

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK

YEAR BEING REPORTED: 2021

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-PEL1929 issued to the Municipality of Kugaaruk.

- a) A summary report of Water use and Waste disposal activities;
- b) Quantity of Water (in cubic metres per month and per year) obtained from all sources;
- c) Quantity of Waste disposed of at the Waste disposal 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 (L)	Quantity of Sewage Waste Discharged (Estimated, L)
January	3,232,134.00	Same
February	2,968,775.10	Same
March	3,221,593.40	Same
April	3,047,471.80	Same
May	3,089,129.30	Same
June	3,004,299.50	Same
July	2,924,673.90	Same
August	3,100,352.80	Same
September	3,243,543.60	Same
October	3,105,327.00	Same
November	3,111,130.70	Same
December	3,135,780.50	Same
ANNUAL TOTAL	37,184,211.60	Same

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

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d) Quantity of Waste backhauled to approved facility for disposal;

- 13 empty Acetylene bottles and 11 empty Oxygen bottles.

e) A list of unauthorized discharges and a summary of follow-up actions taken;

- CIRNAC directed the Municipality of Kugaaruk to report the annual decant of the lagoon as an unauthorized spill because the sample result from the PEL-3-2 had a pH above 9 prior to decanting of effluent. PEL 3-2 is located at a pond between the lagoon and the wetland treatment area. This location for a compliance point is inconsistent with other municipal water licenses in Nunavut. PEL-4, which is at the outlet of the wetland treatment area should be the only compliance point and should be sampled only once decanting has begun since it represents fully treated effluent. The lagoon is not an exfiltration lagoon therefore sampling prior to decant gives no indication of the efficacy of effluent treatment.

f) 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, including any revisions to the management plans submitted in the form of an Addendum;

- May 18, 2021, in the Kugaaruk 2020 Annual Report Review, the following items were requested:
 1. Part F, Item 4: provide to the Board with the 2019 Annual Report an update to the Manual entitled “Kugaaruk Water Treatment Plant Technical Manual - Water Supply Upgrades” dated November 2014 to include a procedure for spill response; and
 2. Part I, Item 9: submit to the Board for acceptance, within ninety (90) days of issuance of the Licence, a Quality Assurance/Quality Control Plan. The Plan shall be acceptable to an accredited laboratory and include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under the License. On April 6, 2020, the Board requested that the Licensee provide the missing information on or before June 30, 2020. The Board does not have a record of receiving these items to date.
- The above listed items will be submitted along with the 2021 Annual Report. The Spill Contingency Plan will also be updated to include a procedure for spill response at the Water Supply Facility rather than including it in the updated Water Supply OM Plan to be consistent with other plans prepared for municipal water licenses.
- The upgraded lagoon was substantially complete in October 2020 and was used over the 2020/21 winter. Inspections by the consultant and contractor took place in October 2021. The consultant is still in the process of developing the Operation and Maintenance Manual and it will

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be submitted to NWB once received.

- Municipal staff identified a leak coming from the southwest berm of the sewage lagoon on September 21, 2021. Samples were taken and sent to Taiga Laboratory and results indicated that it was likely sewage. The leak had dried by October 4th. The lagoon was still under warranty at the time the leak was identified so the CGS project Team is working with the consultant to determine a solution. The notice of the leak submitted to NWB is included in Appendix F.

- g) A summary of all information requested and results of the Monitoring Program;**
- The results of the Monitoring Program are summarized in Appendix D.

- h) A summary, including photographic records before, during and after any relevant construction activities or Modifications and/or major maintenance work carried out on facilities under this Licence and an outline of any work anticipated for the next year;**
- There were no construction or modifications and/or major maintenance work carried out on facilities in 2021.

- i) An update on the Compliance Plan and progress made on specific requirements therein;**
- There were no updates made to the Compliance Plan in 2021. The licensee does not have a copy of any Compliance Plan and could not locate it on the NWB FTP site.

- j) Any other details on Water or Waste deposit requested by the Board by November 1 of the year being reported.**
- There were no other details on Water or Waste deposit requested by the Board by November 1 of 2021.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- No Flow at PEL-9-2

- The sewage lagoon was not fully decanted due to pump malfunction. The decant began on September 8th and ended approximately one month later when pumps failed. There was an estimated 25% remaining in the lagoon which is approximately 9000 m³ based on consumption data. The 46,000 m³ can accommodate this additional wastewater however the lagoon level will be monitored to ensure that freeboard is maintained until such time that the 2022 decant can begin.

