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March 19, 2019

Project #
60587295

Dear Sirs:

Subject: Town of Inuvik – Water Licence No. G17L3-001
Year End Summary Report, 2018

On behalf of Inuvik, we are pleased to provide the Annual Report for 2018.

WATER DEMANDS, STATION 0036-1

The total volume of water used from the East Channel is listed in Table G17L3-001-1 attached. Water use remained well within the Licence limit throughout the year. It was also at ordinary levels relative to recent times: about 8% more than consumption in 2017, possibly due to changes arising from the new water treatment plant (such as the addition of membranes in 2018). Water Licence G17L3-001 dictated the maximum volume of water that can be withdrawn from the East Channel is 1,000,000 m^3 per year. The total water demand in 2018 is approximately 54% of the maximum withdraw volume.

WASTEWATER VOLUMES

Annually, about 97 percent of the wastewater reaching Inuvik's lagoon is distributed and re-collected by the Town's above ground utilidor system. About three percent is distributed from Inuvik's truck fill point and is then re-collected by wastewater trucks.

There is no extraneous inflow, and rarely much loss to leakage. Inuvik will accept in its lagoon wastewater from a source other than the Town's water supply on a fee for service basis, but volumes being received are negligible. There are a few water uses that do not contribute to sewage (such as firefighting, and, in summer, gardening and vehicle washing) but these are so small a portion of total water use that they too can be neglected. For practical purposes, inflow into the lagoon is essentially equal to the Town's metered production of water, reported in Table G17L3-001-1.

It is Inuvik's practice to obtain assurance from waste hauling contractors and waste generators that discharges to the lagoon from trucks will be restricted to wastewater of domestic origin and character, not contaminated by solvents, petroleum products, glycol, drilling fluids, or any other industrial waste of any sort in concentrations exceeding what would ordinarily be expected from domestic activities such as washing of clothes and hands. Inuvik did not accept wastewater from sources outside the Town's boundaries during the year.

SEWAGE EFFLUENT QUANTITIES

Inuvik's lagoon is normally operated at a constant level, with a dyke freeboard of 1.0 m or slightly more. Therefore, in normal operation, monthly quantities of effluent are about equal to monthly water use. Lagoon level was normal and constant throughout 2018.

SOLID WASTE DISPOSAL FACILITY OPERATIONS AND MAINTENANCE

In 2018 Inuvik's solid waste disposal facility was operated routinely. Based on rates from the Municipal Solid Waste Facility O&M Manual, Appendix A, the estimated municipal solid waste generated in 2018 was approximately 5,860 tonnes of Municipal Solid Waste, which used approximately 19,540 m^3 of space at the Municipal Solid Waste Facility. Detailed estimates are presented in Table G17L3-001-2, attached.

No other projects were undertaken, beyond routine covering and compaction of completed cells. Typically Inuvik will accept Municipal Solid Waste from outside sources, though the quantities tend to be very low (i.e., between 3 and 20 loads) and this was the case in 2018.

In 2018, no collection event for household hazardous waste was undertaken.

SEWAGE EFFLUENT QUALITY MONITORING, STATION G17L3-0036-3

Lagoon effluent is sampled monthly at Station 0036-3; the secondary cell outlet. Laboratory test results are listed in Table G17L3-001-3, attached. Generally, results are within typical ranges for the time of year. With the exception of oil and grease, for which routine testing was only recently implemented (at licence renewal), running averages of parameters measured in routine monthly samples, and pH measurements (which are not averaged), remained within licence limits during the year.

BOD_5 monitoring was changed to CBOD monitoring in the licence renewal; the limit for CBOD was set at 135 mg/L, compared to 150 mg/L for BOD_5. There were no concerns with either parameter during the year. It is relevant that the full effluent CBOD load in East Channel is not exerted at or close to Inuvik, in a concentrated way. Rather, it is distributed quite thinly far downstream, due to the slow BOD exertion rate in a northern river environment, especially at winter temperatures.

There were no concerns with Suspended Solids of Fecal Coliforms, as both parameters were within normal ranges and well below the licence limits.

The Town does not have a standard for ammonia, but is required to monitor for it. The ammonia levels all appeared to be within normal ranges.

The treatment performance seen in 2018 was typical for a primary-secondary lagoon system operating normally in a high-latitude setting. In summer a good standard of secondary treatment is achieved; in winter there is just primary treatment. To achieve a secondary-level effluent in winter Inuvik would need a mechanical plant or at minimum lagoon aeration, in either case involving major capital investment and significantly increased operating cost.

Prior to the licence renewal in July, there was no quantitative criterion for oil and grease, with testing for the parameter requiring initiation upon discovery of an oil sheen during the monthly sample collection. Testing for oil and grease was not completed in the third or fourth quarters of 2017, but did commence with the February 2018 sample. Note that sample data for July 2018 was collected however it was not tested for oil and grease criteria.

Oil and grease sample results were all higher than the average criteria permitted by the licence. A review of sample collection methodology indicates that operators were collecting samples for oil and grease by skimming the surface. As oil and grease can accumulate at the surface of quiescent waters as a surface film or emulsion, it is the believed that the samples collected are not representative samples. The Town's operators are changing their sampling procedure for oil and grease (effective starting March 2019) to be consistent with the EPA's SESD Operating Procedure – Wastewater Sampling procedure. It is believed that that future results will be more consistent with the representative sampling intent for the parameter and that the sampling results will be within licence requirements.

SOLID WASTE DISPOSAL FACILITY RUN-OFF QUALITY MONITORING, STATIONS G06L3-001-4,-5 AND -9

Runoff from the Mt. Baldy solid waste disposal facility is sampled monthly during periods of flow. Station 0036-4 monitors flow westward; Station 0036-5 monitors near-shore water quality in a pond to the east; and SNP 0036-9 was added in the latest licence renewal to monitor potential impacts of the Solid Waste Disposal Facilities on surface water at Boot Creek. Sample results are shown in Tables G17L3-001-4, -5, and -9 respectively.

There are no known concerns arising from test results. As described in earlier reports, very little runoff leaves the facility, owing to topographic advantages.

The samples collected at these SNPs inadvertently were tested for BOD_5 instead of CBOD and oil & grease in instead of TPH in June. TPH was also missed in July.

PONDS AT LAGOON, STATIONS G17L3-001-6 AND -7; CONTROL STATION G17L3-001-8

Sampling of ponds adjacent to the lagoon is done once a year, in September; starting in 2007. The purpose is to monitor for possible evidence of leakage from the lagoon. Samples are tested for the same parameters as lagoon effluent.

"Gate Pond", Station 6, occupies a former small gravel quarry just outside the lagoon system's west dike, adjacent to the west sludge cell. "Far Pond", Station 7, is located just outside the lagoon system's west dike, opposite the middle-north part of the secondary cell, about 800 m northwest of Gate Pond and 250 m direct distance south of the outlet structure. Twin Lake is used as a background benchmark, and its Station 8 is located at the south end of north Twin Lake.

The 2018 sample results for these stations' traditional parameters are shown in Table G17L3-001-6, 7 & 8. They are in line with the patterns of preceding years. Complete data for the stations is presented in the results appendix. Current licence parameters have been reviewed with Exova and the Town's operations personnel.

SOLID WASTE FACILITY FENCING PLAN

The Solid Waste Fencing Plan requirement (Part D, Item 15) was added to the 2017 licence renewal. The Plan is to be submitted in 2019.

SURVEILLANCE NETWORK PROGRAM (SNP) LOCATIONS

A map of the SNP Locations is attached. Active SNP location data is presented in the following table.

SNP #	Description	Purpose	Coordinates
0036-1	Raw Water Intake at the Mackenzie River Water Supply Facilities	To monitor monthly and annual quantity of water withdrawn for municipal purposes.	68°21'10.36"N, 133°43'35.53" W
0036-3	Decant Structure at Sewage Treatment Facilities	Site of Compliance. To monitor final effluent quality prior to discharge to the receiving environment and in case of an emergency decant.	68°22'20.58"N, 133°45'38.85" W
0036-4	Run-off below the Solid Waste Disposal Facilities	To monitor potential impacts of the Solid Waste Disposal Facilities on Surface water.	68°21'7"N, 133°41'1.3" W
0036-5	Run-off to two (2) tundra ponds southwest of Solid Waste Disposal Facilities	To monitor potential impacts of the Solid Waste Disposal Facilities on Surface water.	68°20'36.22"N, 133°40'32.41" W
0036-6	"Gate Pond" – near SW corner of Sewage Treatment Facility	To monitor potential impacts of the Sewage Lagoon on Surface Water	68°21'51.45"N, 133°44'1.00" W
0036-7	"Far Pond" – near the NW corner of Sewage Treatment Facility	To monitor potential impacts of the Sewage Lagoon on Surface Water	68°22'15.73"N, 133°45'41.60" W
0036-8	Twin Lakes at Happy Valley	Control for Sewage Lagoon Sampling	68°21'239.14"N, 133°44'28.10" W
0036-9	Boot Creek upstream of Boot Lake	To monitor potential impacts of the Solid Waste Disposal Facilities on Surface water.	68°21'13.35"N, 133°41'51.48" W

SOLIDS REMOVED FROM SEWAGE TREATMENT FACILITY

Sludge that had accumulated in the lagoon's primary cells since their commissioning in 1980 was transferred to the adjacent sludge holding cells in July 1993. A survey done in the fall of 2006 found that that subsequent sludge accumulations were still well below levels requiring the next transfer by dredging. The apparently reduced accumulation rate (relative to 1981-1993) may be due to a lagoon conditioner that Inuvik has been adding to the primary cells since the mid 1990's.

In many years, small amounts of settled and floating solids need to be removed from around ends of pipes passing through primary cell dikes. This is done with a backhoe, the solids being deposited in the sludge holding cells. Routine solids removal as described was done again in 2018.

No sludge measurement was undertaken in 2018; however, Operators have noted that sludge levels in the primary cells have been increasing, and are expecting that sludge removal from the primary cells will be completed in summer 2019.

INSPECTION OF LAGOON EARTHEN CONTAINMENT STRUCTURES

The 2018 inspection of lagoon dikes (Water Licence Condition D8) report is attached in Appendix C. There are no immediate concerns arising from the 2018 lagoon dike inspection. Routine maintenance work was done on the lagoon's earthwork dikes, and all dikes appear to be at or very near to design shapes and levels. Continued longitudinal cracking does indicate that at some point in the future, a major restoration project will be required.

CONSTRUCTION, MODIFICATIONS AND MAJOR MAINTENANCE WORK

No modifications affecting existing processes or existing process facilities were undertaken in 2018. Naturally, routine maintenance work was done as needed.

UNAUTHORIZED DISCHARGES

There were no unauthorized discharges in 2018.

SPILL TRAINING AND COMMUNICATIONS EXERCISES

No additional training was completed. Spill kits and spill containment equipment was purchased in 2017 for implementation of actions identified in the Spill Containment Plan (2017), which was updated and submitted with the 2017 Water Licence renewal application.

ABANDONMENT, CLOSURE, AND RECLAMATION

No such projects were undertaken in 2018. The future of the Lake B – Hidden Lake water supply infrastructure needs to be confirmed, but is expected to be abandoned at a future date.

CURRENT WATER LICENCE RELATED PLANS

Documents currently on file with the Water Board are summarized in the list below.

