

Annual Report -2018

Water Licence: 3BM-PEL 1419

Hamlet of Kugaaruk, NU

Date: Feb 05, 2019



Submitted to:
Nunavut Water Board (NWB)

Appendix A:

Water Samples Results-2018

Hamlet of Kugaaruk, NU



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

Taiga Batch No.:
180222

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: John Ivey

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
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - o Environment Canada
 - o 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: Friday, May 25, 2018

Print Date: *Friday, May 25, 2018*

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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.:
180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Client Project: Kugaaruk Water

Sample Type: Raw Water

Received Date: 30-Apr-18

Sampling Date: 29-Apr-18

Sampling Time: 11:30

Location: Raw Water and Treated Water

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Organic Carbon, Dissolved	2.6	0.5	mg/L	03-May-18	SM5310:B	
Organic Carbon, Total	2.5	0.5	mg/L	03-May-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	58.7	0.4	mg/L	30-Apr-18	SM2320:B	
Colour, Apparent	9	5	CU	30-Apr-18	SM2120:B	
Conductivity, Specific (@25C)	173	0.4	µS/cm	30-Apr-18	SM2510:B	
pH	7.09		pH units	30-Apr-18	SM4500-H:B	
Solids, Total Dissolved	84	10	mg/L	30-Apr-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Apr-18	SM2540:D	
Turbidity	0.33	0.05	NTU	30-Apr-18	SM2130:B	
<u>Major Ions</u>						
Calcium	13.3	0.1	mg/L	01-May-18	SM4110:B	
Chloride	15.6	0.7	mg/L	01-May-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	01-May-18	SM4110:B	

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Taiga Environmental Laboratory

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

Taiga Batch No.:

180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Hardness	64.3	0.7	mg/L	01-May-18	SM4110:B
Magnesium	7.5	0.1	mg/L	01-May-18	SM4110:B
Nitrate as Nitrogen	0.18	0.01	mg/L	01-May-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-May-18	SM4110:B
Potassium	0.9	0.1	mg/L	01-May-18	SM4110:B
Sodium	7.3	0.1	mg/L	01-May-18	SM4110:B
Sulphate	6	1	mg/L	01-May-18	SM4110:B

Microbiology

Coliforms, Total	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B

Subcontracted Inorganics

Sulphide	< 0.0180	0.018	mg/L	04-May-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Weak Acid Dissociable	< 0.0010	0.001	mg/L	08-May-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	09-May-18	AB ENV.06537

Trace Metals, Total

Aluminum	2.2	0.6	µg/L	09-May-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	09-May-18	EPA200.8
Boron	7.7	0.9	µg/L	09-May-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	09-May-18	EPA200.8
Cesium	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Chromium	0.1	0.1	µg/L	09-May-18	EPA200.8
Copper	3.8	0.2	µg/L	09-May-18	EPA200.8
Iron	68	5	µg/L	09-May-18	EPA200.8
Manganese	21.2	0.1	µg/L	09-May-18	EPA200.8

ReportDate: Friday, May 25, 2018

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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.:
180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Mercury	< 0.01	0.01	µg/L	09-May-18	EPA200.8
Nickel	0.3	0.1	µg/L	09-May-18	EPA200.8
Selenium	0.5	0.3	µg/L	09-May-18	EPA200.8
Silver	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Zinc	16.5	0.4	µg/L	09-May-18	EPA200.8

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Taiga Environmental Laboratory

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

Taiga Batch No.:

180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP**

Taiga Sample ID: **002**

Client Project: Kugaaruk Water

Sample Type: Treated Water

Received Date: 30-Apr-18

Sampling Date: 29-Apr-18

Sampling Time: 11:30

Location: Treated Water

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Organic Carbon, Dissolved	2.2	0.5	mg/L	03-May-18	SM5310:B	
Organic Carbon, Total	2.4	0.5	mg/L	03-May-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	57.5	0.4	mg/L	30-Apr-18	SM2320:B	
Colour, Apparent	6	5	CU	30-Apr-18	SM2120:B	
Conductivity, Specific (@25C)	178	0.4	µS/cm	30-Apr-18	SM2510:B	
pH	7.27		pH units	30-Apr-18	SM4500-H:B	
Solids, Total Dissolved	92	10	mg/L	30-Apr-18	SM2540:C	
Solids, Total Suspended	4	3	mg/L	30-Apr-18	SM2540:D	
Turbidity	0.35	0.05	NTU	30-Apr-18	SM2130:B	
<u>Major Ions</u>						
Calcium	13.1	0.1	mg/L	01-May-18	SM4110:B	
Chloride	16.8	0.7	mg/L	01-May-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	01-May-18	SM4110:B	
Hardness	63.8	0.7	mg/L	01-May-18	SM4110:B	
Magnesium	7.6	0.1	mg/L	01-May-18	SM4110:B	

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Taiga Batch No.:

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP**

Taiga Sample ID: **002**

Nitrate as Nitrogen	0.22	0.01	mg/L	01-May-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-May-18	SM4110:B
Potassium	0.9	0.1	mg/L	01-May-18	SM4110:B
Sodium	8.2	0.1	mg/L	01-May-18	SM4110:B
Sulphate	6	1	mg/L	01-May-18	SM4110:B

Microbiology

Coliforms, Total	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B

Organics

Bromodichloromethane	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Chloroform	0.006	0.005	mg/L	09-May-18	EPA8260B
Dibromochloromethane	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Trihalomethanes, Total	0.014	0.005	mg/L	09-May-18	EPA8260B

Subcontracted Inorganics

Sulphide	< 0.0180	0.018	mg/L	04-May-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Weak Acid Dissociable	< 0.0010	0.001	mg/L	08-May-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	09-May-18	AB ENV.06537

Trace Metals, Total

Aluminum	6.5	0.6	µg/L	09-May-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	09-May-18	EPA200.8
Boron	7.0	0.9	µg/L	09-May-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	09-May-18	EPA200.8
Cesium	< 0.1	0.1	µg/L	09-May-18	EPA200.8

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4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
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Taiga Batch No.:
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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP**

Taiga Sample ID: **002**

Chromium	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Copper	13.0	0.2	µg/L	09-May-18	EPA200.8
Iron	40	5	ug/L	09-May-18	EPA200.8
Manganese	7.5	0.1	µg/L	09-May-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	09-May-18	EPA200.8
Nickel	0.7	0.1	µg/L	09-May-18	EPA200.8
Selenium	0.7	0.3	µg/L	09-May-18	EPA200.8
Silver	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Zinc	183	0.4	µg/L	09-May-18	EPA200.8



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Taiga Batch No.:
180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truck Water**

Taiga Sample ID: **003**

Client Project: Kugaaruk Water

Sample Type: Treated Water

Received Date: 30-Apr-18

Sampling Date: 29-Apr-18

Sampling Time: 11:30

Location: Raw Water and Treated Water

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Organic Carbon, Dissolved	2.3	0.5	mg/L	03-May-18	SM5310:B	
Organic Carbon, Total	2.5	0.5	mg/L	03-May-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	57.6	0.4	mg/L	30-Apr-18	SM2320:B	
Colour, Apparent	6	5	CU	30-Apr-18	SM2120:B	
Conductivity, Specific (@25C)	181	0.4	µS/cm	30-Apr-18	SM2510:B	
pH	7.25		pH units	30-Apr-18	SM4500-H:B	
Solids, Total Dissolved	86	10	mg/L	30-Apr-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	30-Apr-18	SM2540:D	
Turbidity	0.25	0.05	NTU	30-Apr-18	SM2130:B	
<u>Major Ions</u>						
Calcium	13.4	0.1	mg/L	01-May-18	SM4110:B	
Chloride	17.7	0.7	mg/L	01-May-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	01-May-18	SM4110:B	
Hardness	65.1	0.7	mg/L	01-May-18	SM4110:B	
Magnesium	7.7	0.1	mg/L	01-May-18	SM4110:B	

