ᐊᐱᕐᓯᖁᑎᒃᑯᑦ ᓄᓇᓕᓐᓂ ᑲᕙᒪᒃᑯᓐᓂᓪᓗ ᐱᕕᒃᓴᖃᐅᑎᒃᑯᑦ
Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble
Nunavut

ᓄᓇᓕᓐᓂ ᑲᕙᒪᒃᑯᓐᓂᓪᓗ ᐱᕕᒃᓴᖃᐅᑎᒃᑯᑦ
Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

December 8, 2015

Phyllis Beaulieu
Licensing Manager
Nunavut Water Board
P.O. Box 119, Gjoa Haven, NU, X0B 1J0
Phone: (867) 360-6338 ext. 27
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

Re: GN-CGS Rankin Inlet Water Licence No. 3AM-GRA1015 Response to Technical Review Comments

Dear Ms. Beaulieu,

As requested by the Nunavut Water Board (NWB) on November 2, 2015 in the Timelines for Information Exchange, the Government of Nunavut, Community and Government Services (GN-CGS) is responding to the technical review comments provided by the participating Interveners. Comments submitted by Aboriginal Affairs and Northern Development Canada (AANDC) were provided by the NWB to GN-CGS on November 30, 2015. Comments submitted by Environment Canada (EC) were provided by the NWB to GN-CGS on December 1, 2015. Please see the attached table for response to each comment.

GN-CGS requested that a written Public Hearing be held for the Renewal Application in the Renewal Application Cover Letter submitted March 9, 2015. Reasoning for this request was that an in-person Public Hearing was recently held in Rankin Inlet on September 25 and 26, 2014 for the Amendment Application requesting approvals for the Nipissar Lake resupply pipeline project, and there are no changes to the water or sewage facilities currently approved under the Water Licence and Amendment No. 1. GN-CGS requests that the Public Hearing take place as soon as possible.

The following information will be provided to the NWB prior to the Public Hearing:

1. The revised version of the Water Pumping Adaptive Management Plan will be submitted by **January 31, 2016**. The final Char River hydrological assessment and water balance study for Lower Landing Lake being completed by Golder Associates will be submitted with the revised plan, as outlined in the original plan submitted to the NWB on September 9, 2015.
2. The 2015 Fourth Quarter Report will be submitted to the NWB by **January 31, 2016**.

3. A revision to the Sewage Treatment Facility Operation & Maintenance Plan addressing EC's comment (Comment Number 8 on attached table) will be submitted to the NWB by **January 31, 2016**.

GN-CGS requests that the NWB remind Interveners that the authority of the NWB applies to inland waters within Nunavut, and therefore the focus of comments for the Technical Review and Public Hearing of the Renewal Application should remain within this jurisdiction. Questions regarding the deposit of waste outside of this jurisdiction, specifically the sewage outfall to the marine environment, should be addressed in a different venue and not delay the processing of the Renewal Application for Water Licence No. 3AM-GRA1015.

For further information please contact Megan Lusty at (867) 645-8176 or mlusty@gov.nu.ca.

Sincerely,

Megan Lusty, EIT
Municipal Planning Engineer-In-Training
Community and Government Services
Kivalliq Region, Government of Nunavut
P.O. Box 490, Rankin Inlet, NU, X0C 0G0
Phone: (867) 645-8176
Fax: (867) 645-8141
Email: mlusty@gov.nu.ca

cc: Ralph Ruediger, Director of Community Development, GN-CGS
David Hohnstein, Director of Technical Services, NWB
Karén Kharatyan, Senior Technical Advisor, NWB