- Spill Contingency Plan: Revised February 2017 (AECOM)
- O&M Manual for the Solid Waste Disposal Facility: Revised April 2018 (AECOM)
- O&M Manual for the Water Treatment Facility: September, 2018 (Nappaq Design and Construction)
- O&M Manual for the Sewage Treatment Facility: Revised March 2012 (AECOM)

CLOSURE

We trust that this submission fulfills the reporting requirements for the period referred to.

Sincerely,
AECOM Canada Ltd.

Jordan Hoffart, P.Eng.
Project Manager
Jordan.hoffart@aecom.com

JH/lw
Encl.
cc: GLWB – AlecSandra MacDonald, Regulatory Officer
Inuvik: Grant Hood, S.A.O.; Rick Campbell; Utilidor Shop
Inuvik Public Works Committee

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The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

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- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

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AECOM: 2015-04-13

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Appendix A

Summary Tables and SNP Map


G17L3-001 - TOWN OF INUVIK - SNP STATION MAP
Hidden Lake
#9
#4
#3
#7
#6
#8
Inuvik
#5
Water Plant
Pumphouse
start
end
Image © 2018 DigitalGlobe
Image © 2018 DigitalGlobe
Google Earth
2002
Imagery Date: 8/17/2016 68°21'27.53" N 133°43'16.49" W elev 77 ft eye alt 16061 ft

INUVIK SURVEILLANCE NETWORK PROGRAM 2018 Table G17L3-001-1

WATER USE ("SNP")

Station 0036-1, Mackenzie River pumphouse. Measure quantities daily. Report by month.

The total volumes of water used from SNP 0036-1 are listed below.

2018 Month	East Channel m^3	
January	44,482	
February	42,790	
March	47,342	
April	47,135	
May	40,315	[1]
June	43,724	
July	47,386	
August	44,294	
September	44,977	
October	46,308	
November	44,104	
December	45,637	
Total	538,494	

Notes:

1. Water records for May 10, 18, 19, and 20 were not recorded due to maintenance and other causes.

2. Quantities are well within Licence limits. No known concerns.

Solid Waste Generation Table G17L3-001-2

The total estimated solid waste generated in 2018 is listed below.

Month 2018	Solid Waste Generated tonnes	Solid Waste Deposited m^3
January	498	1,659
February	450	1,499
March	498	1,659
April	482	1,606
May	498	1,659
June	482	1,606
July	498	1,659
August	498	1,659
September	482	1,606
October	498	1,659
November	482	1,606
December	498	1,659
Total	5,860	19,535

Notes:
1. Latest population estimates based on data from GNWT Bureau of Statistics as of July 1, 2017.

2. Solid Waste Generation estimates based on generation rates outlined in 2017 Inuvik Municipal Solid Waste Facility O&M Manual.

Station 0036-3, Sewage Discharge to Receiving Water.

SNP requirements. Sample monthly. Report parameters tabulated below.

Reports previously due quarterly within thirty days, now only for the calendar year by March 31.

SAMPLE RESULTS										AMBIENT CONDITIONS		
Date			pH	BOD/ CBOD mg/L	SS mg/L	NH3-N mg/L	Un-ionized Ammonia mg/L	Fecal Coli CFU/dL	Oil and Grease mg/L	Temp ° C	Wind km/h	OC/ Prcp
2018	01	17	7.5	62	7	15	0.13	160,000	NR	-18	E 3	Cloudy
2018	02	14	7.2	82	12	18	0.08	220,000	09	-34	NW 3	Clear
2018	03	14	7.1	59	4	18	0.06	250,000	10	-13	ESE 8	Cloudy
2018	04	18	7.2	69	6	20	0.08	500,000	08	-20	N 8	Snow
2018	05	16	7.1	32	8	14	0.05	106,000	06	-2	E 5	Cloudy
2018	06	13	7.3	17	27	13	0.07	12,000	06	2	N 11	Clear
2018	07	NR	8.5	09	46	05	0.41	1,107	NR	11	SW 19	Clear
2018	08	15	7.7	08	22	03	0.04	4,000	59	3	S 16	Clear
2018	09	12	7.4	10	42	01	0.01	9,000	05	-4	E 13	Clear
2018	10	24	7.6	04	9	04	0.05	14,000	07	0	SE 16	Snow
2018	11	14	7.1	07	12	09	0.03	107,000	15	-23	NNE 13	Snow
2018	12	12	7.1	47	13	11	0.04	300,000	53	-20	NNE 10	Snow

RUNNING AVERAGES OF SAMPLE RESULTS									
Item Unit Limit, avg. 4 consec.			pH 6-9	BOD/ CBOD mg/L 150	SS mg/L 70	NH3-N mg/L none	Un-ionized Ammonia mg/L none	Fecal Coli CFU/dL 1,000,000	Oil and Grease mg/L
2018	01	17	7.5	25	10	13.7	0.10	17,602	NR
2018	02	14	7.2	44	8	11.6	0.08	67,791	9.00
2018	03	14	7.1	58	8	15.2	0.23	151,586	9.50
2018	04	18	7.2	68	7	17.6	0.23	257,551	9.00
2018	05	16	7.1	61	8	17.5	0.21	232,359	8.25
2018	06	13	7.3	44	11	16.4	0.21	112,292	7.50
2018	07	NR	8.5	32	22	13.1	0.15	28,965	6.67
2018	08	15	7.7	17	26	8.9	0.14	8,662	23.67
2018	09	12	7.4	11	34	5.7	0.13	4,676	23.33
2018	10	24	7.6	8	30	3.5	0.13	4,860	23.67
2018	11	14	7.1	7	21	4.4	0.03	15,239	21.50
2018	12	12	7.1	17	19	6.4	0.03	44,846	20.00

Notes:

1 In the table header above, "avg. 4 con" is shorthand for "average of four consecutive samples". There is no average requirement for pH, only an upper and lower limt. Values presented for pH are monthly sample results.

2 In the graphs below, the heavier line (coded with suffix "a" in the key) shows the average of four consecutive samples. The thinner line shows individual monthly readings.

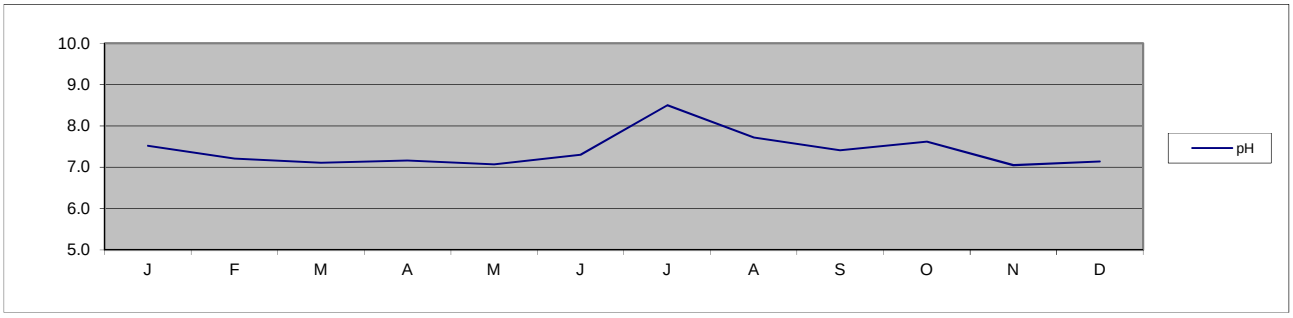
3 NT is not tested in this sample. NR is not reported.

4 Requirements in the new licence took affect July 1, 2017. Average reported for Fecal Coliforms changed from geometric to arithmetic averages at that time. Averages for CBOD were calculated using BOD where CBOD values were unavailable.

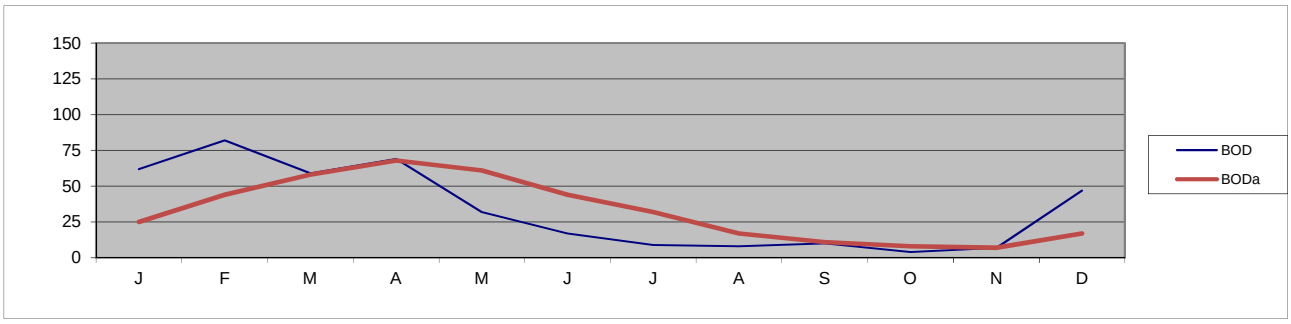
5 Data for NH3-N and Facal Coli were not avilable in July, average sample results from the past four years of the same month were used.