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- The lagoon was bypassed during the repairs until they were completed in fall 2020. The deposited sewage went directly into the settling pond during this time which may account for why the pH was higher than normal during the 2021 sampling season. The decomposition of the additional organic material can cause the pH of the environment to increase.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- As per the 2020 CIRNAC Inspection, the Inspector noted all garbage outside the garbage dump fence to be moved within the dump site prior to freeze up. The garbage was relocated inside the dump and as the fence to the garbage dump site is currently broken, plastic bags have blown free of the dump site. All reasonable efforts have been made to return any plastic. Prior to decanting, any plastic bags blown into the sewage lagoon were removed.
- As per the 2020 CIRNAC Inspection, the Inspector noted the licensee shall immediately restart the burn program of Non-Hazardous material to reduce the volume of waste piles. The burn program restarted and continued throughout 2021. The burn program is conducted according to Environmental Guideline for the Burning and Incineration of Solid Waste (Government of Nunavut – Department of Environment, 2012).
- As per the 2020 CIRNAC Inspection, the Inspector noted the license holder shall remove the large metal debris in the Garbage Dump and place it in the Metal Dump prior to freeze up. The large metal debris was moved to the Metal Dump.
- As per the 2020 CIRNAC Inspection, the Inspector noted the license holder shall push back all debris encroaching onto the road from the Metal Dump prior to March 31, 2021. The debris encroaching onto the road was pushed back.

List of Appendices

Appendix A: PEL-3-2 and PEL-4 Effluent Quality Limits – 1 page

Appendix B: Laboratory Certificate of Analysis

- **Certificate of Analysis 07/17/2021 - 8 pages**
- **Certificate of Analysis 08/09/2021 - 10 pages**
- **Certificate of Analysis 08/31/2021 - 3 pages**

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

Appendix D: Kugaaruk 2021 Sampling Summary – 2 pages

Appendix E : CIRNAC Inspection Report - 1 pages

Appendix F : Notice of Leak - 7 pages

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Appendix A: PEL-3-2 and PEL-4 Effluent Quality Limits

3BM-PEL1929 Kugaaruk Monitoring Program Results 2021 for Effluent Quality

Parameter	Maximum concentration of Any Grab Sample	PEL-3-2	
		August 09	August 31
CBOD	100 mg/L	21	-
Total Suspended Solids	100 mg/L	54	-
Faecal Coliforms	1x10 ⁴ CFU/dl	<100	-
Oil + Grease	No visible sheen	Non-visible	-
pH	between 6 and 9	9.59	9.74

Parameter	Maximum concentration of Any Grab Sample	PEL-4	
		July 17	August 09
CBOD	100 mg/L	5	4
Total Suspended Solids	45 mg/L	10	8
Faecal Coliforms	1x10 ⁴ CFU/dl	1600	1060
Oil + Grease	No visible sheen	Non-visible	Non-visible
pH	between 6 and 9	7.90	7.37

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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.:
211191

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: Chantal Dowden

Facsimile: 867-769-6069

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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Print Date: Monday, August 09, 2021

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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.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Pel-4

Taiga Sample ID: 001

Client Project:
Sample Type: Final Discharge
Received Date: 19-Jul-21
Sampling Date: 17-Jul-21
Sampling Time:
Location: Kugaaruk Sewage and Waste
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	23.8	0.005	mg/L	27-Jul-21	TEL068	
Biochemical Oxygen Demand	5	2	mg/L	19-Jul-21	TEL019	
CBOD	6	2	mg/L	19-Jul-21	TEL019	
Organic Carbon, Total	30.8	0.5	mg/L	23-Jul-21	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	164	0.4	mg/L	19-Jul-21	TEL060	
Conductivity, Specific (@25C)	912	0.4	µS/cm	19-Jul-21	TEL059	
pH	7.90		pH units	19-Jul-21	TEL058	
Solids, Total Dissolved	486	10	mg/L	22-Jul-21	TEL009	
Solids, Total Suspended	10	3	mg/L	22-Jul-21	TEL008	
<u>Major Ions</u>						
Calcium	29.0	0.1	mg/L	20-Jul-21	TEL055	
Chloride	93.5	0.7	mg/L	20-Jul-21	TEL055	
Hardness	152	0.7	mg/L	20-Jul-21	TEL055	

