



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
3AM-IQA1626
Our file - Notre référence
GCDocs#95599998

June 24, 2021

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

Re: Crown-Indigenous Relations and Northern Affairs Canada Review of the City of Iqaluit 2020 Annual Report for Municipal Type A Water Licence No. 3AM-IQA1626

Dear Mr. Dwyer,

Thank you for the invitation to review the 2020 Annual Report submitted by the City of Iqaluit for the Municipal Type A Water Licence No. 3AM-IQA1626.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the report and the various attachments pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact me at (306) 501-4047 or Andrew.Keim@Canada.ca.

Sincerely,

Andrew Keim,

Water Resources Coordinator ,
Nunavut Regional Office
Crown-Indigenous Relations and Northern Affairs Canada
Andrew.Keim@Canada.ca / Tel : (306) 501-4047



Technical Review Memorandum

Date: June 24, 2021

To: Richard Dwyer – Manager of Licensing, Nunavut Water Board

From: Andrew Keim- Water Resources, CIRNAC

**Subject: Crown-Indigenous Relations and Northern Affairs Canada Comments
on City of Iqaluit 2020 Annual Report for Municipal Type A Water
Licence No. 3AM-IQA1626**

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

The City of Iqaluit (City) is located in Southern Baffin Island, in the Qikiqtani Region of Nunavut. The City was awarded its current Type A Municipal Licence, 3AM-IQA1626 in June of 2016 and has amended the licence 5 times. Amendment No. 4 was awarded to the City in December, 2020 Amendment No.5 was approved by the Minister on April 22, 2021 and thus not part of this review.

Amendment No. 4 primarily addressed changes to terms and conditions within Part D: Conditions Applying to the Use of Waters and Water Management Plans contained in Licence No. 3AM-IQA1626. The approval was issued in December of 2020 and thus only applied to one month of this Annual Report. The changes allow for seasonal pumping of up to 500,000 cubic meters of water from Niaqunguk River (Apex River) to supplement Geraldine Lake and associated monitoring for the remaining term of the Licence (expiring in 2026). The terms and conditions of the original Licence related to the use of Waters and deposit of Waste remain an integral part of this approval.

The City, as part of the Water License is required to report annually on monitoring and sampling. Amendment No. 4 added the following reporting requirements under the Supplementary Pumping Program (SPP):

1. A summary of the SPP program;
2. GPS co-ordinates and datum for the locations of all water withdrawals;
3. The daily and monthly quantities in cubic metres of fresh Water withdrawn from watershed at Monitoring Station No. IQA-10;
4. The daily water levels and/or flow rates when withdrawals are occurring at Monitoring Station No. IQA-10;
5. All other monitoring conducted to meet the Fisheries and Oceans Canada requirements; and



6. Discussion of any observed trends, exceedances, or unanticipated impacts. CIRNAC provides the following comments and recommendations pertaining to the 2020 Annual Report. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C. References are listed in Section D.

Table 1: Summary of Recommendations

Recommendation Number	Subject
<u>Follow-Up Comments to the 2019 Annual Report</u>	
R-01	Iqaluit Sewage Lagoon
R-02	Sewage Solids Disposal
R-03	Volume of Landfill Effluent Discharged
<u>Comments on the 2020 Annual Report</u>	
R-04	Map
R-05	Water Withdrawal from Niaqunguk River
R-06	Supplementary Reports Submitted as Required by the Annual Report



B. DOCUMENTS REVIEWED

The following table (Table 2) provides a summary of the documents reviewed under the submission.