ReportDate: Friday, May 25, 2018

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

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truck Water**

Taiga Sample ID: **003**

Nitrate as Nitrogen	0.12	0.01	mg/L	01-May-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-May-18	SM4110:B
Potassium	0.9	0.1	mg/L	01-May-18	SM4110:B
Sodium	8.7	0.1	mg/L	01-May-18	SM4110:B
Sulphate	6	1	mg/L	01-May-18	SM4110:B

Microbiology

Coliforms, Total	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	30-Apr-18	SM9223:B

Organics

Bromodichloromethane	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Bromoform	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Chloroform	0.010	0.005	mg/L	09-May-18	EPA8260B
Dibromochloromethane	< 0.005	0.005	mg/L	09-May-18	EPA8260B
Trihalomethanes, Total	0.017	0.005	mg/L	09-May-18	EPA8260B

Subcontracted Inorganics

Sulphide	< 0.0180	0.018	mg/L	04-May-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Weak Acid Dissociable	0.0014	0.001	mg/L	08-May-18	APHA4500-CN
Phenols, Total	< 0.0010	0.001	mg/L	09-May-18	AB ENV.06537

Trace Metals, Total

Aluminum	9.8	0.6	µg/L	09-May-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	09-May-18	EPA200.8
Boron	7.2	0.9	µg/L	09-May-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	09-May-18	EPA200.8
Cesium	< 0.1	0.1	µg/L	09-May-18	EPA200.8

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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.:
180222

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truck Water**

Taiga Sample ID: **003**

Chromium	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Copper	4.6	0.2	µg/L	09-May-18	EPA200.8
Iron	52	5	ug/L	09-May-18	EPA200.8
Manganese	21.1	0.1	µg/L	09-May-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	09-May-18	EPA200.8
Nickel	0.3	0.1	µg/L	09-May-18	EPA200.8
Selenium	0.7	0.3	µg/L	09-May-18	EPA200.8
Silver	< 0.1	0.1	µg/L	09-May-18	EPA200.8
Zinc	10.9	0.4	µg/L	09-May-18	EPA200.8



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Taiga Batch No.:

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truck Water**

Taiga Sample ID: **003**

*** 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: Friday, May 25, 2018

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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.:
180948

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: John Ivey

Facsimile: 867-769-6069

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

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- Routine methods are based on recognized procedures from sources such as
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - o Environment Canada
 - o 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: Thursday, October 04, 2018

Print Date: *Friday, October 05, 2018*

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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.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Client Project: Kugaaruk Water System

Sample Type: Raw Water

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 11:00

Location: River intake, WTP and Truck hose

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Organic Carbon, Total	2.6	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	44.7	0.4	mg/L	14-Sep-18	SM2320:B	
Colour, Apparent	12	5	CU	14-Sep-18	SM2120:B	
Conductivity, Specific (@25C)	171	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.91		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Dissolved	72	10	mg/L	18-Sep-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	18-Sep-18	SM2540:D	
Turbidity	0.92	0.05	NTU	14-Sep-18	SM2130:B	
<u>Major Ions</u>						
Calcium	10.1	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	19.9	0.7	mg/L	16-Sep-18	SM4110:B	
Hardness	78.6	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	13.0	0.1	mg/L	16-Sep-18	SM4110:B	

ReportDate: Thursday, October 04, 2018

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

Taiga Batch No.:
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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Nitrate as Nitrogen	0.19	0.01	mg/L	16-Sep-18	SM4110:B
Potassium	1.1	0.1	mg/L	16-Sep-18	SM4110:B
Sodium	9.4	0.1	mg/L	16-Sep-18	SM4110:B
Sulphate	6	1	mg/L	16-Sep-18	SM4110:B

Microbiology

Coliforms, Total	28.8	1.0	MPN/100ml	14-Sep-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	14-Sep-18	SM9223:B

Subcontracted Inorganics

Sulphide	< 0.0015	0.0015	mg/L	24-Sep-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	26-Sep-18	APHA4500-CN
Phenols, Total	0.0011	0.001	mg/L	21-Sep-18	AB ENV.06537

Trace Metals, Total

Aluminum	56.9	0.6	µg/L	03-Oct-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	03-Oct-18	EPA200.8
Barium	2.9	0.1	µg/L	03-Oct-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	03-Oct-18	EPA200.8
Cesium	< 0.1	0.1	µg/L	03-Oct-18	EPA200.8
Chromium	0.1	0.1	µg/L	03-Oct-18	EPA200.8
Copper	0.7	0.2	µg/L	03-Oct-18	EPA200.8
Iron	83	5	ug/L	03-Oct-18	EPA200.8
Lead	< 0.1	0.1	µg/L	03-Oct-18	EPA200.8
Manganese	2.2	0.1	µg/L	03-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	03-Oct-18	EPA200.8
Nickel	0.2	0.1	µg/L	03-Oct-18	EPA200.8

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Taiga Batch No.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-1**

Taiga Sample ID: **001**

Zinc	0.4	0.4	µg/L	03-Oct-18	EPA200.8
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP**

Taiga Sample ID: **002**

Client Project: Kugaaruk Water System

Sample Type: Treated Water

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 11:00

Location: River intake, WTP and Truck hose

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Inorganics - Nutrients</u>						
Organic Carbon, Total	2.0	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	44.4	0.4	mg/L	14-Sep-18	SM2320:B	
Colour, Apparent	8	5	CU	14-Sep-18	SM2120:B	
Conductivity, Specific (@25C)	149	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.71		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Dissolved	66	10	mg/L	18-Sep-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	18-Sep-18	SM2540:D	
Turbidity	0.42	0.05	NTU	14-Sep-18	SM2130:B	
<u>Major Ions</u>						
Calcium	10.5	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	15.2	0.7	mg/L	16-Sep-18	SM4110:B	
Hardness	69.5	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	10.5	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.25	0.01	mg/L	16-Sep-18	SM4110:B	
Potassium	1.0	0.1	mg/L	16-Sep-18	SM4110:B	

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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.:

180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP**

Taiga Sample ID: **002**

Sodium	7.2	0.1	mg/L	16-Sep-18	SM4110:B
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Sulphate	4	1	mg/L	16-Sep-18	SM4110:B
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Microbiology

Coliforms, Total	< 1.0	1.0	MPN/100ml	14-Sep-18	SM9223:B
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Escherichia coli	< 1.0	1.0	MPN/100ml	14-Sep-18	SM9223:B
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Organics

Bromodichloromethane	0.005	0.005	mg/L	20-Sep-18	EPA8260B
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Bromoform	< 0.005	0.005	mg/L	20-Sep-18	EPA8260B
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Chloroform	0.009	0.005	mg/L	20-Sep-18	EPA8260B
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Dibromochloromethane	< 0.005	0.005	mg/L	20-Sep-18	EPA8260B
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Trihalomethanes, Total	0.017	0.005	mg/L	20-Sep-18	EPA8260B
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Subcontracted Inorganics