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

Taiga Batch No.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Pel-4**

Taiga Sample ID: **001**

Magnesium	19.3	0.1	mg/L	20-Jul-21	TEL055
Nitrate as Nitrogen	0.37	0.01	mg/L	20-Jul-21	TEL055
Nitrate+Nitrite as Nitrogen	0.52	0.01	mg/L	20-Jul-21	TEL055
Nitrite as Nitrogen	0.15	0.01	mg/L	20-Jul-21	TEL055
Potassium	23.4	0.1	mg/L	20-Jul-21	TEL055
Sodium	96.5	0.1	mg/L	20-Jul-21	TEL055
Sulphate	118	1	mg/L	20-Jul-21	TEL055

Microbiology

Coliforms, Fecal	1600	10	CFU/100mL	19-Jul-21	TEL017
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Organics

Oil and Grease, visible	Non-visible			19-Jul-21	Visual Exam
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Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Fl: C6-C10	< 0.10	0.1	mg/L	30-Jul-21	CCME CWS PHC
Phenols, Total	0.0018	0.001	mg/L	27-Jul-21	AB ENV.06537
Toluene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021

Trace Metals, Total

Aluminum	0.6	µg/L	TEL035	16
Arsenic	0.2	µg/L	TEL035	16
Barium	0.1	µg/L	TEL035	16
Cadmium	0.04	µg/L	TEL035	16
Chromium	0.1	µg/L	TEL035	16
Cobalt	0.1	µg/L	TEL035	16

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

Taiga Batch No.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Pel-4

Taiga Sample ID: 001

Copper	0.2	µg/L	TEL035	16
Iron	5	µg/L	TEL035	16
Lead	0.1	µg/L	TEL035	16
Manganese	0.1	µg/L	TEL035	16
Mercury	0.01	µg/L	TEL035	16
Nickel	0.1	µg/L	TEL035	16
Zinc	0.4	µg/L	TEL035	16

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

Taiga Batch No.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Pel-6

Taiga Sample ID: 002

Client Project:

Sample Type: Landfill Runoff

Received Date: 19-Jul-21

Sampling Date: 17-Jul-21

Sampling Time:

Location: Kugaaruk Sewage and Waste

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	1.17	0.005	mg/L	21-Jul-21	TEL068	
Biochemical Oxygen Demand	4	2	mg/L	19-Jul-21	TEL019	
CBOD	5	2	mg/L	19-Jul-21	TEL019	
Organic Carbon, Total	20.0	0.5	mg/L	23-Jul-21	TEL033	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	192	0.4	mg/L	19-Jul-21	TEL060	
Conductivity, Specific (@25C)	809	0.4	µS/cm	19-Jul-21	TEL059	
pH	7.43		pH units	19-Jul-21	TEL058	
Solids, Total Dissolved	538	10	mg/L	22-Jul-21	TEL009	
Solids, Total Suspended	14	3	mg/L	22-Jul-21	TEL008	
<u>Major Ions</u>						
Calcium	107	0.1	mg/L	21-Jul-21	TEL055	
Chloride	37.3	0.7	mg/L	20-Jul-21	TEL055	
Hardness	303	0.7	mg/L	21-Jul-21	TEL055	
Magnesium	8.8	0.1	mg/L	21-Jul-21	TEL055	
Nitrate as Nitrogen	0.06	0.01	mg/L	20-Jul-21	TEL055	

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

Taiga Batch No.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Pel-6

Taiga Sample ID: 002

Nitrate+Nitrite as Nitrogen	0.06	0.01	mg/L	20-Jul-21	TEL055
Nitrite as Nitrogen	< 0.01	0.01	mg/L	20-Jul-21	TEL055
Potassium	11.2	0.1	mg/L	21-Jul-21	TEL055
Sodium	45.6	0.1	mg/L	21-Jul-21	TEL055
Sulphate	168	1	mg/L	20-Jul-21	TEL055

Microbiology

Coliforms, Fecal	1	CFU/100mL	TEL017	103
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Organics

