal undertakings by the Hamlet of Kimmirut. Documents referenced in the Nunavut Water Board's March 31, 2008 letter sent to A. Ikkidluak of the Hamlet of Kimmirut and B. Roy of the GN-CGS, as well as other documentation applicable to this licence made available on the Board's online public registry have been reviewed. The original application did not indicate a length of license, but a February 15, 2008 letter requests an extension for five (5) years.

The Hamlet of Kimmirut is situated in the Qikiqtani Region and has a coordinate of 62°50'06" north latitude, 69°52'04" west longitude. According to Statistics Canada, Kimmirut had a total population of 411 people in 2006.<sup>1</sup> The Licensee is in the process of assessing its municipal infrastructure demands and has adopted the Nunavut Bureau of Statistics population projection of 846 people living in this Hamlet by the year 2028.

Although the August 20, 2007 licence renewal application indicates that no changes have occurred to the licence' scope, the GN-CGS February 15, 2008 letter stated that the Licensee wished to extend and amend its 3BM-KIM0207 licence to include a proposed wastewater treatment facility.

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<sup>1</sup> Statistics Canada. 2007. *Kimmirut, Nunavut (table). 2006 Community Profiles*. 2006 Census. Statistics Canada Catalogue no. 92-591-XWE. Ottawa. Released March 13, 2007.  
<http://www12.statcan.ca/english/census06/data/profiles/community/Index.cfm?Lang=E> (accessed April 30, 2008).

Indian and Northern Affairs Canada believes that the Licensee intends to commission a new sewage treatment facility in the near future. This treatment facility will require the Board's approval to include the proposed modifications to the lagoon constructed in 2001, the construction of an additional lagoon, treatment wetland area usage, quarry development, and access road rehabilitation activities.

At the present time, sewage is deposited into a small depression and subsequently enters directly into the ocean along a flow path of approximately 300 metres. In 2001 a new sewage lagoon was constructed across a drainage-way about 1.5 km west of the community. However, this lagoon has never been used and is not approved by the Board.

The lagoon's access road has been redesigned and the Licensee intends to proceed with constructing needed modifications in the summer of 2008. This road is considered to be unsafe in its current condition.

The following advice has been provided pursuant to INAC's mandated responsibilities for the enforcement of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

#### **A. General**

1. The Licensee should submit a water licence application supplementary questionnaire as required under Item 13 on the Water Licence Application Form.
2. The Licensee should review its April 5, 2002 water licence application supplementary questionnaire, submitted at the time of the 2001 licence renewal. This questionnaire should be revised where appropriate and submitted along with a cover letter as part of this renewal application.
3. The Licensee should review the January 8, 2008 INAC municipal inspection report for the July 13, 2007 site visit and provide the Board, with a copy to the Inspector, of a plan to bring all areas identified into compliance.
4. Annual reports should include a general plan for modifications to streams and bodies of water within the municipality, including crossings, during the life of the licence. This plan should be modified on an annual basis.
5. The Hamlet of Kimmirut and the GN-CGS should carry out an effective public consultation for any proposed licence amendments. All members of the community should have an opportunity to become aware of the Hamlet's freshwater management and waste treatment ambitions through public consultations. Detailed minutes of all public consultations should be provided to the Board if and when requested so the Board has confidence of public support for the water license.

## B. Waste Disposal

1. The Licensee should confirm the location of the proposed sewage treatment facility. According to the Technical Report of the Sewage Lagoon for the Hamlet of Kimmirut prepared by the GN-CGS, the non-commissioned lagoon is 1.5 kilometres (km) away from the Hamlet. However, according to Trow Associates Inc., this lagoon is located approximately 3 km west of the Hamlet.<sup>2</sup>
2. The Licensee should provide the following documents referenced in the April 5, 2002 water licence application supplementary questionnaire to the Board for review:
  - Dillon Consulting Ltd., *Sewage and Solid Waste Site Selection – Kimmirut, NT*, February 1999.
  - Dillon Consulting Ltd., *Sanitary Site – Environmental Health and Closure Plan*, March 2000.
  - Dillon Consulting Ltd., *Kimmirut Sewage Treatment Site Assessment*, October 2001.
3. The Licensee should submit an Operation Plan for the Wastewater Treatment system, including the type of decant (drawings show portable pumps discharging into a permanent 150 mm pipe), the decant rate from cell one and from cell two, timing of the final (cell 2) decant in relation to runoff and melting of the “ice block” between cells one and two, the timing for sewage releases into cell one (summer) and below cell one (winter for ice block formation) and who and how inspection of the overflow structures will be done. The Licensee should clearly indicate which recommendations of the design engineers will be implemented and if structural inspections will be done by a geotechnical engineer.
4. To satisfy Part D, Item 8 in the 3BM-KIM0207 licence, the Licensee should submit a Hazardous Material Spill Contingency Plan to the Board for approval. This Plan should address both spill prevention and contaminated material recovery measures. Please note that hazardous materials include both organic and inorganic substances (e.g., sewage, hydrocarbons, waste oil, and chemicals).
5. The Licensee should be reminded that its Annual Reports must demonstrate compliance with Part D, Item 2 of the 3BM-KIM0207 licence. This licence term states that all effluent discharged from the Sewage Disposal Facilities at Surveillance Network Program Station Number KIM-3 must meet the following effluent quality standards:

