



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
(3BM-GRI2025)
Our file - Notre référence
GCDocs#143399356

February 5, 2026

Robert Hunter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: robert.hunter@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's Response to Reply on the Comments and Recommendations on the Licence Renewal/Amendment Application for the Hamlet of Grise Fiord Project #3BM-GRI2025, Type B Water Licence

Dear Robert,

Thank you for the January 29, 2026 invitation to review the reply to the referenced application, submitted by the Government of Nunavut Community of Government Services (GN-CGS) on behalf of the hamlet of Grise Fiord, for Type B Water Licence #3BM-GRI2025.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application 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 873-452-2525 or jordan.beer@rcaanc-cirnac.gc.ca or Joyce Demers at joyce.demers@rcaanc-cirnac.gc.ca.

Sincerely,

Jordan Beer, M.Sc.,
Water Management Coordinator



Technical Review Memorandum

Date: February 5, 2026

To: Robert Hunter - Licensing Administrator, Nunavut Water Board

From: Jordan Beer – Water Management Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada’s Response to Reply on the Comments and Recommendations on the Licence Renewal/Amendment Application for the Hamlet of Grise Fiord Project #3BM-GRI2025, Type B Water Licence

Region: Kitikmeot Kivalliq Qikiqtani

A. SUMMARY OF RECOMMENDATION STATUS

Table 1: Summary of Recommendations

Recommendation Number	Subject	Status
R-01	Improved Annual Reporting	Not Resolved
R-02	Lagoon Sample Exceedances	Not Resolved
R-03	Spill Contingency and Fuel Storage	Not Resolved
R-04	Wetland Treatment Area	Not Resolved
R-05	Lagoon Runoff	Resolved
R-06	Lagoon Emergency Discharge	Resolved
R-07	Lagoon Seepage	Resolved with Comment
R-08	Landfill Surface Water Management	Resolved
R-09	Hazardous Waste Storage Berm/Liner Timeline	Resolved with Comment
R-10	Landfill Capacity	Resolved
R-11	Solid Waste Separation	Not Resolved
R-12	Open Burning Ash Monitoring	Resolved



R-13	Landfill Wind Management	Resolved
R-14	Airport River Flow Rate	Resolved
R-15	Aggregate Quality	Resolved

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
251216 3BM-GRI2025 Grise Fiord OM Plan Sewage Disposal Facilities December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
251216 3BM-GRI2025 Grise Fiord OM Plan Solid Waste Disposal Facility December 2025-ILAE	Applicant (Hamlet of Grise Fiord), December 2025
201008 3BM-GRI1520 Spill Contingency Plan for Grise Fiord Oct. 06 2020 Final Edit-ILAE	Applicant (Hamlet of Grise Fiord), October 2020
260129 3BM-GRI2025 - Response to Comments and Recommendations 1-ILAE	Applicant (Hamlet of Grise Fiord), January 2026
Grise Fiord Environmental Emergency Contingency Plan January 2026 with Appendices	Applicant (Hamlet of Grise Fiord), January 2026
Grise Fiord Hydrologic Assessment (Final)	Dillon Consulting, January 2024
Grise Fiord OM Plan Sewage Disposal Facilities January 2026 with Appendices	Applicant (Hamlet of Grise Fiord), January 2026
Grise Fiord OM Plan Solid Waste Disposal Facilities January 2026 with Appendices	Applicant (Hamlet of Grise Fiord), January 2026
Solid Waste Generation Memo (Final)	Government of Nunavut, March 2025



C. RESULTS OF REVIEW

1. Improved Annual Reporting

Comment:

The annual reports provided by the hamlet of Grise Fiord between 2021 and 2025 did not meet the requirements listed within water license GRI-2025 (henceforth referred to as “the License”). The document “251216 3BM-GRI2025 2025 Plan for Compliance-ILAE” provides a plan to improve reporting compliance, but does not address all issues from previous years. This is a concern because the Nunavut Water Board cannot adequately evaluate compliance with water usage, waste discharge and other license conditions without accurate reporting. In particular:

