

# ANNUAL REPORT FOR THE MUNICIPALITY OF GJOA HAVEN

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**YEAR BEING REPORTED: 2023**

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-GJO1828 issued to the Municipality of Gjoa Haven.

- **tabular summaries of all data generated under the “Monitoring Program”;**
- **summary of modifications to the “Monitoring Program” in accordance with Part H, Item 13;**
- **the daily, monthly and annual quantities in cubic metres of freshwater obtained from all sources;**
- **the daily, monthly and annual quantities in cubic metres of each and all waste discharged; including the hazardous and non-hazardous waste accepted at the Solid Waste Facilities;**

Attached are quantities of water used as reported by the Municipality and the estimated discharge of sewage waste based on quantities used.

<b>Month Reported</b>	<b>Quantity of Water Obtained from all sources (m<sup>3</sup>)</b>	<b>Quantity of Sewage Waste Discharged (Estimated, m<sup>3</sup>)</b>
<b>January</b>	4,682.60	Same
<b>February</b>	4,682.60	Same
<b>March</b>	4,682.60	Same
<b>April</b>	4,682.60	Same
<b>May</b>	4,682.60	Same
<b>June</b>	4,682.96	Same
<b>July</b>	4,658.90	Same
<b>August</b>	4,645.45	Same
<b>September</b>	4,645.45	Same
<b>October</b>	4,645.45	Same
<b>November</b>	4,645.45	Same
<b>December</b>	4,645.45	Same
<b>ANNUAL TOTAL</b>	<b>55,982.09</b>	<b>Same</b>

Note: Monthly sewage discharge volume is considered as equal to the monthly water consumption volume.

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- **a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;**
- There were no modifications and/or major maintenance work carried out on the Waste Disposal Facilities in 2023.
- **a list of unauthorized discharges and summary of follow-up action taken;**
- There were no spills associated with licensed infrastructure in 2023. See Appendix E.
- **a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;**
- There was no abandonment and restoration work completed during 2023. There is no abandonment and restoration work anticipated for 2024.
- **a summary of any studies, reports and plans (e.g., Operation and Maintenance, Abandonment and Restoration, QA/QC) requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;**
- The initial planning study was completed in 2020/21. The cost estimates have indicated that the current funding cannot support the construction of a new state-of-the-art 20-year landfill. The focus of the project will shift to making improvements to the current site. A second planning contract to assess and prioritize the improvements to the current site is expected to be complete in 2024.
- **any other details on water use or waste disposal requested by the Board by November 1st of the year being reported.**
- There were no other details on water use or waste disposal requested by the Board by November 1, 2023.

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### **ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:**

- The Sewage Disposal Facility is an impermeable lagoon so there is no flow at GJO-2 or GJO-4 until decant pumping begins. This year, decant began late July so there was no flow at GJO-2 or GJO-4 before that time. There was no flow in Early September as well because decanting was complete. The sampling season is limited to the decant period and as such samples were limited to the time frame when decanting was taking place.
- The laboratory in Yellowknife evacuated due to wildfire from August 16th to September 13<sup>th</sup>. Samples could not be received, which further limited the sampling season.
- No flow at GJO-5 – decanting solid waste site was not planned due to lack of leachate. No sample taken.

### **FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:**

- The tear in the lagoon liner is to be repaired upon thaw in 2024. Freeze up in 2023 occurred prior to Municipal procurement of resources required to complete the repair.
- As per the 2023 CIRNAC inspection, the licensee is to provide an as-built drawing, boundaries, storage locations for various types of waste at the landfill and ensure the wastes are stored in an approved manner. The current site is a non-engineered landfill therefore there are no as-built drawings. The Solid Waste Improvement planning project report will be included with the 2024 Annual Report. When the site improvements are completed as-builts and an updated O&M manual will be submitted.
- The fence was repaired to contain windblown litter. The improved Solid Waste Site will include reinforced fencing.
- The improved Solid Waste site will include proper storage of hazardous waste.

