

ANNUAL REPORT FOR THE MUNICIPALITY OF GJOA HAVEN

YEAR BEING REPORTED: 2021

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.

- a) **tabular summaries of all data generated under the “Monitoring Program”;**
- b) **summary of modifications to the “Monitoring Program” in accordance with Part H, Item 13;**
- c) **the daily, monthly and annual quantities in cubic metres of freshwater obtained from all sources;**
- d) **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, m³)
January	4,279,250.90	Same
February	4,044,863.29	Same
March	4,331,589.50	Same
April	4,279,480.60	Same
May	2,759,717.40	Same
June	5,226,995.30	Same
July	4,333,179.40	Same
August	4,388,095.30	Same
September	4,191,276.40	Same
October	5,275,728.26	Same
November	4,384,507.70	Same
December	4,064,458.90	Same
ANNUAL TOTAL	51,559,142.95	Same

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

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- e) 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 Water Supply and Waste Disposal Facilities in 2021.
- f) a list of unauthorized discharges and summary of follow-up action taken;**
 - No unauthorized discharges for the infrastructure under license 3BM-GJO1828 occurred in 2021.
- g) 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 2021. There is no abandonment and restoration work anticipated for 2022.
- h) 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 for the Solid Waste Project was completed in 2020/21. The cost estimates have indicated that the current funding cannot support the construction of a 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 with the available is expected to begin in 2022.
- i) 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, 2021.

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ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- No flow at GJO-2 or GJO-4 in July prior to decant. No flow in Early September as well.
- GJO-4 exceeded the effluent quality limits for BOD5 and fecal coliform. Compared to previous years this appears to be an outlier. CGS will review sampling procedures with municipal staff at the beginning of the 2022 sampling program.
- 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:

- As per the 2020 CIRNAC Inspection, The License Holder must check the presumed tear in the Sewage Lagoon Berm Liner on the South Side of the Sewage Lagoon. The tear will be checked after thaw 2022.
- As per the 2020 CIRNAC Inspection, The License Holder shall repair the Damaged Section of the Garbage Dump Fence beside Sample Station GJO-5. Repairs will be assessed summer 2022.

List of Appendices

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

Appendix B: Laboratory Certificate of Analysis

- **Certificate of Analysis 08/11/2021 - 7 pages**

Appendix C: Hazardous Materials Spill Database, Gjoa Haven 2021 – 1 page

Appendix D: Gjoa Haven 2021 Sampling Summary – 1 page

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Appendix A: GJO-4 Effluent Quality Limits

3BM-GJO1828 Gjoa Haven Monitoring Program Results 2021 for Effluent Quality

Parameter	Maximum concentration of Any Grab Sample	GJO-4
		August 11
BOD ₅	80 mg/L	131
Total Suspended Solids	100 mg/L	20
Fecal Coliforms	1x10 ⁴ CFU/dl	330000
Oil + Grease	No visible sheen	Non-Visible
pH	between 6 and 9	7.78

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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.:
211426

- FINAL REPORT -

Prepared For: Hamlet of Gjoa Haven

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

Attn: Anthony Anguttitauruq

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;
 - 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.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

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

Taiga Batch No.:
211426

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-2

Taiga Sample ID: 001

Client Project:
Sample Type: Solid waste runoff
Received Date: 11-Aug-21
Sampling Date: 11-Aug-21
Sampling Time: 9:30
Location: Gjoa Haven Sewage
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	87.7	0.005	mg/L	13-Aug-21	TEL068	
Biochemical Oxygen Demand	140	2	mg/L	11-Aug-21	TEL019	
CBOD	125	2	mg/L	11-Aug-21	TEL019	
Organic Carbon, Total	160	0.5	mg/L	14-Aug-21	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	474	0.4	mg/L	12-Aug-21	TEL060	
Conductivity, Specific (@25C)	1550	0.4	µS/cm	12-Aug-21	TEL059	
pH	7.74		pH units	12-Aug-21	TEL058	
Solids, Total Dissolved	658	10	mg/L	12-Aug-21	TEL009	
Solids, Total Suspended	14	3	mg/L	12-Aug-21	TEL008	
<u>Major Ions</u>						
Chloride	170	0.7	mg/L	12-Aug-21	TEL055	
Nitrate as Nitrogen	0.02	0.01	mg/L	12-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	0.02	0.01	mg/L	12-Aug-21	TEL055	

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

Taiga Batch No.:
211426

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-2

Taiga Sample ID: 001

Nitrite as Nitrogen	< 0.01	0.01	mg/L	12-Aug-21	TEL055	
Sulphate	3	1	mg/L	12-Aug-21	TEL055	
<u>Microbiology</u>						
Coliforms, Fecal	270000	10000	CFU/100mL	11-Aug-21	TEL017	
<u>Organics</u>						
Oil and Grease, visible	Non-visible			11-Aug-21	Visual Exam	
<u>Subcontracted Inorganics</u>						
Calcium	28.4	0.05	mg/L	19-Aug-21	EPA200.2	
Hardness	181	0.5	mg/L	19-Aug-21	EPA200.2	
Magnesium	26.8	0.005	mg/L	19-Aug-21	EPA200.2	
Potassium	30.9	0.05	mg/L	19-Aug-21	EPA200.2	
Sodium	117	0.05	mg/L	19-Aug-21	EPA200.2	
<u>Subcontracted Organics</u>						
Phenols, Total	0.4970	0.0100	mg/L	18-Aug-21	AB ENV.06537	224
<u>Trace Metals, Total</u>						
Aluminum	74.8	5	µg/L	24-Aug-21	TEL035	
Arsenic	1.1	0.2	µg/L	24-Aug-21	TEL035	
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035	
Chromium	0.7	0.1	µg/L	24-Aug-21	TEL035	
Cobalt	0.6	0.1	µg/L	24-Aug-21	TEL035	
Copper	109	0.2	µg/L	24-Aug-21	TEL035	
Iron	613	5	µg/L	24-Aug-21	TEL035	
Lead	0.8	0.1	µg/L	24-Aug-21	TEL035	
Manganese	40.4	0.1	µg/L	24-Aug-21	TEL035	
Mercury	0.03	0.01	µg/L	24-Aug-21	TEL035	