Sulphide	< 0.0015	0.0015	mg/L	24-Sep-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	26-Sep-18	APHA4500-CN
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Phenols, Total	< 0.0010	0.001	mg/L	21-Sep-18	AB ENV.06537
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Trace Metals, Total

Aluminum	22.2	0.6	µg/L	03-Oct-18	EPA200.8
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Arsenic	< 0.2	0.2	µg/L	03-Oct-18	EPA200.8
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Barium	2.8	0.1	µg/L	03-Oct-18	EPA200.8
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Cadmium	< 0.04	0.04	µg/L	03-Oct-18	EPA200.8
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Cesium	< 0.1	0.1	µg/L	03-Oct-18	EPA200.8
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Chromium	< 0.1	0.1	µg/L	03-Oct-18	EPA200.8
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Copper	8.5	0.2	µg/L	03-Oct-18	EPA200.8
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Iron	31	5	ug/L	03-Oct-18	EPA200.8
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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.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: WTP

Taiga Sample ID: 002

Lead	1.1	0.1	µg/L	03-Oct-18	EPA200.8
Manganese	2.3	0.1	µg/L	03-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	03-Oct-18	EPA200.8
Nickel	1.0	0.1	µg/L	03-Oct-18	EPA200.8
Zinc	62.9	0.4	µg/L	03-Oct-18	EPA200.8

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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.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truckfill**

Taiga Sample ID: **003**

Client Project: Kugaaruk Water System

Sample Type: Treated Water

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 11:00

Location: River intake, WTP and Truck hose

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Organic Carbon, Total	2.3	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	45.5	0.4	mg/L	14-Sep-18	SM2320:B	
Colour, Apparent	10	5	CU	14-Sep-18	SM2120:B	
Conductivity, Specific (@25C)	176	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.89		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Dissolved	76	10	mg/L	18-Sep-18	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	18-Sep-18	SM2540:D	
Turbidity	0.78	0.05	NTU	14-Sep-18	SM2130:B	
<u>Major Ions</u>						
Calcium	12.0	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	21.5	0.7	mg/L	16-Sep-18	SM4110:B	
Hardness	82.8	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	12.9	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.08	0.01	mg/L	16-Sep-18	SM4110:B	
Potassium	1.3	0.1	mg/L	16-Sep-18	SM4110:B	

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Taiga Environmental Laboratory

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

Taiga Batch No.:

180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truckfill**

Taiga Sample ID: **003**

Sodium	8.3	0.1	mg/L	16-Sep-18	SM4110:B
Sulphate	5	1	mg/L	16-Sep-18	SM4110:B

Microbiology

Coliforms, Total	< 1.0	1.0	MPN/100ml	14-Sep-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	14-Sep-18	SM9223:B

Organics

Bromodichloromethane		0.005	mg/L		EPA8260B	111
Bromoform		0.005	mg/L		EPA8260B	111
Chloroform		0.005	mg/L		EPA8260B	111
Dibromochloromethane		0.005	mg/L		EPA8260B	111
Trihalomethanes, Total		0.005	mg/L		EPA8260B	111

Subcontracted Inorganics

Sulphide	< 0.0015	0.0015	mg/L	24-Sep-18	APHA4500-S2
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Subcontracted Organics

Cyanide, Total	< 0.0050	0.005	mg/L	26-Sep-18	APHA4500-CN
Phenols, Total	0.0012	0.001	mg/L	21-Sep-18	AB ENV.06537

Trace Metals, Total

Aluminum	38.2	0.6	µg/L	03-Oct-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	03-Oct-18	EPA200.8
Barium	3.5	0.1	µg/L	03-Oct-18	EPA200.8
Cadmium	< 0.04	0.04	µg/L	03-Oct-18	EPA200.8
Cesium	< 0.1	0.1	µg/L	03-Oct-18	EPA200.8
Chromium	0.1	0.1	µg/L	03-Oct-18	EPA200.8
Copper	3.8	0.2	µg/L	03-Oct-18	EPA200.8
Iron	74	5	ug/L	03-Oct-18	EPA200.8

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

Taiga Batch No.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truckfill**

Taiga Sample ID: **003**

Lead	0.1	0.1	µg/L	03-Oct-18	EPA200.8
Manganese	1.0	0.1	µg/L	03-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	03-Oct-18	EPA200.8
Nickel	0.2	0.1	µg/L	03-Oct-18	EPA200.8
Zinc	47.5	0.4	µg/L	03-Oct-18	EPA200.8

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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.:
180948

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **Truckfill**

Taiga Sample ID: **003**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

111 *Vial contained air bubble, analysis not possible*

*** 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: Thursday, October 04, 2018

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Appendix B:

Sewage and Effluent Results 2018

Hamlet of Kugaaruk, NU



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

Taiga Batch No.:
180540

- PRELIMINARY REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: John Ivey

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
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - o Environment Canada
 - o 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, July 19, 2018*

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Lagoon Decant

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	204	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	210	2	mg/L	12-Jul-18	SM5210:B	
Chemical Oxygen Demand		5	mg/L		SM5220:D	
Organic Carbon, Total		0.5	mg/L		SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	302	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	967	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.42		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	24	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	20.0	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	60.5	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	122	0.7	mg/L	13-Jul-18	SM4110:B	

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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.:

180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Magnesium	17.4	0.1	mg/L	13-Jul-18	SM4110:B
Nitrate as Nitrogen	0.37	0.01	mg/L	13-Jul-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	66.0	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	48.0	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	9	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	106000	1000	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Benzene	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B
Ethylbenzene	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B
Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam
Toluene	0.086	0.002	mg/L	17-Jul-18	EPA8260B
Xylenes	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B

Subcontracted Organics

Phenols, Total		0.001	mg/L		AB ENV.06537
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Trace Metals, Total

Aluminum		5	µg/L		EPA200.8
Arsenic		0.2	µg/L		EPA200.8
Cadmium		0.04	µg/L		EPA200.8
Chromium		0.1	µg/L		EPA200.8
Cobalt		0.1	µg/L		EPA200.8
Copper		0.2	µg/L		EPA200.8
Iron		5	µg/L		EPA200.8
Lead		0.1	µg/L		EPA200.8

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

Taiga Batch No.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Manganese	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	5	µg/L	EPA200.8

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

Taiga Batch No.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **002**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Outercell-Wetland

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	42.3	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	42	2	mg/L	12-Jul-18	SM5210:B	
Organic Carbon, Total		0.5	mg/L		SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	277	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	772	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.52		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	18	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	37.4	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	47.1	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	1.8	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	153	0.7	mg/L	13-Jul-18	SM4110:B	
Magnesium	14.6	0.1	mg/L	13-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.37	0.01	mg/L	13-Jul-18	SM4110:B	

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **002**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	42.2	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	38.5	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	10	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	5000	1000	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam
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Subcontracted Organics

Phenols, Total	0.001	mg/L		AB ENV.06537
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Trace Metals, Total

Aluminum	5	µg/L	EPA200.8
Arsenic	0.2	µg/L	EPA200.8
Cadmium	0.04	µg/L	EPA200.8
Chromium	0.1	µg/L	EPA200.8
Cobalt	0.1	µg/L	EPA200.8
Copper	0.2	µg/L	EPA200.8
Iron	5	µg/L	EPA200.8
Lead	0.1	µg/L	EPA200.8
Manganese	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	5	µg/L	EPA200.8

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Taiga Environmental Laboratory

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

Taiga Batch No.:

180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **003**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Final Discharge Point

