WATER LICENCE INSPECTION FORM

☒ **Original**
☐ **Follow-Up Report**

Licensee	**Licensee Representative**
Hamlet of Grise Fiord	Meghan Lusty
Licence No. / Expiry	**Representative's Title**
3BM-GRI2025	
Land / Other Authorizations	**Land / Other Authorizations**
Date of Inspection	**Inspector**
July 10, 2023	Joseph Monteith

Activities Inspected

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☒ Other: Potable Water Source, Waste Treatment Facility, and Solid Waste Facility ☐ Other:

Conditions: **A- Acceptable** **U-Unacceptable** **C-Concern** **NI-Not Inspected** **NA- Not applicable**

PART:	**Condition**	**Observation No.***
A: SCOPE, DEFINITIONS AND ENFORCEMENT	NA	
B: GENERAL CONDITIONS	A	
C: CONDITIONS APPLYING TO SECURITY	NI	
D: CONDITIONS APPLYING TO WATER USE	A	1-10
E: CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT	C	11-20
F: CONDITIONS APPLYING TO MODIFICATIONS	NI	21-22
G: CONDITIONS APPLYING TO CONSTRUCTION	A	
H: CONDITIONS APPLYING TO EMERGENCY RESPONSE AND CONTINGENCY PLANNING	A	
I: CONDITIONS APPLYING TO ABANDONMENT, RECLAMATION AND CLOSURE PLANNING	NI	
J: CONDITIONS APPLYING TO MONITORING	A	
SCHEDULES	A	

**The item number corresponds with specific conditions within the licence and the observation number corresponds with specific comments provided below.*

Samples taken by Inspector:	Location(s): N76 25 32.5 W82 54 31.
☐ Yes ☒ No	

SECTION 1 ☒ **Comments** (s.__) ☐ **Non-Compliance with Act or Licence** (s.__) ☐ **Action Required** (s.__)

BACKGROUND

The Hamlet of Grise Fiord is a small community located on the southern tip of Ellesmere Island at Latitude 76°25'N and Longitude 83° 01'W, within the Qikiqtani Region of Nunavut. The Community is located approximately 320 km NE of Resolute. The Community is situated on a narrow strip of beach near the mouth of Grise Fiord. Surface soils in the area consist of free-draining gravel deposits. The depth of the active layer of permafrost is approximately 0.6m.

The Hamlet is responsible for providing municipal services to its estimated 178 (2020) residents, including potable water supply, sewage treatment, and solid waste management, partly in the context of a water licence issued by the Nunavut Water Board (NWB or Board) to the Hamlet. The potable water source for the community is a stream of glacial runoff which lasts for about 45 to 50 days a year during the summer from mid-June to beginning of August, resupplying two storage tanks through gravity feed. These storage tanks were built in 1986 (Tank A) and 2002 (Tank B) and have a capacity of 4,000 m3 each. The Community has a secondary water source (Airport River) about 300 m away from these tanks.

The Hamlet of Grise Fiord is licenced to withdrawal 7,700 cubic metres per annum, and less than 300 cubic metres per day.

Inspector Statement

On July 10, 2023, a water licence inspection by Water Resource Officer (WRO) Joseph Monteith was conducted at the Hamlet of Grise Fiord, Qikiqtani Region, Nunavut.

General Conditions

On March 29, 2023 Richard Dwyer, Manager of Licensing, Nunavut Water Board emailed WRO Monteith with a copy of the Hamlet of Grise Fiord's 2022 Annual Report, satisfying Part B, Item 1.

Water Use and Related Structures

1. Water withdrawal is conducted from a glacier run-off stream that meanders down to the Hamlet of Grise Fiord from the mountain above Grise Fiord. A pond with walls that extend up approximately a metre and a half catches water run-off, and pools up. Fencing was being erected around the ponds at the time of the inspection. No sign of fish mesh screen (photo 1,3,4).
2. At the time of the inspection a yellow triangle sign was observed titled GRI-1. The monitoring station is listed in the water licence(photo 3).
3. The secondary water source at airport river was observed with a water pump and hose (photo 2). The hose from the water pump deposited the water in the water reservoir.
4. A 4 inch HDPE piping with a Fish Mesh Screen extends into the pond through the pond walls.
5. The single walled piping from the water source to the water storage tank has multiple holes in the piping, patched only by screwing in screws with the rubber washers built into the screws. At the time of the inspection no signs of leaks in the pipes were noted. The length of piping from the pond to the water treatment facility is approximately 173 metres. The pipe changes into a flexible hose before it goes into water treatment facility. A green hose was observed.
6. The Water Treatment Plant, and its inner pipes (photo 5 &6).
7. No working flow meter in the water treatment plant, truck was not available for observation of water meter readings.
8. Water Storage Tank damaged in 2018 was repaired in 2023. Equipment outside of tank (photo 8).
9. A bridge crossing was inspected within the community. No signs of erosion on the banks or sedimentation were observed in the fresh water. Buildup of sand was observed on the bridge. This buildup has the potential to spill over into the fresh water. A containment wall should be fixed onto the bridge, and maintained to prevent sedimentation into the river (photo 17).
10. 2022 annual report shows 5,201,326 m^3 withdrawn(photo 18).