- a. The daily quantities in cubic metres of fresh Water obtained at the Water Supply Facility were not reported, as required by Parts B-1a, B-1b, B-2, H-1 and H-2 of the License.
- b. The daily quantities in cubic metres of sewage Waste discharged were not reported, as required by Part B-1c and B-2 of the License.
- c. The monthly and yearly quantities of water obtained from all sources was reported in L in 2020, 2023, and presumably in 2022 despite the table header listing m³. Quantities must be listed in m³ as per Part B-1b of the License.
- d. The monthly and yearly effluent discharge quantities were reported as required under Part B-1c and B-2 of the License, but the values were inaccurate. Reports assume total sewage discharge is equal to the total water added to the water reservoir each year, but the inspection reports from 2022 and 2023 note that this does not account for water used for dust suppression and other purposes.
- e. The monthly and annual quantities of solid waste accepted at the Solid Waste Facilities were not accurately reported as required by part B-1c of the License. No solid waste quantities were reported in the 2020-2023 reports and all monthly quantities were the same in 2024, indicating a lack of detailed monthly records.
- f. A summary of major maintenance work was not included in the 2022 annual report as required by part B-1d of the License, despite the inspection reports indicating repairs to Tank #1 and Tank #3 in 2022.
- g. No unauthorized discharges were reported between 2020 and 2024 as required by Part B-1e, F-6b and F-6c of the License. However, inspection reports from 2022 and 2023 describe spills adjacent to the repair of the water storage tank, within the solid waste facility, and unauthorized discharges from the sewage lagoon.
- h. The 2023 CIRNAC inspection report was included in the 2023 annual report, but was missing pages and no summary was provided as required by Part B-1i of the License. There was also no summary for the 2022 CIRNAC inspection report.
- i. Inspections of all engineered facilities related to the management of Water and Waste were not conducted in 2020, 2021, or 2024, as required by part F-4 of the License.



- j. Samples taken from GRI-2 and GRI-4 were not analyzed for Biochemical Oxygen Demand, oil and grease, cobalt, fecal coliforms, nitrite or nickel in 2023, as required by Part H-5 of the License.
- k. Reports do not include an interpretation and discussion of results from the Monitoring Program, as required by Part H-8 of the License.
- l. Sample IDs used in the 2022, 2023 and 2024 annual reports do not match the proper monitoring station names, making it difficult to evaluate results.

Recommendation:

(R-01) CIRNAC recommends that the applicant provide an updated plan for compliance that addresses how they will:

- (R-01a) report the daily quantity of fresh Water obtained at the Water Supply Facility and/or for all purposes under the license.
- (R-01b) report the daily quantity of sewage Waste discharged.
- (R-01c) report all monthly and yearly quantities of water obtained in m³
- (R-01d) improve the accuracy of their sewage discharge reporting to account for water used for dust suppression and other purposes.
- (R-01e) improve accuracy when reporting monthly and yearly quantities of every type of Waste accepted at the Solid Waste Facilities.
- (R-01f) provide a summary of all modifications and/or major maintenance work carried out on the Water Supply Facilities, Waste Disposal Facilities, and all associated structures.
- (R-01g) report all unauthorized discharges and a summary of follow-up actions taken.
- (R-01h) include a summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities.
- (R-01i) ensure inspections are completed annually and included in annual report.
- (R-01j) ensure samples from GRI-2 and GRI-4 are analyzed for all parameters listed in Part H-5 of the License, and results are included in annual report.
- (R-01k) include interpretations and discussions of results from the Monitoring Program.
- (R-01l) ensure sample ID names used in annual reports match the listed monitoring station names from the License.

Reply from the Hamlet of Grise Fiord:

R-01): See updated Plan for Compliance. As response to R-01d, please reference the supporting document Solid Waste Generation Estimates for Municipal Water Licences. The provided volumes are the best that can be done to satisfy the water licence requirement until significant changes to the solid waste infrastructure and operations funding are in place.