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	22.0	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	8	2	mg/L	12-Jul-18	SM5210:B	
Chemical Oxygen Demand		5	mg/L		SM5220:D	
Organic Carbon, Total		0.5	mg/L		SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	179	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	596	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.52		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	< 3	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	25.8	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	45.9	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	119	0.7	mg/L	13-Jul-18	SM4110:B	
Magnesium	13.2	0.1	mg/L	13-Jul-18	SM4110:B	

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

Taiga Batch No.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **003**

Nitrate as Nitrogen	3.75	0.01	mg/L	13-Jul-18	SM4110:B
Nitrite as Nitrogen	0.13	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	31.5	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	41.0	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	13	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	5	1	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam
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Subcontracted Organics

Phenols, Total	0.001	mg/L		AB ENV.06537
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Trace Metals, Total

Aluminum	5	µg/L	EPA200.8
Arsenic	0.2	µg/L	EPA200.8
Cadmium	0.04	µg/L	EPA200.8
Chromium	0.1	µg/L	EPA200.8
Cobalt	0.1	µg/L	EPA200.8
Copper	0.2	µg/L	EPA200.8
Iron	5	µg/L	EPA200.8
Lead	0.1	µg/L	EPA200.8
Manganese	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	5	µg/L	EPA200.8

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Print Date: **Thursday, July 19, 2018**



Taiga Environmental Laboratory

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

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

Taiga Batch No.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Solid Waste Runoff

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	1.67	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	19	2	mg/L	12-Jul-18	SM5210:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	196	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	821	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.45		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	16	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	99.0	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	25.8	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	1.5	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	299	0.7	mg/L	13-Jul-18	SM4110:B	
Magnesium	12.6	0.1	mg/L	13-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.38	0.01	mg/L	13-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.38	0.01	mg/L	13-Jul-18	SM4110:B	

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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.:

180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	10.7	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	35.4	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	185	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	260	1	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Benzene		0.002	mg/L		EPA8260B	111
Ethylbenzene		0.002	mg/L		EPA8260B	111
F2: C10-C16		0.2	mg/L		EPA8015B	
F3: C16-C34		0.2	mg/L		EPA8015B	
F4: C34-C50		0.2	mg/L		EPA8015B	
Hydrocarbons, Total Extractable		0.2	mg/L		EPA8015B	
Hydrocarbons, Total Purgeable		0.3	mg/L		EPA8015	111
Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam	
Toluene		0.002	mg/L		EPA8260B	111
Xylenes		0.002	mg/L		EPA8260B	111

Subcontracted Organics

Phenols, Total		0.001	mg/L		AB ENV.06537	
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Trace Metals, Total

Aluminum		5	µg/L		EPA200.8	
Arsenic		0.2	µg/L		EPA200.8	
Cadmium		0.04	µg/L		EPA200.8	
Chromium		0.1	µg/L		EPA200.8	
Cobalt		0.1	µg/L		EPA200.8	

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: PEL-6

Taiga Sample ID: 004

Copper	0.2	µg/L	EPA200.8
Iron	5	µg/L	EPA200.8
Lead	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	5	µg/L	EPA200.8

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Metal WasteUp Cell

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	< 2	2	mg/L	12-Jul-18	SM5210:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	23.6	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	97.2	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.59		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	4	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	7.1	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	6.8	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	28.4	0.7	mg/L	13-Jul-18	SM4110:B	
Magnesium	2.6	0.1	mg/L	13-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.12	0.01	mg/L	13-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.12	0.01	mg/L	13-Jul-18	SM4110:B	

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	1.0	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	6.7	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	10	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Benzene		0.002	mg/L		EPA8260B	16
Ethylbenzene		0.002	mg/L		EPA8260B	16
F2: C10-C16		0.2	mg/L		EPA8015B	
F3: C16-C34		0.2	mg/L		EPA8015B	
F4: C34-C50		0.2	mg/L		EPA8015B	
Hydrocarbons, Total Extractable		0.2	mg/L		EPA8015B	
Hydrocarbons, Total Purgeable		0.3	mg/L		EPA8015	16
Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam	
Toluene		0.002	mg/L		EPA8260B	16
Xylenes		0.002	mg/L		EPA8260B	16

Subcontracted Organics

Phenols, Total		0.001	mg/L		AB ENV.06537	
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Trace Metals, Total

Aluminum		5	µg/L		EPA200.8	
Arsenic		0.2	µg/L		EPA200.8	
Cadmium		0.04	µg/L		EPA200.8	
Chromium		0.1	µg/L		EPA200.8	
Cobalt		0.1	µg/L		EPA200.8	

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Copper	0.2	µg/L	EPA200.8
Iron	5	µg/L	EPA200.8
Lead	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	5	µg/L	EPA200.8

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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.:

180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-8**

Taiga Sample ID: **006**

Client Project: Kugaaruk Sewage + Solid Waste Facilities

Sample Type: Metal Waste DN-WellGradient

Received Date: 12-Jul-18

Sampling Date: 11-Jul-18

Sampling Time: 11:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	16-Jul-18	SM4500-NH3:G	
Biochemical Oxygen Demand	< 2	2	mg/L	12-Jul-18	SM5210:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	24.6	0.4	mg/L	12-Jul-18	SM2320:B	
Conductivity, Specific (@25C)	99.3	0.4	µS/cm	12-Jul-18	SM2510:B	
pH	7.43		pH units	12-Jul-18	SM4500-H:B	
Solids, Total Suspended	< 3	3	mg/L	16-Jul-18	SM2540:D	
<u>Major Ions</u>						
Calcium	7.5	0.1	mg/L	13-Jul-18	SM4110:B	
Chloride	6.9	0.7	mg/L	13-Jul-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	13-Jul-18	SM4110:B	
Hardness	29.7	0.7	mg/L	13-Jul-18	SM4110:B	
Magnesium	2.7	0.1	mg/L	13-Jul-18	SM4110:B	
Nitrate as Nitrogen	0.11	0.01	mg/L	13-Jul-18	SM4110:B	
Nitrate+Nitrite as Nitrogen	0.11	0.01	mg/L	13-Jul-18	SM4110:B	

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-8**

Taiga Sample ID: **006**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	13-Jul-18	SM4110:B
Potassium	1.1	0.1	mg/L	13-Jul-18	SM4110:B
Sodium	6.8	0.1	mg/L	13-Jul-18	SM4110:B
Sulphate	10	1	mg/L	13-Jul-18	SM4110:B

Microbiology

Coliforms, Fecal	< 1	1	CFU/100mL	12-Jul-18	SM9222:D
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Organics

Benzene	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B
Ethylbenzene	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B
F2: C10-C16		0.2	mg/L		EPA8015B
F3: C16-C34		0.2	mg/L		EPA8015B
F4: C34-C50		0.2	mg/L		EPA8015B
Hydrocarbons, Total Extractable		0.2	mg/L		EPA8015B
Hydrocarbons, Total Purgeable	< 0.3	0.3	mg/L	17-Jul-18	EPA8015
Oil and Grease, visible	Non-visible			12-Jul-18	Visual Exam
Toluene	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B
Xylenes	< 0.002	0.002	mg/L	17-Jul-18	EPA8260B

Subcontracted Organics

Phenols, Total		0.001	mg/L		AB ENV.06537
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16

Trace Metals, Total

Aluminum		0.6	µg/L		EPA200.8
Arsenic		0.2	µg/L		EPA200.8
Cadmium		0.04	µg/L		EPA200.8
Chromium		0.1	µg/L		EPA200.8
Cobalt		0.1	µg/L		EPA200.8