Waste Water Treatment Facility

11. The amount of waste deposited at the sewage lagoon should match the amount withdrawn from the potable water source, but doesn't take into account the amount water use such as dust suppression, which cannot be calculated as the same amount discharged at the sewage lagoon waste water. At the time of the inspection no record of waste deposited at the lagoon was observed (photo 18).
12. The walls of the sewage lagoon appeared to be working as intended, with no signs of erosion or leaks. The freeboard was below the 1 metre freeboard (photo 10).
13. Two yellow triangle signs titled GRI-3 and GRI-4 was observed. GRI-3 was observed at the sewage lagoon. GRI-4 was observed down slope of the sewage lagoon indicating monitoring sites.
14. Notification of intention for decanting was emailed to WRO Monteith on June 29, 2023. Samples were taken, but no sample results were provided.

Solid Waste Facility

15. The Solid Waste Facility was loosely segregated into Woods, Metals, Hazardous Wastes and Burnable Wastes (photo 14).
16. The burnable waste is open pit burned, pushed off the end of that section then capped with soil. No fencing around the burnable waste.
17. The bulk metals contain white waste, and metal from construction. Hazardous Waste was observed at this site (photo 13).
18. Wood waste was segregated, probably for the purpose of allowing the community help themselves to the wood wastes (photo 11).
19. The Hazardous Waste sea can is mixed with the bulk metal waste. Lots of hazardous waste observed within the bulk metals (photo 14,15,16).
20. A yellow triangle sign titled GRI-2 was observed, which indicated a monitoring site. No Samples were taken on this inspection.

Spill Contingency

21. Spill observed in 2022, not reported and covered in gravel(photo 9).

SECTION 2	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required

The following information is a summary of the actions Required by the licensee to promote and ensure compliance:

- Record the daily use of water in your water usage logs.
- Explain how you calculate and report water usage.
- Consolidate all Hazardous Waste from Solid Waste Facility and deposit into Hazardous Waste section (photo 9).
- Build a containment wall on the bridge to mitigate the amount of soil falling into the river and causing. Sedimentation and maintain the removal of gravel on the bridge (photo 5).
- Erect fencing around the open pit burning section of the Solid Waste Facility to manage wind-blown debris

(photo 8).

- Separate bulk metals, bulk wood, domestic waste, and hazardous waste to be in line with National Standards for the management of Solid Waste Facilities.
- Divert surface water run off away from Solid Waste Facility to mitigate the amount of wastes migrating to the receiving marine environment.
- Email joseph.monteith@rcaanc-cirnac.gc.ca notifying the inspector the intent to decant the sewage lagoon.
- Send WRO Monteith sample results ahead of a decant of the sewage lagoon.
- Maintain a 1 metre freeboard at the sewage lagoon.
- Verify whether there is Fish Mesh Screen on the intake hose at Airport River secondary water source, and the water source with the green hose.

SECTION 3	☐ Comments	☒ Non-Compliance with Act or Licence	☐ Action Required

Part C: Conditions Applying to Water Use

Item 5. The Licensee shall implement sediment and erosion control measures, prior to and during operations, to prevent entry of sediment into Water.

Part D: Conditions Applying to Waste Disposal

Item 2. The Licensee shall provide a minimum of ten (10) days' notice to an Inspector prior to initiating any decant of the Sewage Disposal Facility.

Item 4. The Licensee shall maintain at all times, a Freeboard of at least 1.0 metre, or as recommended by a qualified Geotechnical Engineer and as approved by the Board in writing, for all dams, dykes or other structures intended to contain, withhold, divert or retain Water or Waste.

Item 6. The Licensee shall manage all solid Waste disposed of at the Solid Waste Disposal Facility in accordance with acceptable standard and practices.

Item 8. The Licensee shall segregate and store all hazardous materials and/or hazardous Waste within the Solid Waste Disposal Facility in such a manner as to prevent the deposit of deleterious substances into any Water, until such a time that the materials have been removed for proper disposal at an approved facility.