Table 2: Documents Reviewed

Document Title	Author, File No., Rev., Date
City of Iqaluit 2020 Annual Report	City of Iqaluit , March 2021
Appendix A: Laboratory Results of Monitoring Program	Caducean Environmental Laboratories, various dates within 2020
Appendix B: Spill Reports	City of Iqaluit, various dates within 2020
Appendix C: Other Reports	
City of Iqaluit Lake Geraldine DSI Report	Concentric Associates International INC. Dec 2020
Operations, Maintenance and Surveillance Manual - Lake Geraldine	MECO- Mitchelmore Engineering Company LTD, July 2020
Lake Geraldine – Emergency Response Plan for Dam Safety	MECO- Mitchelmore Engineering Company LTD, July 2020
Dam Safety Management Plan	MECO- Mitchelmore Engineering Company LTD, July 2020
Technical Analysis & Risk Assessment	MECO- Mitchelmore Engineering Company LTD, July 2020
Drinking Water Management Program	EXP Services, June 2020
Iqaluit Water Storage Pre-Feasibility Study	EXP Services, Oct 2020
Waste Generation and West 40 Landfill Airspace Projections	AECOM, Sept 2020
Biosolids Management Study	Nunami Stantec, 2019, Project 110126045



C. RESULTS OF REVIEW

Follow-Up Comments to the 2019 Annual Report

CIRNAC's review of the 2019 Annual Report identified 9 recommendations. The City provided responses in August of 2019 that were acknowledged by CIRNAC in September 2019. With respect to the 2020 Annual report, CIRNAC notes the following concerns that remain outstanding and require further action from the Licensee.

1. Sewage Lagoon Inspection

2019 Recommendation R-05:

CIRNAC recommended that the City provide an update in annual reports on whether or not any seepage or stability concerns have been identified by the designated City staff at the Sewage Lagoon.

Comment:

In their written response of September 2019, the City indicated that as part of the revised Operation and Maintenance (O&M) manual for the lagoon, visual inspections would be conducted. The results of the visual inspections conducted in 2020 have not been included in the 2020 Annual Report and without this information, the reviewer will not be aware of current conditions at the sewage lagoon.

Recommendation:

(R-01) CIRNAC recommends that the City include a detailed account of observations and information collected with respect to inspections conducted at the sewage lagoon in the 2021 Annual Report and subsequent Annual Reports.

2. Sewage Solids Disposal

2019 Recommendation R-06:

CIRNAC recommended that the City clarify the disposal method for the Sludge filled Geotube containment cells.

Comment:

In their written response of September 2019, the City indicated that the geotubes were placed in cells adjacent to the Emergency Sewage Lagoon to capture any drainage or leachate and they would remain in the cells an extra season due to restrictions in manpower caused by the Covid-19 pandemic. CIRNAC finds no mention of the geotubes, their disposal method, nor locations following the 2020 overwintering in the 2020 Annual Report.



Recommendation:

(R-02) CIRNAC recommends that the ultimate disposal method and location for the geotubes be documented in subsequent Annual Reports, and that the information be provided to the CIRNAC Inspector within 90 days of receipt of CIRNAC's comments on the City of Iqaluit's 2020 Annual Report .

3. Volume of Landfill Effluent Discharged

2019 Recommendation R-09:

CIRNAC recommended that the City clarify the volume of landfill effluent discharged during each of the two discharge events in cubic metres or clarify why these measurements are not available.

Comment:

The City provided the following written response (City of Iqaluit, August 11, 2020, pg.4):

"The City utilizes a portable pump with no metering available to the pump. If measuring of volume is a requirement moving forward, the City will implement a method to measure liquid levels in the receiving pond to get an estimated volume. The City will consult with its Engineer on specifying suitable instrumentation that will be able to provide the information requested. This instrumentation will be purchased in time for the 2021 season".

CIRNAC reminds the City that measuring volume is required under Part I, Item 7 of licence 3AM-IQA1626: Amendment No. (4):

"7. The Licensee shall measure, by instrument and record in cubic metres, the quantities of Effluent released from the Sewage Lagoon Facility at Monitoring Station No. IQA-02, Wastewater Treatment Plant and/or Upgraded Wastewater Treatment Plant at Monitoring Station No. IQA-04 and the West 40 Landfill at Monitoring Station No. IQA-08."

As such, compliance is a mandatory requirement.

Recommendation:

(R-03) CIRNAC recommends that the City install and use the equipment necessary to record the volume in cubic metres of landfill effluent discharged during each discharge event.



Comments on the 2020 Annual Report

4. Map

Comment:

It would be helpful for the review if diagrams or maps indicating the locations of the various monitoring stations and their locations relative to the overall layout of the facilities were included in the annual report. This includes the solid waste management area and Lake Geraldine water reservoir as an example.