- R-01a) The daily quantities of fresh water were provided in the 2024 Annual Report and will be continued to be provided in subsequent Annual Reports.
- R-01b) The sewage trucks (gravity flow discharged) and sewage lagoon (outdoor exposed environment) do not have a flowmeter as they would be could not be feasibly maintained. The Board has accepted in the past that sewage disposal volumes be assumed as equal to delivered water volumes, which are available as monthly and yearly volumes.
- R-01c) Subsequent Annual Reports will report the quantities of water in cubic metres.
- R-01d) At this time, there are no technologies / methods that can be feasibly implemented to obtain a more accurate estimate of the effluent discharged volumes.
- R-01e) Please reference the supporting document Solid Waste Generation Estimates for Municipal Water Licences. The provided volumes are the best that can be done to satisfy the water licence requirement until significant changes to the solid waste infrastructure and operations funding are in place. The reported volumes do not alter the environmental responsibilities and compliance obligations of operating and maintaining the solid waste disposal facility.
- R-01f) The Licensee acknowledges it should have been included in the 2022 Annual Report.
- R-01g) The Licensee acknowledges that the spills should have been reported in the Annual Report.
- R-01h) The Licensee acknowledges that an inspection summary should have been provided in the 2022 and 2023 Annual Reports.
- R-01i) The Licensee acknowledges non-compliance with the water licence item. Amendment and justification for this item was submitted in the Amendment Justification Letter on the basis on resource (personnel and funding) and technical reasoning.
- R-01j) Noted. The parameters will be performed in future laboratory analyses of GRI-2 and GRI-4.
- R-01k) The 2025 Annual Report will include this interpretation and discussion.
- R-01l) Noted.

Response to Reply:

R-01 – Unresolved. CIRNAC did not find an updated Plan for Compliance attached with submission. CIRNAC recommends that this plan, along with all other updated documents provided in this submission, be submitted to the NWB and posted on the public registry. The following information must still be provided in an updated Plan for Compliance:

- R-01a) Resolved.
- R-01b) Unresolved. If the municipality maintains that flowmeters cannot be feasibly maintained, CIRNAC recommends the municipality estimate the volume of daily



sewage discharged using operational logs (e.g. “Daily volume = Volume of Truck Tank x Number of Daily Truck Offloads”).

R-01c) Resolved.

R-01d) Unresolved. If the municipality maintains that flowmeters cannot be feasibly maintained, CIRNAC recommends that the municipality estimate the volume of water used for dust suppression using operational logs (e.g. “Volume of Water Used for Dust Suppression = Truck Tank Volume x Number of Water Tanker Refills x Number of Days”).

R-01e) Resolved. CIRNAC will note this comment as resolved however notes that this is not a long-term solution. CIRNAC recommends that the municipality reconsider waste quantification as waste infrastructure improves and funds become available.

R-01f) Resolved.

R-01g) Resolved. CIRNAC considers this comment resolved however notes that more effort needs to be put placed on reporting all reportable spills to the NWT-NU-Spill line in a timely manner. These spills must also be included in subsequent annual reports.

R-01h) Resolved.

R-01i) Resolved. CIRNAC considers this comment resolved, however notes that inspections should be conducted annually moving forward. Results from these inspections must be included in subsequent annual reports.

R-01j) Resolved.

R-01k) Resolved.

R-01l) Resolved.

2. Lagoon Sample Exceedances

Comment:

Water quality results indicate that lagoon water exceeded Canadian Council of Ministers of the Environment (CCME)’s Water Quality Guidelines for the Long Term Protection of Aquatic life for copper, iron, and mercury in 2021 and 2024. This is a concern because the lagoon effluent is decanted directly into a wetland.

Recommendation:

(R-02a) CIRNAC recommends that the applicant provide a plan for how they will bring the lagoon water effluent in compliance with the CCME Water Quality Guidelines before decanting into the wetland.

(R-02b): CIRNAC recommends adding the following maximum thresholds to Part D-3 of the renewed license, regulating discharge water quality at GRI-4:



Parameter:	Maximum Concentration of Any Grab Sample:
Copper	$0.2 * e^{\{0.8545[\ln(\text{hardness})]-1.465\}}$
Iron	300 µg/L
Mercury	0.026 µg/L

(R-02c): CIRNAC recommends adding Dissolved Organic Carbon (DOC) to the sample analysis requirements listed in part H-5 of the License. This will allow regulators to assess whether Zinc concentrations exceed CCME guidelines.