GRAPHS OF PARAMETERS MEASURED AT LAGOON OUTLET, STATION 0036-3

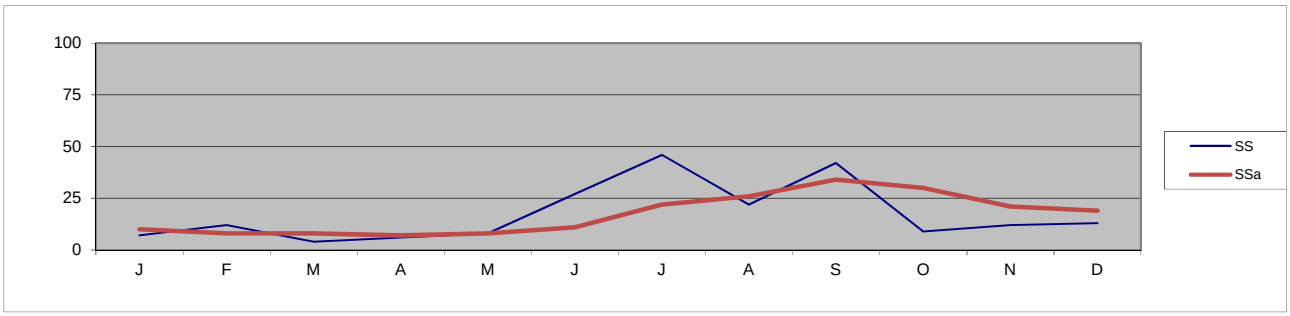
pH, BY MONTH 2018



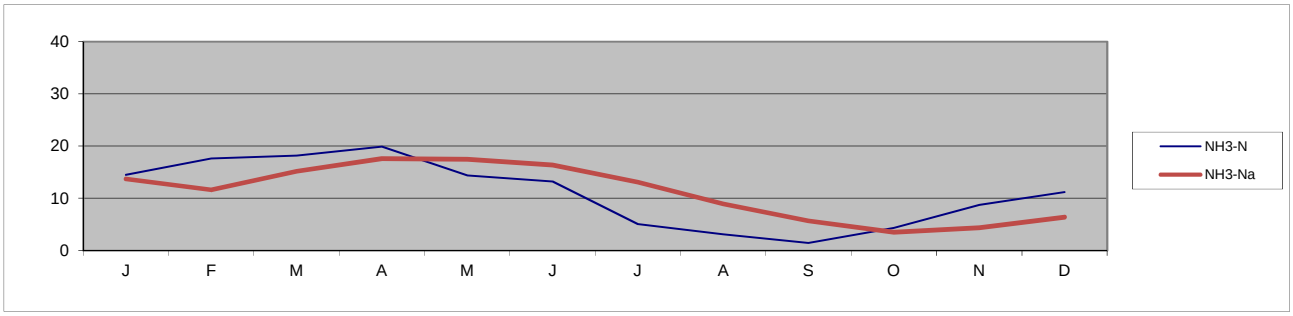
BOD5 / CBOD (mg/L), BY MONTH 2018



SUSPENDED SOLIDS (mg/L) BY MONTH 2018

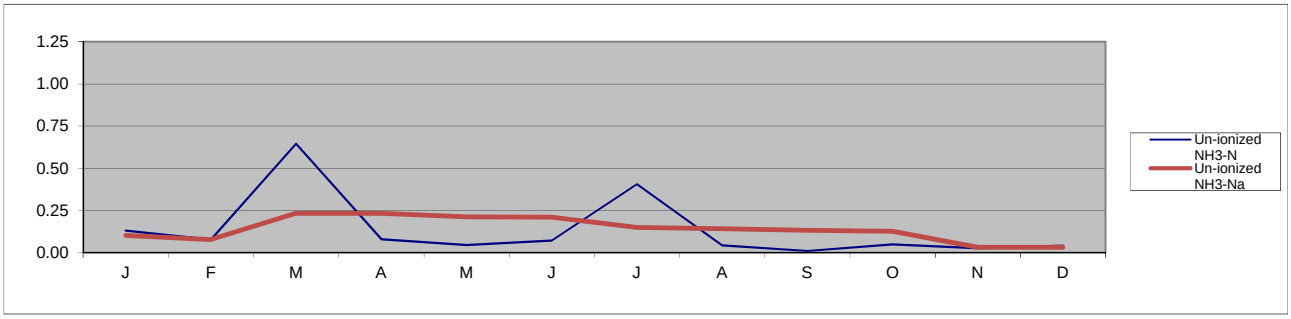


NH3-N (mg/L) BY MONTH 2018

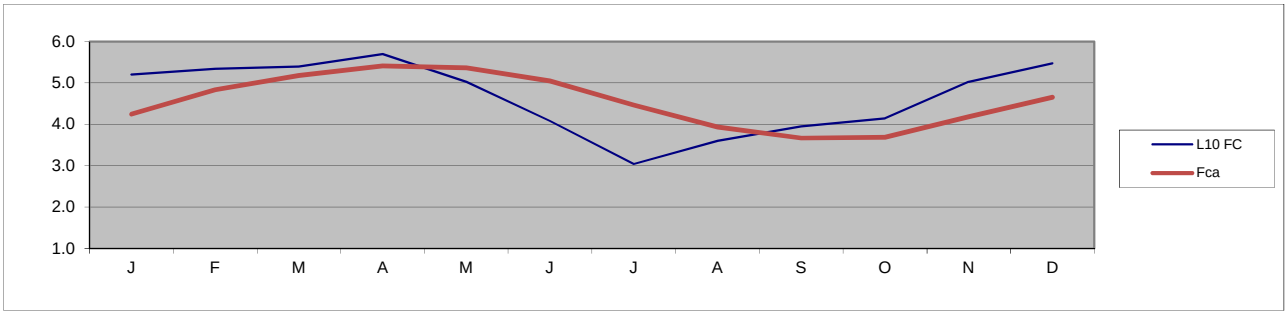


GRAPHS OF PARAMETERS MEASURED AT LAGOON OUTLET, STATION 0036-3

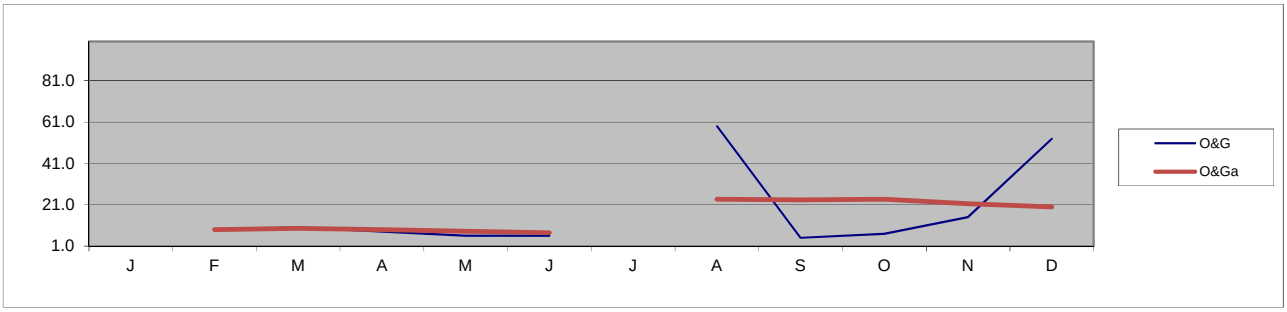
Un-ionized NH3-N (mg/L) BY MONTH 2018



FECAL COLIFORMS (LOG10 CFU/100 mL) BY MONTH 2018



Oil and Grease (mg/L) BY MONTH 2018



Note: the chart for Fecal Colifirms, above, shows the Log(10) of the measured value.

Note: Data charted are monthly measured values and running averages.
Averages are identified by the suffix "a".

INUVIK SURVEILLANCE NETWORK PROGRAM 2018 Table G17L3-001-4
RUNOFF WESTWARD FROM SOLID WASTE SITE

Station 0036-4 Sample monthly when there is flow. Report parameters tabulated below.

SAMPLE DATES & OBSERVATIONS			Temp ° C	Wind km/h	Sky	Prcp
April		2018		Frozen - No Sample Taken		
May		2018		Frozen - No Sample Taken		
June	13	2018	2	N 11	Clear	-
July	18	2018	11	SW 19	Clear	-
August	15	2018	3	S 16	Partly Cloudy	-
September	12	2018	-4	E 13	Partly Cloudy	-
October		2018		Frozen - No Sample Taken		

SAMPLE ANALYSIS RESULTS					
Item		Date			
		Jun 13	Jul 18	Aug 15	Sep 12
pH	NA	8.10	8.02	8.16	7.96
Conductivity	uS/cm	2010	2180	2170	2340
Sodium	mg/L	142.0	150.0	143.0	144.0
Potassium	mg/L	35.3	33.7	30.1	25.7
Magnesium	mg/L	107.0	108.0	103.0	123.0
Calcium	mg/L	235	232	220	266
Cadmium	mg/L	0.00022	<0.00002	<0.00002	0.00002
Chromium	mg/L	0.0020	0.0010	0.0010	<0.001
Copper	mg/L	0.012	0.003	<0.002	0.002
Iron	mg/L	5.900	0.77	1.6	1.0
Lead	mg/L	0.0052	0.0002	0.0003	0.0002
Mercury	mg/L	<0.000005	<0.000005	0.00001	0.00001
Nickel	mg/L	0.0268	0.0110	0.0078	0.0076
Zinc	mg/L	0.057	0.013	0.005	0.008
Sulphate	mg/L	599	621	675	845
Phosphate	mg/L	0.11	0.12	0.08	0.06
Phenols	mg/L	0.003	0.009	0.002	<0.001
BOD5	mg/L	4	<4	<4	<4
Oil & Grease	mg/L	5	NR	NR	NR
Suspend. Solid	mg/L	83	32	12	6
TPH	mg/L	NR	NR	<0.2	<0.2

Notes:

1. "Phosphate" is reported as total P.

2. "NR" denotes Not Reported.

3. TPH value listed is summation of F1 and F2.

INUVIK SURVEILLANCE NETWORK PROGRAM 2018 Table G17L3-001-5
RUNOFF EASTWARD FROM SOLID WASTE SITE

Station 0036-5. Sample monthly when there is flow. Report parameters tabulated below.

SAMPLE DATES & OBSERVATIONS			Temp ° C	Wind km/h	Sky	Prcp
April		2018		Frozen - No Sample Taken		
May		2018		Frozen - No Sample Taken		
June	13	2018	2	N 11	Clear	-
July	18	2018	11	SW 19	Clear	-
August	15	2018	3	S 16	Partly Cloudy	-
September	12	2018	-4	E 13	Partly Cloudy	-
October		2018		Frozen - No Sample Taken		

SAMPLE ANALYSIS RESULTS					
Item		Date			
		Jun 13	Jul 18	Aug 15	Sep 12
pH	NA	7.60	7.71	7.91	7.36
Conductivity	uS/cm	291	349	350	375
Sodium	mg/L	14.6	17.7	17.5	18.0
Potassium	mg/L	3.9	2.6	1.9	2.3
Magnesium	mg/L	11.8	14.8	14.6	14.8
Calcium	mg/L	32.6	36.8	34.8	38.7
Cadmium	mg/L	0.00001	<0.00001	<0.00001	<0.00001
Chromium	mg/L	0.0006	<0.0005	<0.0005	0.00080
Copper	mg/L	0.001	0.001	<0.001	0.002
Iron	mg/L	1.10	0.59	0.55	2.54
Lead	mg/L	0.0002	0.0001	0.0001	0.0007
Mercury	mg/L	<0.000005	<0.000005	0.000012	0.000013
Nickel	mg/L	0.0026	0.0022	0.0021	0.0030
Zinc	mg/L	0.005	0.002	0.003	0.004
Sulphate	mg/L	72.8	82.2	90.2	102.0
Phosphate	mg/L	0.15	0.10	0.07	0.14
Phenols	mg/L	0.003	0.006	<0.001	0.003
BOD5	mg/L	<4	<4	<4	<4
Oil & Grease	mg/L	5	NR	NR	NR
Suspend. Solid	mg/L	5	2	<2	23
TPH	mg/L	NR	NR	<0.2	<0.2

Notes:

1. "Phosphate" is reported as total P.

2. "NR" denotes Not Reported.

3. TPH value listed is summation of F1 and F2.

INUVIK SURVEILLANCE NETWORK PROGRAM **2018** **Table G17L3-001-6, 7 & 8**
MONITORING OF PONDS NEAR LAGOON

Station 0036-6, "Gate Pond", W dike, SW, near gate. 68º 21' 51.45" N; 133° 44' 1.00" W
Station 0036-7, "Far Pond", W dike, mid-north. 68º 22' 15.73" N; 133° 45' 41.60" W
Station 0036-8, control, Twin Lakes at Happy Valley. 68º 21' 239.14" N; 133° 44' 28.10" W

SNP requirements. Sample annually. Report parameters tabulated below.
Reports are due for the calendar year by March 31.

Date			SNP #	SAMPLE RESULTS					AMBIENT CONDITIONS		
				pH	BOD_5 mg/L	SS mg/L	NH3-N mg/L	Fecal Coli CFU/dL	Temp ° C	Wind km/h	Sky
2018	09	12	6	7.8	<4	1	8.9	1			
2018	09	12	7	8.3	<4	3	<0.025	1	-4	E 13	Partly Cloudy
2018	09	12	8	8.1	<4	<2	0.5	<1			

Note: Results from recent earlier years are included below for comparison.