Oil and Grease, visible	Non-visible	19-Jul-21	Visual Exam
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Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Fl: C6-C10	< 0.10	0.1	mg/L	27-Jul-21	CCME CWS PHC
Phenols, Total	0.0017	0.001	mg/L	30-Jul-21	AB ENV.06537
Toluene	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	27-Jul-21	EPA 5021

Trace Metals, Total

Aluminum	0.6	µg/L	TEL035	16
Arsenic	0.2	µg/L	TEL035	16
Barium	0.1	µg/L	TEL035	16
Cadmium	0.04	µg/L	TEL035	16
Chromium	0.1	µg/L	TEL035	16
Cobalt	0.1	µg/L	TEL035	16
Copper	0.2	µg/L	TEL035	16
Iron	5	ug/L	TEL035	16

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

Taiga Batch No.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Pel-6

Taiga Sample ID: 002

Lead	0.1	µg/L	TEL035	16
Manganese	0.1	µg/L	TEL035	16
Mercury	0.01	µg/L	TEL035	16
Nickel	0.1	µg/L	TEL035	16
Zinc	0.4	µg/L	TEL035	16

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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.:
211191

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Pel-7**

Taiga Sample ID: **003**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

103 *Bottle/Vial received empty, analysis not possible*
16 *Test requested but no sample bottle received*

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

Taiga Batch No.:
211657

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: Chantal Dowden

Facsimile: 867-769-6069

Final report has been reviewed and approved by:

Glen Hudry
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.

ReportDate: September-07-21
Print Date: September-08-21

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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.:
211657

- CERTIFICATE OF ANALYSIS -

Client Sample ID: PEL 3-2

Taiga Sample ID: 009

Client Project:

Sample Type: Pond Discharge

Received Date: 01-Sep-21

Sampling Date: 31-Aug-21

Sampling Time: 8:45

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
pH	9.74		pH units	01-Sep-21	SM4500-H:B	

Report Date: September-07-21
Print Date: September-08-21

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Appendix C: Hazardous Materials Spill Documentation

Spill	Occurance Date	Spill Region	Location	Location Description	Product Spilled	Quantity	Measurement	Spill Cause	Lead Agency
spill-2021389	September 8, 2021	Kitikmeot	Kugaaruk, Community, Nunavut	Kugaaruk Sewage Lagoon Discharge Point (68.522500, -89.837500)	Wastewater (sewage, mine tailings)	37000.00	Cubic Meters	Deliberate Discharge	CIRNAC - Crown-Indigenous Relations and Northern Affairs Canada

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Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 973-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR 09-09-2021	REPORT TIME 15:16	<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____
B	OCURRENCE DATE: MONTH - DAY - YEAR 09-08-2021	OCURRENCE TIME 0930		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) N/A	WATER LICENCE NUMBER (IF APPLICABLE) 3BM-PEL1929		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Kugaaruk Sewage Lagoon Discharge Point		REGION <input type="checkbox"/> NWT <input checked="" type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES 68 MINUTES 31 SECONDS 21		LONGITUDE DEGREES 89 MINUTES 50 SECONDS 15	
F	RESPONSIBLE PARTY OR VESSEL NAME Hamlet of Kugaaruk	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION Kugaaruk Nunavut X0B 1K0		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED Wastewater	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES 37,000 m3	U.N. NUMBER	
I	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
J	SPILL SOURCE Sewage Lagoon	SPILL CAUSE Decanting the Lagoon	AREA OF CONTAMINATION IN SQUARE METRES	
K	FACTORS AFFECTING SPILL OR RECOVERY DESCRIBE ANY ASSISTANCE REQUIRED HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT			
L	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS Decanting the sewage lagoon is required in order to make room for next year's sewage in the lagoon. As per CIRNAC inspector, Baba Pedersen, a spill report is required as the pH at the monitoring program station PEL-3-2 is outside the license's required parameter of 6-9 at 9.74. However, PEL-4 is the end of the treatment process, at the discharge point at the ocean and the pH results sampled there are within the licences' parameters. As such, there is no deleterious effect on the receiving environment and no remedial action required.			
M	REPORTED TO SPILL LINE BY Madeline Cole	POSITION MTO	EMPLOYER GN	LOCATION CALLING FROM Cambridge Bay
N	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION
REPORT LINE USE ONLY				
O	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT
			REPORT LINE NUMBER (867) 920-8130	
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> COG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN	FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY	CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY				
FIRST SUPPORT AGENCY				
SECOND SUPPORT AGENCY				
THIRD SUPPORT AGENCY				