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<sup>2</sup> Trow Associates Inc., *Geotechnical Investigation – Sewage Lagoon – Hamlet of Kimmirut, Nunavut*. (Ottawa, ON), September 24, 2007, p. 3.

Parameter	Maximum Average Concentration
Faecal coliforms	1 x 10 <sup>6</sup> CFU/dl
BOD <sub>5</sub>	120 mg/L
Total Suspended Solids	180 mg/L
Oil and grease	No visible sheen
pH	Between 6 and 9

6. The 2006 Annual Report may be considered to be incomplete since all of the terms and conditions specified in Part B, Item 1 (e.g., tabular summaries of all data generated under the "Surveillance Network Program) are incomplete.
7. The Licensee should notify the Board on the status of its solid waste storage facility. According to the April 5, 2002 supplementary municipal licence application questionnaire, a new solid waste storage facility was planned to be constructed in the general vicinity of the proposed sewage treatment facility to replace the facility which had reached capacity and had been considered inadequate by the Government of Nunavut Environmental Health Assessment Report for October 3, 2000 (letter dated October 6, 2000). The report indicates that little or no waste was segregated, burned waste material was left uncovered, hazardous material management was inappropriate, and fencing was deficient.
8. The material included in the 2007 Renewal and the 2008 Amendment Request mentioned changes to the solid waste storage facility which is/may be upstream of the proposed wastewater treatment system. The application does not clearly indicate the effect that runoff through/from the solid waste (leachate) will have on the wastewater treatment.

### **C. Modifications and Construction**

1. The amendment indicates that the access road has been redesigned and the licensee would like to proceed with construction in 2008. A review of the existing (2001) lagoon found that it was inadequate to meet the demands of the Hamlet and local runoff. A re-evaluation recommends that the existing (2001) lagoon be used as the primary cell and a second lagoon should be constructed downstream to provide additional retention for treatment. A 107 day summer release into wetlands would be for final treatment.
2. The Licensee has addressed Part E, Item 1 of the 3BM-KIM0207 by submitting design drawings for the proposed sewage treatment facility. These drawings are stamped by S.L. Burden, a Registered Professional Engineer in the Northwest Territories, and have the following titles and reference numbers: Upper Lagoon, L-1, Lower Lagoon, L-2, Topographic Map, T-1, Lagoon Dewatering Details, DE-1, Lagoons and Wetlands Site Plan, SP-1. However, neither the Hamlet nor the

GN-CGS has indicated to the Board which design recommendations will be implemented, such as the modification to the slope of the lagoon berm.

3. The Licensee should be reminded that it must provide as-built plans/drawings for the proposed sewage treatment facility within ninety (90) days of completion of construction activities, as required in Part E, Item 4 in the 3BM-KIM0207 licence.
4. INAC understands that the Licensee requires aggregate materials for the construction of its proposed sewage treatment facility (i.e., berm and access road construction). According to the submitted January 2008 design brief for the rehabilitation and expansion of Kimmirut's existing sewage treatment facility, an aggregate source referred to as New Deposit No. 2 may be exploited.<sup>3</sup> Prior to the constructing the proposed sewage treatment facility, the Licensee should provide a quarry design plan to the Board. This plan should assess any potential impacts to freshwater quality that may result from the road and quarry development. Planned mitigation measures should be included in this plan. According to the submitted Topographic Map, drawing T-1, this deposit is within 250 metres of the water supply pumping station.<sup>4</sup>

