



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

Your file - Votre référence
3AM-IQA1626
Our file - Notre référence
GCDOCS#106122776

October 5, 2022

Richard Dwyer
Manager of Licencing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of City of Iqaluit's 2021 Annual Report for Water Licence 3AM-IQA1626

Dear Richard Dwyer,

Thank you for your July 5, 2022 invitation to review the City of Iqaluit's 2021 annual report for Water Licence 3AM-IQA1626.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) reviewed the 2021 annual report 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 david.zhong@rcaanc-cirnac.gc.ca or Andrew Keim at andrew.keim@rcaanc-cirnac.gc.ca.

Sincerely,

David Zhong,
Regulatory & Science Advisor



Technical Review Memorandum

Date: October 5, 2022

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

From: David Zhong, Regulatory & Science Advisor, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of City of Iqaluit's 2021 Annual Report for Water Licence 3AM-IQA1626

Region: Qikiqtani

A. BACKGROUND

On June 17, 2016, the Nunavut Water Board (NWB) issued Water Licence 3AM-IQA1626, authorizing the City of Iqaluit (Licensee) to use Water and deposit Waste in support of a Municipal undertaking within the City's municipal boundaries at the following approximate geographic coordinates:

| Undertaking | Latitude | Longitude |
|----------------------------|------------------|------------------|
| Overall Extents | 63° 50' 56.31" N | 68° 39' 49.87" W |
| | 63° 50' 57.30" N | 68° 33' 41.94" W |
| | 63° 43' 48.91" N | 68° 18' 12.53" W |
| | 63° 41' 06.60" N | 68° 18' 18.82" W |
| | 63° 41' 04.08" N | 68° 32' 44.20" W |
| | 63° 44' 46.02" N | 68° 39' 43.10" W |
| West 40 Landfill | 63° 43' 58.15" N | 68° 32' 08.54" W |
| Water Treatment Plant | 63° 45' 12.24" N | 68° 30' 22.79" W |
| Wastewater Treatment Plant | 63° 44' 45.15" N | 68° 32' 19.80" W |

Water Licence 3AM-IQA1626 authorizes the Licensee to extract water from Lake Geraldine for municipal use, discharge Landfill run-off from the West 40 Landfill, and discharge wastewater from the West 40 Wastewater Treatment Plant and backup Sewage Lagoon.

In 2021, the Licensee was granted two (2) amendments:

Amendment #5 – New Solid Waste Management Facility and Additional Water Source:

- Construction and operation of the new solid waste management facility, including the Waste Transfer Station, the New North Landfill, and associated infrastructure.



- Withdrawal of water from Imiqtarviviniq at Monitoring Station No. IQA-14, up to a total of 2,500 cubic metres of water annually for dust suppression and general municipal purposes.

Amendment #6 – Withdrawal of Water from the Sylvia Grinnell River:

- Withdrawal of 350 cubic meters of water per day for the purposes of distributing to the community for drinking water purposes, as a result of the State of Emergency declared by the GN Minister of Community and Government Services.

Part B, Item 1 of Water Licence 3AM-IQA1626 reads: *“(T)he Licensee shall file, with the Board for review, no later than the 31st of March of the year following the calendar year being reported, an Annual Report formulated in accordance with the requirements under **Schedule B** of this Licence.”*

Schedule B (i.e., Annual Reporting Requirements) of Water Licence 3AM-IQA1626 stipulates:

“The Annual Report referred to in Part B, Item 1, shall include the following:

- a. The monthly and annual quantities in cubic metres of fresh Water withdrawn from the Lake Geraldine Reservoir at Monitoring Station No. IQA-01;
- b. The monthly and annual quantities in cubic metres of any Discharges from the Wastewater Treatment Facilities at Monitoring Stations IQA-02, IQA-04, and IQA-08;
- c. Copy of reports generated from Dam Safety Inspections and Dam Safety Reviews along with the Licensee’s proposed actions to address issues identified and/or updates on continuing actions to address issues;
- d. The monthly and annual quantities in cubic metres of sludge removed from the Wastewater Treatment Facilities;
- e. The monthly and annual quantities of Wastes disposed of at the West 40 landfill;
- f. A summary report which includes all data and information generated under the Monitoring Program, including the QA/QC program, in electronic and printed formats acceptable to the Board;
- g. A summary of all construction activities carried out for facilities under the Licence;
- h. A summary of modifications and/or major maintenance work carried out on the potable Water Treatment and Waste Treatment Facilities, including all associated structures;



