Aboriginal Affairs and Northern Development Canada
Affaires autochtones et Développement du Nord Canada

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

Your file - Votre référence
3AM-GRA1015

September 20, 2013

Our file - Notre référence
CIDM# 741212

Phyllis Beaulieu
Manager, Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0A 1J0

Re: AANDC Response to Information Requests – GN-CGS Hamlet of Rankin Inlet - Amendment Application

Dear Phyllis Beaulieu:

Please be advised that Aboriginal Affairs and Northern Development Canada (AANDC) have completed a review of the submission for Information Request (IRs) for water license amendment application 3AM-GRA1015 submitted by Stantec Architecture Ltd. on behalf of Government of Nunavut, Community and Government Services Hamlet of Rankin Inlet. The Nunavut Water Board ("NWB") circulated the call for information requests on August 23, 2013. All documents related to the request posted on the NWB ftp site under 3AM-GRA1015 were included in my review (See attached Technical Review Memo).

Should you have any questions or comments, please do not hesitate to contact me at (867) 975-4568 or by e-mail at Rory.MacDonald@aandc-aadnc.gc.ca

Regards,

Sent via Email

Rory MacDonald
Water Resources Technician

Cc. Murray Ball, Manager of Water Resources, AANDC
Erik Allain, Manager of Field Operations, AANDC

Technical Review Memorandum

To: Phyllis Beaulieu – Manager of Licensing, Nunavut Water Board

From: Rory MacDonald – Water Resources Technician, AANDC

Existing Licence: 3AM-GRA1015

Re: AANDC Response to Information Requests – GN-CGS Hamlet of Rankin Inlet - Amendment Application

1. Project Description

The Government of Nunavut, Community and Government Services for Rankin Inlet – has proposed to pump water from Lower Landing Lake watercourse to replenish Nipissar Lake (the community's primary water source). Currently water is being withdrawn from Nipissar Lake year round and the annual withdrawal is beginning to exceed natural replenishment/recharge. The proposed project would allow for seasonal replenishment of water to be withdrawn from Char River which exits Lower Landing Lake.

Design calculations presented by FSC Architects & Engineers suggest that water withdrawals required to replenish Nipissar Lake will increase consistently with projected population growth over the next 20 years. Community growth is also expected to occur (i.e. infrastructure growth, economic development) over the same time frame and has been included in the design calculations. Water would be pumped via a seasonal pipeline from upper Char River about 3 months each year during the summer months.

A proposed overland pipeline would take water from Lower Landing Lake exiting through Char River. Given the river drains into Hudson Bay, the Proponent claims no negative impacts to Lower Landing Lake, Char River or other waterbodies within the watershed. The discharge location would be at the closest end of Nipissar Lake and would be discharged onto a concrete pad armored with rip rap to prevent soil erosion from the flowing water.

A trailer mounted diesel powered pump would be utilized to pump the water from Lower Landing Lake (i.e. Char River) and discharge into Nipissar Lake. The pump rate would depend on water consumption (i.e. demand). Using *Manning's Formula for Uniform Flow,* the theoretical velocity and flow rate for Char River was determined to be 1440m³/hr. Maximum pumping withdrawal from Char River is proposed to be 700USGPM or 159m³/hr – roughly 10% of the flow rate.

Studies conducted in 1995 and replicated in 2009 determined that the volume of Nipissar Lake had decreased by 660,520m³ - roughly 44,000m³/year. The studies examined climate variables such as precipitation and evapotranspiration and concluded that climate was not a factor in the decreased volume of Nipissar Lake. The current population of Rankin Inlet is using more water than is being naturally replenished.

2. Information Requests

AANDC Water Resources Division offers the following requests for information.

- Prior to issuing any water licence, all other applicable regulatory authorizations should be issued (i.e., land use permit, NPC conformity decision, NIRB screening decision, DFO authorizations, etc.).

The Proponent indicates in a letter dated November 6, 2012, that minimal information has been developed evaluating the impacts of water withdrawal on Lower Landing Lake and its downstream environments. In order to properly address concerns held by the Board and other

parties, the Proponent had requested more specific information and clarification of the scope of the concerns.

- AANDC requests that the following information be provided to properly address concerns:

    1. Describe natural fluctuations, variability and sources of variability in flow rates in Char River. Include seasonal fluctuations. Theoretical velocity and flow rates had previously been determined based on *Manning's Formula for Uniform Flow.* AANDC suggests the proponent consider installing flow meters and/or a hydrometric station to collect data within the river to accurately capture on site characteristics and flow rates.
    2. Describe existing and/or proposed protected areas, special management areas and conservation areas within the watershed or downstream environment.
    3. Provide additional information on water chemistry within Lower Landing Lake and Char River and potential impacts water withdrawals will have on the source and discharge waterbodies (i.e. Nipissar Lake).
    4. Please include assessment of alternative waterbodies investigated and rationale for choosing Lower Landing Lake.

- AANDC recommends that the Proponent provide high resolution maps/images of the suggested pipeline path and intake/discharge locations. Reference to the Hamlet of Rankin and other reference sites should also be included (i.e. Commissioner's land parcels, Hudson's Bay).

- AANDC recommends additional information be provided on spill contingency planning and mitigation measures with respect to the pumping station and generators.