Comment Number	Intervener	Source/Reference	Concern/Issue	Recommendation	GN-CGS Response
1	AANDC	2015 Water Licence Renewal Application for the Hamlet of Rankin Inlet Submitted to the Nunavut Water Board.	AANDC notes that the applicant has indicated that they will be pumping water from Char River to supplement Nipissar Lake at a rate of 3485m3/day.	Based on the information provided by the applicant AANDC recommends that the applicant be required to provide further clarification on the number days they will be pumping and what the total transfer volume will be. AANDC is unable to determine from the information provided the number of days of pumping water the applicant requires. Will there be a minimum/maximum number of pumping days that will occur? Will the number of pumping days increase in subsequent years or will the pumping rate increase to account for more water use per year?	The water consumption of Rankin Inlet has been exceeding the natural recharge of Nipissar Lake for many years, therefore the plan in 2015 was to pump for as many days as the in-stream flow objectives outlined in Amendment No. 1 were being met. Golder Associates is developing a water supply forecasting and management tool with the Lower Landing Lake water balance study that will allow GN-CGS to forecast the short- and medium-term water supplies in Nipissar Lake and Lower Landing Lake in order to better predict the water supplementation requirements. This forecasting tool will be available with the final study by January 31, 2016. Until Nipissar Lake is restored to historical levels, the maximum number of pumping days possible based on in-stream flow objectives of Char River will be used. The pumping rate of water from Char River as discussed in this Licence renewal will not be increased beyond 3485 m3/day, as this would exceed the authorized water quantity of Amendment No. 1.
				Based on the information provided AANDC would recommend to the Board that the applicant provide further information on the sustainability of the Char River to provide on-going annual recharge to Nipissar Lake. It is also recommended that the Board request details on options being considered in the event the current location of the intake at Char River is unable to support withdrawal of the required water volume in years of low water flow.	GN-CGS is currently looking at options for a long-term alternative water source to replenish Nipissar Lake. GN-CGS contracted Golder Associates to complete a water balance study for Lower Landing Lake during summer/fall 2015. This study will include details on the recharge rate and available water in Lower Landing Lake, the impact withdrawing water from Lower Landing Lake will have on Char River, and the volume of water required to be pumped to Nipissar Lake to meet the natural recharge deficit caused by increasing water consumption. The water balance study for Lower Landing Lake will be available by January 31, 2016. Unless the study determines that Lower Landing Lake is not a more suitable location for the resupply pipeline, it is anticipated that the design will be for the intake to be located near the 2015 water level monitoring site.
2	AANDC	2015 Water Licence Renewal Application - Water Pumping Adaptive Management Plan	AANDC notes that there has been no alternative's assessment undertaken for additional water sources should Char River not be sufficient as a supplemental water source.	AANDC recommends that the applicant provide an assessment of what options are available to the applicant with respect to alternative water sources which could be utilized as a supplemental water source for Nipissar Lake.	Lower Landing Lake has been chosen as an alternative water source for Rankin Inlet. The project to Locate Alternative Sources of Drinking Water for Each Nunavut Hamlet prepared by Williams Engineering in 2014 identified Lower Landing Lake as an alternative source of water for Rankin Inlet and lab analysis confirmed that the water quality was similar to that of Nipissar Lake. Additionally, a bathymetric study was done in 2009 by Natural Resources Canada and determined the volume of Lower Landing Lake to be 4,200,000 m3, approximately 1.5 times the volume of Nipissar Lake determined in the same study. To confirm that Lower Landing Lake will be a sufficient supplemental water source for Nipissar Lake as the population and subsequent water consumption of Rankin Inlet grows, a water balance study is being completed for Lower Landing Lake by Golder Associates. Once this water balance study is complete, design of the resupply pipeline extension from Char River to Lower Landing Lake will begin. Upon design completion, approval from the NWB will be sought prior to construction of the resupply pipeline extension. If the water balance study finds that Lower Landing Lake is not suitable as a long-term supplementary water source, additional work will be done to find an appropriate supplementary water source. The plan going forward is for Char River to be used as a supplementary water source only until a long-term supplementary water source can be identified, approval to use said source obtained, and the resupply pipeline extension has been constructed.
3	AANDC	2015 Water Licence Renewal Application for the Hamlet of Rankin Inlet ii) Nunavut Water Board's ftp site	AANDC notes that there are either missing or incomplete administrative reports including annual and quarterly reports including monitoring data for all years of this water licence since the renewal in 2010.	AANDC recommends that the Hamlet provide the missing information or justification as to why it has not been submitted to the NWB.	GN-CGS acknowledges that monitoring data is missing from past Annual Reports and that Quarterly Reports have not been filed in previous years. This monitoring data was not collected and cannot be retroactively produced. GN-CGS is committed to fulfilling the monitoring requirements of the Licence in the future and providing complete Quarterly and Annual Reports to the NWB.
4	AANDC	2015 Water Licence Renewal Application - Updated Sewage Operation & Maintenance Plan	Deposit of Waste into Marine Environment (Sewage) AANDC is seeking a legal determination, through the Arctic Waters Pollution Prevention Act (AWPPA) on the authorizations required for this activity.	AANDC suggests that the Board require the applicant to provide information and documentation on the approvals they have received necessary for the deposit of waste into a marine environment.	The authority of the NWB applies to inland waters within Nunavut, and the request for approvals for the deposit of waste into a marine environment falls outside of this jurisdiction. GN-CGS requests that if AANDC has questions regarding the sewage outfall to the marine environment, they should be addressed outside of the Technical Review for the 3AM-GRA1015 Licence.