ReportDate:

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Print Date: **Thursday, July 19, 2018**



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

Taiga Batch No.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-8**

Taiga Sample ID: **006**

Copper	0.2	µg/L	EPA200.8
Iron	5	ug/L	EPA200.8
Lead	0.1	µg/L	EPA200.8
Mercury	0.01	µg/L	EPA200.8
Nickel	0.1	µg/L	EPA200.8
Zinc	0.4	µg/L	EPA200.8

ReportDate:
Print Date: *Thursday, July 19, 2018*

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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.:
180540

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-8**

Taiga Sample ID: **006**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

111 *Vial contained air bubble, 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

ReportDate:

Print Date: *Thursday, July 19, 2018*

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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.:
180671

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: John Ivey

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
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - o Environment Canada
 - o 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: Friday, August 17, 2018

Print Date: *Monday, August 20, 2018*

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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **001**

Client Project: Kugaaruk Sewage and Solid Waste

Sample Type: Decanted Sewage

Received Date: 03-Aug-18

Sampling Date: 02-Aug-18

Sampling Time:

Location: Wetland, Solid Waste Runoff

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	19	2	mg/L	03-Aug-18	SM5210:B	
Organic Carbon, Total	134	0.5	mg/L	14-Aug-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	388	0.4	mg/L	03-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	1160	0.4	µS/cm	03-Aug-18	SM2510:B	
pH	7.59		pH units	03-Aug-18	SM4500-H:B	
Solids, Total Suspended	20	3	mg/L	07-Aug-18	SM2540:D	
<u>Major Ions</u>						
Calcium	34.1	0.1	mg/L	04-Aug-18	SM4110:B	
Chloride	72.3	0.7	mg/L	04-Aug-18	SM4110:B	
Hardness	180	0.7	mg/L	04-Aug-18	SM4110:B	
Magnesium	23.1	0.1	mg/L	04-Aug-18	SM4110:B	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	04-Aug-18	SM4110:B	
Potassium	63.0	0.1	mg/L	04-Aug-18	SM4110:B	

ReportDate: Friday, August 17, 2018

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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **001**

Sodium	60.1	0.1	mg/L	04-Aug-18	SM4110:B
Sulphate	6	1	mg/L	04-Aug-18	SM4110:B

Microbiology

Coliforms, Total	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B
Escherichia coli	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B

Subcontracted Organics

Phenols, Total	0.5430	0.010	mg/L	09-Aug-18	AB ENV.06537	224
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Trace Metals, Total

Aluminum	106	5	µg/L	16-Aug-18	EPA200.8
Arsenic	1.3	0.2	µg/L	16-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	16-Aug-18	EPA200.8
Chromium	0.7	0.1	µg/L	16-Aug-18	EPA200.8
Copper	60.8	0.2	µg/L	16-Aug-18	EPA200.8
Iron	802	5	µg/L	16-Aug-18	EPA200.8
Lead	1.1	0.1	µg/L	16-Aug-18	EPA200.8
Manganese	313	0.1	µg/L	16-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	16-Aug-18	EPA200.8
Nickel	2.9	0.1	µg/L	16-Aug-18	EPA200.8
Zinc	45.5	5	µg/L	16-Aug-18	EPA200.8

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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **002**

Client Project: Kugaaruk Sewage and Solid Waste

Sample Type: Final Discharge

Received Date: 03-Aug-18

Sampling Date: 02-Aug-18

Sampling Time:

Location: Wetland, Solid Waste Runoff

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	19	2	mg/L	03-Aug-18	SM5210:B	
Organic Carbon, Total	53.7	0.5	mg/L	14-Aug-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	362	0.4	mg/L	03-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	1040	0.4	µS/cm	03-Aug-18	SM2510:B	
pH	7.71		pH units	03-Aug-18	SM4500-H:B	
Solids, Total Suspended	18	3	mg/L	07-Aug-18	SM2540:D	
<u>Major Ions</u>						
Calcium	37.1	0.1	mg/L	04-Aug-18	SM4110:B	
Chloride	69.7	0.7	mg/L	04-Aug-18	SM4110:B	
Hardness	184	0.7	mg/L	04-Aug-18	SM4110:B	
Magnesium	22.1	0.1	mg/L	04-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.62	0.01	mg/L	04-Aug-18	SM4110:B	
Potassium	51.0	0.1	mg/L	04-Aug-18	SM4110:B	
Sodium	64.3	0.1	mg/L	04-Aug-18	SM4110:B	
Sulphate	3	1	mg/L	04-Aug-18	SM4110:B	

ReportDate: Friday, August 17, 2018

Print Date: **Monday, August 20, 2018**



Taiga Environmental Laboratory

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

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

Taiga Batch No.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **002**

Microbiology

Coliforms, Total	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B
Escherichia coli	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B

Organics

Benzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B
Ethylbenzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B
F2: C10-C16	< 0.2	0.2	mg/L	14-Aug-18	EPA8015B
F3: C16-C34	1.1	0.2	mg/L	14-Aug-18	EPA8015B
F4: C34-C50	0.3	0.2	mg/L	14-Aug-18	EPA8015B
Hydrocarbons, Total Extractable	1.5	0.2	mg/L	14-Aug-18	EPA8015B
Toluene	0.008	0.002	mg/L	08-Aug-18	EPA8260B
Xylenes	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B

Subcontracted Organics

Phenols, Total	0.2710	0.010	mg/L	09-Aug-18	AB ENV.06537	224
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Trace Metals, Total

Aluminum	5	µg/L	EPA200.8	103
Arsenic	0.2	µg/L	EPA200.8	103
Cadmium	0.04	µg/L	EPA200.8	103
Chromium	0.1	µg/L	EPA200.8	103
Copper	0.2	µg/L	EPA200.8	103
Iron	5	µg/L	EPA200.8	103
Lead	0.1	µg/L	EPA200.8	103
Manganese	0.1	µg/L	EPA200.8	103
Mercury	0.01	µg/L	EPA200.8	103
Nickel	0.1	µg/L	EPA200.8	103

ReportDate: Friday, August 17, 2018

Print Date: **Monday, August 20, 2018**

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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **002**

Zinc	5	µg/L	EPA200.8	103
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ReportDate: Friday, August 17, 2018
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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.:

180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LSW**

Taiga Sample ID: **003**

Client Project: Kugaaruk Sewage and Solid Waste

Sample Type: Leaked Sewage

Received Date: 03-Aug-18

Sampling Date: 02-Aug-18

Sampling Time: 10:30

Location: Wetland, Solid Waste Runoff

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	20	2	mg/L	03-Aug-18	SM5210:B	
Organic Carbon, Total	122	0.5	mg/L	14-Aug-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	421	0.4	mg/L	03-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	1230	0.4	µS/cm	03-Aug-18	SM2510:B	
pH	7.62		pH units	03-Aug-18	SM4500-H:B	
Solids, Total Suspended	32	3	mg/L	07-Aug-18	SM2540:D	
<u>Major Ions</u>						
Calcium	37.5	0.1	mg/L	04-Aug-18	SM4110:B	
Chloride	77.8	0.7	mg/L	04-Aug-18	SM4110:B	
Hardness	192	0.7	mg/L	04-Aug-18	SM4110:B	
Magnesium	23.9	0.1	mg/L	04-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.47	0.01	mg/L	04-Aug-18	SM4110:B	
Potassium	62.5	0.1	mg/L	04-Aug-18	SM4110:B	
Sodium	72.3	0.1	mg/L	04-Aug-18	SM4110:B	
Sulphate	3	1	mg/L	04-Aug-18	SM4110:B	

