



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
918 Nunavut Drive
Iqaluit, NU, X0A 3H0

Your file - Votre référence
3AM-CHE2333
Our file - Notre référence
GCDOCS# 139012660

July 10, 2025

Robert Hunter
Licensing Administrator
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's Review of the 2024 and 2023 Annual Reports Water Licence 3AM-CHE2333 for the Hamlet of Pangnirtung in the Kivalliq Region of Nunavut

Dear Mr. Hunter,

Thank you for the April 8, 2025 invitation to review the 2024 and 2023 Annual Reports submitted by the Licensee. This review is for Chesterfield Inlet's Type A Water Licence No. 3AM-CHE2333.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the documents 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*. **CIRNAC has 6 recommendations from the 2024 and 2023 Annual Reports.** Please find CIRNAC's comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact me at michelle.blade@rcaanc-cirnac.gc.ca or Andrew Keim at 305-501-4047 or andrew.keim@canada.ca.

Sincerely,

Michelle Blade
Regulatory and Science Advisor



Technical Review Memorandum

Date: July 8, 2025

To: Robert Hunter, Licensing Administrator, Nunavut Water Board

From: Michelle Blade, Regulatory and Science Advisor, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada's Review of the 2024 and 2023 Annual Reports Water Licence 3AM-CHE2333 for the Hamlet of Pangnirtung in the Kivalliq Region of Nunavut

Region: ☐ Kitikmeot ☒ Kivalliq ☐ Qikiqtani

A. BACKGROUND

The Hamlet of Chesterfield Inlet is situated approximately 91 km northeast of Rankin Inlet, Nunavut. It is located on the south shore of Chesterfield Inlet on the western side of Hudson Bay in Nunavut. The Hamlet of Chesterfield Inlet extracts water from First Lake (also known as Puiqsuk Lake) for potable water with the authorized quantity of water not to exceed 23,000 cubic metres (m³) annually. Water is pumped annually from First Lake during the months of August and September and transferred via overland pipeline to the rock-blasted reservoir located approximately 150 metres (m) west of the community. The solid waste disposal facility consists of a fenced disposal area for municipal solid waste (MSW), a separate bulk metal disposal area, and two drum storage areas. Sewage passively flows into a natural tundra wetland composed of four major ponds and several intermittent ponds, some small streams, and open, boggy, wet tundra areas (natural wetlands) between them.

On December 19, 2022, the Hamlet applied for an amendment to their Type B water licence 3BM-CHE1523 to a Type A water licence due to an increase in daily water use exceeding 299 m³/day to a total of 23,000 m³ during the annual resupply of the raw water reservoir. The Hamlet was issued a Type A water licence (Water Licence No. 3AM-CHE2333) on December 20, 2023, for a 10-year period, expiring December 19, 2033. Water Licence No. 3AM-CHE2333 authorizes the following activities, works, and undertakings by the Hamlet:

- a) Continued use of up to 23,000 m³ water annually from First Lake and deposit of waste associated with a Municipal Undertaking;
- b) Pumping of up to 2,000 cubic metres per day (m³/day) of water from First Lake for the annual resupply of the storage reservoir, during the open water season;
- c) Continued operation and maintenance of the Water Supply Facility and Waste Disposal Facilities; and
- d) Roads management, watercourse crossings and culvert installations within Municipal boundaries.

A CIRNAC inspection was conducted on July 17, 2024.



CIRNAC provides the following comments and recommendations pertaining to the 2024 and 2023 Annual Reports. 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 for the 2024 and 2023 Annual Reports can be found in Sections C.

Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	Sources of water and quantity used
R-02	Sludge removal reporting
R-03	Water quality reporting
R-04	Update of plans
R-05	Decommissioned landfill site
R-06	Sludge management

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
Annual Report for the Municipality of Chesterfield Inlet, 2024	Author unknown, 8 Apr 2025
Annual Report for the Municipality of Chesterfield Inlet, 2023	Author unknown, 17 Jun 2025
Annual Report for the Municipality of Chesterfield Inlet, 2023	Author unknown, 24 Mar 2023
Water Licence Inspection Report	CIRNAC, 17 July 2024
Water Licence Inspection Report	CIRNAC, 21 September 2021



Document Title	Author, File No., Rev., Date
Operation & Maintenance Plan for Chesterfield Inlet Municipal Water Licence: Water Supply Facilities 2023	Hamlet of Chesterfield Inlet, 7 December 2022
Operation & Maintenance Plan for Chesterfield Inlet Municipal Water Licence: Solid Waste Disposal Facilities 2023	Hamlet of Chesterfield Inlet, 7 December 2022
Operation & Maintenance Plan for Chesterfield Inlet Municipal Water Licence: Sewage Disposal Facilities 2023	Hamlet of Chesterfield Inlet, 7 December 2022
Hamlet of Chesterfield Inlet Environmental Emergency Contingency Plan	Hamlet of Chesterfield Inlet, March 2023
Hamlet of Chesterfield Inlet Environmental Monitoring Program and Quality Assurance/Quality Control Plan	Hamlet of Chesterfield Inlet, December 2022
TYPE "A" WATER LICENCE NO: 3AM-CHE2333	Nunavut Water Board, 20 Dec 2023

C. RESULTS OF THE 2024 AND 2023 ANNUAL REPORTS REVIEW

R-01: Sources of water and quantity used

Comment:

The 2023 Annual Water Licence Report provides the monthly and annual quantities in litres (L) of water obtained from all sources; however, this is noted as the same volumes as CHE-1.