Date			SNP #	SAMPLE RESULTS					AMBIENT CONDITIONS		
				pH	BOD_5 mg/L	SS mg/L	NH3-N mg/L	Fecal Coli CFU/dL	Temp ° C	Wind km/h	Sky
2017	09	13	6	7.8	<4	19	nd	2			
2017	09	13	7	8.0	<4	<1	nd	2	11	SE 12	Clear
2017	09	13	8	8.0	<4	10	nd	<1			
2016	09	13	6	8.1	<4	2	14.1	<1			
2016	09	13	7	8.1	<4	<1	<0.025	<1	0	E 18	Cloudy
2016	09	13	8	8.1	<4	2	3.1	2			
2015	09	08	6	7.7	<4	3	12.8	2			
2015	09	08	7	8.4	<4	<7	<0.025	<1	1	NW 4	Cloudy
2015	09	08	8	8.2	<4	8	1.6	1			
2014	10	07	6	7.7	<4	4	12.4	81			
2014	10	07	7	8.0	<4	4	<0.05	<1	-3	NW 30	Snow
2014	10	07	8	8.1	<4	47	1.9	1			
2013	09	24	6	7.8	<4	<1	14.4	2			
2013	09	24	7	8.1	<4	15	<0.05	24	0	NE 5	Cloudy
2013	09	24	8	8.1	<4	<2	1.9	<1			
2012	09	18	6	8.1	<4	3	10.4	4			
2012	09	18	7	8.3	<4	<1	<0.05	1	7	S 10	Clear
2012	09	18	8	8.2	<4	<2	3.4	2			
2011	09	19	6	8.0	<4	<2	13.6	<1			
2011	09	19	7	8.3	<4	<2	<0.05	<1	0	NE 15	Cloudy
2011	09	19	8	8.1	<4	6	1.6	<1			
2010	09	21	6	7.8	<4	<1	14.3	1			
2010	09	21	7	8.1	<4	<1	<0.05	<1	1	NW 15	Cloudy
2010	09	21	8	8.1	<4	50	2.6	<1			
2009	09	28	6	7.1	<4	3	11.2	<1			
2009	09	28	7	8.2	5	6	<0.05	<1	-3	NW 4	Snow
2009	09	28	8	7.8	<4	6	2.8	<1			
2008	09	15	6	7.7	<4	5	10.0	1			
2008	09	15	7	8.6	<4	3	<0.05	<1	-3	E 12	Clear
2008	09	15	8	8.3	<4	6	1.3	<1			
2007	11	14	6	7.2	<4	13	8.9	<1			
2007	11	14	7	7.3	14	303	0.3	1	-12	SE 07	Snow
2007	11	14	8	7.4	5	6	4.3	<1			

INUVIK SURVEILLANCE NETWORK PROGRAM 2018 Table G17L3-001-9
BOOT CREEK UPSTREAM OF BOOT LAKE

Station 0036-9. Sample monthly when there is flow. Report parameters tabulated below - effective for new licence.

SAMPLE DATES & OBSERVATIONS			Temp ° C	Wind km/h	Sky	Prcp
April		2018		Frozen - No Sample Taken		
May		2018		Frozen - No Sample Taken		
June	13	2018	2	N 11	Clear	-
July	18	2018	11	SW 19	Clear	-
August	15	2018	3	S 16	Partly Cloudy	-
September	12	2018	-4	E 13	Partly Cloudy	-
October		2018		Frozen - No Sample Taken		

SAMPLE ANALYSIS RESULTS					
Item		Date			
		Jun 13	Jul 18	Aug 15	Sep 12
pH	NA	7.43	7.61	7.52	7.13
Conductivity	uS/cm	262	434	317	357
Sodium	mg/L	11.2	16.6	10.4	11.4
Potassium	mg/L	1.9	1.6	1.1	1.2
Magnesium	mg/L	13.0	17.2	13.2	15.4
Calcium	mg/L	31.8	45.0	31.4	36.6
Cadmium	mg/L	0.00002	0.00001	0.00002	0.00003
Chromium	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Copper	mg/L	0.002	0.002	0.002	0.002
Iron	mg/L	0.75	0.52	0.97	0.76
Lead	mg/L	<0.0001	<0.0001	0.0001	<0.0001
Mercury	mg/L	0.000011	<0.000005	0.000008	0.000012
Nickel	mg/L	0.0092	0.0074	0.0101	0.0116
Zinc	mg/L	0.012	0.008	0.011	0.015
Sulphate	mg/L	109	164	118	134
Phosphate	mg/L	0.05	<0.05	<0.05	<0.05
Phenols	mg/L	0.002	0.003	0.003	<0.001
BOD5	mg/L	<4	<4	<4	<4
Oil & Grease	mg/L	<5	NR	NR	NR
Suspend. Solid	mg/L	3	4	3	5
TPH	mg/L	NR	NR	<0.2	<0.2

Notes:

1. "Phosphate" is reported as total P.

2. "NR" denotes Not Reported.

3. TPH value listed is summation of F1 and F2.

AECOM Imagine it. Delivered.

Appendix B

SNP Station Sampling Data

Exova Testing Advising Assuring

www.exova.com

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	Yearly Samples
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Sample Custody (please print)

Sampled by: David Kendi

Company: Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Aug 15/18 Initial:

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp 3° C, precip 0, Wind dir S Vel 16 km/h

Indicate Regulatory Requirements below

This section for Lab use only

Date/Time stamp:

	Sample Identification	Location	Free	Date/Time sampled	Total Res	Sampling method	Number of Containers	THM	
1	Truck Fill	1 Navy rd	0.23	Aug 15/18 9:50AM	0.37	Grab	2	x	
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1292071 COC

Shipping: COD Y/N

Cooler temp: 3.2

and size of coolers received:

Delivery Method: COURIER

Waybill:

Received by: INUVIK

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
Canada, T1Y-5L3

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Confirmation of Service Request

Lot ID: 1292071
Number of Samples: 1
Printed Date: Aug 17, 2018

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

Report To:
Attn: Richard Feilden
AECOM - Edmonton
17203 - 103 Avenue
Edmonton, AB T5S 1J4
Phone: (780) 488-6800
Fax: (780) 488-2121

Invoice To:
Attn: Rick Campbell
Town of Inuvik
Box 1160
2 Firth Street
Inuvik, NT X0E 0T0
Phone: (867) 777-8615
Fax: (867) 777-8601

Bill Paid by:
Attn: Accounts Payable
Town of Inuvik
Box 1160
2 Firth Street
Inuvik, NT X0E 0T0
Phone: (867) 777-2607
Fax: (867) 777-2071

Agreement Id	992	**Control Id**	
Project Id	Yearly Samples	**Report Due Date**	Aug 24, 2018
Project Name		**Received Date**	Aug 16, 2018
Project Location	Inuvik	**Sampled By**	David Kendi
Legal Location		**Sampling Company**	Town of Inuvik
PO#	100104	**Est. Disposal Date**	Sep 23, 2018
Proj. Acct. Code			

Service Information

Sample Id **1**
6225831

Date Sampled	Aug 15, 2018 9:50
Priority	Normal
Sample Description	Truck Fill
Site I.D.	1 Navy Rd
Temp: Received	3.2°C

Service		Service Name
DISP	**A**	Environmental Disposal Fee
THM		THMs in water

Service Count

Service Name	Service Code	Quantity
Environmental Disposal Fee	DISP	1
THMs in water	THM	1

Notes

If required for invoice approval, please sign and return to the address indicated at the top of the page.

(Signature) _____

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
Canada, T1Y-5L3

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Exova

Confirmation of Service Request

Lot ID: 1292071
Number of Samples: 1
Printed Date: Aug 17, 2018

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

Report Delivery Plan

Contact	Company	Address
Jason Casault	AECOM - Edmonton	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COA / COC
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Richard Feilden	AECOM - Edmonton	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	Town of Inuvik	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
T1Y-5L3, Canada

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1292071**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 23, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315077
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kendi				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
T1Y-5L3, Canada

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Analytical Report

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1292071**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 23, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315077
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kendi				
Company:	Town of Inuvik				

Reference Number	1292071-1
Sample Date	Aug 15, 2018
Sample Time	09:50
Sample Location	
Sample Description	1 Navy Rd / Truck Fill / 3.2°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water						
Chloroform		mg/L	0.089			0.001
Bromodichloromethane		mg/L	0.009			0.001
Dibromochloromethane		mg/L	<0.001			0.001
Bromoform		mg/L	<0.001			0.001
Total Trihalomethanes		mg/L	0.098			0.001
Trihalomethanes - Surrogate Recovery						
Dibromofluoromethane	EPA Surrogate	%	132			50-140
Toluene-d8	EPA Surrogate	%	100			50-140
Bromofluorobenzene	EPA Surrogate	%	93			50-140

Approved by:

Mike Yohemas, BSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
T1Y-5L3, Canada

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1292071**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 23, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315077
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kendi				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
THM - Water	US EPA	*	Volatile Organic Compounds by GCMS / Purge and Trap for Aqueous Samples, 8260B/5030B	Aug 17, 2018	Exova Calgary

** Reference Method Modified*

References

US EPA	US Environmental Protection Agency Test Methods

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.
Results relate only to samples as submitted.

Exova Testing Advising Assuring

www.exova.com

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	Yearly Samples
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Sample Custody (please print)

Sampled by: David Kendi

Company: Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Aug 15/18 Initial:

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp 3° C, precip 0, Wind dir S Vel 16 km/h

Indicate Regulatory Requirements below

This section for Lab use only

Date/Time stamp:

	Sample Identification	Location	Free	Date/Time sampled	Total Res	Sampling method	Number of Containers	THM	
1	Truck Fill	1 Navy rd	0.23	Aug 15/18 9:50AM	0.37	Grab	2	x	
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1292071 COC

Shipping: COD Y/N

Cooler temp: 3.2

and size of coolers received:

Delivery Method: COURIER

Waybill:

Received by: INUVIK

Exova Testing Advising Assuring

www.exova.com

Project Information

Project ID	Yearly Samples
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: DALE HIATUM

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Oct 24/18 Initial: DH

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp 0 C, precip 0, Wind dir SE Vel. 16 km/h

Indicate Regulatory Requirements below

	Sample Identification	Location	Free res	Date/Time sampled	Total Res	Sampling method	Number of Containers	THM
1	Truck Fill	1 Navy rd	0.62	Oct 24/18 9:27am	0.78	Grab	2	x
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

This section for Lab use only

Date/Time stamp:

OCT 25 AM 6:38

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1307966 COC

Shipping: COD Y/N

Cooler temp: 1-2

and size of coolers received:

Delivery Method: Drop Box

Waybill:

Received by:

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
Canada, T1Y-5L3

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Confirmation of Service Request

Lot ID: 1307966
Number of Samples: 1
Printed Date: Oct 26, 2018

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

Report To:
Attn: Richard Feilden
AECOM - Edmonton
17203 - 103 Avenue
Edmonton, AB T5S 1J4
Phone: (780) 488-6800
Fax: (780) 488-2121

Invoice To:
Attn: Rick Campbell
Town of Inuvik
Box 1160
2 Firth Street
Inuvik, NT X0E 0T0
Phone: (867) 777-8615
Fax: (867) 777-8601

Bill Paid by:
Attn: Accounts Payable
Town of Inuvik
Box 1160
2 Firth Street
Inuvik, NT X0E 0T0
Phone: (867) 777-2607
Fax: (867) 777-2071

Agreement Id	992	**Control Id**	
Project Id	Yearly Samples	**Report Due Date**	Nov 02, 2018
Project Name		**Received Date**	Oct 25, 2018
Project Location	Inuvik	**Sampled By**	Dale Hvatum
Legal Location		**Sampling Company**	Town of Inuvik
PO#	100104	**Est. Disposal Date**	Dec 02, 2018
Proj. Acct. Code			

Service Information

Sample Id	**1**
	6329296
Date Sampled	Oct 24, 2018 9:27
Priority	Normal
Sample Description	Truck Fill
Site I.D.	1 Navy Rd.
Temp: Received	11.2°C

Service	**Service Name**
DISP	Environmental Disposal Fee
THM	THMs in water

Service Count

Service Name	Service Code	Quantity
Environmental Disposal Fee	DISP	1
THMs in water	THM	1

Notes

If required for invoice approval, please sign and return to the address indicated at the top of the page.