5	AANDC	2015 Third Quarter Report	In the absence of effluent quality parameters being set out in the water licence, AANDC looks to the Canadian Council of Ministers for the Environment (CCME) Guidelines to be used as criteria for water quality, in this case, Water Quality Guidelines for the Protection of Aquatic Life - Marine Environment. As indicated in the 2015 third quarter report submitted by the applicant, there are exceedances of copper in every quarter of 2015 as well as exceedances of cadmium (June and October) and the pH in June.	The applicant should submit to the Board an action plan which outlines how these exceedances will be reduced to below acceptable levels set out in the Protection of Aquatic Life - Marine Environment guidelines.	The CCME Water Quality Guidelines for the Protection of Aquatic Life are generic in nature, as sites and ecosystems vary in aquatic species and environmental characteristics. Please refer to the response to Comment Number 7 for work the GN is currently conducting with regards to wastewater effluent standards in the north. Monitoring Program Station GRA-3, effluent discharge from the Sewage Treatment Facility, will continue to be sampled quarterly and analyzed for the parameters outlined in Part H, Item 4 of the Licence. These effluent quality results will be available for review in the Quarterly and Annual Reports.
6	AANDC	Water Pumping Adaptive Management Plan	Documentation to be submitted January, 2016	AANDC also notes that the applicant plans on submitting a Revised Water Pumping Adaptive Management Plan as per Part C, Item 11 of Amendment No.1. AANDC looks forward to reviewing this plan when it is made available, but suggests that the Board require the submission of this plan in sufficient time for it to be reviewed by regulators, so it can be discussed at a potential public hearing and subsequently approved by the Board.	The revised Water Pumping Adaptive Management Plan will be submitted to the NWB by January 31, 2016, as outlined in the original document submitted to the NWB on September 9, 2015. The final Char River hydrological assessment and water balance study for Lower Landing Lake being completed by Golder Associates will be submitted with the revised plan.
7	EC	Discharge Criteria and Requirements	The effluent quality downstream of the treatment system should be such that discharge to the ocean will comply with Section 36(3) of the Fisheries Act at end-of-pipe. EC acknowledges that the discharge to a marine outfall rests outside of the jurisdiction of the NWB, and that effluent quality criteria at the outfall would not be included in the Water Licence. However, effluent quality measured at the outflow from the treatment system varies substantially with season (see 2015 Third Quarter Report) and steps should be taken to improve discharge quality. Rankin Inlet is currently achieving primary treatment and EC encourages the Proponent to prioritize installing (at least) secondary treatment of sewage wastewater within a reasonable time frame. All effluent discharges must meet the Fisheries Act requirement that any deposits to waters frequented by fishes be non-deleterious. EC recommends that the Proponent should strive to meet or exceed the Wastewater Systems Effluent Regulations SOR/2012-139 Fisheries Act Registration 2012-06-29 for effluent quality at the end of the treatment system. Specifically: • average carbonaceous biochemical oxygen demand (CBOD) due to the quantity of CBOD matter of less than or equal to 25 mg/L; • average concentration of suspended solids of less than or equal to 25 mg/L; • average concentration of total residual chlorine of less than or equal to 0.02 mg/L ; • maximum concentration of un-ionized ammonia of less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ± 1°C; and • non-acutely lethal effluent. Although the Wastewater Systems Effluent Regulations do not currently apply to Nunavut, EC recommends monitoring and sampling be aligned with the requirements of the Wastewater Systems Effluent Regulations.	Develop and submit a wastewater treatment plan to the NWB that outlines steps to optimize the current effluent management and address the need for treatment going forward.	As identified by EC, the Wastewater Systems Effluent Regulations do not currently apply to Nunavut. As per the CCME Canada-wide Strategy for the Management of Municipal Wastewater Effluent …" a coordinating committee will be established under CCME…Its activities will include… addressing issues related to facilities in Canada's far north" The Strategy goes on to state "Due to the extreme climatic conditions and remoteness of Canada's Far North, a viable means to improve human and environmental health protection needs to be carefully considered. Therefore, a window of up to five years is provided to undertake research into factors that affect performance of wastewater facilities in northern conditions. During this period of time, the governments of the Northwest Territories, Nunavut, Quebec, Newfoundland and Labrador and the federal government will work collaboratively.." In response to this Strategy the Government of Nunavut, in collaboration with Dalhousie University, has conducted extensive wastewater research in Nunavut, beginning in 2010 and to be completed in 2016. The coordinating committee – including representation from EC – acknowledges that this research is essential to developing northern standards. Until these standards have been developed for the north it seems premature to adopt the WSER, as the CCME Strategy itself identifies that these requirements may not be applicable to the North. The current Licence Renewal should not be hindered by comparison of effluent quality to the current WSER standards.
8	EC	Design Life - Sewage Treatment Facility (STF) Operation and Maintenance (O&M) Plan (updated September 2015)	Wastewater management system components typically have a finite design life. Advance planning to manage the replacement or upgrading of system components will support the long-term provision of responsible wastewater management.	Describe the design life of the STF and the wastewater management system components. Develop a plan to replace or upgrade system components as required.	The Sewage Treatment Facility was recently upgraded, including the installation of the Monster Auger system in 2012. As-built drawings are available on the NWB ftp site. At present there is no infrastructure plan to upgrade the system to achieve secondary treatment.
9	EC	Diversion of Hazardous Wastes and Incompatible Materials - STF O&M Plan (updated September 2015)	Hazardous wastes and incompatible materials should be diverted from the wastewater system in order to diminish the effects of the effluent on the receiving environment. The STF O&M Plan does not currently address this issue.	The STF O&M Plan should include a description of how hazardous wastes and incompatible materials are diverted from the wastewater system in order to minimize the effects of the effluent on the receiving environment. Provide a description of how these materials will be managed.	The Sewage Treatment Facility Operation & Maintenance Plan will be revised to include a description of how hazardous wastes are diverted from the wastewater system, and submitted to the NWB by **January 31, 2016**.