- i. A progress report and revisions (if applicable) to any studies requested by the Board that relate to Waste management, Water use or reclamation and a brief description of any future studies planned by the Licensee including, a non-technical executive summary for the general public, translated into Inuktitut;
- j. Any revisions required, in the form of addenda, to Plans, Manuals and Reports approved under the Licence;
- k. A list and description, including volumes and Spill Report Line Identification Number, of all un-authorized Discharges, spills and summaries of follow-up action taken;
- l. A summary of any closure and reclamation work undertaken and an outline of any work anticipated for the next year, including any changes to implementation and scheduling;
- m. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector;
- n. A brief update on the implementation plan of all facilities within the scope of this Licence including changes projected implementation and status of the Upgraded Wastewater Treatment Plant;
- o. A summary of any studies, reports and plans requested by the Board that relate to Waste disposal, Water use or reclamation and a brief description of any future studies planned; and
- p. Any other details on the use of Water or Waste disposal requested by the Board by November 1st of the year being reported.”

Schedule B of Amendment #5 of Water Licence 3AM-IQA1626 adds:

- “r. The monthly and annual quantities in cubic metres of fresh Water withdrawn from Imiqtarviviniq (Dead Dog Lake) at Monitoring Station No. IQA-14.
- s. The monthly and annual quantities, and general types of Wastes brought to the Waste Transfer Station and disposed of at the New North Landfill.
- t. A review of procedures for packaging, storage, and shipment of harmful hazardous waste.
- u. An update on the capacity of the landfill cell currently in use, including the installation timing calculation (inputs and result), including discussion on the required actions/schedule for the design and installation of the next lined disposal area in the sequence.”



And **Schedule B** of Amendment #6 of Water Licence 3AM-IQA1626 further adds Item v:

“The 2021 Annual Report referred to in Part B, Item 1, shall provide the following information:

1. A summary of the investigation of the petroleum hydrocarbon contamination in the City’s water supply system, including lessons learned, based on monitoring and mitigation efforts.
2. GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) and datum for the locations of all water withdrawals.
3. The daily and monthly quantities in cubic metres of fresh Water withdrawn from the Sylvia Grinnell River at Monitoring Station IQA-17.
4. Discussion of any observed trends, exceedances, or unanticipated impacts.”

On July 5, 2022, the NWB invited interested parties to submit comments on the 2021 Annual Report submitted by the Licensee. Comments are due October 5, 2022.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) reviewed the 2021 Annual Report 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*. A summary of the subjects of CIRNAC’s comments and recommendations regarding the renewal application 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 are in Section C.



Table 1: Summary of Comments and Recommendations

| Recommendation Number | Subject |
|-----------------------|--|
| R-01 | Volume of Un-authorized Discharge or Spill |
| R-02 | Additional Reporting Requirements from Amendments #5 and #6 |
| R-03 | Lake Geraldine Water Balance Prior to Water Withdrawal from Apex River in 2021 |

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

Table 2: Documents Reviewed and Referenced

| Document Title | Author, File No., Rev., Date |
|---|---------------------------------------|
| Water Licence 3AM-IQA1626 2021 Annual Water Licence Report and attached Appendices A to G | City of Iqaluit, June 24, 2022 |
| Water Licence 3AM-IQA1626 | Nunavut Water Board, June 17, 2016 |
| Water Licence 3AM-IQA1626, Amendment | Nunavut Water Board, August 14, 2018 |
| Water Licence 3AM-IQA1626, Amendment #2 | Nunavut Water Board, August 1, 2019 |
| Water Licence 3AM-IQA1626, Amendment #3 | Nunavut Water Board, August 2, 2019 |
| Water Licence 3AM-IQA1626, Amendment #4 | Nunavut Water Board, April 1, 2020 |
| Water Licence 3AM-IQA1626, Amendment #5 | Nunavut Water Board, March 15, 2021 |
| Water Licence 3AM-IQA1626, Amendment #6 | Nunavut Water Board, October 15, 2021 |