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

Taiga Batch No.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **LSW**

Taiga Sample ID: **003**

Microbiology

Coliforms, Total	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B
Escherichia coli	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B

Subcontracted Organics

Phenols, Total	0.5880	0.010	mg/L	09-Aug-18	AB ENV.06537	224
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Trace Metals, Total

Aluminum	83.0	5	µg/L	16-Aug-18	EPA200.8
Arsenic	2.9	0.2	µg/L	16-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	16-Aug-18	EPA200.8
Chromium	0.6	0.1	µg/L	16-Aug-18	EPA200.8
Copper	25.7	0.2	µg/L	16-Aug-18	EPA200.8
Iron	1760	5	µg/L	16-Aug-18	EPA200.8
Lead	2.4	0.1	µg/L	16-Aug-18	EPA200.8
Manganese	607	0.1	µg/L	16-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	16-Aug-18	EPA200.8
Nickel	4.2	0.1	µg/L	16-Aug-18	EPA200.8
Zinc	23.9	5	µg/L	16-Aug-18	EPA200.8

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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.:

180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Client Project: Kugaaruk Sewage and Solid Waste

Sample Type: Solid Waste Run

Received Date: 03-Aug-18

Sampling Date: 02-Aug-18

Sampling Time: 11:45

Location: Wetland, Solid Waste Runoff

Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	5	2	mg/L	03-Aug-18	SM5210:B	
Organic Carbon, Total	14.9	0.5	mg/L	14-Aug-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	250	0.4	mg/L	03-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	671	0.4	µS/cm	03-Aug-18	SM2510:B	
pH	7.98		pH units	03-Aug-18	SM4500-H:B	
Solids, Total Suspended	4	3	mg/L	07-Aug-18	SM2540:D	
<u>Major Ions</u>						
Calcium	78.5	0.1	mg/L	04-Aug-18	SM4110:B	
Chloride	25.1	0.7	mg/L	04-Aug-18	SM4110:B	
Hardness	252	0.7	mg/L	04-Aug-18	SM4110:B	
Magnesium	13.7	0.1	mg/L	04-Aug-18	SM4110:B	
Nitrate as Nitrogen	< 0.01	0.01	mg/L	04-Aug-18	SM4110:B	
Potassium	9.6	0.1	mg/L	04-Aug-18	SM4110:B	
Sodium	34.6	0.1	mg/L	04-Aug-18	SM4110:B	
Sulphate	60	1	mg/L	04-Aug-18	SM4110:B	

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Taiga Environmental Laboratory

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

Taiga Batch No.:

180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Microbiology

Coliforms, Total	>2419.6	1.0	MPN/100ml	03-Aug-18	SM9223:B
Escherichia coli	12.2	1.0	MPN/100ml	03-Aug-18	SM9223:B

Organics

Benzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B	
Ethylbenzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B	
F2: C10-C16		0.2	mg/L		EPA8015B	103
F3: C16-C34		0.2	mg/L		EPA8015B	103
F4: C34-C50		0.2	mg/L		EPA8015B	103
Hydrocarbons, Total Extractable		0.2	mg/L		EPA8015B	103
Toluene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B	
Xylenes	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B	

Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	09-Aug-18	AB ENV.06537
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Trace Metals, Total

Aluminum	26.2	5	µg/L	16-Aug-18	EPA200.8
Arsenic	0.7	0.2	µg/L	16-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	16-Aug-18	EPA200.8
Chromium	0.4	0.1	µg/L	16-Aug-18	EPA200.8
Copper	4.8	0.2	µg/L	16-Aug-18	EPA200.8
Iron	3930	5	µg/L	16-Aug-18	EPA200.8
Lead	0.9	0.1	µg/L	16-Aug-18	EPA200.8
Manganese	717	0.1	µg/L	16-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	16-Aug-18	EPA200.8
Nickel	2.4	0.1	µg/L	16-Aug-18	EPA200.8

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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Zinc	122	5	µg/L	16-Aug-18	EPA200.8
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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Client Project: Kugaaruk Sewage and Solid Waste

Sample Type: Metal Dup

Received Date: 03-Aug-18

Sampling Date: 02-Aug-18

Sampling Time: 11:30

Location: Wetland, Solid Waste Runoff

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	< 2	2	mg/L	03-Aug-18	SM5210:B	
Organic Carbon, Total	2.5	0.5	mg/L	14-Aug-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	34.8	0.4	mg/L	03-Aug-18	SM2320:B	
Conductivity, Specific (@25C)	153	0.4	µS/cm	03-Aug-18	SM2510:B	
pH	7.53		pH units	03-Aug-18	SM4500-H:B	
Solids, Total Suspended	16	3	mg/L	07-Aug-18	SM2540:D	
<u>Major Ions</u>						
Calcium	10.1	0.1	mg/L	04-Aug-18	SM4110:B	
Chloride	14.0	0.7	mg/L	04-Aug-18	SM4110:B	
Hardness	42.8	0.7	mg/L	04-Aug-18	SM4110:B	
Magnesium	4.2	0.1	mg/L	04-Aug-18	SM4110:B	
Nitrate as Nitrogen	0.23	0.01	mg/L	04-Aug-18	SM4110:B	
Potassium	1.3	0.1	mg/L	04-Aug-18	SM4110:B	
Sodium	10.5	0.1	mg/L	04-Aug-18	SM4110:B	
Sulphate	13	1	mg/L	04-Aug-18	SM4110:B	

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Taiga Environmental Laboratory

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Taiga Batch No.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Microbiology

Coliforms, Total	21.6	1.0	MPN/100ml	03-Aug-18	SM9223:B
Escherichia coli	< 1.0	1.0	MPN/100ml	03-Aug-18	SM9223:B

Organics

Benzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B
Ethylbenzene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B
F2: C10-C16	< 0.2	0.2	mg/L	14-Aug-18	EPA8015B
F3: C16-C34	< 0.2	0.2	mg/L	14-Aug-18	EPA8015B
F4: C34-C50	< 0.2	0.2	mg/L	14-Aug-18	EPA8015B
Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	14-Aug-18	EPA8015B
Toluene	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B
Xylenes	< 0.002	0.002	mg/L	08-Aug-18	EPA8260B

Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	09-Aug-18	AB ENV.06537
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Trace Metals, Total

Aluminum	196	5	µg/L	16-Aug-18	EPA200.8
Arsenic	< 0.2	0.2	µg/L	16-Aug-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	16-Aug-18	EPA200.8
Chromium	0.4	0.1	µg/L	16-Aug-18	EPA200.8
Copper	1.6	0.2	µg/L	16-Aug-18	EPA200.8
Iron	270	5	µg/L	16-Aug-18	EPA200.8
Lead	0.6	0.1	µg/L	16-Aug-18	EPA200.8
Manganese	6.6	0.1	µg/L	16-Aug-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	16-Aug-18	EPA200.8
Nickel	0.4	0.1	µg/L	16-Aug-18	EPA200.8

ReportDate: Friday, August 17, 2018

Print Date: **Monday, August 20, 2018**



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

Taiga Batch No.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

Zinc	11.4	5	µg/L	16-Aug-18	EPA200.8
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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.:
180671

