

**Nunavut Water Board  
Municipal Licensing Meeting – Baffin Region  
MEETING MINUTES**

**DATE:** February 13<sup>th</sup>, 2009-02-15

**TIME:** 1:00 pm MST (3:00 pm EST)

**VENUE:** Teleconference

**PURPOSE:** Discuss municipal licensing issues in light of recently issued water licence renewal for Kimmirut (3BM-KIM0911) and water licence amendment for Clyde River (NWB3CLY0308), as well as the renewal application for Clyde River.

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**1. Introductions:**

Participants included:

David Hohnstein – Nunavut Water Board (NWB)  
Catherine Emrick – NWB Legal Counsel  
Karlette Tunaley – Tunaley, Lines and Assoc. (For the NWB)  
Babesh Roy – Government of Nunavut Community Government Services (GN-CGS)  
Patricio Fuentes – GN-CGS  
Steven Burden – Trow Associates Inc.  
Kevin Buck – Indian and Northern Affairs Canada (INAC)  
Andrea Cull – INAC  
Anne Wilson – Environment Canada (EC)  
Jane Fitzgerald – EC  
Scott Grant – GN Department of Environment (DOE)  
Froydis Reinhart – GN-DOE

**2. General Water Licensing Issues**

Not addressed due to time restrictions

**3. Clyde River water licence amendment (Expiry March 15 2009) and renewal application**

The staff of the Nunavut Water Board (NWB) provided background information on this file referencing a letter received by the NWB from Trow (on behalf of the GN-CGS) dated January 8<sup>th</sup>, 2009 outlining a number of concerns regarding the Clyde River water licence amendment issued on October 8<sup>th</sup>, 2008 (NWB3CLY0308 Amend No. 1). Trow's concerns included the final discharge point for compliance, the requirement for toxicity testing, and the discharge criteria.

The NWB stated that it agrees with Trow, that the licence should include a single final discharge point.

The NWB stated that it had discussed the issue regarding the requirement for acute toxicity testing with EC and that the NWB will not include this requirement in the

water licence renewal on the understanding that the licensee is required to comply with section 36(3) of the Fisheries Act.

The NWB stated that the discharge limits of the renewal licence could be set at the limits of the original licence (120 for BOD and 180 for TSS).

The NWB acknowledged that there are some disagreements with respect to how the NWT Guidelines are interpreted.

The NWB stated that the main issue from the NWB's point of view with respect to the renewal of Licence 3BM-CLY is a requirement in the licence amendment for the GN-CGS to submit a "Plan for Compliance". The NWB clarified that the Plan for Compliance is basically a commitment outlining how the licensee will achieve compliance with terms and conditions of the licence. The NWB stated that the Board has difficulty issuing subsequent licence renewals and amendments if conditions of the original licence are not met.

The NWB suggested (based on discussion with INAC) a possible solution to the Plan for Compliance issue, suggesting that the NWB may extend the current licence if construction of the new sewage lagoon approved as part of the licence amendment has not started. Extension of the current licence would allow for year 1 of construction to be completed and the submission of the Plan for Compliance. Following construction and meeting of all Licence conditions, the NWB could issue the renewal.

The GN-CGS acknowledged that Items 3 (b) and (c) of the Meeting Agenda were resolved.

The NWB stated that the use of the end of the wetland as the final discharge point is difficult because there is no actual control. The only point of control is from the lagoon.

The GN-CGS stated that its issues regarding the final discharge point have been resolved.

The GN-CGS asked the NWB what it expected in the Plan for Compliance.

The NWB clarified that the Plan for Compliance should outline what has been constructed, whether facilities need to be constructed, whether it can meet the discharge limits of the licence. The Plan should itemize the licensee's procedures and plans to meet the licence conditions. The Plan should address any other issues on file such as those respecting solid waste management, submission of O&M Plans (and associated documents) etc.

The NWB clarified that the suggestion of extending the licence is only an option at this time. The option needs to be discussed with the NWB's executive director and the Board.