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To: Chalmers, Elan <EChalmers@gov.nu.ca>

Subject: RE: Kugaruk Annual Lagoon Decant

Quana,

Community Support Division

დაცა ორგანიზაცია

✉ mcole1@gov.nu.ca

Subject: RE: Kugaruk Annual Lagoon Decant

Acknowledged

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK

Koana
Baba

Baba Pedersen
Resource Management/Water Resource Officer
CIRNAC - Kitikmeot Region
Kugluktuk, NU
Baba.pedersen@canada.ca
Cell 867-222-2839

From: Cole, Madeline <MCole1@GOV.NU.CA>
Sent: Friday, August 27, 2021 4:36 PM
To: Pedersen, Baba (AADNC/AANDC) <baba.pedersen@canada.ca>
Cc: Chalmers, Elan <EChalmers@gov.nu.ca>; Hack, Justin (AADNC/AANDC) <justin.hack@canada.ca>; Collins, Sarah <SCollins@GOV.NU.CA>
Subject: RE: Kugaaruk Annual Lagoon Decant

Hi Baba,

To follow up on our conversation on the phone today, the parameter exceeding the limit of the license is the pH at PEL-3-2. We will attempt to resample again prior to decanting which will commence on September 2nd. If required, a spill report will be completed.

Thank you for your time today,

Madeline Cole
Municipal Technical Officer
Community Support Division

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Cambridge Bay, NU, X0B 0C0
ᐱ 867-983-4134
ᐱ 867-983-4123 (fax)
ᐱ mcole1@gov.nu.ca

From: Pedersen, Baba (AADNC/AANDC) <baba.pedersen@canada.ca>
Sent: August 26, 2021 3:18 PM
To: Cole, Madeline <MCole1@GOV.NU.CA>
Cc: Chalmers, Elan <EChalmers@gov.nu.ca>; Hack, Justin (AADNC/AANDC) <justin.hack@canada.ca>
Subject: RE: Kugaaruk Annual Lagoon Decant

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Madeline,

The BOD at PEL 3-1 at 265 is higher than permitted and the pH at PEL 3-2 is at 9.59 when allowable is between 7 and 9.

If you decide to discharge, then you will NOT be meeting the requirements of the License and a Spill Report should be submitted to the NU/NT Spill Line in order to document this on the Spills Database.

Koana

Baba

Baba Pedersen
Resource Management/Water Resource Officer
CIRNAC - Kitikmeot Region
Kugluktuk, NU
Baba.pedersen@canada.ca
Cell 867-222-2839

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK

Appendix D: Kugaaruk 2021 Sampling Summary

		PEL-3-1	PEL-3-2	PEL-4	
Parameter	Unit	August 09	August 09	July 17	August 09
BOD ₅	mg/L	265	21	5	4
TSS	mg/L	26	54	10	8
Faecal Coliforms	CFU/100 ml	640000	<100	1600	1060
pH	pH	7.53	9.59	7.90	7.37
Conductivity	µS/cm	1210	263	912	3410
Nitrate-Nitrite	mg/L			0.37	
Ammonia Nitrogen	mg/L	115	1.97	23.8	6.58
Oil and Grease	Visibility	Non-Visible	Non-Visible	Non-Visible	Non-Visible
Chloride	mg/L			93.5	895
Sulphate	mg/L			118	174
Sodium	mg/L	62.2		96.5	550
Potassium	mg/L	24.6		23.4	25.0
Magnesium	mg/L	13.1	5.83	19.3	68.4
Calcium	mg/L	22.9	18.2	29.0	38.8
Total Hardness	mg/L	111	69.4	152	
Total Alkalinity	mg/L	395	44.8	164	79.7
Total Phenols	mg/L	0.5030	<0.0100	0.018	<0.0010
Total Manganese	µg/L	32.9	174		197
Total Arsenic	µg/L	0.7	1.0		1.3
Total Aluminum	µg/L	134	384		68.6
Total Cadmium	µg/L	<0.1	<0.1		<0.1
Total Cobalt	µg/L	0.4	0.9		0.9
Total Chromium	µg/L	0.8	0.7		0.2
Total Copper	µg/L	106	7.8		9.7
Total Iron	µg/L	278	1140		209
Total Lead	µg/L	1.0	0.9		0.3
Total Mercury	µg/L	0.03	0.01		0.02
Total Nickel	µg/L	2.1	2.0		2.4
Total Zinc	µg/L	74.7	11.5		<5.0
Total Organic Carbon	mg/L	221	46.3	30.8	19.4