Reply from the Hamlet of Grise Fiord:

The wetland is a vegetated filter strip that does not support aquatic life.

Response to Reply:

Lagoon effluent discharged into a freshwater body or wetland must be monitored for potential contaminants, since an influx of contaminants can negatively impact water quality downstream. The CCME guidelines are widely accepted as the standard for assessing freshwater contamination. CIRNAC maintains its previous recommendations.

- R-02a) Unresolved. CIRNAC maintains its previous recommendation.
- R-02b) Unresolved. CIRNAC maintains its previous recommendation.
- R-02c) Unresolved. CIRNAC maintains its previous recommendation.

3. Spill Contingency and Fuel Storage

Comment:

No spill contingency plan was submitted as part of this application, so it was assumed that the municipality will continue to use the version submitted in October 2020. The spill contingency plan and the various operation and maintenance plans are missing important information on how spills will be prevented and managed. Of particular concern:

- a) There are no measures listed in The Operation and Maintenance Plan for Sewage Disposal Facilities or The Spill Contingency Plan For Grise Fiord to prevent spills during the collection, transport, and offload of sewage. The concern is that this will lead to preventable spills during operations.
- b) The design report and schematic drawings for the new water treatment facility do not specify the volume of fuel that will be stored on site. The concern is that fuel storage volumes greater than 4,000 L require secondary containment.



- c) The Spill Contingency Plan For Grise Fiord does not describe the storage capacity or the amount of contaminants normally stored at facilities. The concern is that this information is legally required under the Consolidation of Spill Contingency Planning and Reporting Regulations, section 4(2) (Government of Nunavut 2022; Government of Nunavut 2023).

Recommendation:

(R-03a): CIRNAC recommends that the applicant update either The Operation and Maintenance Plan for Sewage Disposal Facilities or The Spill Contingency Plan For Grise Fiord to clearly indicate what measures will be taken to prevent spills during sewage collection, transport, and disposal into the lagoon (e.g. drip trays).

(R-03b): CIRNAC recommends that the applicant clarify the volume of fuel that will be stored at the new Water Treatment Facility, and that appropriate containment measures will be installed.

(R-03c): CIRNAC recommends that the applicant submit an updated spill contingency plan containing the storage capacity and the amount of contaminants normally stored at facilities (including the existing water treatment facility, proposed water treatment facility, the lagoon, the landfill, and any other bulk fuel storage locations within the municipality).

Reply from the Hamlet of Grise Fiord:

R-03a) Sewage is only released from the trucks when the discharge valve is manually opened, and the trucks are aligned to discharge directly into the sewage lagoon.

R-03b) The storage tank for fuel will meet CSA CAN/ULC-S601-14. The day tank will be double walled with 110% capacity secondary containment installed on a concrete pad. The tank will be equipped with an overfill protection valve and a high-level audible alarm to alert the operator when the high-level mark is reached. All piping drains containing fuel oil will be piped to appropriate secondary containments systems.

R-03c) (Please see the updated Plan entitled Municipality of Grise Ford Environmental Emergency Contingency Plan for Municipal Water Licence January 2026.

Response to Reply:

R-03a) Unresolved. The proposed operating procedures do not identify spill prevention measures as might be caused by human error or splashing during hose disconnection. CIRNAC recommends the applicant provide specific operating procedures that include some form of secondary containment, such as drip trays or splash pads.

R-03b) Resolved.



R-03c) Unresolved. CIRNAC appreciates the hamlet's efforts to inclusion of Table 1 within the Environmental Emergency Contingency Plan. However, CIRNAC recommends that the applicant further clarify the quantity of jet fuel and diesel / gasoline stored in bulk within the municipality (e.g. bulk fuel tanks at the airport and gas station).