### **List of Appendices**

**Appendix A: GJO-4 Effluent Quality Limits – 1 page**

**Appendix B: Laboratory Certificate of Analysis**

- **Certificate of Analysis 07/26/2023 - 6 pages**

**Appendix C: Gjoa Haven 2023 Sampling Summary – 1 page**

**Appendix D: CIRNAC Inspection Report - 1 page**

**Appendix E: Spill Report- 1 page**

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Appendix A: GJO-4 Effluent Quality Limits

**3BM-GJO1828 Gjoa Haven Monitoring Program Results 2023 for Effluent Quality**

Parameter	Maximum concentration	GJO-4
		July 26
CBOD	100 mg/L	123
Total Suspended Solids	100 mg/L	34
Fecal Coliforms	1x10 <sup>4</sup> CFU/dl	27000
Oil + Grease	No visible sheen	Non-visible
pH	between 6 and 9	7.63

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Appendix B: Laboratory Certificate of Analysis



**Taiga Environmental Laboratory**  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

**Taiga Batch No.:**  
**231177**

**- FINAL REPORT -**

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**Prepared For:** Hamlet of Gjoa Haven

**Address:** P.O. Box 200  
Gjoa Haven, NU  
X0B 1J0

**Attn:** Adam Halluqtalik

**Facsimile:** (867) 360-6309

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**Final report has been reviewed and approved by:**

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**Glen Hudy**  
**Quality Assurance Officer**

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**NOTES:**

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Results are based on the specific tests at the time of analysis, does not represent the conditions during sampling and relates only to the items tested.

**ReportDate:** August 10, 2023

**Print Date:** *August 10, 2023*

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Taiga Environmental Laboratory  
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9  
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**231177**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GJO-2**

Taiga Sample ID: **001**

**Client Project:**

**Sample Type:** Sewage Effluent

**Received Date:** 27-Jul-23

**Sampling Date:** 26-Jul-23

**Sampling Time:** 9:30

**Location:** Gjoa Haven Sewage System

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Cations by ICP-MS</u></b>						
Calcium	30.4	0.1	mg/L	31-Jul-23	TEL035	
Hardness	182	0.7	mg/L	31-Jul-23	TEL035	
Magnesium	25.8	0.1	mg/L	31-Jul-23	TEL035	
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	83.6	0.005	mg/L	31-Jul-23	TEL068	
Biochemical Oxygen Demand	173	2	mg/L	27-Jul-23	TEL019	
CBOD	184	2	mg/L	27-Jul-23	TEL019	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	458	0.4	mg/L	27-Jul-23	TEL060	
Conductivity, Specific (@25C)	1470	0.4	µS/cm	27-Jul-23	TEL059	
pH	7.67		pH units	27-Jul-23	TEL058	

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Solids, Total Suspended	26	3	mg/L	28-Jul-23	TEL008
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**Major Ions**

Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	27-Jul-23	TEL055
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Sulphate	5	1	mg/L	27-Jul-23	TEL055
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Taiga Batch No.:  
**231177**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GJO-2**

Taiga Sample ID: **001**

**Microbiology**

Coliforms, Fecal	36000	1000	CFU/100mL	27-Jul-23	TEL017
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**Organics**

Oil and Grease, visible	Non-visible			27-Jul-23	Visual Exam
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**Subcontracted Organics**

Phenols, Total	0.6610	0.001	mg/L	01-Aug-23	AB ENV.06537
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**Trace Metals, Total**

Arsenic	< 2.0	2	µg/L	02-Aug-23	TEL035	207
Cadmium	< 0.40	0.4	µg/L	02-Aug-23	TEL035	207
Chromium	< 1.0	1	µg/L	02-Aug-23	TEL035	207
Copper	121	2	µg/L	02-Aug-23	TEL035	207
Iron	497	50	µg/L	02-Aug-23	TEL035	207
Lead	< 1.0	1	µg/L	02-Aug-23	TEL035	207
Mercury	< 0.10	0.1	µg/L	02-Aug-23	TEL035	207
Nickel	2.7	1	µg/L	02-Aug-23	TEL035	207
Zinc	70.2	4	µg/L	02-Aug-23	TEL035	207

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**231177**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GJO-4**