(Signature) _____

Exova
Bay #5, 2712-37 Avenue N.E.
Calgary, Alberta
Canada, T1Y-5L3

T: +1 (403) 291-2022
F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Exova

Confirmation of Service Request

Lot ID: 1307966
Number of Samples: 1
Printed Date: Oct 26, 2018

Please verify the following service request. If you have corrections or questions, please contact Client Services. No response to this confirmation of analysis will signify all services listed below are accurate.

Report Delivery Plan

Contact	Company	Address
Jason Casault	AECOM - Edmonton	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COA / COC
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Richard Feilden	AECOM - Edmonton	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	Town of Inuvik	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

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T1Y-5L3, Canada

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E: Calgary@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1307966**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337634
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Hvatum				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

Exova
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F: +1 (403) 291-2021
E: Calgary@exova.com
W: www.exova.com

Analytical Report

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1307966**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337634
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Hvatum				
Company:	Town of Inuvik				

Reference Number	1307966-1
Sample Date	Oct 24, 2018
Sample Time	09:27
Sample Location	
Sample Description	1 Navy Rd. / Truck Fill / 11.2°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water						
Chloroform		mg/L	0.052			0.001
Bromodichloromethane		mg/L	0.007			0.001
Dibromochloromethane		mg/L	<0.001			0.001
Bromoform		mg/L	<0.001			0.001
Total Trihalomethanes		mg/L	0.059			0.001
Trihalomethanes - Surrogate Recovery						
Dibromofluoromethane	EPA Surrogate	%	100			50-140
Toluene-d8	EPA Surrogate	%	89			50-140
Bromofluorobenzene	EPA Surrogate	%	107			50-140

Approved by:

Mike Yohemas, BSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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T1Y-5L3, Canada

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W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	Yearly Samples	Lot ID:	**1307966**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337634
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Hvatum				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
THM - Water	US EPA	*	Volatile Organic Compounds by GCMS / Purge and Trap for Aqueous Samples, 8260B/5030B	Oct 25, 2018	Exova Calgary

** Reference Method Modified*

References

US EPA	US Environmental Protection Agency Test Methods

Exova Testing Advising Assuring

www.exova.com

Project Information

Project ID	Yearly Samples
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: DALE HIATUM

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Oct 24/18 Initial: DH

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp 0 C, precip 0, Wind dir SE Vel. 16 km/h

Indicate Regulatory Requirements below

	Sample Identification	Location	Free res	Date/Time sampled	Total Res	Sampling method	Number of Containers	THM
1	Truck Fill	1 Navy rd	0.62	Oct 24/18 9:27am	0.78	Grab	2	x
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

This section for Lab use only

Date/Time stamp:

OCT 25 AM 6:38

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1307966 COC

Shipping: COD Y/N

Cooler temp: 1-2

and size of coolers received:

Delivery Method: Drop Box

Waybill:

Received by:

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1307942**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337603
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Oct 31, 2018 - Sample 1307942-1; 6329108: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

Exova
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Edmonton, Alberta
T6B 3J4, Canada

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F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Exova

Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1307942**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337603
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Reference Number	1307942-1
Sample Date	Oct 24, 2018
Sample Time	09:15
Sample Location	
Sample Description	Sewage Lagoon / SNP0036-3 / 11.2°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4			4
Oil and Grease	Total	mg/L	7			5
pH adjustment	adjustment required		No			
Inorganic Nonmetallic Parameters						
Ammonia - N		mg/L	4.35			0.025
Un-ionized Ammonia-N	15 °C	mg/L	0.0494			
Ammonium/Ammonia Preservation			Yes			
Microbiological Analysis						
Fecal Coliforms	Membrane Filtration	CFU/100 mL	14000			1
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	9			2
Routine Water						
pH	15 °C	pH	7.62			
Temperature of observed pH		°C	15			
pH			7.95			
Temperature of observed pH		°C	20.7			

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

Exova
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Edmonton, Alberta
T6B 3J4, Canada

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1307942**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Oct 25, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 1, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2337603
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Oct 29, 2018	Exova Edmonton
Ammonium-N in Water	APHA	*	Automated Phenate Method, 4500-NH3 G	Oct 31, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Oct 25, 2018	Exova Edmonton
Coliforms - Membrane Filtration	APHA		Fecal Coliform Membrane Filter Procedure, 9222 D	Oct 25, 2018	Exova Calgary
Oil and Grease in water	US EPA	*	n-Hexane Extractable Material and Silica Gel Treated n-Hexane Extractable Material by Extraction and Gravimetry, 1664	Oct 31, 2018	Exova Edmonton
pH at 15°C	APHA	*	pH - Electrometric Method, 4500-H+ B	Oct 26, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Oct 25, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Oct 31, 2018 - Sample 1307942-1; 6329108: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

Exova Testing Advising Assuring
www.exova.com

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 3
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp 0 C, precip 0, Wind dir SE Vel 16 km/h

Indicate Regulatory Requirements below

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 10/24/18 Initial: mr

This section for Lab use only

Date/Time stamp:

OCT 25 AM 6:38

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	pH	CBOD5	Suspended Solids	Ammonia	Fecal Coliforms	Oil & Grease				
1	SNP0036-3	Sewage Lagoon		10/24/18 9:15A		Dip	5	x	x	x	x	x	x				
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1307942 COC

Shipping: COD Y/N

Cooler temp: 1.2

and size of coolers received:

Delivery Method: Drop Box

Waybill:

Received by:

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

T: +1 (780) 438-5522
F: +1 (780) 434-8586
E: Edmonton@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036--3	Lot ID:	**1313570**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Nov 15, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 21, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2348568
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Huatum				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Nov 15, 2018 - Sample 1313570-1; 6373913: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

Exova
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Edmonton, Alberta
T6B 3J4, Canada

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F: +1 (780) 434-8586
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W: www.exova.com

Exova

Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036--3	Lot ID:	**1313570**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Nov 15, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 21, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2348568
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Huatum				
Company:	Town of Inuvik				

Reference Number	1313570-1
Sample Date	Nov 14, 2018
Sample Time	NA
Sample Location	
Sample Description	Sewage Lagoon / SNP0036-3 / 7.5°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	7			4
Oil and Grease	Total	mg/L	15			5
pH adjustment	adjustment required		No			
Inorganic Nonmetallic Parameters						
Ammonia - N		mg/L	8.72			0.025
Un-ionized Ammonia-N	15 °C	mg/L	0.0269			
Ammonium/Ammonia Preservation			Yes			
Microbiological Analysis						
Fecal Coliforms	Membrane Filtration	CFU/100 mL	107000			1
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	12			2
Routine Water						
pH	15 °C	pH	7.05			
Temperature of observed pH		°C	15			
pH			7.64			
Temperature of observed pH		°C	20.6			

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
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Exova
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T6B 3J4, Canada

T: +1 (780) 438-5522
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E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036--3	Lot ID:	**1313570**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Nov 15, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Nov 21, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2348568
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Dale Huatum				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Nov 19, 2018	Exova Edmonton
Ammonium-N in Water	APHA	*	Automated Phenate Method, 4500-NH3 G	Nov 21, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Nov 16, 2018	Exova Edmonton
Coliforms - Membrane Filtration	APHA		Fecal Coliform Membrane Filter Procedure, 9222 D	Nov 16, 2018	Exova Calgary
Oil and Grease in water	US EPA	*	n-Hexane Extractable Material and Silica Gel Treated n-Hexane Extractable Material by Extraction and Gravimetry, 1664	Nov 15, 2018	Exova Edmonton
pH at 15°C	APHA	*	pH - Electrometric Method, 4500-H+ B	Nov 16, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Nov 16, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Nov 15, 2018 - Sample 1313570-1; 6373913: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

Exova Testing Advising Assuring
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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 3
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report [ ]

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp -23 C, precip 0, Wind dir N.DE Vel 13 km km/h

Indicate Regulatory Requirements below

Sample Custody (please print)

Sampled by: DALE HUATUM

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Nov 14/18 Initial: DH

This section for Lab use only

Date/Time stamp:

NOV 15 PM12:23

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers ↓	pH	CBOD5	Suspended Solids	Ammonia	Fecal Coliforms	Oil & Grease				
1	SNP0036-3	Sewage Lagoon				Dip	5	x	x	x	x	x	x				
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

Lot: 1313570 COC

Shipping: COD Y/N

Cooler temp: 7.5°C

and size of coolers received:

Delivery Method: Courier

Waybill:

Received by: Sandi

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W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1322978**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Dec 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Dec 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2364729
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Dec 17, 2018 - Sample 1322978-1; 6422718: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1322978**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Dec 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Dec 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2364729
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Reference Number	1322978-1
Sample Date	Dec 12, 2018
Sample Time	09:07
Sample Location	
Sample Description	Sewage Lagoon / SNP0036-3 / 3.9°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	47			4
Oil and Grease	Total	mg/L	53			5
pH adjustment	adjustment required		No			
Inorganic Nonmetallic Parameters						
Ammonia - N		mg/L	11.2			0.025
Un-ionized Ammonia-N	15 °C	mg/L	0.0423			
Ammonium/Ammonia Preservation			Yes			
Microbiological Analysis						
Fecal Coliforms	Membrane Filtration	CFU/100 mL	300000			1
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	13			2
Routine Water						
pH	15 °C	pH	7.14			
Temperature of observed pH		°C	15			
pH			7.62			
Temperature of observed pH		°C	22.8			

Approved by:

Randy Neumann, BSc
Division Director

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-3	Lot ID:	**1322978**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Dec 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Dec 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2364729
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Dec 13, 2018	Exova Edmonton
Ammonium-N in Water	APHA	*	Automated Phenate Method, 4500-NH3 G	Dec 19, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Dec 13, 2018	Exova Edmonton
Coliforms - Membrane Filtration	APHA		Fecal Coliform Membrane Filter Procedure, 9222 D	Dec 13, 2018	Exova Calgary
Oil and Grease in water	US EPA	*	n-Hexane Extractable Material and Silica Gel Treated n-Hexane Extractable Material by Extraction and Gravimetry, 1664	Dec 14, 2018	Exova Edmonton
pH at 15°C	APHA	*	pH - Electrometric Method, 4500-H+ B	Dec 20, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Dec 13, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Dec 17, 2018 - Sample 1322978-1; 6422718: Sample formed an emulsion during oil and grease extraction. Centrifugation was required in order to complete analysis.