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		PEL-6	PEL-9-2
Parameter	Unit	July 17 2021	
TSS	mg/L	14	
pH	pH	7.43	
Conductivity	µS/cm	809	
Nitrate-Nitrite	mg/L		
Ammonia Nitrogen	mg/L	1.17	
Oil and Grease	Visibility	Non-visible	
Sulphate	mg/L	168	
Sodium	mg/L	45.6	
Potassium	mg/L	11.2	
Magnesium	mg/L	8.8	
Calcium	mg/L	107	
Total Hardness	mg/L	303	
Total Alkalinity	mg/L	192	
Total Phenols	mg/L	0.0017	
Total Arsenic	µg/L		
Total Cadmium	µg/L		
Total Chromium	µg/L		
Total Copper	µg/L		
Total Iron	µg/L		
Total Lead	µg/L		
Total Mercury	µg/L		
Total Nickel	µg/L		
Total Petroleum Hydrocarbons	mg/L	<0.10	
Polycyclic Aromatic Hydrocarbons	mg/L		
Benzene	mg/L	<0.00050	
Toluene	mg/L	<0.00050	
Ethylbenzene	mg/L	<0.00050	
Xylene	mg/L	<0.00050	

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FOR THE MUNICIPALITY OF KUGAARUK**

Appendix E: CIRNAC Inspection Report

The CIRNAC inspection did not take place in 2021.

**ANNUAL REPORT
FOR THE MUNICIPALITY OF KUGAARUK**

Appendix F: Notice of Leak

ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK



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Building Nunavut Together
Nunavutluqatigiingniq
Bâtir le Nunavut ensemble

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Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

October 8, 2021

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1L0

Attention: Richard Dwyer, Manager of Licensing

Re: Kugaaruk Lagoon Leak

Dear Richard,

On September 21, 2021, a leak with some pooling was observed below the southwest berm of the Kugaaruk sewage lagoon by municipal staff. Samples were taken on September 22nd and sent to Taiga Laboratory in Yellowknife.

The preliminary sample results and a photograph of the area of the leak taken October 4, 2021 are attached to this letter. The leak had dried at the time of the photograph, but the discoloration and lab results suggest that the leak contains wastewater effluent. The lagoon was upgraded and commissioned in 2020 and is still under warranty. The contractor is currently on site investigating the issue and the design consultant will be onsite next week.

CGS will follow-up with the consultant's recommendations once available.

Thank you,

Elan Chalmers
Municipal Planning Officer
Government of Nunavut
Community and Government Services
Email: echalmers@gov.nu.ca

**ANNUAL REPORT
FOR THE MUNICIPALITY OF KUGAARUK**



ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK



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

Taiga Batch No.:
211876

- PRELIMINARY REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: Chantal Dowden

Facsimile: 867-769-6069

Final report has been reviewed and approved by:



Judy Mah
Client Service 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.

ReportDate:

Print Date: *Thursday, October 7, 2021*

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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK



Taiga Environmental Laboratory

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

Taiga Batch No.:
211876

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Sewage Lagoon

Taiga Sample ID: 001

Client Project:

Sample Type: Leak

Received Date: 23-Sep-21

Sampling Date: 22-Sep-21

Sampling Time: 8:00

Location: Kugaaruk Sewage Lagoon

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	257	2	mg/L	23-Sep-21	TEL019	
CBOD	127	2	mg/L	23-Sep-21	TEL019	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	204	0.4	mg/L	23-Sep-21	TEL060	
Conductivity, Specific (@25C)	928	0.4	µS/cm	23-Sep-21	TEL059	
pH	7.55		pH units	23-Sep-21	TEL058	
Solids, Total Dissolved	473	10	mg/L	24-Sep-21	TEL009	
Solids, Total Suspended	1630	3	mg/L	24-Sep-21	TEL008	
Turbidity	383	0.05	NTU	23-Sep-21	TEL006	
<u>Major Ions</u>						
Chloride	36.8	0.7	mg/L	23-Sep-21	TEL055	
Nitrate as Nitrogen	10.9	0.01	mg/L	23-Sep-21	TEL055	
Nitrate+Nitrite as Nitrogen	11.1	0.01	mg/L	23-Sep-21	TEL055	
Nitrite as Nitrogen	0.19	0.01	mg/L	23-Sep-21	TEL055	

