

**APPENDIX-J:**

**RESPONSE TO THE LETTER OF NWB DATED NOV, 20, 2009**

**Revised Response to the Letter of Nunavut Water Board dated November 20, 2009  
on the administrative review of the Municipality of Cape Dorset Water License  
# 3BM-CAP 0810/F1**

1. Upon carrying out a thorough review of the revised O&M Manual and considering the submissions received, comments provided with respect to the manual and the overall need for additional information prior to the commissioning of the new 2007 Sewage Disposal Facilities, the NWB has determined that prior to approving the O&M Manual under Part F, Item 1, an **addendum** shall be prepared by the licensee that addresses the concerns identified during the review, which include the following:

**O&M Manual**

i. Inconsistencies between the manual and the Licence (note that Licence errata will be prepared by the NWB and issued to clarify the monitoring station requirements. Monitoring Stations identified within Part H, Item 1 are correct and references within Part D will be revised);

**Ans:** O&M document has been revised following the correction of the Water License dated Nov 20, 2009 and submitted to NWB. All the as built drawings prepared in 2007 are unchanged. Only Location drawing of the thermistors is new and it is replaced.

ii. Corrections to the manual with respect to the monitoring program stations, frequency and effluent quality limits, and items identified in the comments provided;

**Ans.** O&M manual has been corrected as per the letter of NWB dated Nov. 20, 2009. Design model has been developed considering Fecal Coliforms level of  $1.5 \times 10^4$  CFU/100mL. Design has been approved by the NWB. Therefore this value should be amended in the water license. In reality, Community is testing effluent only for BOD and TSS in the accredited Lab.

iii. Monitoring frequency and monitoring stations are requirements of the Licence and although EC has recommended monitoring for two years (as opposed to the O&M Manual's one year) prior to making Adjustments to the monitoring program, these changes can only be made upon application to the NWB for

amendment of the Licence. The NWB Water Licence requires monitoring on an annual basis for the term of the Licence;

**Ans.** Follow NWB's requirements. Monitoring will be done on annual basis.

iv. Section 3.4.5 describes the installation of monitoring wells at the new sewage disposal facility. Only one station is proposed, however the Licence requires under Part H, Item 1, three monitoring locations required at the facility including one up gradient of the lagoon, station CAP-16 and two wells located down gradient of the new lagoon at stations CAP-17 and CAP-18;

**Ans.** A Consultant, AMEC, has been hired to design and prepare the Technical specifications. Construction is expected to take place in summer, 2010. The consultant will be responsible to develop the as built drawings along with O&M manual. Hamlet staffs will be trained.

v. Section 3.4.6 describes the procedures for sludge management of the Lagoon. Information on sludge Characterization and procedures for the safe removal and disposal of sludge should be included. This was requested however the revised version had not been changed (although the conformity table indicated that the reader refers to the response in the O&M Manual);

**Ans.** This is a single cell lagoon. It has been designed to retain the sludge at the bed. No research data is available which indicates any adverse impact to the water quality due to retention of sludge at the Lagoon bed until the expiration of the lifetime of the facility.

vi. Section 3.4.8 indicates that a Dam Safety Review will be carried out by a qualified geotechnical Engineer following three years of operation (after commissioning) and every ten years thereafter, however

there is no mention of the required geotechnical inspection required under Part F, Item 5, to be carried out annually in July. These reports are currently outstanding for 2008 and 2009;

**Ans.** The new Sewage lagoon at P-Lake was not commissioned. However, a Geotechnical Engineer of AMEC inspected the new P Lake Sewage Lagoon in 2008 and inspection report is attached. The existing three cell lagoons have been rehabilitated in last summer. One of the three cells will be kept active for emergency during the P Lake sewage lagoon is in operation.

vii. Updated contact phone numbers as identified in the submissions;

**Ans:** The Contact Phone numbers have been considered and addressed in the O&M manual as required.

viii. Spill Contingency Plan to expand on the potential for sewage spills from trucks to address the potential of dike failure or overtopping of the dikes and associated response actions. The Plan is to include formal training provided to employees that would be exposed to situations covered in the spill Plan;

**Ans:** Municipal Training organization (MTO) incorporates this item. The Spill Response plan of GN-DOE and INAC has specific guidelines on this item which the community usually follows.

ix. Any other concerns raised by the parties that are relevant to the O&M Manual.