INAC recommended that the licence be extended until Fall of 2009 to allow for construction of the sewage lagoon and submission of the Plan for Compliance. INAC stated that the water licence needs to exert control of discharge. INAC stated

that the Plan for Compliance should address the 2007 inspection report and that this report is available from the NWB's ftp site. INAC stated that the Plan for Compliance should also address the 2008 inspection report. INAC stated that the 2008 inspection report is not available at this time, however it will be shortly. INAC stated that the Plan for Compliance should set firm dates committing to perform specific tasks by specific dates so that the inspector can follow up. INAC stated that the inspector will be visiting the site again in 2009 to check on the extension or renewal licence. INAC brought up the issue that repeated non-compliance is considered by the Board when deciding whether or not to approve licences.

The NWB stated that the Plan for Compliance requires an implementation schedule with firm dates with respect to lagoon construction, commissioning, and whether discharge will meet the effluent quality criteria. The Plan should also address any other outstanding items with respect to water use and waste disposal (Solid waste disposal facility).

The GN-CGS stated that it had not contracted the construction of the lagoon yet and that it wanted to wait for the licence renewal.

The NWB stated that the current amendment licence (NWB3CLY0308 Amend No. 1) allows for construction and that the GN-CGS should not need the renewal to contract the construction. The NWB stated that the proposed extension discussed earlier would allow for construction this summer.

The GN stated that construction of the sewage lagoon will take two seasons and that the facility would be ready for operation in the fall of 2010.

The NWB stated that the GN needs to demonstrate by fall 2009 that construction of the lagoon has started and the GN needs to submit a suitable Plan for Compliance.

INAC stated that the GN has received approval to construct the lagoon and that the application for licence renewal is for a facility that has not been constructed.

The GN stated that they tendered construction of the lagoon last year, advising contractors that the GN would provide the go ahead once it received the renewal licence. The GN stated that, in September 2008, no work could be done due to frozen ground. The GN stated that work cannot start until June 2009.

INAC recommended that the licence be extended until September or October 2009 (end of next construction season), that the GN-CGS start construction of the lagoon and that the GN-CGS submit the Plan for Compliance and then renewal of the licence. INAC stated that progress on these items puts the Board in a better position to make a decision regarding the renewal. INAC stated that this is a good compromise for all parties.

The GN-CGS agreed to submit the Plan for Compliance, agreed to wait for the licence renewal, agreed to proceed with construction, agreed to INAC inspection in 2009, asking INAC to let the GN-CGS know when they planned to visit. GN stated that construction will only include the sewage lagoon because funding does not allow them to expand other facilities.

The NWB asked the GN-CGS when the new sewage facility would be fully constructed.

The GN stated that the new sewage facility would be commissioned in September 2010.

The NWB asked the GN-CGS what plans were in place for sewage disposed during construction of the new facility.

The GN-CGS stated that they would use the existing facility.

The NWB asked the GN-CGS about a QA/QC Plan.

The GN-CGS stated that the QA/QC Plan is part of its monitoring program, and that it had collected samples and sent the samples to a lab in Ottawa. The GN-CGS stated that QA/QC is conducted in accordance with the licence and that the plan would be submitted as part of the final Operations and Maintenance Plan in 2010.

The NWB stated that it needs a QA/QC Plan for the current facility which is outstanding under the current licence.

The GN-CGS stated that they are decanting, sampling, and testing and that this will continue. The GN-CGS stated that they had submitted a draft Operations and Maintenance Plan to the NWB and that they are working on this Plan to comply with the licence.

The NWB stated that it would send the GN-CGS a sample QA/QC Plan to give a better idea of what it is looking for (this was submitted on February 14, 2009). The NWB stated that the QA/QC Plan should provide information regarding sample collection and analyses that ensures that monitoring results are of good quality.

The GN-CGS stated that it had already submitted something that might satisfy this requirement to INAC.

The NWB stated that it would follow up with INAC to see if it is adequate.

The GN-CGS asked Trow to explain what had been submitted.

Trow stated that the QA/QC plan for the new sewage facility has not been prepared. Trow stated that the QA/QC plan for the current facility is in progress.

The GN stated that all test results for the current facility have been submitted to INAC. The GN stated that it would submit these results to the NWB tomorrow.

The NWB stated that it is not in receipt of the QA/QC Plan and that this is another compliance issue. The NWB stated that renewal of conditions not met in previous licence is not in the best interests of the NWB and would prefer not to proceed in this manner.

The GN agreed to provide information to address this requirement on Monday.

The NWB stated that it requires QA/QC procedures. The NWB stated that it would look at what the GN-CGS submitted to INAC and determine whether that information is suitable or whether additional information is required.