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-7**

Taiga Sample ID: **005**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

103 *Bottle received empty, analysis not possible*
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

ReportDate: Friday, August 17, 2018

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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.:
180947

- FINAL REPORT -

Prepared For: Hamlet of Kugaaruk

Address: Box 205
Kugaaruk, NU, X0B 1K0

Attn: John Ivey

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
 - o Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - o Environment Canada
 - o 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: Wednesday, October 10, 2018

Print Date: *Wednesday, October 10, 2018*

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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.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Client Project: Kugaaruk Sewage + Solid Waste

Sample Type: Lagoon Decant

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 9:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	82.0	0.005	mg/L	15-Sep-18	SM4500-NH3:G	
Biochemical Oxygen Demand	236	2	mg/L	14-Sep-18	SM5210:B	
Organic Carbon, Total	147	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	397	0.4	mg/L	14-Sep-18	SM2320:B	
Conductivity, Specific (@25C)	1190	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.66		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Suspended	22	3	mg/L	18-Sep-18	SM2540:D	
<u>Major Ions</u>						
Calcium	12.3	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	73.9	0.7	mg/L	16-Sep-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	16-Sep-18	SM4110:B	
Hardness	45.6	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	3.6	0.1	mg/L	16-Sep-18	SM4110:B	

ReportDate: Wednesday, October 10, 2018

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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.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Nitrate as Nitrogen	0.27	0.01	mg/L	16-Sep-18	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	16-Sep-18	SM4110:B
Potassium	14.7	0.1	mg/L	16-Sep-18	SM4110:B
Sodium	38.9	0.1	mg/L	16-Sep-18	SM4110:B
Sulphate	5	1	mg/L	16-Sep-18	SM4110:B

Microbiology

Coliforms, Fecal	410000	10000	CFU/100mL	14-Sep-18	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			14-Sep-18	Visual Exam
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Subcontracted Inorganics

Chemical Oxygen Demand	378	20	mg/L	24-Sep-18	APHA5220:D
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Subcontracted Organics

Phenols, Total	0.5790	0.020	mg/L	21-Sep-18	AB ENV.06537	207
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Trace Metals, Total

Aluminum	110	5	µg/L	04-Oct-18	EPA200.8
Arsenic	1.0	0.2	µg/L	04-Oct-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
Chromium	0.7	0.1	µg/L	04-Oct-18	EPA200.8
Cobalt	0.7	0.1	µg/L	04-Oct-18	EPA200.8
Copper	68.3	0.2	µg/L	04-Oct-18	EPA200.8
Iron	865	5	µg/L	04-Oct-18	EPA200.8
Lead	1.0	0.1	µg/L	04-Oct-18	EPA200.8
Manganese	185	0.1	µg/L	04-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	04-Oct-18	EPA200.8
Nickel	2.5	0.1	µg/L	04-Oct-18	EPA200.8

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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.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-1**

Taiga Sample ID: **001**

Zinc	52.4	5	µg/L	04-Oct-18	EPA200.8
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ReportDate: Wednesday, October 10, 2018
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Taiga Environmental Laboratory

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

Taiga Batch No.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **002**

Client Project: Kugaaruk Sewage + Solid Waste

Sample Type: Outercell-Wetland

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 9:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	74.0	0.005	mg/L	15-Sep-18	SM4500-NH3:G	
Biochemical Oxygen Demand	175	2	mg/L	14-Sep-18	SM5210:B	
Organic Carbon, Total	116	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	372	0.4	mg/L	14-Sep-18	SM2320:B	
Conductivity, Specific (@25C)	1080	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.73		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Suspended	14	3	mg/L	18-Sep-18	SM2540:D	
<u>Major Ions</u>						
Calcium	13.7	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	67.8	0.7	mg/L	16-Sep-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	16-Sep-18	SM4110:B	
Hardness	45.2	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	2.6	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.28	0.01	mg/L	16-Sep-18	SM4110:B	

ReportDate: Wednesday, October 10, 2018

Print Date: **Wednesday, October 10, 2018**

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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.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL 3-2**

Taiga Sample ID: **002**

Nitrite as Nitrogen	< 0.01	0.01	mg/L	16-Sep-18	SM4110:B
Potassium	9.7	0.1	mg/L	16-Sep-18	SM4110:B
Sodium	35.0	0.1	mg/L	16-Sep-18	SM4110:B
Sulphate	7	1	mg/L	16-Sep-18	SM4110:B

Microbiology

Coliforms, Fecal	240000	10000	CFU/100mL	14-Sep-18	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			14-Sep-18	Visual Exam
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Subcontracted Organics

Phenols, Total	0.4390	0.020	mg/L	21-Sep-18	AB ENV.06537	207
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Trace Metals, Total

Aluminum	91.6	5	µg/L	04-Oct-18	EPA200.8
Arsenic	0.9	0.2	µg/L	04-Oct-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
Chromium	0.6	0.1	µg/L	04-Oct-18	EPA200.8
Cobalt	0.8	0.1	µg/L	04-Oct-18	EPA200.8
Copper	60.6	0.2	µg/L	04-Oct-18	EPA200.8
Iron	842	5	µg/L	04-Oct-18	EPA200.8
Lead	1.0	0.1	µg/L	04-Oct-18	EPA200.8
Manganese	203	0.1	µg/L	04-Oct-18	EPA200.8
Mercury	0.01	0.01	µg/L	04-Oct-18	EPA200.8
Nickel	2.3	0.1	µg/L	04-Oct-18	EPA200.8
Zinc	43.8	5	µg/L	04-Oct-18	EPA200.8

ReportDate: Wednesday, October 10, 2018

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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.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-4**

Taiga Sample ID: **003**

Client Project: Kugaaruk Sewage + Solid Waste

Sample Type: Final Discharge Point

Received Date: 14-Sep-18

Sampling Date: 13-Sep-18

Sampling Time: 9:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	67.3	0.005	mg/L	15-Sep-18	SM4500-NH3:G	
Biochemical Oxygen Demand	76	2	mg/L	14-Sep-18	SM5210:B	
Organic Carbon, Total	59.6	0.5	mg/L	26-Sep-18	SM5310:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	394	0.4	mg/L	14-Sep-18	SM2320:B	
Conductivity, Specific (@25C)	1130	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.72		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Suspended	16	3	mg/L	18-Sep-18	SM2540:D	
<u>Major Ions</u>						
Calcium	19.0	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	74.9	0.7	mg/L	16-Sep-18	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	16-Sep-18	SM4110:B	
Hardness	59.5	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	2.9	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.27	0.01	mg/L	16-Sep-18	SM4110:B	

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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.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: PEL-4

Taiga Sample ID: 003

Nitrite as Nitrogen	< 0.01	0.01	mg/L	16-Sep-18	SM4110:B
Potassium	15.3	0.1	mg/L	16-Sep-18	SM4110:B
Sodium	48.8	0.1	mg/L	16-Sep-18	SM4110:B
Sulphate	2	1	mg/L	16-Sep-18	SM4110:B

Microbiology

Coliforms, Fecal	12500	100	CFU/100mL	14-Sep-18	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			14-Sep-18	Visual Exam
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Subcontracted Inorganics

Chemical Oxygen Demand	165	20	mg/L	24-Sep-18	APHA5220:D
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Subcontracted Organics

Phenols, Total	0.3820	0.020	mg/L	21-Sep-18	AB ENV.06537	207
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Trace Metals, Total