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www.exova.com

Project Information

Project ID	SNP 0036- 3
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company: Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 12-12-18 Initial: MO

This section for Lab use only

Date/Time stamp: DEC 13 AM 7:11

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp -20 C, precip ____, Wind dir NNE Vel 10 km/h km/h

Indicate Regulatory Requirements below

Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	pH	CBOD5	Suspended Solids	Ammonia	Fecal Coliforms	Oil & Grease				
1 SNP0036-3	Sewage Lagoon		12-12-18 9:07		Dip	5	x	x	x	x	x	x				
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Lot: 1322978 COC

Shipping: COD Y/N

Cooler temp: 3.9

and size of coolers received:

Delivery Method: Box

Waybill:

Received by: SNUNEZ

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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

Exova
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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	0.002	<0.001	0.003	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.08	0.07	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.20	0.06	0.17	0.02
Calcium	Total	mg/L	220	34.8	31.4	0.2
Iron	Total	mg/L	1.6	0.55	0.97	0.05
Magnesium	Total	mg/L	103	14.6	13.2	0.2
Manganese	Total	mg/L	1.03	0.020	0.408	0.005
Potassium	Total	mg/L	30.1	1.9	1.1	0.4
Silicon	Total	mg/L	4.14	0.28	1.41	0.05
Sodium	Total	mg/L	143	17.5	10.4	0.4
Sulfur	Total	mg/L	218	30.7	39.9	0.3
Mercury	Total	mg/L	0.000007	0.000012	0.000008	0.000005
Antimony	Total	mg/L	<0.0004	<0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0014	0.0008	0.0002
Barium	Total	mg/L	0.081	0.040	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.941	0.018	0.027	0.002
Cadmium	Total	mg/L	<0.00002	<0.00001	0.00002	0.00001
Chromium	Total	mg/L	0.001	<0.0005	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0002	0.0009	0.0001
Copper	Total	mg/L	<0.002	<0.001	0.002	0.001
Lead	Total	mg/L	0.0003	0.0001	0.0001	0.0001
Lithium	Total	mg/L	0.043	0.008	0.010	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0078	0.0021	0.0101	0.0005
Selenium	Total	mg/L	0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.860	0.121	0.106	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0081	<0.0005	0.0023	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.002	0.0017	0.0009	0.0001
Zinc	Total	mg/L	0.005	0.003	0.011	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	12	<2	3	2
Routine Water						
pH			8.16	7.91	7.52	
Temperature of observed pH		°C	21.3	21.4	21.4	
Electrical Conductivity	at 25 °C	µS/cm	2170	350	317	1
Electrical Conductivity	at 25 °C	dS/m	2.17	0.350	0.317	0.001
Calcium	Dissolved	meq/L	11.1	1.72	1.56	0.01
Calcium	Dissolved	mg/L	223	34.4	31.2	0.2
Magnesium	Dissolved	meq/L	8.79	1.20	1.09	0.01
Magnesium	Dissolved	mg/L	107	14.6	13.2	0.2
Sodium	Dissolved	meq/L	6.26	0.75	0.45	0.02
Sodium	Dissolved	mg/L	144	17.2	10.3	0.4
Potassium	Dissolved	meq/L	0.75	0.05	0.03	0.01
Potassium	Dissolved	mg/L	29.5	1.8	1.0	0.4
Chloride	Dissolved	mg/L	89.8	14.9	4.0	0.4
Chloride		meq/L	2.53	0.42	0.11	0.01
Sulfate (SO4)	Dissolved	mg/L	675	90.2	118	0.9
Sulfate-S		meq/L	14.0	1.88	2.45	
Sulfate-S	Dissolved	mg/L	225	30.1	39.2	0.3
Total Dissolved Solids	Estimated	mg/L	1390	224	203	1
SAR	Dissolved		2.0	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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W: www.exova.com

Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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E: Edmonton@exova.com
W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Aug 17, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Aug 17, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Aug 21, 2018	Exova Edmonton
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	Aug 17, 2018	Exova Calgary
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl-E	Aug 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Aug 16, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Aug 16, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Aug 17, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Aug 17, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Aug 17, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Aug 17, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Aug 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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W: www.exova.com

Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 08-15-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Sampler: note weather:

Temp 3 C, precip 0, Wind dir S Vel 16 km/h

Indicate Regulatory Requirements below

This section for Lab use only

Date/Time stamp:

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		9:00A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		9:15A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		9:30A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

Lot: 1292125 COC

Shipping:

COD Y/N

Cooler temp: 3.2

and size of coolers received:

Delivery Method: COURIER

Waybill:

Received by: J NUNEZ

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T6B 3J4, Canada

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E: Edmonton@exova.com
W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Reference Number	1297946-1	1297946-2	1297946-3
Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018
Sample Time	08:58	08:37	09:10
Sample Location			
Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	<0.001	0.003	<0.001	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.06	0.14	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.08	0.34	0.18	0.02
Calcium	Total	mg/L	266	38.7	36.6	0.2
Iron	Total	mg/L	1.0	2.54	0.76	0.05
Magnesium	Total	mg/L	123	14.8	15.4	0.2
Manganese	Total	mg/L	0.919	0.271	0.482	0.005
Potassium	Total	mg/L	25.7	2.3	1.2	0.4
Silicon	Total	mg/L	4.00	1.29	1.67	0.05
Sodium	Total	mg/L	144	18.0	11.4	0.4
Sulfur	Total	mg/L	280	35.0	45.9	0.3
Mercury	Total	mg/L	0.000011	0.000013	0.000012	0.000005
Antimony	Total	mg/L	<0.0004	0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0029	0.0007	0.0002
Barium	Total	mg/L	0.080	0.075	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.766	0.020	0.026	0.002
Cadmium	Total	mg/L	0.00002	<0.00001	0.00003	0.00001
Chromium	Total	mg/L	<0.001	0.0008	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0005	0.0011	0.0001
Copper	Total	mg/L	0.002	0.002	0.002	0.001
Lead	Total	mg/L	0.0002	0.0007	<0.0001	0.0001
Lithium	Total	mg/L	0.040	0.009	0.011	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0076	0.0030	0.0116	0.0005
Selenium	Total	mg/L	<0.0002	0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.924	0.119	0.108	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0020	0.0031	0.0013	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1297946-1	1297946-2	1297946-3	
	Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018	
	Sample Time	08:58	08:37	09:10	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.0008	0.0029	0.0004	0.0001
Zinc	Total	mg/L	0.008	0.004	0.015	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	6	23	5	2
Routine Water						
pH			7.96	7.36	7.13	
Temperature of observed pH		°C	21.7	21.6	21.5	
Electrical Conductivity	at 25 °C	µS/cm	2340	375	357	1
Electrical Conductivity	at 25 °C	dS/m	2.34	0.375	0.357	0.001
Calcium	Dissolved	meq/L	13.5	1.88	1.74	0.01
Calcium	Dissolved	mg/L	270	37.6	34.9	0.2
Magnesium	Dissolved	meq/L	10.1	1.20	1.22	0.01
Magnesium	Dissolved	mg/L	123	14.6	14.9	0.2
Sodium	Dissolved	meq/L	6.31	0.78	0.47	0.02
Sodium	Dissolved	mg/L	145	17.9	10.9	0.4
Potassium	Dissolved	meq/L	0.65	0.06	0.03	0.01
Potassium	Dissolved	mg/L	25.4	2.2	1.1	0.4
Chloride	Dissolved	mg/L	89.5	15.7	4.5	0.4
Chloride		meq/L	2.53	0.44	0.13	0.01
Sulfate (SO4)	Dissolved	mg/L	845	102	134	0.9
Sulfate-S		meq/L	17.6	2.11	2.78	
Sulfate-S	Dissolved	mg/L	282	33.9	44.6	0.3
Total Dissolved Solids	Estimated	mg/L	1500	240	228	1
SAR	Dissolved		1.8	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Murray Klutz
Senior Agronomist

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Sep 17, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Sep 17, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Sep 14, 2018	Exova Edmonton
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	Sep 14, 2018	Exova Calgary
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl-E	Sep 13, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Sep 15, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Sep 15, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Sep 14, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Sep 14, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Sep 18, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Sep 18, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Sep 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Exova Testing Advising Assuring

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Sample Custody (please print)

Sampled by: Matt ORourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 09-12-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Indicate Regulatory Requirements below

Sampler: note weather:

Temp -4 C, precip 0, Wind dir E Vel 13 km/h

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		09-12-18 / 858 A		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		09-12-18 / 837A		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		09-12-18/ 910A		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

This section for Lab use only

Date/Time stamp:

SEP 13 PM 1:07

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Indi

Lot: 1297946 COC

Shipping: COD Y/N

Cooler temp: 1

and size of coolers received:

Delivery Method: Courier

Waybill:

Received by: NC

Control #

Page 1 of 1

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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4	Lot ID:	**1286104**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pit NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:		Report Number:	2307013
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Jul 24, 2018 - Sample 1286104-1; 6193277: Some trace total metal results were less than dissolved metal results for sample 1286104-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4	Lot ID:	**1286104**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pit NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:		Report Number:	2307013
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286104-1
Sample Date	Jul 18, 2018
Sample Time	09:50
Sample Location	
Sample Description	SNP0036-4 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4			4
Phenol		mg/L	0.009			0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.12			0.05
Metals Dissolved						
Subsample			Field Filtered			
Metals Total						
Aluminum	Total	mg/L	0.2			0.02
Calcium	Total	mg/L	232			0.2
Iron	Total	mg/L	0.77			0.05
Magnesium	Total	mg/L	108			0.2
Manganese	Total	mg/L	0.824			0.005
Potassium	Total	mg/L	33.7			0.4
Silicon	Total	mg/L	4.72			0.05
Sodium	Total	mg/L	150			0.4
Sulfur	Total	mg/L	210			0.3
Mercury	Total	mg/L	<0.000005			0.000005
Antimony	Total	mg/L	<0.0004			0.0002
Arsenic	Total	mg/L	0.002			0.0002
Barium	Total	mg/L	0.106			0.001
Beryllium	Total	mg/L	<0.0002			0.0001
Bismuth	Total	mg/L	<0.001			0.0005
Boron	Total	mg/L	1.18			0.002
Cadmium	Total	mg/L	<0.00002			0.00001
Chromium	Total	mg/L	0.001			0.0005
Cobalt	Total	mg/L	0.001			0.0001
Copper	Total	mg/L	0.003			0.001
Lead	Total	mg/L	0.0002			0.0001
Lithium	Total	mg/L	0.053			0.001
Molybdenum	Total	mg/L	<0.002			0.001
Nickel	Total	mg/L	0.011			0.0005
Selenium	Total	mg/L	0.0003			0.0002
Silver	Total	mg/L	<0.00002			0.00001
Strontium	Total	mg/L	0.854			0.001
Thallium	Total	mg/L	<0.0001			0.00005
Tin	Total	mg/L	<0.002			0.001
Titanium	Total	mg/L	0.0022			0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4	Lot ID:	**1286104**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pit NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:		Report Number:	2307013
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286104-1
Sample Date	Jul 18, 2018
Sample Time	09:50
Sample Location	
Sample Description	SNP0036-4 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	0.001			0.0005
Vanadium	Total	mg/L	0.002			0.0001
Zinc	Total	mg/L	0.013			0.001
Zirconium	Total	mg/L	<0.002			0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	32			2
Routine Water						
pH			8.02			
Temperature of observed pH		°C	18.0			
Electrical Conductivity	at 25 °C	µS/cm	2180			1
Electrical Conductivity	at 25 °C	dS/m	2.18			0.001
Calcium	Dissolved	meq/L	11.7			0.01
Calcium	Dissolved	mg/L	234			0.2
Magnesium	Dissolved	meq/L	9.17			0.01
Magnesium	Dissolved	mg/L	111			0.2
Sodium	Dissolved	meq/L	6.69			0.02
Sodium	Dissolved	mg/L	154			0.4
Potassium	Dissolved	meq/L	0.89			0.01
Potassium	Dissolved	mg/L	34.7			0.4
Chloride	Dissolved	mg/L	100			0.4
Chloride		meq/L	2.83			0.01
Sulfate (SO4)	Dissolved	mg/L	621			0.9
Sulfate-S		meq/L	12.9			
Sulfate-S	Dissolved	mg/L	207			0.3
Total Dissolved Solids	Estimated	mg/L	1400			1
SAR	Dissolved		2.1			