#### **D. Operation and Maintenance**

1. INAC is unsure if the Licensee has satisfied Part F, Item 1 of the 3BM-KIM0207 licence. This licence term requires the submission of an operation and maintenance plan for municipal sewage and solid waste disposal facilities. A copy of this plan must be provided to the Board for review within ninety (90) days of this licence renewal. If the license is also amended, a new operation and maintenance plan for all aspects of the license should be provided to the Board by the end of the first operating season (October 30), with updates in each annual report.
2. The Licensee's Operations and Maintenance Plan should address hazardous waste management in addition to sewage and solid waste treatment.
3. The application does not provide a plan for vehicle accidents, including sewage trucks, as they pass through the drainage basin of the Hamlet's drinking water.
4. The application also does not include a plan for erosion or sudden failure of the wastewater lagoon berms.

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<sup>3</sup> Trow Associates Inc., *Design Brief – Rehabilitation and Expansion of Existing Sewage Lagoon for the Hamlet of Kimmirut*. (Ottawa, ON), January 2008, p. 32.

<sup>4</sup> Trow Associates Inc., *Topographic Map, Kimmirut Wastewater Lagoon*. (Ottawa, ON), February 11, 2008.

## **E. Abandonment and Reclamation**

1. The Licensee should begin preparing an abandonment and reclamation plan for its current sewage treatment facility and solid waste sites(s). A plan should be submitted to the Board for review and approval at least six (6) months prior to abandonment of the facilities, such as referenced in Part G, Item 1 of the water licence.

## **F. Monitoring**

1. The Licensee should submit a written Monitoring Plan to the Board for review and then discuss the monitoring locations with the INAC Inspector. This Plan should address all the terms and conditions specified in Part H: Conditions Applying to the Surveillance Network Program of the 3BM-KIM0207 licence as well as any other requirements set by the Board.
2. The Licensee should indicate whether it or other agency is responsible for submitting a Quality Assurance / Quality Control (QA/QC) Plan for the collection and analysis of water quality samples. The 3BM-KIM0207 licence has a discrepancy on this plan's approval process.
  - Page 2 of the 3BM-HAL0308 licence states:

“The requirements to develop a QA/QC Plan imposed on the Licensee in this licence are for the purpose of ensuring the NWB that samples taken in the field as part of the Monitoring Program will maintain a high quality, so as to accurately represent the physical and chemical nature of the samples being taken.”
  - Whereas, Part H, Item 5 of the 3BM-KIM0207 licence states:

“The Licensee shall conform to the Quality Assurance / Quality Control (QA/QC) Plan which shall be provided to the Licensee by the NWB within 60 days of the issuance of this license.”

## **Summary**

Indian and Northern Affairs Canada recommends that the 3BM-KIM0207 license be extended, provided that the Hamlet of Kimmirut and the GN-CGS agree to bring the Hamlet of Kimmirut (the Licensee) into compliance with the current licence' terms and conditions.

However, INAC has reservations over the Board also amending the license to include reconstruction of the road, modifications to the unused lagoon and construction of a second lagoon. INAC agrees with the inclusion of the wetlands as part of the waste water treatment system. However, the Licensee does not provide sufficient information for INAC to have confidence that overall design fully utilizes treatment through lagoon retention and includes the effects of flows from the solid waste storage site.

INAC believes that the Nunavut Water Board should only approve the amendment if the Licensee is required in their license to:

- Monitor natural inflows (daily maximums, monthly or seasonally discharge) into lagoon one (upstream lagoon) to further clarify the safety of the lagoon berms and spillways and to estimate the sewage concentrations in the downstream wetland;
- Monitor the concentration at the last point of control. This point should be suggested by the Licensee to the Board and confirmed through discussions with the INAC inspector and, possibly, Environment Canada;
- Develop contingency plans for accident and malfunctions from the Hamlet to the wastewater and solid waste storage sites and provide it to the Board for review and post it for use by the Inspector or Emergency personnel;
- Within a year, provide the Board with a clear indication of wastewater treatment levels upstream and downstream of the wetland;
- Within a year of issuance, provide the Board with a plan to manage the solid waste storage site and any runoff originating from the site.

Indian and Northern Affairs Canada requests notification of any changes in this licence renewal application, as further review may be necessary. Please either J. Rogers, Manager of Water Resources, or D. Abernethy, Regional Coordinator, if you have any questions or comments with regards to our feedback.

Regards,

***Original signed by***

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