Aluminum	51.7	5	µg/L	04-Oct-18	EPA200.8
Arsenic	1.8	0.2	µg/L	04-Oct-18	EPA200.8
Cadmium	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
Chromium	0.4	0.1	µg/L	04-Oct-18	EPA200.8
Cobalt	1.6	0.1	µg/L	04-Oct-18	EPA200.8
Copper	22.5	0.2	µg/L	04-Oct-18	EPA200.8
Iron	1950	5	µg/L	04-Oct-18	EPA200.8
Lead	0.8	0.1	µg/L	04-Oct-18	EPA200.8
Manganese	453	0.1	µg/L	04-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	04-Oct-18	EPA200.8
Nickel	3.5	0.1	µg/L	04-Oct-18	EPA200.8
Zinc	16.4	5	µg/L	04-Oct-18	EPA200.8

ReportDate: Wednesday, October 10, 2018

Print Date: *Wednesday, October 10, 2018*



Taiga Environmental Laboratory

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

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

Taiga Batch No.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Client Project: Kugaaruk Sewage + Solid Waste

Sample Type: Solid Waste Runoff

Received Date: 14-Sep-18

Sampling Date: 12-Sep-18

Sampling Time: 9:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	1.55	0.005	mg/L	15-Sep-18	SM4500-NH3:G	
Biochemical Oxygen Demand	4	2	mg/L	14-Sep-18	SM5210:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	242	0.4	mg/L	14-Sep-18	SM2320:B	
Conductivity, Specific (@25C)	560	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.51		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Suspended	6	3	mg/L	18-Sep-18	SM2540:D	
<u>Major Ions</u>						
Calcium	60.5	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	16.3	0.7	mg/L	16-Sep-18	SM4110:B	
Hardness	173	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	5.3	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.40	0.01	mg/L	16-Sep-18	SM4110:B	
Potassium	7.0	0.1	mg/L	16-Sep-18	SM4110:B	
Sodium	25.2	0.1	mg/L	16-Sep-18	SM4110:B	

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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.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Sulphate	24	1	mg/L	16-Sep-18	SM4110:B
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Microbiology

Coliforms, Fecal	52	1	CFU/100mL	14-Sep-18	SM9222:D
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Organics

Benzene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Ethylbenzene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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F2: C10-C16	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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F3: C16-C34	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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F4: C34-C50	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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Hydrocarbons, Total Purgeable	< 0.3	0.3	mg/L	15-Sep-18	EPA8015
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Oil and Grease, visible	Non-visible			14-Sep-18	Visual Exam
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Toluene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Xylenes	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Subcontracted Organics

Phenols, Total	0.0037	0.001	mg/L	21-Sep-18	AB ENV.06537
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Trace Metals, Total

Aluminum	29.9	5	µg/L	04-Oct-18	EPA200.8
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Arsenic	0.5	0.2	µg/L	04-Oct-18	EPA200.8
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Barium	19.8	0.1	µg/L	04-Oct-18	EPA200.8
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Cadmium	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
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Chromium	0.3	0.1	µg/L	04-Oct-18	EPA200.8
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Cobalt	1.1	0.1	µg/L	04-Oct-18	EPA200.8
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Copper	3.3	0.2	µg/L	04-Oct-18	EPA200.8
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Iron	4320	5	µg/L	04-Oct-18	EPA200.8
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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.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-6**

Taiga Sample ID: **004**

Lead	0.6	0.1	µg/L	04-Oct-18	EPA200.8
Manganese	1280	0.1	µg/L	04-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	04-Oct-18	EPA200.8
Nickel	1.7	0.1	µg/L	04-Oct-18	EPA200.8
Zinc	223	5	µg/L	04-Oct-18	EPA200.8



Taiga Environmental Laboratory

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

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

Taiga Batch No.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-9**

Taiga Sample ID: **005**

Client Project: Kugaaruk Sewage + Solid Waste

Sample Type: Metal dump runoff

Received Date: 14-Sep-18

Sampling Date: 12-Sep-18

Sampling Time: 9:00

Location: Sewage Lagoon, Wetland, Solid Waste,
Metal Dump

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	15-Sep-18	SM4500-NH3:G	
Biochemical Oxygen Demand	< 2	2	mg/L	14-Sep-18	SM5210:B	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	36.6	0.4	mg/L	14-Sep-18	SM2320:B	
Conductivity, Specific (@25C)	152	0.4	µS/cm	14-Sep-18	SM2510:B	
pH	7.66		pH units	14-Sep-18	SM4500-H:B	
Solids, Total Suspended	< 3	3	mg/L	18-Sep-18	SM2540:D	
<u>Major Ions</u>						
Calcium	9.3	0.1	mg/L	16-Sep-18	SM4110:B	
Chloride	14.0	0.7	mg/L	16-Sep-18	SM4110:B	
Hardness	45.1	0.7	mg/L	16-Sep-18	SM4110:B	
Magnesium	5.3	0.1	mg/L	16-Sep-18	SM4110:B	
Nitrate as Nitrogen	0.22	0.01	mg/L	16-Sep-18	SM4110:B	
Potassium	1.6	0.1	mg/L	16-Sep-18	SM4110:B	
Sodium	7.4	0.1	mg/L	16-Sep-18	SM4110:B	

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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.:

180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-9**

Taiga Sample ID: **005**

Sulphate	12	1	mg/L	16-Sep-18	SM4110:B
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Microbiology

Coliforms, Fecal	1	1	CFU/100mL	14-Sep-18	SM9222:D
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Organics

Benzene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Ethylbenzene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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F2: C10-C16	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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F3: C16-C34	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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F4: C34-C50	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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Hydrocarbons, Total Extractable	< 0.2	0.2	mg/L	18-Sep-18	EPA8015B
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Hydrocarbons, Total Purgeable	< 0.3	0.3	mg/L	15-Sep-18	EPA8015
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Oil and Grease, visible	Non-visible			14-Sep-18	Visual Exam
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Toluene	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Xylenes	< 0.002	0.002	mg/L	15-Sep-18	EPA8260B
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Subcontracted Organics

Phenols, Total	< 0.0010	0.001	mg/L	21-Sep-18	AB ENV.06537
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Trace Metals, Total

Aluminum	77.9	5	µg/L	04-Oct-18	EPA200.8
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Arsenic	< 0.2	0.2	µg/L	04-Oct-18	EPA200.8
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Barium	6.2	0.1	µg/L	04-Oct-18	EPA200.8
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Cadmium	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
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Chromium	0.2	0.1	µg/L	04-Oct-18	EPA200.8
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Cobalt	< 0.1	0.1	µg/L	04-Oct-18	EPA200.8
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Copper	1.4	0.2	µg/L	04-Oct-18	EPA200.8
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Iron	115	5	µg/L	04-Oct-18	EPA200.8
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Print Date: **Wednesday, October 10, 2018**



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

Taiga Batch No.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-9**

Taiga Sample ID: **005**

Lead	0.2	0.1	µg/L	04-Oct-18	EPA200.8
Manganese	2.4	0.1	µg/L	04-Oct-18	EPA200.8
Mercury	< 0.01	0.01	µg/L	04-Oct-18	EPA200.8
Nickel	0.3	0.1	µg/L	04-Oct-18	EPA200.8
Zinc	9.7	5	µg/L	04-Oct-18	EPA200.8



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Taiga Batch No.:
180947

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **PEL-9**

Taiga Sample ID: **005**

- DATA QUALIFIERS -

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: Wednesday, October 10, 2018

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