Recommendation:

(R-04) CIRNAC recommends that a site specific location diagrams or maps be included in future annual reports.

5. Water Withdrawal from Niaqunguk River – Cumulative Effects

Comment:

The City of Iqaluit has identified a deficit in the availability of freshwater within Lake Geraldine reservoir. In September 2019 water licence 3AM-IQA1626 was approved to undertake supplementary pumping of freshwater from the Niaqunguk (Apex) River on an annual basis up to a maximum volume of 500,000 cubic meters. It is noted that in 2017 and 2018 emergency amendments were approved by the Nunavut Water Board on a short term basis to address this issue.

The Government of Nunavut has awarded Tower Arctic Ltd. a contract to work on continued construction of the Iqaluit Marine Infrastructure project, and has applied for a Type B Water licence outlining a requirement for an estimated 500 to 800 cubic meters of water to be sourced annually from a location less than 1 Km downstream from where the City currently has their intake for supplementary pumping as detailed above.

The withdrawal of between 5 cubic meters and 8 cubic meters per day later in the season during periods of lower flow volumes may have negative downstream effects on the River and aquatic habitat.

Recommendation:

(R-05) CIRNAC recommends that the Licensee engage with the Nunavut Water Board, Tower Arctic Ltd., and the Government of Nunavut as necessary to coordinate water withdrawals within the City of Iqaluit, to ensure total combined abstraction rates only occur when the natural flow in the Niaqunguk River is above 30% of the mean annual discharge and their total combined withdrawals will not exceed 10% of the instantaneous flow of the Niaqunguk River.



6. Supplementary Reports Submitted as Required by the Annual Report

Comment:

The City, in compliance with the requirement of their Type A licence, submitted multiple reports in support of their 2020 Annual Report. The following information has not been included in their respective reports.

A. Dam Safety Inspection Report – Concentric, 2020

Items that remain outstanding include:

- Submission of informal weekly/monthly visual inspections added to permanent file and the 2020 Annual Report; and
- Appointment of a Dam Safety engineer.

B. Dam Safety Management Plan – Mecco Engineers, 2020

Provision of the records of training and qualifications for staff is required.

C. Lake Geraldine Operations, Maintenance & Surveillance Manual (component of the Dam Safety Management Plan) – Mecco Engineers, 2020

Page 17 of the Lake Geraldine Operations, Maintenance and Surveillance Manual lists the pipe from the reservoir to be 375 mm. Page 8 lists the pipe from the reservoir to be 450mm. Confirmation of the inflow pipe diameter is requested.

Recommendation:

(R-06) CIRNAC recommends that the Licensee adopt, implement and provide responses to all the recommendations contained within submissions provided in support of the requirements of their Type A water licence. These activities should be completed and reported on in the City of Iqaluit 2021 Annual Report.



D. REFERENCES

Letter to the Nunavut Water Board RE: Crown-Indigenous Relations and Northern Affairs Canada Comments on City of Iqaluit 2019 Annual Report for Municipal Type A Water Licence No. 3AM-IQA1626. CIDM#1286790. Crown-Indigenous Relations and Northern Affairs Canada. July 14, 2020.

Letter to the Nunavut Water Board RE: City of Iqaluit Response to Crown-Indigenous Relations and Northern Affairs Canada Comments on City of Iqaluit 2019 Annual Report for Municipal Type A Water Licence No. 3AM-IQA1626. City of Iqaluit. August 11, 2020.

Letter to the Nunavut Water Board RE: Crown-Indigenous Relations and Northern Affairs Canada Acknowledgement of City of Iqaluit Responses to Comments on the City of Iqaluit 2019 Annual Report, Sept 2019

Nunavut Water Board Water Licence No. 3AM-IQA1626 Amendment No. 3. City of Iqaluit. Signed by Norman Mike, Hearing Chair, Nunavut Water Board, June 17, 2016.

Nunavut Water Board Water Licence No. 3AM-IQA1626 Amendment No. 4. City of Iqaluit. Signed by Lootie Toomasie, Hearing Chair, Nunavut Water Board, April 1, 2020.