**Ans:** Addressed in the O&M manual.

### **Commissioning of the 2007 Sewage Treatment Facility**

INAC Submission, November 2, 2009 Re: 3BM-CAP0810 – Hamlet of Cape Dorset – Government of Nunavut, Department of Community and Government Services - Submission of Operations and Maintenance Plan and Thermistor Monitoring Results for the 2007 Sewage Lagoon

Throughout INAC Water Resources review of the Thermistor Monitoring Results and the O&M Manual and Appendices, a number of substantial deficiencies have been identified which prevent the conditions of Part H, Item 8 of the Licence from being satisfied at this time. Therefore, until such a time that the GN provides the appropriate information to the NWB, an approval to commission the 2007 sewage disposal facility should be withheld.

**Ans:** The Construction Report of the thermistors installation was submitted to NWB in Nov.20, 2009.



Further, the submission by INAC referred to the Inspector's reports of 2008 and 2009 and submitted that:

It is important to note, that the Water Resources Officer (WRO), via July 24, 2009 and previously August 16, 2008 inspection reports indicated that there is obvious seepage through the berm walls of the new lagoon, specifically:

- Ground water entering and pooling within the new lagoon, in 3 places
- A flow exiting the berm from the East side and flowing into the lake adjacent to the new lagoon.

**Ans:** The Geotechnical Engineer inspected the site in 2008 and inspection report is attached.

- Water is contained within the access hatch, at a depth that was covering the valve controls to the new lagoon for decant

**Ans:** This problem does not exist as reported. The drainage valve is kept open.

2. The first item listed in the summary table provided on June 26, 2009 is the requirement under Part E, Item 5, to submit a summary report within sixty (60) days of issuance of the licence to include as-built drawings (record drawings), reflecting any clarifications and omissions during construction as identified in Schedule 1 of the Licence. The response provided does not satisfy this requirement and simply refers to the updated drawings in the revised O&M Manual, as such a summary report is to be provided and cross referenced to Schedule 1 in order to be acceptable for review under Part E, Item 5.

**Ans:** According to the consultant, the as built drawings prepared in 2007 will remain unchanged except the location drawing of the thermistors. This location map is replaced in the revised O&M manual submitted on Nov.20, 2009.

Part H, Item 8 does not allow the commissioning of the 2007 Sewage Disposal Facilities until Part H, Items 6 and 7 have been met and reads:

The Licensee shall not commission the 2007 Sewage Disposal Facility until the requirements of Part H, Item 6 and Item 7 have been completed and approved.

Part H, Item 6 reads:

The Licensee shall install thermistors for the purpose of validating assumptions made in the geothermal analyses for the 2007 Sewage Disposal Facilities as recommended by the Geotechnical Engineer of record and agreed upon by the Licensee, subject to a minimum of three 20 to 25 metre deep thermistors installed in crest of the west berm and at least one thermistor of that depth in the east berm.

**Ans:** The Geotechnical Engineer of AMEC prepared the design of thermistors and Kudlik Construction Ltd installed them up to 18.8m depth from the top of the berm. A report on the deficiency of depth was submitted to NWB on Nov.20, 2009.

3. Within the information provided on September 4, 2009 a tabular summary and graphs were included, However there is still a need for verification and/or as built drawings and a construction report to be provided, detailing the installation and reasons for any variance from the requirements outlined in Part H, Item 6.

In addition, Part H, Item 7 reads:

The results of thermistor monitoring required under Part H, Item 6, shall be submitted to the

Board for approval in writing, prior to commissioning of the 2007 Sewage Disposal Facility. The results shall include an Engineer's Report, validating the assumptions of the geothermal analysis through adequate monitoring of the thermal regime for the East and West Berms and downstream foundations.

**Ans:** The Geotechnical consultant, AMEC, has been hired to validate the temperature data obtained from the field. Right now they are working on it. The report will be available at the end of Feb, 2010.

4. Results were submitted with the letter of September 4, 2009 however the results, as noted within the comments received, are incomplete and have not been accompanied by the required Engineer's Report under Part H, Item 7. Some discrepancies noted are as follows:

- a. Temperature data has not been provided for a full year of monitoring. Results were presented from December 15, 2008 through to May 15, 2009. There is missing data within what was provided and include:
- b. Data Logger #1 - January 15, 2009 through to April 15, 2009;
- c. Data Logger #2 - December 15, 2009 through to April 15, 2009;
- d. Data Logger #3 - January 15, 2009 through to March 6, 2009;
- e. Data Logger #4 - January 15, 2009 through to March 6, 2009;
- f. The graphs for data loggers 3 and 4 indicate in the titles that they are for the periods March 6, 2009 through to May 6, 2009, however the data is only up to April 6, 2009;
- g. It is unclear why the legend for the Data logger 4 graphs simply indicates Int/Ext temp?
- h. Several strings are missing data for depths, noted are the 4.2m depths for loggers #3 and 4;

An Engineer's Report is therefore required to be submitted under Part H, Item 7 prior to the commissioning of the 2007 Sewage Treatment Facility. This report may also help to clarify some of the assumptions made in the geothermal analysis as well as provide a more recent update on monitoring data acquired. Through a quick review of the data presented, it appears as though actual temperatures have not yet reached those of the 2005 Geothermal Report prepared by AMEC (excerpt excerpt provided with submission) for predicted temperatures within the berm and below, considering the data does not take into account the maximum warming of the ground through to October/November and that there is (no) sewage currently being disposed of in the facility or appreciable water contained in the facility.

