



## Technical Review Memorandum

**TO** Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
Nunavut Regional Office

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**FROM** David Abernethy  
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Water Resources Division  
Nunavut Regional Office

**SUBJECT** Water License #3BM-CLY0308, Hamlet of Clyde River,  
Qikqitani Region, License Renewal and Amendment,  
Additional Information

### Description

The Nunavut Water Board (NWB) received additional information from the Government of Nunavut's Department of Community and Government Services on August 6, 2008 regarding the amendment application for the above mentioned undertaking. This information is specific to proposed sewage treatment facility upgrades and was distributed for review on August 12, 2008.

### Comments / Recommendations

Following a review of this additional information, the following comments / recommendations are provided to the NWB for consideration in the license approval process,

#### A. Alternatives Assessment

- The submitted August 6, 2008 *Geotechnical Investigation - Proposed Sewage Lagoon – Hamlet of Clyde River, Nunavut* prepared by Trow Associates Inc. indicates that three (3) different options are being considered for the construction of the new lagoon and rehabilitation of the existing lagoon. It states that the construction of a new lagoon south of the existing lagoon and rehabilitation of the existing lagoon is the preferred option. This recommendation is consistent with the February 1, 2008 *Design Brief – New Sewage Lagoon and Rehabilitation of Existing Sewage Lagoon for the Hamlet of Clyde River* prepared by Trow Associates Inc. which recommends that the existing sewage lagoon be

rehabilitated and a new sewage lagoon be constructed southwest of the existing lagoon to supplement the existing lagoon's storage capacity.

- The final or preferred option, complete with a technical rationale, should be provided to the NWB.

## **B. Berm Stability**

- The proposed sewage treatment lagoon design recommends that water retention berms be constructed as 'ice dams' where the soil in the core of the berm and the underlying ice rich soils are maintained in a permanently frozen state. Trow Associates Inc. recommended, in its August 6, 2008 Geotechnical Investigation report, that a geothermal analysis be performed to determine if the aggradation of frost into the berms and underlying soils can be achieved naturally or whether the installation of thermosyphons is required. The proponent should advise if the geotechnical analysis will take place. The results of the analysis should be provided to the NWB in order to consider whether the water retention berms are feasible in this case.

## **C. Operations and Maintenance Manuals**

- The August 6, 2008 letter from Mr. B. Roy of the Government of Nunavut's Department of Community and Government Services states that a draft Operations and Maintenance Manual was provided to the NWB. A copy of this manual cannot be found on the NWB on-line public registry. However, the August 5, 2008 *Response to Comments – Clyde River Sewage Lagoon, Nunavut* prepared by Trow Associates Inc. states that a complete Operations and Maintenance Manual will be provided prior to the commissioning of the system. It is important that the manual specify waste handling and storage procedures, including the handling of hazardous wastes, in order to minimize any potential environmental impacts. The manual should also reference procedures that identify all monitoring requirements, including wastewater sampling protocols.
- With respect to wastewater lagoon sludge management, the Operations and Maintenance Manual must include a detailed procedure for wastewater lagoon sludge management. The plan should reference anticipated sludge storage capacity, criteria to determine when accumulated sludge should be removed, and the final disposal of any sludge removed from the lagoons. Accumulated sludge should be analyzed on, at least a yearly basis, for standard parameters, including nutrients and metals, and this information should be included in the facility's annual report to the NWB.

Should you have any questions regarding the comments provided feel free to contact me at 867-975-4555 or [AbernethyD@inac-ainc.gc.ca](mailto:AbernethyD@inac-ainc.gc.ca).

Regards,

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Cc. Kevin Buck, Manager of Water Resources  
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