4. Wetland Treatment Area

Comment:

The Operation and Maintenance Plan for Sewage Disposal Facilities lacks important information related to the operation, maintenance, and function of the Wetland Treatment Area. Of particular concern:

- a) The extent of the Wetland Treatment Area is not specified. The concern is that without clear boundaries, there is no clear restriction on where the applicant can decant the lagoon effluent.
- b) The retention time of the Wetland Treatment Area is not specified. The concern is that the applicant cannot currently assess whether the retention time is sufficient to treat desired contaminants.
- c) There is no monitoring plan specified for the Wetland Treatment Area. The CSA W203:19 "guidelines for wastewater treatment in northern communities using lagoon and wetland systems" specifies minimum water quality and visual inspection standards for wetland treatment area maintenance. The concern is that the applicant currently has no way of knowing if the lagoon effluent discharge is polluting freshwater in the Wetland Treatment Area.
- d) The average effluent discharge rate is listed as unknown. The concern is that discharge rates may be exceeding the Wetland Treatment Area's capacity.

Recommendation:

(R-04a): CIRNAC recommends that the applicant clearly define the extent of the Wetland Treatment Area.

(R-04b): CIRNAC recommends that the applicant undertake studies to determine the retention time of the Wetland Treatment Area.

(R-04c): CIRNAC recommends that the applicant update section 8.0 of the Operation and Maintenance Plan for Sewage Disposal Facilities to include CSA W203:19's guidelines for wetland maintenance and water quality monitoring.

(R-04d): CIRNAC recommends that the applicant undertake studies to determine the average effluent discharge flowrate.



Reply from the Hamlet of Grise Fiord:

R-04a) Please see the updated Plan entitled Municipality of Grise Ford Environmental Emergency Contingency Plan for Municipal Water Licence January 2026.

R-04b) The extent of the wetland treatment area has been added to the updated Municipality of Grise Fiord Operation and Maintenance Plan for Municipal Water Licence: Sewage Disposal Facilities January 2026.

R-04c) The retention time of the wetland treatment area has not been established as the sewage lagoon was designed in the early 1990s and commissioned in 1996 at which that time studies on the hydraulic retention time were not requested.

R-04d) The Municipality of Grise Fiord Operation and Maintenance Plan for Municipal Water Licence: Sewage Disposal Facilities January 2026 was updated to include the lagoon and wetland maintenance requirements from CSA W203:19. The water quality monitoring activities for the sewage disposal facilities were updated and provided in the monitoring section, which meet the requirements of the water licence.

Response to Reply:

R-04a) Resolved.

R-04b) Unresolved. CIRNAC recommends that the applicant commit to undertaking studies to determine the retention time of the Wetland Treatment Area.

R-04c) Resolved.

R-04d) Resolved.

5. Lagoon Seepage

Comment:

The Operation and Maintenance Plan for Sewage Disposal Facilities states that the lagoon detention cell is impervious, but does not specify how this is achieved. The original design and construction report from 1998 notes that the lagoon is unlined, and that “seepage through the base of the site could occur on a seasonal basis” based on seepage observed during construction (Johnson et al., 1998). The concern is that the lagoon may be seeping contaminated materials into the surrounding environment.

Recommendation:

(R-07): CIRNAC recommends that the applicant clarify whether the original seepage concern was ever addressed, and if not, provide a plan to monitor and prevent future seepage from the lagoon.

Reply from the Hamlet of Grise Fiord:



The original 1998 design and construction report identified that the sewage lagoon is unlined and that limited seasonal seepage through the lagoon base could occur during thaw conditions. No engineered liner or seepage control measures were implemented at the time of construction, and the lagoon continues to operate in its original configuration.

To address this potential concern, periodic visual inspections of the lagoon base, berms, and surrounding areas will be conducted to identify signs of seepage, erosion, or saturated ground conditions. Effluent and surrounding surface water quality will continue to be monitored to identify any potential impacts.

Should evidence of significant seepage and environmental impact be determined, corrective actions such as localized soil sealing, installation of low-permeability material or non-permeable liner in affected areas will be evaluated and implemented as feasible.

Response to Reply:

R-07) Resolved. CIRNAC is satisfied with this solution, and recommends including any evidence of seepage, erosion, or saturated ground conditions in subsequent annual reports.