**Ans:** The missing strings have been repaired. Temperature data collected from the field from December 15, 2008 to Nov.30, 2009. AMEC is working on the validation of the information to satisfy assumptions.

5. Part H, Item 9 requires the submission of a Temperature Monitoring Program and Implementation Plan for the approval of the Board, as was identified in the conformity table provided with the letter of June 26, 2009. The response provided within the GN letter of September 4, 2009 does not provide adequate information, nor in a suitable format (stand-alone document) required by the licence condition for Board approval. A formal, stand-alone document was required to be submitted, past due, within ninety (90) days of issuance of the Licence. In review of the revised O&M Manual provided, the NWB has determined that the requirements of Part H, Item 9 have been sufficiently incorporated into the Manual and as such may be approved with the manual upon completion of the deficiencies listed above. The Licensee is requested to submit a request on letterhead for the consideration of the requirements of Part H, Item 9 within the O&M Manual.

**Ans:** The Revised O&M manual was submitted to NWB on November 20, 2009. This document has



addressed all the issues and concerns raised at the past.

Part H, Item 12 requires the installation of monitoring wells around the perimeter of the 2007 Sewage Treatment Facility as well as the solid waste disposal facility and the metals dump area. The table provided under Part H, Item 1 lists the correct number of wells and their locations. Item 12 inadvertently omitted the two locations and is to be clarified with the issuance of an errata to include the two wells down gradient of the sewage facility as indicated in the table (stations CAP-16 through 20).

It should be noted that the monitoring wells were to be installed with sufficient time to provide one monitoring season prior to the expiry of the Licence. As the monitoring wells would only be functional for a short period of the year due to freezing, this requirement cannot be feasibly be completed prior to the expiry of the current licence as the next monitoring opportunity would be in late 2010. This item needs to be addressed within the Plan for Compliance, required under Part B, Item 6.

**Ans:** The Geotechnical consultant, AMEC, is working on the design and Technical specifications of the monitoring wells. These wells will be constructed in summer 2010. The consultant will provide O&M manual to operate these wells.

**6.** Part H, Item 25 requires the verification of several conditions of the Licence and to provide notification to the Board of compliance and satisfaction that the conditions have been met, and read:

Her Majesty in the right of Canada shall:

- a. Monitor the Licensee's installation of thermistors and notify the Board when the installation of thermistors is complete and in compliance with Part H, Item 6;
- b.

**Ans:** Installed in 2008 and confirmed the NWB.

- c. Monitor the Licensee's validation of the assumptions of the geothermal analysis through adequate monitoring of the thermal regime for the East and West Berms and downstream foundations under Part H, Item 7, and notify the Board when satisfied the assumptions of the geothermal analysis have been validated; and

**Ans:** AMEC will present the report at the end of February, 2010.

- d. Monitor the 2007 Waste Disposal Facility and notify the Board immediately if the Project is commissioned prior to the completion of i. and ii., or in contravention of any other condition of the Licence

**Ans:** Need INAC's approval to commission this facility in next summer 2010. The date will be informed to NWB once hamlet is ready for using this facility.

**7.** With regard to verification of thermistor installation and monitoring being carried out, the NWB has not received any correspondence from INAC indicating instrumentation and monitoring has taken Place and those results have been reviewed in the context of an Engineer's Report under Part H, Item 7. The NWB is in receipt of the latest inspection reports from 2008 and 2009 which clearly indicate that there are several outstanding items with respect to compliance with the Licence and that there are serious concerns with the physical condition of the 2007 Sewage Treatment Facility. The Licensee is therefore encouraged to initiate (or maintain) contact with INAC Field Operations in order to expedite a resolution to the compliance issues that are paramount to commissioning the Facility.

**Ans:** The AMEC Engineer inspected the new facility and inspection report is attached. Their report on the temperature data validation will be available soon.

## **General Conditions for Licence Compliance**

**8.** In the June 26, 2009 letter with summary tables, the Plan for Compliance required under Part B, Item 6 had not at that time, been submitted. The requirement for this Plan was within ninety (90) days of issuance of the licence or upon the filing of any application in relation to the licence. This Plan is to “clearly demonstrate the ways and means the Licensee will undertake to achieve full compliance with the conditions of the Licence.” The response provided in the table summary of outstanding requirements, indicated that:

The CGS Consultant will be dealing with the general O&M issues of the Licence like Plan of compliances, etc.