The NWB Legal Counsel stated that the decision to renew the licence is a decision of the Board, not the NWB staff, noting that NWB staff, not Board members, were participating in the meeting. The NWB Legal Counsel stated that extension of the licence term is still a renewal of the licence and that the renewal only changes the expiry date. The NWB Legal Counsel asked when the renewal application would be presented to the Board.

The GN stated that the expiry date of the current licence is March 15<sup>th</sup>, 2009.

The NWB stated that the renewal was to be presented to the Board but it hasn't due to current compliance issues. The NWB stated that renewal is difficult when there are ongoing compliance issues. The NWB emphasized that the proposed extension is only an option at this time to move towards compliance. The NWB stated that it was understood at the time of issuing the amendment that construction was to start in the Fall of 2008.

The GN-CGS asked the NWB when the Board would make a decision.

The NWB indicated that it would need to discuss this matter further with its Legal Counsel.

The GN stated that in order to start construction the contractor requires lead time to prepare. The GN stated that by the time it received its amendment licence in October 2008 there was no lead time available.

The NWB stated that it based its decision regarding the amendment upon the information it had available to it at the time. The NWB stated that since construction has not started the best option is to extend the expiry date. The NWB asked the GN whether this option would satisfy its needs.

The GN asked the NWB whether it would need to re-submit its renewal application and go through the process again.

The NWB stated that it had all the information regarding the renewal on file with the exception of the items discussed (Plan for Compliance and QA/QC Plan) and that there would likely just be a delay.

The NWB Legal Counsel stated that the GN-CGS would need to re-file the renewal application form.

The NWB stated that the forms would need to be submitted prior to the extended licence's expiry date.

The GN agreed.

The NWB asked whether EC or GN-DOE had any questions regarding the issues discussed so far.

#### 4. Kimmirut water licence renewal

The NWB provided background information on this file referencing a letter received by the NWB from Trow (on behalf of the GN-CGS) dated January 27<sup>th</sup>, 2009 outlining a number of concerns regarding the Kimmirut water licence renewal issued on January 19<sup>th</sup>, 2009 (3BM-KIM0911).

The NWB clarified that the Guidelines for Discharge of Domestic Wastewater in Nunavut, 2000 referenced in Trow's letter had not been adopted by the Board and that the Board usually refers to the 1992 NWT Guidelines. The NWB asked Trow to highlight its concerns.

Trow stated that its main issue with the Kimmirut licence was the fact that it did not recognize the wetland as the main source of sewage treatment. Trow stated that the licence forces the licensee out of compliance by requiring the licensee to implement Trow's design yet setting effluent quality limits that cannot be met by the design. Trow stated the Clyde River wetland was intended just as a polishing pond, but the wetland for Kimmirut is intended as the main source of treatment. Trow stated that the Kimmirut lagoon is intended only for containment until the wetland is active for treatment. Trow referred to Note (k) to Table 4.1 of the NWT Guideline which states that where the land is used as part of the treatment system, discharge limits may be chosen to suit the point of measurement and control. Trow stated that it is not concerned with the last point of control being located at the point of discharge from the lagoon, but it is concerned that the limits at that point do not reflect the design.

The NWB stated that it had discussed the issue regarding the last point of control with EC.

EC asked Trow whether there was a discrete point in the wetland where the quality of water could be assessed prior to discharge to the receiving environment and whether this point was accessible.

Trow stated that a four wheeler would be required to access that point.

EC asked Trow whether fish were present downstream of the wetland.

Trow stated that it did not know.

EC asked Trow what the depth of the watercourse was.

Trow stated that it did not know. Trow stated that following the wetland, effluent enters a small pond which drains to a larger lake and that the larger lake likely contains fish.

EC asked Trow what the predicted effluent quality limits were upstream of the small lake.

Trow stated that the predicted effluent quality from the lagoon was 240 for TSS and 230 for BOD. Trow stated that the predicted effluent quality at the end of the wetland was 39 for TSS and 38 for BOD. Trow stated that the Wetland Study predated the

Design and that the Wetland Study was based on a lagoon effluent with higher TSS and BOD value.

EC referred to a similar issue regarding the Cape Dorset licence. EC stated that sufficient monitoring data is required to confirm the effectiveness of wetland treatment.

