

PART 1: WATER SUPPLY

Questions from ECCC (letter dated 2017 July 19) and responses:

- ECCC's preference is for the Hamlet of Pangnirtung Renewal-Amendment Water Licence Technical Meeting, Pre-Hearing Conference and Public Hearing to be in written form.

Ans.: NWB 's decision was published on dated Oct.30,2017 to conduct the Public hearing on Dec.5 and Dec.6, 2017.

Questions from DFO (letter dated 2017 July 21) and responses:

- Following the hydrology study that is to be conducted, should the proposed water taking be likely to result in a reduction in either the instantaneous flow or wetted width of Duval River, further advice from DFO should be sought.

Ans.: Hamlet is using a pump of capacity 31.67L/s. The mean flow in the river is $5.2\text{m}^3/\text{s}$ and 10% of the means flow is $0.52\text{m}^3/\text{s} = 520\text{L/s}$. The extraction rate is less than 10% of the mean flow rate which is totally safe. Therefore, impact on the river flow is very minimal. However, the Nunavut-wide final hydrology study is attached.

Questions from INAC (letter dated 2017 July 28) and responses:

- We recommend an authorized water use of $120,000\text{ m}^3/\text{year}$ to allow the Licensee to fill its reservoir to capacity the years it is drained.

Ans.: $120,000\text{ m}^3/\text{year}$ water permit is required in the new licence. This is simply because at 5-year intervals, the reservoir is emptied, cleaned and refilled to the maximum allowable level.

- We recommend requiring the Licensee provide detailed and accurate information about their pumping capacity. If the capacity is insufficient to adequately fill the reservoir in a timely manner, they should also provide plans on how they will increase their capacity, with an implementation schedule.

Ans.: The capacity of the pump in both cases is correct. $114,000\text{L/hr} = 31.67\text{L/s}$, the capacity of the current pump; whereas 75L/s is the capacity of the original pump. Every 5 years, consideration should be given for draining out the reservoir for maintenance and clean up. Using the current pump would require 58 days (18 hours operation per day), 87 days (12 hours operation per day) or 132 days (8 hours operation per day).

Annual consumption including other uses is roughly $55,000\text{m}^3$. It means about $65,000\text{ m}^3$ water remains in the reservoir. So, the extraction annual volume is equal to consumption volume = $55,000\text{m}^3$. With a pump of capacity of 31.67L/s , it would take 27days (18 hrs. operation per day), 40days (12 hrs. operation per day) or 60days (8 hrs. operation per day) to fill the reservoir.

The reservoir needs to be filled to the maximum level annually because winter ice covers about 2m which significantly reduces the available water.

The extraction rate of 75L/s is not a risk as determined by INAC where current extraction rate is only 31.67L/s. Therefore, the current extract rate from July to October has very minimal impact to the flow in Duval River because extraction is much less than 10% of the mean flow ($5.2\text{m}^3/\text{s} = 520\text{L/s}$ which is only 7% of the 10% of the mean flow).

Also, the intake pipe end has been deepened to increase the hydraulic depth. Hamlet prefers to run the pump for 12 to 18 hours a day to fill the reservoir from August to September in a regular year. But to fill the empty reservoir, filling must be started earlier (in July).

- INAC recommends that until further information is available, water extraction from the Duval River be limited to the months of July and August unless the Licensee monitors river discharge to ensure they are not extracting more than 10% of its flow.

We also recommend that the hydrology study committed to by GN-CGS be included as a condition in the licence, should it be renewed.

Ans.: The Nunavut wide Final Hydrology study is attached. This report shows the hydrology characteristics of the Duval River. The extraction rate is 31.67L/s against the designed extraction rate of 75L/s which is only 45%. The extraction rate of 31.67L/s is less than 10% of the mean flow ($10\% \text{ of } 5.2\text{m}^3/\text{s} = 0.52 \text{ m}^3/\text{sec} = 520\text{L/s}$). The current pumping rate practically has not much impact on the river flow.

- INAC recommends that the Licensee re-enforce this berm wall around the reservoir, failing to do so may cause future problems.

Ans. The repairing to the berm has been completed and the pictures are attached. Along the Northern berm, a collector drain has been created outside of the berm to divert surface runoff and prevent entering into the reservoir.

- INAC recommends that the old truck fill station remain in a renewed licence and that a condition for its decommissioning be included.

Ans.: Yes, possible. By this time the decommissioning plan will be developed and presented.

- INAC also recommends that the Licensee be required to provide an Operation and Maintenance manual for the process of filling the reservoir, either as a stand-alone document, or a section in the truck fill station manual, which would then become a broader manual on water supply.

Ans.: The revised O&M manual will consist of WTP operation, Water reservoir maintenance and water extraction process from Duval River. The final version is expected by December 31, 2017.

- INAC recommends the Licensee install a gauge or flow meter to have an exact

amount of water used on a daily, monthly and annual basis. It would also be acceptable to estimate the extraction volumes by multiplying the pumping rate by the duration of pumping operations. The measurements should be recorded in the annual reports, fulfilling the obligation required under the licence.

Ans.: The old WTP and the new WTP both have meters to measure the extraction volume of water from the Water Reservoir.

The log sheets of the old WTP in 2016 are attached. Hamlet has been advised of this procedure for the new plant as well. Currently, the new plant is undergoing calibration.

- INAC recommends the Licensee:
 - correct their O&M Plan to include all four water quality stations
 - comply with the issued water licence Part H Item 5
 - identify the sample results submitted by monitoring station names, so they can be identified
 - report in future annual reports all samples taken for QA/QC sampling and monitoring

Ans.: Inserted PAN-6 in the Table and the updated document is attached. It is noted that in the previous Water Licence PAN-6 did not exist.

- INAC recommends keeping the requirement in the Licence and encourages the Licensee to provide water quality monitoring data in a tabular format that identifies the station sampled and any criteria exceedance.

Ans.: The Hamlet has been advised to follow this instruction strictly for the coming years.

- INAC recommends that the license should be renewed for 10 years.

Ans.: Yes, this recommendation will be welcome, however, the Hamlet will be requesting a 15-year renewal.