



Water Resources Division  
Nunavut Regional Office  
P.O. Box 100  
Iqaluit, NU, X0A 0H0

November 27, 2015

Matthew Hamp  
Director of Public Works and Engineering  
City of Iqaluit  
P.O. Box 460  
Iqaluit, NU X0A 0X0

**Re: First reply to City of Iqaluit's response to Aboriginal Affairs and Northern Development Canada's comments regarding its renewal application for water licence 3AM-IQA**

Dear Mr. Hamp,

Aboriginal Affairs and Northern Development Canada (AANDC) has received the City of Iqaluit's (the City) response to our submissions made in the course of the City's water licence renewal application process. We are glad to receive these responses and are presently preparing replies. This first letter will address the three responses in which the City requested we clarify our intervention.

Information request #15 and recommendation #20

**West 40 landfill leachate and runoff**

**Reference:**

- West 40 Landfill Drainage Management Review, AECOM, 60221928, September 16, 2011
- City of Iqaluit 2012 Annual Water Licence Report, City of Iqaluit, March 2013
- Annual Monitoring Report – 2013, exp Services Inc., April 7, 2014
- Annual Monitoring Report – 2014, exp Services Inc., January 23, 2015

**Comment:**

The Drainage Management Review states: *"The landfill site relies on the local permafrost regime to provide a low permeability barrier to control the subsurface runoff."*

AANDC is concerned with potential threats of leachate and contaminated water (runoff containing leachate) to the groundwater because no data has been presented regarding the permafrost regime in this location. It is not clear if permafrost has aggraded into the landfill or if leachate can escape through the active layer. Knowledge of the thermal distribution through the landfill is crucial if permafrost aggradation through the landfill contents is to be an integral part of the design.

**Information request:**

**(IR 15)** AANDC would like the Licensee to provide information regarding the permafrost regime below the landfill and any information they have on the groundwater.

**Response:**

*Prior to responding to this request for information the City requests clarification of the purpose of this request for information.*

**Reply:**

The purpose of this request is to allow AANDC to evaluate the statement made in the Drainage Management Review; “*The landfill site relies on the local permafrost regime to provide a low permeability barrier to control the subsurface runoff.*” Our concerns, detailed in the second paragraph of the comment, warrant verifying the data used to make the statement.

**Recommendation:**

**(R 20)** AANDC recommends that the renewed licence include thermal monitoring at the landfill through the installation of thermistor strings with thermistor beads at selected intervals to provide ground temperature profiles at various locations in the landfill.

**Response:**

*The City requests clarification as to the purpose for this condition prior the City providing a response.*

**Reply:**

Including thermal monitoring in landfills in the North where permafrost is being used for leachate containment is good practise. It can be used to confirm that permafrost is distributed as assumed and can be counted on as a low permeability barrier. If permafrost distribution is not as expected, alternate methods for leachate containment may be required to prevent the landfill from contaminating water.

**Recommendation #17****West 40 wastewater treatment plant upgrade****Reference:**

- Inspector's Direction, AANDC, March 5, 2013
- Water Licence Compliance 3<sup>rd</sup> Quarterly Update 2014, City of Iqaluit, October 16, 2014
- Technical Memorandum: Iqaluit Wastewater Treatment Plant Technical Overview of 2005 Secondary Sewage Treatment Design, AECOM, 60225321-400, November 7, 2011

**Comment:**

Presently the majority of the treatment equipment has been removed from the Wastewater Treatment Plant building, leaving only the primary treatment portion in place. Biological oxygen demand (BOD) and total suspended solids (TSS) consistently exceed the effluent criteria stipulated by the water licence and resulted in directions being issued by Environment Canada and AANDC in March 2013. In response to the

direction, the Licensee created a project schedule for the upgrade of the wastewater treatment plant which culminates with an operational upgraded plant in December 2018.

**Recommendation:**

AANDC encourages the Licensee continue to work with its consultants for effective wastewater treatment and recommends incorporating the project schedule to attain compliance into the renewed water licence.

**(R17)** AANDC recommends adding criteria for more parameters for the wastewater treatment plant effluent discharge to be more in line with national standards.

**Response:**

*Prior to responding to this recommendation the City requests clarification as to what parameters are being considered to be added to the water licence to fully understand the potential ramifications of the recommendation.*

**Reply:**

AANDC recommends adding un-ionized ammonia and total residual chlorine criteria and changing the BOD<sub>5</sub> criterion to a carbonaceous BOD<sub>5</sub> criterion. These are included in the *Wastewater Systems Effluent Regulations* and are referred to in the Iqaluit WWTP Upgrade/Expansion Feasibility Study submitted by the City.

As mentioned in the first paragraph, AANDC is preparing replies for all the responses provided by the City. We hope to be able to share these with you next week in order to give the City the most time possible to prepare for the technical meeting, scheduled the week of January 11<sup>th</sup> 2016. I would encourage you to contact me if you would like to discuss what we present in this letter or any matter relating to AANDC's comments about the water licence application. We work just across the street and it would be not be much trouble to meet here or in your office if you prefer. Please contact me via email at [sarah.forte@aandc-aadnc.gc.ca](mailto:sarah.forte@aandc-aadnc.gc.ca) or by phone at 867-975-3876.

Sincerely,

Sarah Forté  
Water Management Coordinator

c.c.: Andrew Keim, Acting Manager of Water Resources, AANDC  
Amjad Tariq, Regulatory and Science Advisor, AANDC  
Sean Joseph, Technical Advisor, Nunavut Water Board