10	EC	Total Petroleum Hydrocarbons - Third Quarter Report (2015)	Chemistry results in the Third Quarter Report (2015) revealed high levels of oil and grease (896 mg/L) in treatment plant effluent indicating that a large volume of oil and/or grease entered the wastewater system during this time. Oil and grease concentrations, as reported, are determined using an all-encompassing analytical methodology which is able to detect an array of substances, including Total Petroleum Hydrocarbons (TPH) as well as the other non-volatile hydrocarbon forms (e.g. animal fats, vegetable oils). It would be useful to be able to differentiate between hydrocarbons from natural origin (e.g. kitchen grease) and those of petrogenic origin (mineral hydrocarbons) that could be associated with spills or improper disposal of waste oils. By narrowing down the type of hydrocarbon, the licencee would be able to flag the need for further investigation and action. Future effluent monitoring should include analysis of TPH, as this will allow the municipality to determine whether the more toxic hydrocarbon sources are entering the treatment plant, and to take remedial actions. Sample characterization would assist with source identification.	Monitor for Total Petroleum Hydrocarbons to determine whether these are entering the treatment plant. If TPH are entering the wastewater treatment system, the source(s) should be identified and diverted from the wastewater stream.	High levels of animal fats in the wastewater stream have previously been identified due to the fish processing plant (Kivalliq Arctic Foods) and restaurants/grocery stores within the community. GN-CGS will sample for Total Petroleum Hydrocarbons with the fourth quarter sampling of Monitoring Program Station GRA-3, effluent discharge from the Sewage Treatment Facility, however if Total Petroleum Hydrocarbons are not present in the sample, it is requested that this is not a routine sample required since the high levels of animal fats have previously been identified due to animal fats.
11	EC	Sample Blanks - Environmental Monitoring Program and Quality Assurance/Quality Control (QA /QC) Plan	Section 5 (Quality Control) of the Environmental Monitoring Program and Quality Assurance/Quality Control (QA /QC) Plan states: "To ensure that the monitoring program maintains accepted quality control, field blanks and duplicate samples may be suggested by the laboratory. These samples are collected and analyzed for the sample parameters as the monitoring program in the licence as part of a quality control check on monitoring activities."	Routinely collect an appropriate proportion of field blanks and travel blanks during monitoring events at each sampling location, in alignment with best practices.	The laboratory will be contacted to determine the appropriate number of field blanks to be included with the required sample. Duplicate sampling is typically carried out in conjunction with samples taken during AANDC Inspections.