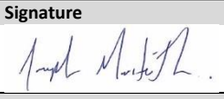
Part F: Conditions Applying Operation and Maintenance

Item 6. The Licensee shall, during the term of this Licence, undertake the following activities in addition to any other required action should an unauthorized discharge of waste occur or if such a discharge is foreseeable:

a. Employ the appropriate contingency measures as approved under the Spill Contingency Plan for the Hamlet of Grise Fiord;

b. Report the incident immediately via the NWT/NU 24-Hour Spill Reporting Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and

c. Submit to the Inspector, a detailed report on each occurrence, not later than thirty (30) days after initially reporting the event, that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean-up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and preventative measures to be implemented.

Licensee or Representative	Inspector's Name
Gord Marinic	Joseph Monteith
Signature	**Signature**
	
Date	**Date**
	December 5, 2023

CC: Licensing Department, NWB
Jeremy Fraser, Manager of Field Operations, CIRNAC

PHOTO LOG

Date	Camera	Inspector	
July 10, 2023	Galaxy S9	Joseph Monteith	

Photo Log #1	Location
Photo 1	Grise Fiord, NU

Description: Water run off from the mountain in the background historically provided all the water to the community.

Photo Log	Location
Photo 2	Grise Fiord, NU

Description: Secondary Water Withdrawal from Airport River. Water pumps and hoses observed in place. Hose goes from Water pump to Water Reservoir. This was required after the damages to the water storage tank. An amendment to the water licenses has since made this apart of the water license.

Photo Log	Location
Photo 3	Grise Fiord, NU

Description: Sign Reads Hamlet of Grise Fiord, Water Supply . Monitoring station GRI1 observed.

Photo Log	Location
Photo 4	Grise Fiord, NU

Description: The water reservoir has grown in capacity since its original trench

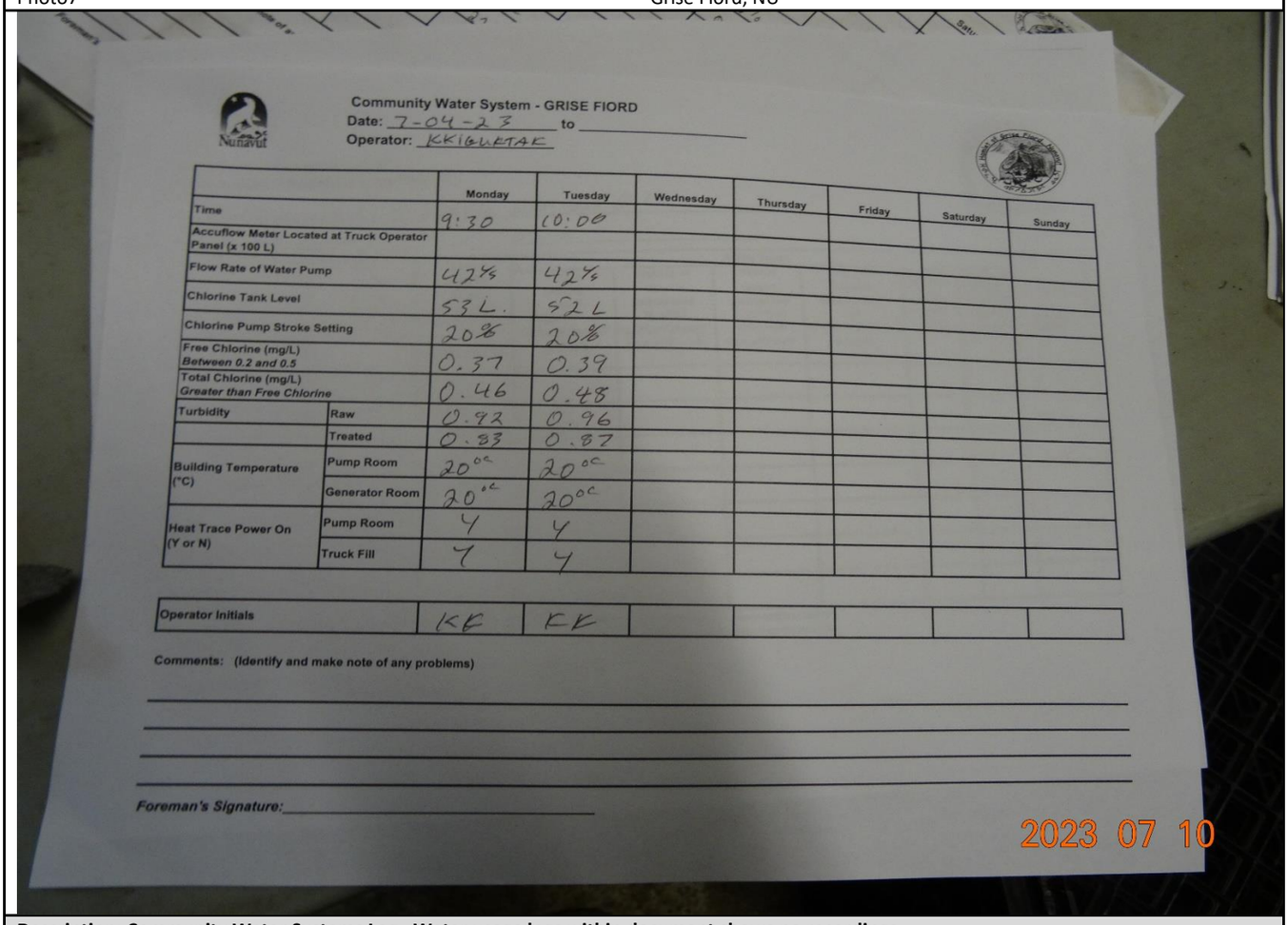
Photo Log	Location
Photo 5	Grise Fiord, NU