Report Date:

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Print Date: Thursday, October 7, 2021

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

Taiga Batch No.:
211876

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Sewage Lagoon			Taiga Sample ID: 001		
Sulphate	173	1	mg/L	23-Sep-21	TEL055
<u>Microbiology</u>					
Coliforms, Fecal	6600	100	CFU/100mL	23-Sep-21	TEL017
<u>Organics</u>					
Oil and Grease, visible	Non-visible			23-Sep-21	Visual Exam
<u>Subcontracted Inorganics</u>					
Calcium		0.05	mg/L		EPA200.2
Hardness		0.5	mg/L		EPA200.2
Magnesium		0.005	mg/L		EPA200.2
Potassium		0.05	mg/L		EPA200.2
Sodium		0.05	mg/L		EPA200.2
<u>Subcontracted Organics</u>					
Phenols, Total		0.001	mg/L		AB ENV.06537
<u>Trace Metals, Total</u>					
Aluminum	13600	5	µg/L	29-Sep-21	TEL035
Antimony	0.9	0.1	µg/L	29-Sep-21	TEL035
Arsenic	2.7	0.2	µg/L	29-Sep-21	TEL035
Barium	124	0.1	µg/L	29-Sep-21	TEL035
Beryllium	0.7	0.1	µg/L	29-Sep-21	TEL035
Bismuth	0.2	0.2	µg/L	29-Sep-21	TEL035
Boron	176	0.9	µg/L	29-Sep-21	TEL035
Cadmium	0.3	0.1	µg/L	29-Sep-21	TEL035
Cesium	2.1	0.1	µg/L	29-Sep-21	TEL035
Chromium	20.9	0.1	µg/L	29-Sep-21	TEL035
Cobalt	11.7	0.1	µg/L	29-Sep-21	TEL035

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Report Date:
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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.:
211876

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Sewage Lagoon			Taiga Sample ID: 001		
Copper	50.0	0.2	µg/L	29-Sep-21	TEL035
Iron	29800	5	µg/L	29-Sep-21	TEL035
Lead	11.1	0.1	µg/L	29-Sep-21	TEL035
Lithium	33.9	0.2	µg/L	29-Sep-21	TEL035
Manganese	1470	0.1	µg/L	29-Sep-21	TEL035
Mercury	0.02	0.01	µg/L	29-Sep-21	TEL035
Molybdenum	22.5	0.1	µg/L	29-Sep-21	TEL035
Nickel	15.3	0.1	µg/L	29-Sep-21	TEL035
Rubidium	56.4	0.1	µg/L	29-Sep-21	TEL035
Selenium	1.4	0.5	µg/L	29-Sep-21	TEL035
Silver	0.6	0.1	µg/L	29-Sep-21	TEL035
Strontium	222	0.1	µg/L	29-Sep-21	TEL035
Thallium	0.3	0.1	µg/L	29-Sep-21	TEL035
Tin	0.4	0.1	µg/L	29-Sep-21	TEL035
Titanium	1290	0.1	µg/L	29-Sep-21	TEL035
Uranium	125	0.1	µg/L	29-Sep-21	TEL035
Vanadium	37.5	0.1	µg/L	29-Sep-21	TEL035
Zinc	81.4	5	µg/L	29-Sep-21	TEL035

Report Date:
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ANNUAL REPORT FOR THE MUNICIPALITY OF KUGAARUK



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

Taiga Batch No.:
211876

- CERTIFICATE OF ANALYSIS -

Client Sample ID: Sewage Lagoon

Taiga Sample ID: 001

- DATA QUALIFIERS -

Data Qualifier Descriptions:

249 *Taiga Environmental Laboratory is not accredited for this test.*

*** 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

Report Date:

Print Date: *Thursday, October 7, 2021*

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