



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

Your file - Votre référence  
3AM-ARV1016

Our file - Notre référence  
GCDOCS # 100663273

February 3, 2022.

Mr. Richard Dwyer  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU, X0B 1J0  
*sent via e-mail: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)*

**Re: Crown-Indigenous Relations and Northern Affairs Canada's technical review of  
Hamlet of Arviat Type A Water Licence renewal application for municipal  
undertakings – Type A Water Licence No. 3AM-ARV1016**

Dear Mr. Dwyer,

Thank you for your February 3, 2022 invitation for reply on GN-CGS responses on the technical review comments on the above referenced application.

On February 3, Nunavut Water Board (NWB) sent out invitation to parties to provide reply to GN-CGS responses to CIRNAC's technical review comments on Hamlet of Arviat Type A water Licence Renewal Amendment application.

CIRNAC had on January 20, 2022, provided six technical review comments to the NWB on the Hamlet of Arviat Type A Water Licence Renewal and Amendment application.

GN-CGS, on February 3, 2022, provided responses to the comments to the satisfaction of CIRNAC with zero outstanding issues.

**1. CIRNAC Technical Review Comment (R-01):**

Provide detailed steps GN-CGS plans to take to address the overcapacity issue at the solid waste management facility (SWMF) until such time as a new facility can be constructed.



### **GC-CGS Response:**

Beginning in 2018, the Municipality purchased equipment and began shredding depolluted metal waste to increase capacity at the site. The metal was then used as cover material for the landfill which resulted in compaction that drastically increased the capacity as seen in the photo provided.

The Municipality also partnered with the local mine to have hazardous waste backhauled. Pending federal funding approval, CGS will undertake a study in 2022/23 to determine how to further improve capacity of the current solid waste site and evaluate the feasibility of expanding into the abandoned lagoon cells after proper remediation. The results will be submitted to NWB for distribution along with any subsequent designs and planned modifications.

CIRNAC is satisfied with GN-CGS' response

### **2. CIRNAC Technical Review Comment (R-02):**

- a) Clarify the retention time of the effluent in the lagoon to achieve treatment goals before manual discharge by pumping; and
- b) Clarify the pumping rate from the lagoon discharge point to the wetland treatment area.

### **GN-CGS Response:**

Lagoon-wetland systems do not function to achieve treatment goals prior to discharging into the wetland. The lagoon only represents first phase of the treatment process. The wetland treatment area is a significant component of the treatment facility. The 2-cell lagoon system will be sized to retain wastewater for 12 months for a 20-year design life following CSA W203:19 *Planning, design, operation, and maintenance of wastewater treatment in northern communities using lagoon and wetland systems*. Effluent will be decanted into the wetland treatment area in late summer once the wetland has had the opportunity to develop and runoff has passed through. Currently the effluent is benefiting from dilution rather than treatment, potentially resulting in lower effluent concentrations, but in reality, not better-quality effluent.

The pumping rate will be determined during design to optimize both drawn down time and effectiveness off the wetland treatment, but it will be below the recommended maximum of 2500 m<sup>3</sup>/day to preserve the health of the marine receiving environment.

CIRNAC is satisfied with GN-CGS' response.

### **3. CIRNAC Technical Review Comment (R-03):**

Clarify the change in parameters being requested in the two documents and update the documents accordingly.



**GN-CGS Response:**

The licensee is requesting that the effluent parameter limits at the end of the wastewater treatment facility be changed to cBOD/TSS of 100/120 mg/L. This error in the OM Plan will be fixed in the newer version.

CIRNAC is satisfied with GN-CGS' response.

**4. CIRNAC Technical Review Comment (R-04):**

Provide a detailed plan on how GN-CGS intends to prevent seepage of the effluent into ground water in the event that localized thawing of the permafrost damages the impermeable liner.

**GN-CGS Response:**

In the event that the liner is damaged resulting in a leak, the effluent will passively exfiltrate into the wetland treatment area, which is downgrade from the lagoon, in the same way that it does with the current permeable lagoon. The new lagoon will use the same wetland as the current lagoon therefore no additional land will be contaminated. In addition, the effluent samples taken, and lagoon water levels will be monitored in order to detect evidence of a leak. Repairs to the liner will be completed if there is a leak.

CIRNAC is satisfied with GN-CGS' response.

**5. CIRNAC Technical Review Comment (R-05):**

- a) Provide rationale as to why the stations are being listed as "inactive", and;
- b) Rationale why the Licensee is requesting that ARV-10 and ARV-11 monitoring stations be deleted from the licence.

**GN-CGS Response:**

A "hydrocarbon impacted storage facility" was never constructed and does not exist therefore ARV-10 and ARV-11 do not exist. Having inactive compliance points listed in the monitoring station program table is unnecessarily cumbersome for operational staff and provide no benefit. Historical information on previous compliance points is stored on the Nunavut Water Board FTP site and therefore should not be included in active licenses. The licensee agrees with removing these stations from the licence.

CIRNAC is satisfied with GN-CGS' response.

**6. CIRNAC Technical Review Comment (R-06):**

Update section 6 of the sewage treatment facility operation and maintenance plan to include acceptable methods of sludge disposal as required by the water licence.

**GN-CGS Response:**

A new OM plan will be prepared by the design consultant and contractor for the new 2-cell lagoon. The plan will contain a sludge management plan that includes assessment and disposal techniques, as well as a disposal location. The upgraded lagoon will be sized to accommodate 20 years of sludge accumulation. However, effluent samples as well as visual inspection will indicate if sludge accumulates more than anticipated, and appropriate



methods to remove and dispose of the sludge will be included in the new, upgraded lagoon Operation and Maintenance plan.

CIRNAC is satisfied with GN-CGS' response.

If there are any questions or concerns, please contact me at (867) 975-4738 or by e-mail at [Vincent.okonkwo@rcaanc-cirnac.gc.ca](mailto:Vincent.okonkwo@rcaanc-cirnac.gc.ca) or Andrew Keim at (867) 975-4550 or [Andrew.keim@rcaanc-cirnac.gc.ca](mailto:Andrew.keim@rcaanc-cirnac.gc.ca).

Sincerely,

Vincent Okonkwo  
Senior Environmental Assessment Specialist