Description: 3x Water Storage Tanks. 1 of 3 Water Storage Tanks damaged, and decommissioned. Truck refill station.

Photo Log	Location
Photo 6	Grise Fiord, NU

Description: Internal piping to distribute water to the 3 different water storage tanks. Water comes in from the reservoir on the left, and is distributed to the two working water storage tanks.

Photo Log	Location
Photo7	Grise Fiord, NU



Community Water System - GRISE FIORD
Date: 7-04-23 to
Operator: KKIGUKTAK

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time		9:30	10:00					
Accuflow Meter Located at Truck Operator Panel (x 100 L)								
Flow Rate of Water Pump		42%	42%					
Chlorine Tank Level		53L.	52L					
Chlorine Pump Stroke Setting		20%	20%					
Free Chlorine (mg/L) *Between 0.2 and 0.5*		0.37	0.39					
Total Chlorine (mg/L) *Greater than Free Chlorine*		0.46	0.48					
Turbidity	Raw	0.92	0.96					
	Treated	0.83	0.87					
Building Temperature (°C)	Pump Room	20°C	20°C					
	Generator Room	20°C	20°C					
Heat Trace Power On (Y or N)	Pump Room	Y	Y					
	Truck Fill	Y	Y					
Operator Initials		KK	KK					

Comments: (Identify and make note of any problems)

Foreman's Signature:

2023 07 10

Description: Community Water Systems Log. Water usage logs within document shows no recordings.

Photo Log	Location
Photo 8	Grise Fiord, NU

Description: Water Storage Tank repair complete.

Photo Log	Location
Photo 9	Grise Fiord, NU

Description: Spill observed in 2021, covered with gravel.

Photo Log	Location
Photo 10	Grise Fiord, NU

Description: The sewage lagoon Freeboard less than 1 metre

Photo Log	Location
Photo 11	Grise Fiord, NU

Description: Pile of bulk wood, in the Bulk Woods Section of the Solid Waste Facility

Photo Log	Location
Photo 12	Grise Fiord, NU

Description: Bulk Metals section of the Solid Waste Facility

Photo Log # 1	Location
Photo 13	Grise Fiord, NU

Description: Bulk Metal waste. White waste includes freezers, fridges, washers and dryers. Segregated from other wastes.

Photo Log # 1	Location
Photo 14	Grise Fiord, NU

Description: Empty Propane tanks segregated away from the other wastes.

Photo Log # 1	Location
Photo 15	Grise Fiord, NU

Description: empty fuel test containers. Signs of spills from larger drums.

Photo Log # 1	Location
Photo 16	Grise Fiord, NU

Description: Hazardous waste drums not in secondary containment.

Photo Log	Location
Photo 17	Grise Fiord, NU

Description: Soil build up on bridge. No walls on bridge to prevent soil from falling into fresh water.

Photo Log	Location
Photo 18	Grise Fiord, NU

ANNUAL REPORT
FOR THE MUNICIPALITY OF GRISE FIORD, 2022

YEAR BEING REPORTED: 2022

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License # 3BM-GRI2025 issued to the Municipality of Grise Fiord.

i) - iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our On Tap Water Delivery System and the estimated discharge of sewage waste.

Month Reported	Quantity of Water Obtained from all sources (m^3)	Quantity of Sewage Waste Discharged (Estimated)
January	480,628	Same
February	416,732	Same
March	460,233	Same
April	470,910	Same
May	453,718	Same
June	385,958	Same
July	366,799	Same
August	464,775	Same
September	426,054	Same
October	417,637	Same
November	436,221	Same
December	421,661	Same
ANNUAL TOTAL	5,201,326	Same

Note: The water consumption volume is considered equal to the sewage discharge volume because there is no meter at the end of the discharge pipe.

Page 1 of 16

Description: 2022 Annual Report shows an annual withdrawal of water to be 5,201,326m^3