Trow stated that similar issues applied to the Baker Lake sewage facility.

EC stated that Note (k) to Table 4.1 of the NWT Guidelines was taken into consideration for the Cape Dorset sewage facility. EC stated that the Cape Dorset licence required higher effluent quality limits at the point of discharge from the lagoon than those recommended in Table 4.1 of the NWB Guidelines.

Trow asked what effluent quality limits were set for the end of the wetland in the Cape Dorset licence. Trow stated that if monitoring is conducted at the end of the wetland, the licensee can demonstrate that the system is working even if it is not in compliance coming out of the lagoon.

EC stated that it requires information that describes how release is done, therefore monitoring is needed.

Trow recommended that parties agree to review the Baker Lake and Cape Dorset files and correspond further on the issue via email.

EC stated that the Operations and Maintenance Manual should address this issue to ensure the wetland is used properly.

Trow provided a detailed description of the Kimmirut lagoon and wetland system and its discharge strategy.

Trow stated that construction of the Kimmirut lagoon was scheduled to start this season and that it was expected to be operational in 2010.

The GN confirmed Trow's statement.

The NWB stated it had been researching its file system during the teleconference and discovered that Baker Lake has not had a valid licence since 1999. The NWB stated that the Baker Lake facility was not a good example to refer to.

Trow stated that the Cape Dorset sewage facility was similar to the Clyde River facility because the lagoon provided the major component of treatment.

The NWB stated that it will look into its Cape Dorset file.

EC reminded parties of the Canada Wide Strategy for the Management of Municipal Wastewater Effluent and the push for lower limits.

The NWB asked Trow about the control of discharge from the Kimmirut lagoon in spring.

Trow stated that the Kimmirut facility is designed for semi-continuous discharge from mid-June to the end of September and that the rate of flow is governed by spring melt and new sewage input. Trow stated that the current facility at Kimmirut does not have the capacity.

The NWB asked Trow whether wetland discharge is accessible for monitoring.

Trow stated that a four wheeler could make it there and that they were planning to monitor three times / year at the start, midway and end of discharge.

The NWB asked Trow about its concerns regarding flow monitoring.

Trow stated that most discharge occurs over the spillway which is a low riprap area in the berm. Trow stated that during discharge it is possible to monitor pumping rates and duration but monitoring of flow over the spillway will not provide accurate results. Trow stated that more accurate results would be obtained by correlating the discharge to the total water consumed.

The NWB stated that correlations of discharge to water consumption would not provide information regarding nutrient loading to the wetland making it more difficult to assess impacts downstream. The NWB stated that it understood the difficulties with flow monitoring. The NWB expressed concern over whether the amount of spring runoff would affect the strength of effluent.

EC expressed concern over the capacity of the wetland to assimilate and treat the effluent if it was overloaded.

Trow stated that it could provide the rate of runoff introduced to the lagoon. Trow stated that the Wetland Study did not account for dilution from runoff. Trow offered to provide a summary of the theoretical loading break down.

EC asked Trow whether their effluent quality predictions provide higher or lower end of pipe values.

Trow stated that they used 460 BOD and 490 TSS as influent values, which are published values and therefore are defensible, however these influent values are higher than most communities. Trow stated that at the end of the lower lagoon effluent is predicted to meet 216 for BOD and 172 for TSS and that these values do not account for dilution. Trow stated that the effect of dilution varies throughout the year and acknowledged that measurements are better than estimates. Trow stated that the effect of dilution would be lowest in September.

EC asked what an average quality would look like and how would it be regulated.

The NWB stated that it is difficult to regulate effluent with variable strengths of discharge and the licence must consider the enforceability of any conditions related to effluent discharge. The NWB stated that without any real time data collection from the end of the wetland, the wetland cannot be controlled. The NWB acknowledged that monitoring results require a month turn around.

EC stated that in a couple of months it will have the results of its wetland studies.



The NWB stated that additional monitoring may be required to get a better understanding of all the variables coming into the system. The NWB stated that sampling of the effluent out of the lagoon is required to know what is entering the wetland.

EC stated that monitoring at the lagoon end of pipe and the wetland is required for a couple of years, then appropriate limits can be set at the lagoon outlet.

