#### 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.

Month Reported	Quantity of Water Obtained from all sources (m³)	Quantity of Sewage Waste Discharged (Estimated, m <sup>3</sup> )
January	4,682.60	Same
February	4,682.60	Same
March	4,682.60	Same
April	4,682.60	Same
May	4,682.60	Same
June	4,682.96	Same
July	4,658.90	Same
August	4,645.45	Same
September	4,645.45	Same
October	4,645.45	Same
November	4,645.45	Same
December	4,645.45	Same
ANNUAL TOTAL	55,982.09	Same

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

- 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.

#### 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

### Appendix A: GJO-4 Effluent Quality Limits

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

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

Appendix B: Laboratory Certificate of Analysis



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

#### - FINAL REPORT -

Prepared For: Hamlet of Gjoa Haven

Address: P.O. Box 200

Gjoa Haven, NU

X0B 1J0

Attn: Adam Halluqtalik Facsimile: (867( 360-6309

Final report has been reviewed and approved by:

Glen Hudy

**Quality Assurance Officer** 

#### **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;
  - o Environment Canada
  - o USEPA
- Samples shall be kept forthirty (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



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

#### - 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

Final Report Status:

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Cations by ICP-MS						
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	
Inorganics - Nutrients						
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	
Inorganics - Physicals						
Alkalinity, Total (as CaCO3)	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	

ReportDate: August 10, 2023

Solids, Total Suspended	26	3	mg/L	28-Jul-23	TEL008	
<u>Major Ions</u>						
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	27-Jul-23	TEL055	
Sulphate	5	1	mg/L	27-Jul-23	TEL055	

ReportDate: August 10, 2023
Print Date: August 10, 2023



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

#### - CERTIFICATE OF ANALYSIS -

GJO-2 Taiga Sample ID: 001 Client Sample ID: **Microbiology** Coliforms, Fecal 1000 36000 CFU/100mL 27-Jul-23 **TEL017 Organics** Oil and Grease, visible Non-visible 27-Jul-23 Visual Exam **Subcontracted Organics** Phenols, Total 0.001 0.6610 mg/L 01-Aug-23 AB ENV.06537 Trace Metals, Total 2 207 Arsenic 2.0 μg/L 02-Aug-23 TEL035 207 Cadmium < 0.40 0.4 02-Aug-23 TEL035 μg/L Chromium 1.0 1 207 μg/L 02-Aug-23 TEL035 207 121 2 Copper μg/L 02-Aug-23 TEL035 207 Iron 497 50 μg/L 02-Aug-23 TEL035 Lead 1.0 1 02-Aug-23 TEL035 207 μg/L Mercury < 0.10 02-Aug-23 207 0.1 μg/L TEL035 Nickel 2.7 1 207 μg/L 02-Aug-23 TEL035 207 02-Aug-23 Zinc 70.2 μg/L TEL035

ReportDate: August 10, 2023 Print Date: August 10, 2023



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

#### - CERTIFICATE OF ANALYSIS -

Client Sample ID:

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

GJO-4

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer	
Cations by ICP-MS							
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		
Inorganics - Nutrients							
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		
<u>Inorganics - Physicals</u>							
Alkalinity, Total (as CaCO3)	440	0.4	mg/L	27-Jul-23	TEL060		
Conductivity, Specific (@25C)	1390	0.4	μS/cm	27-Jul-23	TEL059		
pН	7.63		pH units	27-Jul-23	TEL058		
Solids, Total Suspended	34	3	mg/L	28-Jul-23	TEL008		
Major Ions	<u>Major Ions</u>						
Nitrate+Nitrite as Nitrogen	0.03	0.01	mg/L	27-Jul-23	TEL055		

ReportDate: August 10, 2023



**Microbiology** 

### Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

10 Tel: (867)-767-9235 FAS (867)-920-8740-23 TEL055

Taiga Batch No.: 231177

#### - CERTIFICATE OF ANALYSIS -

ReportDate: August 10, 2023



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

#### - CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-4	Taiga Sample ID: 002					
Coliforms, Fecal	27000	1000	CFU/100mL	27-Jul-23	TEL017	
<u>Organics</u>						
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

ReportDate: August 10, 2023
Print Date: August 10, 2023



Taiga Batch No.: 231177

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

#### - CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-4 Taiga Sample ID: 002

#### - DATA QUALIFERS -

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

ReportDate: August 10, 2023

### 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		
рН	рН	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		

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

X	Original
	Follow-Up Report

**Action Required** 

Conditions:	A - Acceptable	C - Concern	U - Unaccentable	NA – Not Applicable	NI – Not Inspected
Roads/Hauling	Other:		△ Other: Municipa	ality	
Camp	☐ Drilling	☐ Mining	☐ Construction ☐ Other: Municipa	☐ Reclamation	☐ Fuel Storage
Activities Inspected	_				
May 23, 202	23		Jonathan MES	SHER	
Date of Inspection			Inspector		
Land / Other Author	rizations		Land / Other Authoriza	tions	
3BM-GJO18	28		Director of M	unicipal Services	
Licence No. / Expiry			Representative's Title		
Hamlet of G	ijoa Haven		Adam halluqta	alik	
Licensee			Licensee Representativ	e	