Taiga Sample ID: **002**

**Client Project:**

**Sample Type:** Sewage

**Received Date:** 27-Jul-23

**Sampling Date:** 26-Jul-23

**Sampling Time:** 9:30

**Location:** Gjoa Haven Sewage System

**Report Status:** Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<b><u>Cations by ICP-MS</u></b>						
Calcium	32.9	0.1	mg/L	31-Jul-23	TEL035	
Hardness	191	0.7	mg/L	31-Jul-23	TEL035	
Magnesium	26.6	0.1	mg/L	31-Jul-23	TEL035	
<b><u>Inorganics - Nutrients</u></b>						
Ammonia as Nitrogen	73.1	0.005	mg/L	31-Jul-23	TEL068	
Biochemical Oxygen Demand	146	2	mg/L	27-Jul-23	TEL019	
CBOD	123	2	mg/L	27-Jul-23	TEL019	
<b><u>Inorganics - Physicals</u></b>						
Alkalinity, Total (as CaCO <sub>3</sub> )	440	0.4	mg/L	27-Jul-23	TEL060	
Conductivity, Specific (@25C)	1390	0.4	µS/cm	27-Jul-23	TEL059	
pH	7.63		pH units	27-Jul-23	TEL058	
Solids, Total Suspended	34	3	mg/L	28-Jul-23	TEL008	
<b><u>Major Ions</u></b>						
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	27-Jul-23	TEL055	

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Microbiology

## Taiga Environmental Laboratory

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**Taiga Batch No.:**  
**231177**

### - CERTIFICATE OF ANALYSIS -

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Taiga Environmental Laboratory  
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:  
**231177**

**- CERTIFICATE OF ANALYSIS -**

Client Sample ID: **GJO-4**

Taiga Sample ID: **002**

Coliforms, Fecal 27000 1000 CFU/100mL 27-Jul-23 TEL017

**Organics**

Oil and Grease, visible Non-visible 27-Jul-23 Visual Exam

**Subcontracted Organics**

Phenols, Total 0.5240 0.001 mg/L 01-Aug-23 AB ENV.06537

**Trace Metals, Total**

Arsenic	< 2.0	2	µg/L	02-Aug-23	TEL035	207
Cadmium	< 0.40	0.4	µg/L	02-Aug-23	TEL035	207
Chromium	< 1.0	1	µg/L	02-Aug-23	TEL035	207
Copper	101	2	µg/L	02-Aug-23	TEL035	207
Iron	675	50	µg/L	02-Aug-23	TEL035	207
Lead	< 1.0	1	µg/L	02-Aug-23	TEL035	207
Mercury	< 0.10	0.1	µg/L	02-Aug-23	TEL035	207
Nickel	2.7	1	µg/L	02-Aug-23	TEL035	207
Zinc	57.3	4	µg/L	02-Aug-23	TEL035	207

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**- CERTIFICATE OF ANALYSIS -**

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Client Sample ID: **GJO-4**

Taiga Sample ID: **002**

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**- DATA QUALIFIERS -**

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*Data Qualifier Descriptions:*

**207**      *Detection limit adjusted due to sample matrix effects*

**\* Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

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## Appendix C Gjoa Haven 2023 Sampling Summary

		July 26 2023	
Parameter	Unit	GJO-2	GJO-4
BOD <sub>5</sub>	mg/L	-	-
TSS	mg/L	26	34
Faecal Coliforms	CFU/100mL	36000	27000
pH	pH	7.67	7.63
Conductivity	µS/cm	1470	1390
Ammonia Nitrogen	mg/L	83.6	73.1
Nitrate-Nitrite	mg/L	<0.01	0.03
Oil and Grease	Visibility	Non-visible	Non-Visible
Total Phenols	mg/L	0.6610	0.5240
Sulphate	mg/L	5	10
Magnesium	mg/L	25.8	26.6
Calcium	mg/L	30.4	32.9
Sodium	mg/L	-	-
Potassium	mg/L	-	-
Total Arsenic	µg/L	<2.0	<2.0
Total Cadmium	µg/L	<0.40	<0.40
Total Copper	µg/L	121	101
Total Chromium	µg/L	<1.0	<1.0
Total Iron	µg/L	497	675
Total Lead	µg/L	<1.0	<1.0
Total Mercury	µg/L	<0.10	<0.10
Total Nickel	µg/L	2.7	2.7
Total Zinc	µg/L	70.2	57.3

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### Appendix D: CIRNAC Inspection Report

The CIRNAC Inspection took place May 23 2023. CIRNAC Inspector Jonathan Mesher and Hamlet Employee Adam Halluqtalik were in attendance.