C. RESULTS OF REVIEW

1. Volume of Un-authorized Discharge or Spill

Comment:

Item K of **Schedule B** of Water Licence 3AM-IQA1626 requires that the annual report provide *“(A) list and description, including volumes and Spill Report Line Identification Numbers, of all un-authorized discharges, spills and summaries of follow-up action taken.”*

Table 6 of the annual report summarized the reported spills or un-authorized discharges in 2021. CIRNAC notes that in all the reported incidents, the volumes of spills or un-authorized discharges were reported as unknown.

Recommendation:

(R-01) CIRNAC recommends that the licensee make efforts in quantifying and reporting the volumes of spills or un-authorized discharges in the future.

2. Additional Reporting Requirements from Amendments #5 and #6

Comment:

Both amendments #5 and #6 stipulated additional requirements for annual reporting (i.e., Items r, s, t, u and v of **Schedule B**). The 2021 annual report does not adequately address these additional requirements.

Recommendation:

(R-02) CIRNAC recommends that licensee address the additional reporting requirements as described in water licence amendments #5 and #6.

3. Lake Geraldine Water Balance Prior to Water Withdrawal from Apex River in 2021

Comment:

In the Executive Summary section of the 2021 annual report, it is stated that *“(T)he City executed the replenishment of the Lake Geraldine Reservoir, via supplemental pumping of water from the Apex River. Pumping activities were completed between June 24, 2021 and June 24, 2021. A total of 76,320 m³ of water was pumped with maximum daily pumped volumes of 17,280 m³. The Lake Geraldine water level as of October 1, 2021 was recorded at 111.239 mASL.”*

In its response to Item o of **Schedule B**, the licensee stated that *“(T)he City executed the replenishment of the Lake Geraldine Reservoir, via supplemental pumping of water from the Apex River. Pumping activities were completed between June 24, 2021 and July 28, 2021.”*



A total of 76,320 m³ of water was pumped, with maximum daily pumped volumes of 17,280 m³. Pumping records were maintained by the contractor at the pumping site but had not been provided to City's representative (Nunami Stantec Limited) for review and tabulation at the time of issuance of this report. No supplementary pumping occurred between June 29, 2021 and September 17, 2021, when Lake Geraldine water level was recorded at 111.295 masl, or approximately 1,667,097 m³."

In Appendix G (i.e., *Iqaluit 2021 Lake Geraldine Resupply (Apex Pumping): Report of Activities*, by Nunami Stantec Limited on November 26, 2021), it is stated that "(A) total of 76,320 m³ were withdrawn from the Niaqunguk River and directed to Lake Geraldine during the SPP in 2021. Lake Geraldine was filled to the spillway elevation by June 28, 2021 and continued overflowing for a period of time due to natural recharge" and that "(P)rior to, during and after supplementation activities, Nunami Stantec conducted daily monitoring of river discharge and Lake Geraldine levels (WSC stations), as well as daily monitoring and guidance of pumping rates to the contractor (Tower Arctic Ltd., TAL)."

Based on the Lake Geraldine Dam Safety Inspection 2021 reports (Appendix A), Lake Geraldine Reservoir has a maximum operating elevation at 111.1 masl and the spillway of the reservoir has an elevation of 112.3 masl.

Item 11 of Amendment #4 of Water Licence 3AM-IQA1626 stipulates that "(T)he Licensee shall, at least thirty (30) days prior to the intended annual start of water withdrawals referred to in Part D, Item 10, submit to the Board, for review, an updated Lake Geraldine Water Balance Model completed with the most up to date data available"

It is not clear if and how the term and condition stipulated in Item 11 of Amendment #4 was implemented in 2021.

Recommendation:

(R-03) CIRNAC recommends that the licensee clarify if and how the term and condition stipulated in Item 11 of Amendment #4 was implemented in 2021.