Trow stated that lagoons can only do so much and that mechanical systems are expensive. Trow stated that it is confident that the wetland would function as intended. Trow noted a problem with monitoring downstream of the wetland in that effluent may be further diluted by an upstream lake. Trow offered to provide a theoretical breakdown of the flow out of the lagoon to determine the dilution factor from runoff. Trow suggested working backwards from the end of wetland effluent quality criteria of 45 BOD and 45 TSS used for Cape Dorset to determine end of pipe effluent quality criteria for Kimmirut.

EC asked whether Trow could monitor the lake upstream of the end of wetland that could introduce more dilution. EC asked Trow whether a dilution factor could be determined for the wetland area.

Trow stated that it would have to discuss this issue with their hydrology department to determine the effect of dilution.

Trow offered to provide a recommendation to address effluent quality discharge criteria for the GN and NWB to consider. Trow stated that as bacterial populations within the wetland increase over time, wetland treatment will improve.

The NWB agreed. The NWB stated that it needs definite plans and designs to make a decision, not an options assessment.

Trow stated that the licence defines two systems, the existing facility and the enhanced facility when in fact there are three systems, the existing facility adjacent to the landfill that discharges to a ditch, the sewage lagoon that was never commissioned and the enhanced lagoon.

The NWB stated that the licence was intended to be written this way.

Trow asked the GN-CGS whether the existing sewage facility (disposal to ditch adjacent to landfill) was ever licensed.

The NWB asked the GN-CGS about the current sewage disposal system and stated that based on the licence that just expired, the Hamlet was to use the facility constructed in 2001. The NWB stated that it understood that the constructed facility was not used due to the access road and that the Board would likely not licence discharge to a ditch adjacent to the landfill.

The GN stated that the constructed facility is not fit for sewage disposal and that it needs to be completely rebuilt.

Trow stated that there are issues with the slope stability of the existing berm of the constructed facility and that a geotechnical investigation was undertaken which determined the need to flatten the berm slopes to meet slope stability requirements. Trow stated that increasing the berm height and flattening the slopes is part of the enhancement.

The NWB stated that it will need to look into this issue further acknowledging that there is an immediate compliance issue if Hamlet is discharging effluent using a method that was never intended by the Board.

Trow stated that the existing constructed lagoon requires work and further work is required downstream. Trow stated that work cannot be done if the existing constructed facility is operational and that monitoring at station KIM-3 cannot be done.

## **5. Other municipal water licence applications**

Not discussed due to time restrictions.

### **Action Items**

- NWB to send the GN-CGS a sample QA/QC Plan for GN-CGS's consideration in developing QA/QC Plan for Clyde River
- GN-CGS to submit Clyde River monitoring results to NWB
- NWB to determine whether the GN-CGS submission satisfies the Clyde River licence QA/QC Plan requirement
- NWB staff to discuss option of extending existing Clyde River licence amendment with its Board and Legal Counsel
- Trow to provide recommendation regarding effluent quality limits for Kimmirut licence and description of dilution effect of runoff

**Nunavut Water Board  
Municipal Licensing Meeting – Baffin Region  
AGENDA**

**DATE:** February 13, 2009

**TIME:** 1:00 pm MST (3:00 pm EST)

**VENUE:** Teleconference call in procedures:  
Dial: 1-877-579-4178  
Passcode: 807543#

**PURPOSE:** Discuss municipal licensing issues in light of recently issued water licence renewal for Kimmirut (3BM-KIM0911) and water licence amendment for Clyde River (NWB3CLY0308), as well as the renewal application for Clyde River.

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1. Introductions
2. General water licensing issues:
  - a. Incorporation of wetlands as form of sewage treatment
  - b. Interpretation of "Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories", 1992
  - c. Acute toxicity testing
3. Clyde River water licence amendment (Expiry March 15 2009) and renewal application
  - a. Compliance with amendment licence (Plan for compliance, QA/QC Plan)
  - b. Final discharge point
  - c. Effluent discharge criteria
  - d. Acute toxicity testing
  - e. Sewage disposal during construction
  - f. Monitoring program
4. Kimmirut water licence renewal
  - a. Wetland treatment
  - b. Effluent discharge criteria
  - c. Sewage disposal during construction
  - d. Monitoring program
5. Other municipal water licence applications
  - a. Arctic Bay
  - b. Grise Fiord
  - c. Resolute Bay
  - d. Igloolik
  - e. Sanikiluaq