The 2024 Annual Water Licence Report provides the monthly and annual quantities of water obtained from all sources at (CHE-1a) in the correct units (m³) and supplements this data with a note that *"pumping from First Lake began on September 4, 2024 and ended on September 08, 2024 over a period of 5.083 days (122 hours). An estimated total of 11,030 m3 was pumped to the Reservoir in 2024, which corresponds to a daily average rate of 2170 m3. The municipality has ordered a new pump for next year's reservoir refilling event. The pump will be throttled back to ensure that the daily water withdrawal limit is not exceeded."* It is also noted in the 2024 Annual Water Licence Report that the monthly reported quantities are provided from the daily logs; however, the daily amount was not provided as backup to the Annual Report.

In both the 2023 and 2024 Annual Water Licence Reports, it is unclear if water withdrawn from the Water Supply Facility pump-house at Monitoring Station CHE-1a is monitored or



tracked separately from water withdrawn from First Lake at Monitoring Station CHE-1. Water Licence No. 3AM-CHE2333 requires measurement by instrument and recording in cubic metres, the daily, monthly and annual quantities of Water extracted from First Lake (Puiqsuk Lake) for all purposes at Monitoring Program Station CHE-1, as well as water withdrawn from the Water Supply Facility (pump-house) at Monitoring Program Station CHE-1a.

Recommendation:

(R-01) CIRNAC recommends the Hamlet:

- a) Provide the name or origin of the undefined sources of water tabulated in the 2023 and 2024 Annual Water Licence Reports for CHE-1;
- b) Record and report the daily, monthly, and annual quantities in m³ of water withdrawn from First Lake (Puiqsuk Lake) at Monitoring Station CHE-1, and specify if any daily rates exceeded 2,000 m³ in the 2023 and 2024 Annual Water Licence Reports; and
- c) Record and report the daily, monthly, and annual quantities in m³ of water withdrawn from the Water Supply Facility pump-house at Monitoring Station CHE-1a in the correct units in the 2023 and 2024 Annual Water Licence Reports.

R-02: Sludge removal reporting

Comment:

Water licence 3AM-CHE2333 requires reporting of the monthly and annual quantities in m³ of sludge removed from the Sewage Disposal Facility. The 2023 Annual Water Licence Report notes that no sludge was removed. CIRNAC was unable to locate the sludge removal values in the 2024 Annual Water Licence Report.

Recommendation:

(R-02) CIRNAC recommends that the Hamlet specify whether sludge was removed in 2024 and that the associated sludge removal values are reported in the 2024 Annual Water Licence Report.

R-03: Water quality reporting

Comment:

Water licence 3AM-CHE2333 requires the Monitoring Program to be conducted in accordance with Schedule I of the Water Licence. All effluent discharged from the Sewage Disposal Facility at Monitoring Program Station CHE-4 shall not exceed the effluent quality standards in Part E, Item 2, of the Water Licence. The 2023 Annual Water Licence Report notes that *“past information from past SAO not available, looking for information from the board,”* and *“that the sampling program to their knowledge was conducted with CGS and sample reports from previous year will follow.”* The sample labelled CH-3 + CH3a exceeded the CCME guideline for freshwater aquatic life for mercury.



The 2024 Annual Water Licence Report notes that *“this report also includes results for Monitoring Station CHE-1, as well as detailed chemical, physical and biological analysis required at CHE-2, CHE-3, CHE-3b, and CHE-4 monitoring stations.”* Appendix A (CHE-4 Effluent Quality Limits) of the 2024 Annual Water Licence Report tabulates the results for one sample (monitoring station CHE-4) collected on July 17, 2024, with a comparison to the effluent quality standards from Part E, Item 2, of the Water Licence. Appendix B (Certificate of Analysis – 17-July-2024) includes results for monitoring stations CHE-3, CHE-3a and CHE-4 from one sampling event (July 17, 2024). The sample from CH3a exceeded the CCME guideline for freshwater aquatic life for cadmium.

The Annual Water Licence Reports do not include the results of sampling or flow at monitoring station CHE-2; lacks analytical results for field conductivity and temperature associated with monitoring stations CHE-3, CHE-3a and CHE-4; total petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and benzene, toluene, ethylbenzene, xylene (BTEX) in CH4; mercury for all samples in 2024 sampling; does not compare the analytical results to any regulatory criteria, other than CHE-4 to the effluent limits in Part E Section 2 of the Water Licence; and does not provide QA/QC data for the program.