**Ans: Plan of compliance:**

**O&M document:** Corrected, revised and submitted to NWB on Nov. 20, 2009.

**Temperature data:** AMEC is working on it. The Report will be available in March 2010.

**Monitoring wells:** AMEC is working on it. The Report will be available in January 2010.

**Solidwaste site:** Included in 2011-12 capital program for funding.

**9.** Part F, Item 2 requires the submission of an O&M Manual for both the Water Supply Facilities and the Solid Waste Disposal Facilities, neither of which have been submitted or received by the NWB. The response in the September 4, 2009 submission, in the table on general conditions, is again insufficient and does not fully explain the status of the manuals, nor when they will be provided. The NWB public register does not contain an O&M for the Water Supply Facilities as is indicated in the response. These items need to be submitted, or included as part of the Plan for Compliance, under Part B, Item 6.

**Ans.** Hamlet is still using the existing O&M manual of water supply system. The O&M manual of solid waste facility is not available. A new facility will be designed and O&M manual will be prepared sometime in 2012. Recently Hamlet engaged Concentric to prepare a report on proper sorting of the bulky metals.

**10.** Part F, Item 5 requires that an annual inspection in July, of all engineered facilities related to the management of water and waste by a Geotechnical Engineer with the report to be submitted within sixty (60) days of the inspection. The response in the September 4, 2009 submission, in the table on general conditions, indicates that an inspection of all the engineered facilities “will be conducted during this summer and included hamlet 2009 annual report”. This is not in compliance with the licence condition where the report is to be submitted within sixty (60) days of the inspection. Considering the response was included with the September 4, 2009 submission, even if carried out in September, it would not be in compliance with the timing required of the condition. Clarification is required as to the status of the geotechnical inspections and whether one was carried out in 2009, and when the NWB might expect to receive the formal inspection report.

**Ans:** Only the new P Lake sewage Lagoon was inspected by a geotechnical Engineer in 2008. This process will be followed in future.

**11.** Part G, Item 1 required the Licensee submit to the Board a detailed Final Abandonment and Restoration Plan for the 2001 Sewage Disposal Facility and the Emergency Sewage Disposal Facility. The response received on September 4, 2009 indicated that the condition was addressed in the O&M Manual and the A&R for the facilities will be developed only when the new facility is approved for



commissioning and functions successfully for one complete year. Although the response provided indicated that the Plan was "attached in the O&M Manual", a review of the manual concluded that there are no references to an A&R Plan for these or any facilities. This response, again, does not satisfy the licence condition.

**Ans:** The Existing 3 cells lagoons are not engineered facilities and operated without any O&M manual. There is no intention to develop any O&M manual at this stage because the new lagoon is expected to commission at any time. The abandonment and restoration plan is proposed to get budgeted under 2011-12 capital program. Decommissioning will take place once the new lagoon is in operation. Even though during the operation of the new lagoon, one cell will be kept active for emergency.

**12.** Part G, Item 2 required the Licensee to submit to the Board for approval, within six (6) months of issuance of the Licence, a preliminary Abandonment and Restoration Plan for Water and Waste Disposal Facilities not covered under Part G, Item 1. The response submitted and provided below may have resulted from a misinterpretation of the requirement and possibly confused with other licences that require a submission prior to "planned" abandonment. The response was as follows:

**Ans:** Yes, the preliminary or conceptual abandonment and restoration plan will be submitted respectfully six (6) months prior to implementation as directed by the Water Board satisfying the conditions of item 2 of Part G.

**13.** Part H, Item 20 required the submission of a revised Quality Assurance/Quality Control Plan. The submission of September 4, 2009 included, once again (this was submitted as a revision with the June 17, 2009 submission by GN CGS), the version of the "Guidelines for Wastewater Sampling, dated October 24, 2007" which was identified in the table provided in the June 26, 2009 letter as being a previous version to the October 27, 2007 version on file with the NWB. This aside, condition 20 of this part requires a revision of this guideline to replace it with a Quality Assurance/Quality Control Plan, submitted to the NWB for approval by an Analyst in writing. This Plan is to be based on the INAC guideline for preparation of QA/QC plans, referenced in the condition. In addition to requirements of condition 20, an important aspect of the plan is the description of the site and water sampling location (Monitoring locations), where a map of locations is an important item.

**Ans.** Monitoring locations of the sewage lagoons are shown in the O&M manual. The QA/QC plan of Drinking water and the QA/QC plan for wastewater are attached.