WATER LICENCE INSPECTION FORM

☒ Original

☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Gjoa Haven	Adam halluqtalik
Licence No. / Expiry	Representative's Title
3BM-GJO1828	Director of Municipal Services
Land / Other Authorizations	Land / Other Authorizations
	--
Date of Inspection	Inspector
May 23, 2023	Jonathan MESHER
Activities Inspected	
<input type="checkbox"/> Camp	<input type="checkbox"/> Drilling
<input type="checkbox"/> Roads/Hauling	<input type="checkbox"/> Other:
	<input type="checkbox"/> Mining
	<input type="checkbox"/> Construction
	<input checked="" type="checkbox"/> Other: Municipality
	<input type="checkbox"/> Reclamation
	<input type="checkbox"/> Fuel Storage

Conditions:

A - Acceptable

C - Concern

U - Unacceptable

NA – Not Applicable


NI – Not Inspected

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	NA		Water Management Structures	NA		Storage	C	
Flow Measure. Device	A		Culverts / Bridges	NA		Spills	NA	
Source:	NA		Drainage	NA		Spill Plan	NI	
Water Use:	NA		Erosion / Sediment	NA				
Recirculation ( y /n)	NA		Mitigation Measures	A		Administrative		
			Reclamation Activities	NA		Records	NI	
			Materials Storage	NA		Reports	NI	
Waste Disposal			Signage	A		Plans	NI	
Waste Water	NA					Notifications	A	
Solid Waste	C		Monitoring			Other		
Hazardous Waste	C		Sample Collection / Analysis	A		Follow-up from previous inspection	NI	
*The number in the comments field will correspond with specific comments provided below.								
Samples taken by Inspector:			Location(s):					
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								


SECTION 1	<input checked="" type="checkbox"/> Comments	<input type="checkbox"/> Non-Compliance with Act or Licence	<input type="checkbox"/> Action Required
Inspection			
On May23,2023, I Jonathan Mesher of CIRNAC conducted inspections of Water Licence facilities under the licence 3BM-GJO1828 at the hamlet of Gjoa Haven During this inspection.			
Deposits of waste:			
<div>1. Part D, Item 7 of the licence 3BM-GJO states; “The Licensee shall implement measures to prevent hazardous materials and/or leachate from the Solid Waste Disposal Facility from entering water.” During the inspection there was significant water pooling within the landfill. The inspector is requesting the licensee provide As-build photos of the landfill to ensure the runoff from the facility is properly contained. See photo 1 below for a image of excess water In the landfill.</div> <div>2. During the inspection the fence surrounding the Landfill had been damaged and blown down. Section 4.6.1.4 of the sewage and solid waste operations and maintenance manual states that monthly maintenance procedures should occur on the landfill fence such as; removing wind blown litter, inspections for frost heaving and holes in the mesh. See photo 2 for the broken fence.</div> <div>3. The inspector noted a rip in the lagoon liner where the trucks back up and dump the sewage. See photo 3 for the rip in the lagoon liner.</div> <div>4. The inspector noted potentially hazardous waste/ barrels in multiple locations throughout the landfill, due to snow cover I was unable to see if the potentially hazardous wastes were within a lined contained area. See photos 4 and 5 for protentional hazardous waste.</div>			
Water intake			



1. During the inspection no concerns were noted regarding the usage of water.			
SECTION 2	<input type="checkbox"/> Comments	<input checked="" type="checkbox"/> Non-Compliance with Act or Licence	<input checked="" type="checkbox"/> Action Required
The licensee is to provide the requested information and provide a plan to complete the actions required below in 3 weeks from the receiving this report, Actions required;			
A. The licensee is to repair the lagoon liner to ensure the waste water is properly contained.			
B. The licensee is to provide an as-built drawing, boundaries, storage locations for the various types of waste at the landfill and ensure the wastes are stored in an approved manner.			
C. The licensee is to repair the fence to contain the windblown litter.			
D. The licensee is to ensure the hazardous waste at the landfill is stored in a way approved by the Nunavut Water Board.			


Inspector's Name	
Jonathan MESHER	
Signature	
	
Date	
June 29, 2023	

Water Resource Officer, Nunavut Region  
Crown Indigenous Relations and Northern Affairs Canada – CIRNAC  
Jonathan.mesher@canada.ca  
Office #: 867-975-4296  
Fax: 867 979-6445

Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3BM-GJO
Photo Log			
Photo 1			
			
Description: dump flooded with water.			



Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3BM-GJO
Photo Log			
Photo 2			
			
Description: fence broken.			

Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3BM-GJO
Photo Log			
Photo			
			



Description: rip in liner.

Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3BM-GJO

Photo Log

Photo 4



Description: potentially hazardous waste does not appear to be properly contained.

Date	Camera	Inspector	Authorization
	Sony Cyber-shot	J.Mesher	3BM-GJO

Photo Log

Photo 5



Description: scattered barrels of potentially hazardous waste.

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Appendix E: Spill Report

There were no spills associated with licensed infrastructure in 2023.