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4	Lot ID:	**1286104**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pit NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:		Report Number:	2307013
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Jul 23, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Jul 23, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Jul 20, 2018	Exova Edmonton
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl- E	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Jul 20, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Jul 23, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jul 23, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 23, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 23, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Jul 24, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Jul 22, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Jul 24, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Jul 24, 2018 - Sample 1286104-1; 6193277: Some trace total metal results were less than dissolved metal results for sample 1286104-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4	Lot ID:	**1286104**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pit NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:		Report Number:	2307013
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

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Project Information

Project ID	SNP 0036- 4
Project Name	
Project Location	Pit NW of dump
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company: Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

18-Jul-18 M.O

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: Circle Project ID Below and note weather:
SNP3 Lagoon - SNP4 Mt.B W - SNP5 Mt.B E
SNP6 GatePond - SNP7 FarPond - SNP8 TwinL

Temp 11 C, precip 69, Wind dir SW Vel 19 km/h

Indicate Regulatory Requirements below

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers ↓
1	B.O.D.	SNP0036-4		July 18, 2018-9:50a		Dip	1
2	Oil & Grease	"		"		"	1
3	Microbiology	"		"		"	1
4	Routine	"		"		"	1
5	Nutrients	"		"		"	1
6	Metals	"		"		"	1
7	Phenol	"		"		"	1
8							
9							
10							
11							
12							
13							
14							
15							

This section for Lab use only

Date/Time stamp:
JUL 20 AM 6:24

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1286104 COC

Shipping:
COD Y/N

Cooler temp:
8.1

and size of coolers received:
1 Large Box

Delivery Method:

Waybill:

Received by:

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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	0.002	<0.001	0.003	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.08	0.07	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.20	0.06	0.17	0.02
Calcium	Total	mg/L	220	34.8	31.4	0.2
Iron	Total	mg/L	1.6	0.55	0.97	0.05
Magnesium	Total	mg/L	103	14.6	13.2	0.2
Manganese	Total	mg/L	1.03	0.020	0.408	0.005
Potassium	Total	mg/L	30.1	1.9	1.1	0.4
Silicon	Total	mg/L	4.14	0.28	1.41	0.05
Sodium	Total	mg/L	143	17.5	10.4	0.4
Sulfur	Total	mg/L	218	30.7	39.9	0.3
Mercury	Total	mg/L	0.000007	0.000012	0.000008	0.000005
Antimony	Total	mg/L	<0.0004	<0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0014	0.0008	0.0002
Barium	Total	mg/L	0.081	0.040	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.941	0.018	0.027	0.002
Cadmium	Total	mg/L	<0.00002	<0.00001	0.00002	0.00001
Chromium	Total	mg/L	0.001	<0.0005	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0002	0.0009	0.0001
Copper	Total	mg/L	<0.002	<0.001	0.002	0.001
Lead	Total	mg/L	0.0003	0.0001	0.0001	0.0001
Lithium	Total	mg/L	0.043	0.008	0.010	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0078	0.0021	0.0101	0.0005
Selenium	Total	mg/L	0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.860	0.121	0.106	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0081	<0.0005	0.0023	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.002	0.0017	0.0009	0.0001
Zinc	Total	mg/L	0.005	0.003	0.011	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	12	<2	3	2
Routine Water						
pH			8.16	7.91	7.52	
Temperature of observed pH		°C	21.3	21.4	21.4	
Electrical Conductivity	at 25 °C	µS/cm	2170	350	317	1
Electrical Conductivity	at 25 °C	dS/m	2.17	0.350	0.317	0.001
Calcium	Dissolved	meq/L	11.1	1.72	1.56	0.01
Calcium	Dissolved	mg/L	223	34.4	31.2	0.2
Magnesium	Dissolved	meq/L	8.79	1.20	1.09	0.01
Magnesium	Dissolved	mg/L	107	14.6	13.2	0.2
Sodium	Dissolved	meq/L	6.26	0.75	0.45	0.02
Sodium	Dissolved	mg/L	144	17.2	10.3	0.4
Potassium	Dissolved	meq/L	0.75	0.05	0.03	0.01
Potassium	Dissolved	mg/L	29.5	1.8	1.0	0.4
Chloride	Dissolved	mg/L	89.8	14.9	4.0	0.4
Chloride		meq/L	2.53	0.42	0.11	0.01
Sulfate (SO4)	Dissolved	mg/L	675	90.2	118	0.9
Sulfate-S		meq/L	14.0	1.88	2.45	
Sulfate-S	Dissolved	mg/L	225	30.1	39.2	0.3
Total Dissolved Solids	Estimated	mg/L	1390	224	203	1
SAR	Dissolved		2.0	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
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Attn:	Rick Campbell	Proj. Acct. code:			
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Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Aug 17, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Aug 17, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Aug 21, 2018	Exova Edmonton
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	Aug 17, 2018	Exova Calgary
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl-E	Aug 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Aug 16, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Aug 16, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Aug 17, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Aug 17, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Aug 17, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Aug 17, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Aug 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 08-15-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Sampler: note weather:

Temp 3 C, precip 0, Wind dir S Vel 16 km/h

Indicate Regulatory Requirements below

This section for Lab use only

Date/Time stamp:

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		9:00A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		9:15A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		9:30A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

Lot: 1292125 COC

Shipping:

COD Y/N

Cooler temp: 3.2

and size of coolers received:

Delivery Method: COURIER

Waybill:

Received by: J NUNEZ

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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Reference Number	1297946-1	1297946-2	1297946-3
Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018
Sample Time	08:58	08:37	09:10
Sample Location			
Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	<0.001	0.003	<0.001	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.06	0.14	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.08	0.34	0.18	0.02
Calcium	Total	mg/L	266	38.7	36.6	0.2
Iron	Total	mg/L	1.0	2.54	0.76	0.05
Magnesium	Total	mg/L	123	14.8	15.4	0.2
Manganese	Total	mg/L	0.919	0.271	0.482	0.005
Potassium	Total	mg/L	25.7	2.3	1.2	0.4
Silicon	Total	mg/L	4.00	1.29	1.67	0.05
Sodium	Total	mg/L	144	18.0	11.4	0.4
Sulfur	Total	mg/L	280	35.0	45.9	0.3
Mercury	Total	mg/L	0.000011	0.000013	0.000012	0.000005
Antimony	Total	mg/L	<0.0004	0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0029	0.0007	0.0002
Barium	Total	mg/L	0.080	0.075	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.766	0.020	0.026	0.002
Cadmium	Total	mg/L	0.00002	<0.00001	0.00003	0.00001
Chromium	Total	mg/L	<0.001	0.0008	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0005	0.0011	0.0001
Copper	Total	mg/L	0.002	0.002	0.002	0.001
Lead	Total	mg/L	0.0002	0.0007	<0.0001	0.0001
Lithium	Total	mg/L	0.040	0.009	0.011	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0076	0.0030	0.0116	0.0005
Selenium	Total	mg/L	<0.0002	0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.924	0.119	0.108	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0020	0.0031	0.0013	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1297946-1	1297946-2	1297946-3	
	Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018	
	Sample Time	08:58	08:37	09:10	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.0008	0.0029	0.0004	0.0001
Zinc	Total	mg/L	0.008	0.004	0.015	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	6	23	5	2
Routine Water						
pH			7.96	7.36	7.13	
Temperature of observed pH		°C	21.7	21.6	21.5	
Electrical Conductivity	at 25 °C	µS/cm	2340	375	357	1
Electrical Conductivity	at 25 °C	dS/m	2.34	0.375	0.357	0.001
Calcium	Dissolved	meq/L	13.5	1.88	1.74	0.01
Calcium	Dissolved	mg/L	270	37.6	34.9	0.2
Magnesium	Dissolved	meq/L	10.1	1.20	1.22	0.01
Magnesium	Dissolved	mg/L	123	14.6	14.9	0.2
Sodium	Dissolved	meq/L	6.31	0.78	0.47	0.02
Sodium	Dissolved	mg/L	145	17.9	10.9	0.4
Potassium	Dissolved	meq/L	0.65	0.06	0.03	0.01
Potassium	Dissolved	mg/L	25.4	2.2	1.1	0.4
Chloride	Dissolved	mg/L	89.5	15.7	4.5	0.4
Chloride		meq/L	2.53	0.44	0.13	0.01
Sulfate (SO4)	Dissolved	mg/L	845	102	134	0.9
Sulfate-S		meq/L	17.6	2.11	2.78	
Sulfate-S	Dissolved	mg/L	282	33.9	44.6	0.3
Total Dissolved Solids	Estimated	mg/L	1500	240	228	1
SAR	Dissolved		1.8	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Murray Klutz
Senior Agronomist

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Methodology and Notes

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	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
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Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Sep 15, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Sep 15, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Sep 14, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Sep 14, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Sep 18, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Sep 18, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Sep 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Sample Custody (please print)

Sampled by: Matt ORourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 09-12-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Indicate Regulatory Requirements below

Sampler: note weather:

Temp -4 C, precip 0, Wind dir E Vel 13 km/h

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		09-12-18 / 858 A		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		09-12-18 / 837A		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		09-12-18/ 910A		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

This section for Lab use only

Date/Time stamp:

SEP 13 PM 1:07

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Indi

Lot: 1297946 COC

Shipping: COD Y/N

Cooler temp: 1

and size of coolers received:

Delivery Method: Courier

Waybill:

Received by: NC

Control #

Page 1 of 1

Exova
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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-5	Lot ID:	**1286096**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pond SE of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307002
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Jul 24, 2018 - Some trace total metal results were less than dissolved metal results for sample 1286002-1, 1285596-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-5	Lot ID:	**1286096**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pond SE of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307002
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286096-1
Sample Date	Jul 18, 2018
Sample Time	09:30
Sample Location	
Sample Description	SNP0036-5 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4			4
Phenol		mg/L	0.006			0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.10			0.05
Metals Dissolved						
Subsample			Lab Filtered			
Metals Total						
Aluminum	Total	mg/L	0.05			0.02
Calcium	Total	mg/L	36.8			0.2
Iron	Total	mg/L	0.59			0.05
Magnesium	Total	mg/L	14.8			0.2
Manganese	Total	mg/L	0.055			0.005
Potassium	Total	mg/L	2.6			0.4
Silicon	Total	mg/L	0.34			0.05
Sodium	Total	mg/L	17.7			0.4
Sulfur	Total	mg/L	29.1			0.3
Mercury	Total	mg/L	<0.000005			0.000005
Antimony	Total	mg/L	<0.0002			0.0002
Arsenic	Total	mg/L	0.0017			0.0002
Barium	Total	mg/L	0.050			0.001
Beryllium	Total	mg/L	<0.0001			0.0001
Bismuth	Total	mg/L	<0.0005			0.0005
Boron	Total	mg/L	0.017			0.002
Cadmium	Total	mg/L	<0.00001			0.00001
Chromium	Total	mg/L	<0.0005			0.0005
Cobalt	Total	mg/L	0.0002			0.0001
Copper	Total	mg/L	0.001			0.001
Lead	Total	mg/L	0.0001			0.0001
Lithium	Total	mg/L	0.007			0.001
Molybdenum	Total	mg/L	<0.001			0.001
Nickel	Total	mg/L	0.0022			0.0005
Selenium	Total	mg/L	<0.0002			0.0002
Silver	Total	mg/L	<0.00001			0.00001
Strontium	Total	mg/L	0.124			0.001
Thallium	Total	mg/L	<0.00005			0.00005
Tin	Total	mg/L	<0.001			0.001
Titanium	Total	mg/L	<0.0005			0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-5	Lot ID:	**1286096**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pond SE of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307002
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286096-1
Sample Date	Jul 18, 2018
Sample Time	09:30
Sample Location	
Sample Description	SNP0036-5 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.0005			0.0005
Vanadium	Total	mg/L	0.0011			0.0001
Zinc	Total	mg/L	0.002			0.001
Zirconium	Total	mg/L	<0.001			0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	2			2
Routine Water						
pH			7.71			
Temperature of observed pH		°C	18.1			
Electrical Conductivity	at 25 °C	µS/cm	349			1
Electrical Conductivity	at 25 °C	dS/m	0.349			0.001
Calcium	Dissolved	meq/L	1.77			0.01
Calcium	Dissolved	mg/L	35.5			0.2
Magnesium	Dissolved	meq/L	1.17			0.01
Magnesium	Dissolved	mg/L	14.3			0.2
Sodium	Dissolved	meq/L	0.72			0.02
Sodium	Dissolved	mg/L	16.5			0.4
Potassium	Dissolved	meq/L	0.06			0.01
Potassium	Dissolved	mg/L	2.4			0.4
Chloride	Dissolved	mg/L	14.1			0.4
Chloride		meq/L	0.40			0.01
Sulfate (SO4)	Dissolved	mg/L	82.2			0.9
Sulfate-S		meq/L	1.71			
Sulfate-S	Dissolved	mg/L	27.4			0.3
Total Dissolved Solids	Estimated	mg/L	223			1
SAR	Dissolved		0.6			