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Taiga Batch No.:
211426

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **GJO-2**

Taiga Sample ID: **001**

Nickel	2.4	0.1	µg/L	24-Aug-21	TEL035
Zinc	71.5	5	µg/L	24-Aug-21	TEL035

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

Taiga Batch No.:
211426

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-4

Taiga Sample ID: 002

Client Project:

Sample Type: Final Discharge

Received Date: 11-Aug-21

Sampling Date: 11-Aug-21

Sampling Time: 9:11

Location: Gjoa Haven Sewage

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	84.3	0.005	mg/L	13-Aug-21	TEL068	
Biochemical Oxygen Demand	131	2	mg/L	11-Aug-21	TEL019	
CBOD	125	2	mg/L	11-Aug-21	TEL019	
Organic Carbon, Total	144	0.5	mg/L	14-Aug-21	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	462	0.4	mg/L	12-Aug-21	TEL060	
Conductivity, Specific (@25C)	1510	0.4	µS/cm	12-Aug-21	TEL059	
pH	7.78		pH units	12-Aug-21	TEL058	
Solids, Total Dissolved	642	10	mg/L	12-Aug-21	TEL009	
Solids, Total Suspended	20	3	mg/L	12-Aug-21	TEL008	
<u>Major Ions</u>						
Chloride	164	0.7	mg/L	12-Aug-21	TEL055	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	12-Aug-21	TEL055	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	12-Aug-21	TEL055	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	12-Aug-21	TEL055	
Sulphate	5	1	mg/L	12-Aug-21	TEL055	

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Taiga Batch No.:
211426

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **GJO-4**

Taiga Sample ID: **002**

Microbiology

Coliforms, Fecal	330000	10000	CFU/100mL	11-Aug-21	TEL017
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Organics

Oil and Grease, visible	Non-visible			11-Aug-21	Visual Exam
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Subcontracted Inorganics

Calcium	30.8	0.05	mg/L	19-Aug-21	EPA200.2
Hardness	191	0.5	mg/L	19-Aug-21	EPA200.2
Magnesium	27.8	0.005	mg/L	19-Aug-21	EPA200.2
Potassium	29.2	0.05	mg/L	19-Aug-21	EPA200.2
Sodium	115	0.05	mg/L	19-Aug-21	EPA200.2

Subcontracted Organics

Phenols, Total	0.4120	0.0100	mg/L	18-Aug-21	AB ENV.06537 224
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Trace Metals, Total

Aluminum	70.0	5	µg/L	24-Aug-21	TEL035
Arsenic	1.9	0.2	µg/L	24-Aug-21	TEL035
Cadmium	< 0.1	0.1	µg/L	24-Aug-21	TEL035
Chromium	0.7	0.1	µg/L	24-Aug-21	TEL035
Cobalt	0.7	0.1	µg/L	24-Aug-21	TEL035
Copper	100	0.2	µg/L	24-Aug-21	TEL035
Iron	745	5	µg/L	24-Aug-21	TEL035
Lead	1.2	0.1	µg/L	24-Aug-21	TEL035
Manganese	47.6	0.1	µg/L	24-Aug-21	TEL035
Mercury	0.01	0.01	µg/L	24-Aug-21	TEL035
Nickel	2.8	0.1	µg/L	24-Aug-21	TEL035
Zinc	67.1	5	µg/L	24-Aug-21	TEL035

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Taiga Batch No.:
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- CERTIFICATE OF ANALYSIS -

Client Sample ID: GJO-4

Taiga Sample ID: 002

- DATA QUALIFIERS -

Data Qualifier Descriptions:

224 *Detection Limit Raised: Dilution required due to high concentration of test analyte(s).*

* 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: Hazardous Materials Spill Database, Gjoa Haven 2021

No unauthorized discharges for the infrastructure under license 3BM-GJO1828 occurred in 2021.

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Appendix D: Gjoa Haven 2021 Sampling Summary

		GJO-2	GJO-4
Parameter	Unit	August 11	August 11
BOD ₅	mg/L	140	131
TSS	mg/L	14	20
Faecal Coliforms	CFU/100mL	270000	330000
pH	pH	7.74	7.78
Conductivity	µS/cm	1550	1510
Ammonia Nitrogen	mg/L	87.7	84.3
Nitrate-Nitrite	mg/L		
Oil and Grease	Visibility	Non-Visible	Non-Visible
Total Phenols	mg/L	0.4970*	0.4120*
Sulphate	mg/L	3	5
Magnesium	mg/L	26.8	27.8
Calcium	mg/L	28.4	30.8
Sodium	mg/L	117	115
Potassium	mg/L	30.9	29.2
Total Arsenic	µg/L	1.1	1.9
Total Cadmium	µg/L	<0.1	<0.1
Total Copper	µg/L	109	100
Total Chromium	µg/L	0.7	0.7
Total Iron	µg/L	613	745
Total Lead	µg/L	0.8	1.2
Total Mercury	µg/L	0.03	0.001
Total Nickel	µg/L	2.4	2.8
Total Zinc	µg/L	71.5	67.1

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Appendix E: CIRNAC Inspection Report

The CIRNAC inspection did not take place in 2021.