Recommendation:

(R-03) CIRNAC recommends that the Hamlet:

- a) Provide the sample reports for the sample program conducted with CGS;
- b) Include the dates of discharge from the wetland treatment area entering Finger Bay;
- c) Include the 2024 flow data and analytical results for monitoring station CHE-2 in the 2024 Annual Water Licence Report to remain in compliance with the water licence terms and conditions or provide an explanation as to why it was not done;
- d) Include the 2024 field readings for pH, conductivity, and temperature for monitoring stations CHE-3, CHE-3a and CHE-4, as well as laboratory results for mercury and hydrocarbons (monitoring station CHE-4 only) in the 2024 Annual Water Licence Report to remain in compliance with the water licence terms and conditions or provide an explanation as to why it was not done;
- e) Include analytical results for all other sampling events at monitoring stations CHE-3, CHE-3a, and CHE-4 to remain in compliance with the water licence terms and conditions (i.e., monthly sampling) or provide an explanation as to why it was not done;
- f) Compile the analytical results in an Appendix table with comparison to the applicable guidelines or instruct the lab to include the guidelines in the lab report for easy reference and comparison; and
- g) Provide QA/QC data or provide an explanation as to why it was not done.



R-04: Update of Plans

Comment:

Water licence 3AM-CHE2333 requires in Part I, Item 9, that *“the Licensee shall update, and submit with the 2023 Annual Report, the Plan entitled “Hamlet of Chesterfield Inlet, Environmental Monitoring Program and Quality Assurance/Quality Control Plan” dated December 2022, to include new Monitoring Station CHE-1a and updated figures with locations.”* The 2023 Annual Water Licence Report did not include any revisions, in the form of addenda, to the Environmental Monitoring Program and Quality Assurance/Quality Control Plan.

Water licence 3AM-CHE2333 also requires in Part G that:

“4. The Licensee shall submit an updated Operation & Maintenance Plan for Sewage Disposal Facility, after the Inspector’s inspection during the 2024 field season, to take into consideration comments and recommendations made during the licensing process; and

5. The Licensee shall submit an updated Operation & Maintenance Plan for Solid Waste Disposal Facility, after the Inspector’s inspection during the 2024 field season, to take into consideration comments and recommendations made during the licensing process.”

The 2024 Inspection was conducted on July 17, 2024. The 2024 Annual Water Licence Report did not include any revisions, in the form of addenda, to either Operation & Maintenance Plan specified above.

Recommendation:

(R-04) CIRNAC recommends that the Hamlet:

- a) Update the *“Hamlet update the Hamlet of Chesterfield Inlet, Environmental Monitoring Program and Quality Assurance/Quality Control Plan”* (2022) based on the requirements of Water licence 3AM-CHE2333 and submit the updated plan with the 2023 Annual Water Licence Report.
- b) Update the following plans based on the comments and recommendations made during the licensing process and submit the updated plans with the 2024 Annual Water Licence Report for review:
 - i. *Operation & Maintenance Plan for Sewage Disposal Facility* (2023).
 - ii. *Operation & Maintenance Plan for Solid Waste Disposal Facility* (2023).



R-05: Decommissioned landfill site

Comment:

Water licence 3AM-CHE2333 requires in Part E, Item 11, that *“the Licensee shall submit, within the 2023 Annual Report, a summary of restoration works completed and future use plans, for the decommissioned landfill site located between the fenced MSW area and the bulk metal disposal area.”* The 2023 Annual Water Licence Report noted that were none.

Recommendation:

(R-05) CIRNAC recommends the Hamlet provide an explanation in the 2023 Annual Report, as to why there was no restoration work done or future use plans for the decommissioned landfill site and their timeline for when this work will be completed by, to remain in compliance with the water licence terms and conditions.

R-06: Sludge management

Comment:

The July 17, 2024, inspection identified that the Hamlet was to remove sludge from the sewage disposal facility from the discharge point closest to landfill.

In the 2024 Annual Water Licence Report, the Hamlet noted that *“the municipality has not removed the sludge from the second holding cell for the following reasons:*

- *The municipality is able to use the first holding cell only for all wastewater and the effluent quality at CHE-4 is meeting the effluent quality compliance limits.*
- *As per the O&M Plan for the Sewage Disposal Facility, a sludge management plan needs to be developed prior to removing the sludge.*
- *A planning study for a new Sewage Disposal Facility will commence in the Summer 2025.*
- *Once a new facility is commissioned the existing holding cells will be abandoned and restored.”*

Recommendation:

(R-06) CIRNAC recommends that the Hamlet:

- a) provide a timeline for the submission of the sludge management plan;
- b) provide a timeline for the planning, construction and development of a new Sewage Disposal Facility; as well as a timeline for decommissioning the existing facility.