Conditions: A	- Acceptable	. (	C - Concern U - Unacceptab	le	NA –	Not Applicable	NI – Not Ins	pected
Water Use	Condition	Comment	Site Conditions	Condit ion	Comme nt	Haz/Mat Management	Condition	Comment
Intake/Screen	NA		Water Management Structures	NA		Storage	С	
Flow Measure. Dev	rice 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	Α		Administrative		
			Reclamation Activities	NA		Records	NI	
			Materials Storage	NA		Reports	NI	
Waste Disposal			Signage	Α		Plans	NI	
Waste Water	NA					Notifications	Α	
Solid Waste	С		Monitoring			Other		
Hazardous Waste	С		Sample Collection / Analysis	Α		Follow-up from previous inspection	NI	
	*The numbe	r in the co	omments field will correspond with	n specij	fic comr	ments provided below.		
Samples taken by Inspector:  Yes No			Location(s):					

Samples taken by Inspector:	Location(s):
☐ Yes ⊠No	

Non-Compliance with Act or Licence

#### SECTION 1 **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:**

**Comments** 

- 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.
- 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.
- 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.
- 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.

#### Water intake





1.	During the inspection no	concerns were	noted regarding	the usage of water.

Non-Compliance with Act or Licence 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.

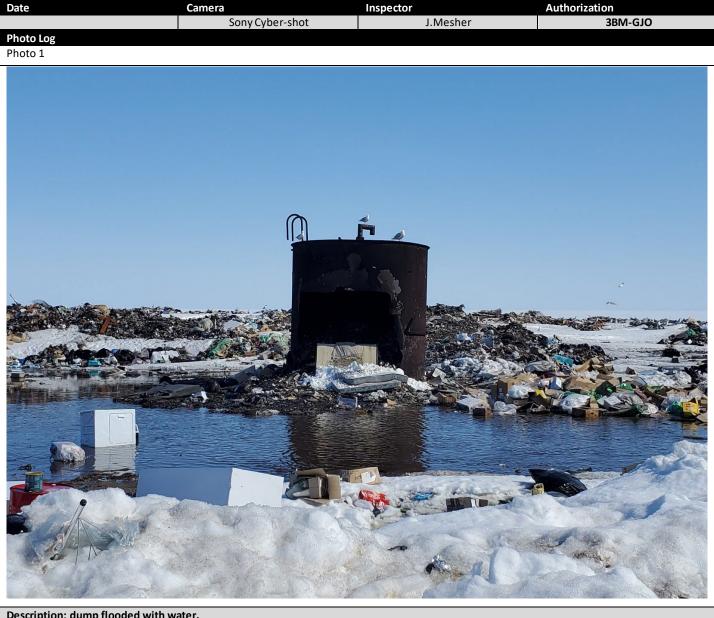
Inspector's Name	
Jonathan MESHER	
Signature	
Date	
June 29, 2023	

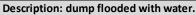
Water Resource Officer, Nunavut Region

Crown Indigenous Relations and Northern Affairs Canada – CIRNAC

Jonathan.mesher@canada.ca

Office #: 867-975-4296 Fax: 867 979-6445

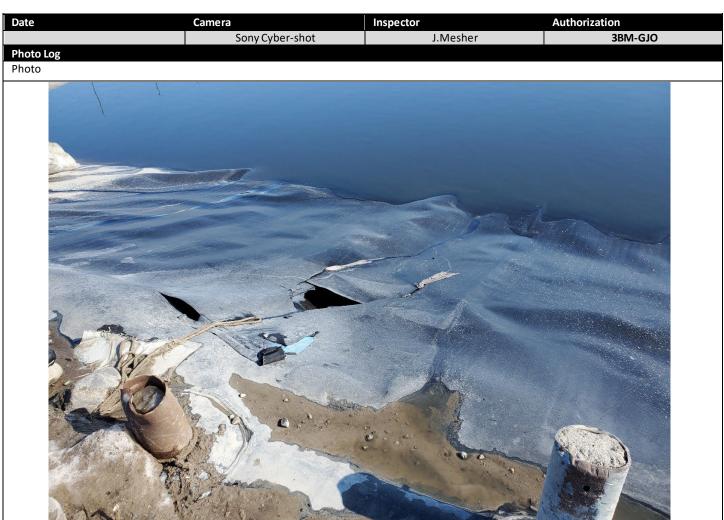








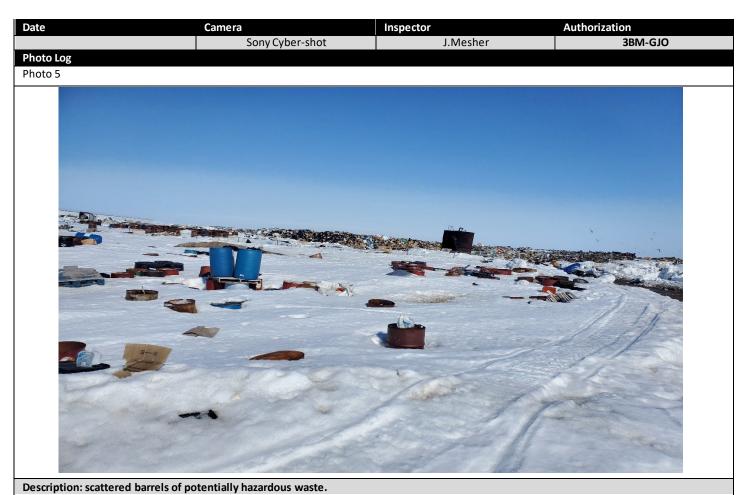






Description: rip in liner.







Appendix E: Spill Report

There were no spills associated with licensed infrastructure in 2023.