6. Hazardous Waste Storage Secondary Containment

Comment:

The Operation & Maintenance Plan for Solid Waste Disposal Facilities states that the bulk metal / hazardous waste storage area is “filled but not bermed or lined”. The plan recommends that an engineered berm and liner system be installed, but does not propose a timeline or implementation plan. The concern is that delays in implementing this recommendation could allow hazardous leachate to contaminate the surrounding environment.

Recommendation:

(R-09) CIRNAC recommends the applicant provide a timeline for installing engineered berms and liner or other equivalent secondary containment systems at the bulk metal / hazardous waste storage area.

Reply from the Hamlet of Grise Fiord:

Reference to an engineered berm and liner has been removed from the updated Plan. In the next capital upgrade project, the approach for the metals and hazardous wastes area will be to minimize contact water and runoff water through ditching and grading. In addition, appropriate containment containers including seacans will be added to the hazardous waste area.



The Government of Nunavut anticipates securing the funding for and commencing the design of the solid waste facility upgrade in the 2026/2027 fiscal year.

Response to Reply:

R-09) Resolved. CIRNAC is satisfied with this solution, so long as all hazardous waste is properly stored within appropriate secondary containment and appropriate water management strategies are implemented.

7. Solid Waste Separation

Comment:

The 2022 and 2023 inspection reports stated that bulk metals, bulk wood, domestic waste, and hazardous waste were not adequately separated in line with National Standards for the management of Solid Waste Facilities. This has been an ongoing comment from CIRNAC, with inspections reports as far back as 2006 noting little to no segregation of materials. The Operation & Maintenance Plan for Solid Waste Disposal Facilities describes one feature of the Solid Waste Management Facility as “An area that contains general household, commercial and institutional wastes, hazardous waste, construction and demolition waste, and other bulky materials”. The concern is that hazardous and bulky waste will continue to remain unsegregated, creating a greater leachate risk for surface waters.

Recommendation:

(R-11): CIRNAC recommends that the applicant provide an updated Operation & Maintenance Plan for Solid Waste Disposal Facilities that includes a detailed plan to achieve hazardous waste segregation (including milestone and timelines), prior to any renewed license being issued.

Reply from the Hamlet of Grise Fiord:

The Licensee recognizes the benefits of increased waste segregation; however, current operational capacity and site limitations prevent the implementation of a detailed segregation program with defined milestones at this time.

The Solid Waste Disposal Facility continues to operate as a centralized receiving area for multiple waste streams, consistent with historical practice in remote northern communities.

Planned capital upgrades will focus on waste segregation, minimizing contact water and leachate generation through improved grading, drainage controls, and the addition of enclosed containment for hazardous wastes, which will significantly reduce environmental risk. The Government of Nunavut anticipates securing the funding for and commencing the design of the solid waste facility upgrade in the 2026/2027 fiscal year.



Timely renewal of the water licence is critical for the municipality in order to construct the water treatment plant.

Response to Reply:

R-11): Unresolved. Segregating hazardous waste from other waste types is essential for ensuring hazardous leachate does not runoff into the surrounding environment, especially within an unlined solid waste management site. CIRNAC continues to recommend the applicant provide an updated Operation & Maintenance Plan for Solid Waste Disposal Facilities that includes a detailed plan to achieve hazardous waste segregation (including milestone and timelines), prior to any renewed license being issued. Timelines can and should take into account the amount of time it will reasonably take to secure operational capacity and sufficient funds.



REFERENCES

- 1) Government of Nunavut, Department of Environment. (2022). Contingency planning and spill reporting in Nunavut: A guide to the new regulations. Government of Nunavut.
- 2) Government of Nunavut, Department of Environment. (2023, March). Spill Contingency Planning and Reporting Regulations: Environmental guideline. Government of Nunavut.
- 3) Johnson, K., Craig, G., & Spry, S. (1998). Design and construction of sewage lagoon in Grise Fiord, NWT. In *International Conference on Permafrost, Yellowknife, Can Underwrit.*