Approved by:

Randy Neumann, BSc
Division Director

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-5	Lot ID:	**1286096**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pond SE of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307002
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Jul 23, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Jul 23, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Jul 20, 2018	Exova Edmonton
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl- E	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Jul 20, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Jul 20, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jul 20, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 23, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 20, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Jul 24, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Jul 22, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Jul 24, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Jul 24, 2018 - Some trace total metal results were less than dissolved metal results for sample 1286002-1, 1285596-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-5	Lot ID:	**1286096**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Pond SE of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307002
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

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Project Information

Project ID	SNP 0036- 5
Project Name	
Project Location	Pond SE of Dump
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

18-Jul-18 M.O

This section for Lab use only

Date/Time stamp: JUL 20 AM 6:24

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: Circle Project ID Below and note weather:
SNP3 Lagoon - SNP4 Mt.B W - SNP5 Mt.B E
SNP6 GatePond - SNP7 FarPond - SNP8 TwinL
Raw Water
Temp 11 C, precip69%, Wind dir SW Vel 19km/h

Indicate Regulatory Requirements below

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers ↓
1	B.O.D.	SNP0036-5		July 18, 2018-9:30A		Dip	1
2	Oil & Grease + presevs.	"		"		"	1
3	Microbiology	"		"		"	1
4	Routine	"		"		"	1
5	Nutrients + presevs.	"		"		"	1
6	Metals + presevs.	"		"		"	1
7	Phenol + presevs.	"		"		"	1
8							
9							
10							
11							
12							
13							
14							
15							

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

Lot: 1286096 COC

Shipping:
COD Y/N

Cooler temp: 8.1

and size of coolers received: 1 Large

Delivery Method: Boat

Waybill:

Received by:

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

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F: +1 (780) 434-8586
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W: www.exova.com

Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-6,7&8	Lot ID:	**1297937**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322878
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kandi				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-6,7&8	Lot ID:	**1297937**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322878
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kandi				
Company:	Town of Inuvik				

		Reference Number	1297937-1	1297937-2	1297937-3
		Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018
		Sample Time	08:35	08:25	08:50
		Sample Location			
		Sample Description	Gate Pond / SNP0036-6 / 1C	Far Pond / SNP0036-7 / 1C	Twin Lakes / SNP0036-8 / 1C
		Matrix	Water	Water	Water
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Inorganic Nonmetallic Parameters						
Ammonia - N		mg/L	8.87	<0.025	0.507	0.025
Un-ionized Ammonia-N	15 °C	mg/L	0.155	<0.0012	0.0178	
Ammonium/Ammonia Preservation			Yes	Yes	Yes	
Microbiological Analysis						
Fecal Coliforms	Membrane Filtration	CFU/100 mL	1	1	<1	1
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	1	3	<2	2
Routine Water						
pH	15 °C	pH	7.81	8.27	8.12	
Temperature of observed pH		°C	15	15	15	
pH			7.84	8.15	8.05	
Temperature of observed pH		°C	21.6	21.4	21.4	

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-6,7&8	Lot ID:	**1297937**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 20, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322878
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	David Kandi				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Sep 17, 2018	Exova Edmonton
Ammonium-N in Water	APHA	*	Automated Phenate Method, 4500-NH3 G	Sep 20, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Sep 14, 2018	Exova Edmonton
Coliforms - Membrane Filtration	APHA		Fecal Coliform Membrane Filter Procedure, 9222 D	Sep 14, 2018	Exova Calgary
pH at 15°C	APHA	*	pH - Electrometric Method, 4500-H+ B	Sep 18, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Sep 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA — Standard Methods for the Examination of Water and Wastewater

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www.exova.com

Project Information

Project ID	SNP 0036- 6,7 & 8
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required | As Indicated [ ] | All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Sample Custody (please print)

Sampled by: David Kent

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: Sept 12/18 Initial:

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: note weather:

Temp -4 C, precip 0, Wind dir E Vel 13 km/h

Indicate Regulatory Requirements below

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	pH	CBOD5	Suspended Solids	Ammonia	Fecal Coliforms
1	SNP0036-6	Gate Pond		09-12-18 8:25 Am		Dip	4	x	x	x	x	x
2	SNP0036-7	Far Pond		09-12-18 8:25 Am		Dip	4	x	x	x	x	x
3	SNP0036-8	Twin Lakes		09-12-18 8:50 Am		Dip	4	x	x	x	x	x
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

This section for Lab use only

Date/Time stamp:

SEP 13 PM 1:07

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

In Lot: 1297937 COC

Shipping: COD Y/N

Cooler temp: 1

and size of coolers received:

Delivery Method: Courier

Waybill:

Received by: MC

Exova
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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-9	Lot ID:	**1286111**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Creek NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307024
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	ToI				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Jul 24, 2018 - Sample 1286111-1; 6193325: Some trace total metal results were less than dissolved metal results for sample 1286111-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-9	Lot ID:	**1286111**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Creek NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307024
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286111-1
Sample Date	Jul 18, 2018
Sample Time	09:10
Sample Location	
Sample Description	SNP0036-9 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4			4
Phenol		mg/L	0.003			0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	<0.05			0.05
Metals Dissolved						
Subsample			Lab Filtered			
Metals Total						
Aluminum	Total	mg/L	0.06			0.02
Calcium	Total	mg/L	45.0			0.2
Iron	Total	mg/L	0.52			0.05
Magnesium	Total	mg/L	17.2			0.2
Manganese	Total	mg/L	0.173			0.005
Potassium	Total	mg/L	1.6			0.4
Silicon	Total	mg/L	1.17			0.05
Sodium	Total	mg/L	16.6			0.4
Sulfur	Total	mg/L	54.4			0.3
Mercury	Total	mg/L	<0.000005			0.000005
Antimony	Total	mg/L	<0.0002			0.0002
Arsenic	Total	mg/L	0.0008			0.0002
Barium	Total	mg/L	0.016			0.001
Beryllium	Total	mg/L	<0.0001			0.0001
Bismuth	Total	mg/L	<0.0005			0.0005
Boron	Total	mg/L	0.039			0.002
Cadmium	Total	mg/L	0.00001			0.00001
Chromium	Total	mg/L	<0.0005			0.0005
Cobalt	Total	mg/L	0.0003			0.0001
Copper	Total	mg/L	0.002			0.001
Lead	Total	mg/L	<0.0001			0.0001
Lithium	Total	mg/L	0.013			0.001
Molybdenum	Total	mg/L	<0.001			0.001
Nickel	Total	mg/L	0.0074			0.0005
Selenium	Total	mg/L	0.0002			0.0002
Silver	Total	mg/L	<0.00001			0.00001
Strontium	Total	mg/L	0.152			0.001
Thallium	Total	mg/L	<0.00005			0.00005
Tin	Total	mg/L	<0.001			0.001
Titanium	Total	mg/L	0.0006			0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-9	Lot ID:	**1286111**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Creek NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307024
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Reference Number	1286111-1
Sample Date	Jul 18, 2018
Sample Time	09:10
Sample Location	
Sample Description	SNP0036-9 / 8.1°C
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.0005			0.0005
Vanadium	Total	mg/L	0.0005			0.0001
Zinc	Total	mg/L	0.008			0.001
Zirconium	Total	mg/L	<0.001			0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	4			2
Routine Water						
pH			7.61			
Temperature of observed pH		°C	17.7			
Electrical Conductivity	at 25 °C	µS/cm	434			1
Electrical Conductivity	at 25 °C	dS/m	0.434			0.001
Calcium	Dissolved	meq/L	2.22			0.01
Calcium	Dissolved	mg/L	44.4			0.2
Magnesium	Dissolved	meq/L	1.44			0.01
Magnesium	Dissolved	mg/L	17.5			0.2
Sodium	Dissolved	meq/L	0.76			0.02
Sodium	Dissolved	mg/L	17.4			0.4
Potassium	Dissolved	meq/L	0.04			0.01
Potassium	Dissolved	mg/L	1.5			0.4
Chloride	Dissolved	mg/L	7.2			0.4
Chloride		meq/L	0.20			0.01
Sulfate (SO4)	Dissolved	mg/L	164			0.9
Sulfate-S		meq/L	3.41			
Sulfate-S	Dissolved	mg/L	54.6			0.3
Total Dissolved Solids	Estimated	mg/L	278			1
SAR	Dissolved		0.6			

Approved by:

Randy Neumann, BSc
Division Director

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-9	Lot ID:	**1286111**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Creek NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307024
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Jul 23, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Jul 23, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Jul 20, 2018	Exova Edmonton
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl- E	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Jul 20, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Jul 20, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Jul 23, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Jul 23, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 23, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Jul 23, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Jul 24, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Jul 22, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Jul 24, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Jul 24, 2018 - Sample 1286111-1; 6193325: Some trace total metal results were less than dissolved metal results for sample 1286111-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-9	Lot ID:	**1286111**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Creek NW of Dump	Date Received:	Jul 20, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Jul 27, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2307024
Attn:	Accounts Payable	Proj. Acct. code:			
Sampled By:	M. O'Rourke				
Company:	TOI				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 9
Project Name	
Project Location	Creek NW of dump
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Special Instructions/Comments (please include contact information including ph. # if different from above).

Sampler: Circle Project ID Below and note weather:
SNP3 Lagoon - SNP4 Mt.B W - SNP5 Mt.B E
SNP6 GatePond - SNP7 FarPond - SNP8 TwinL

Temp 11 C, precip 69 %, Wind dir SW Vel 19km/h

Indicate Regulatory Requirements below

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company: Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

18-Jul-18 M.O

This section for Lab use only

Date/Time stamp: JUL 20 AM 6:24

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers ↓
1	B.O.D.	SNP0036-9		July18, 2018-9:10A		Dip	1
2	Oil & Grease	"		"		"	1
3	Microbiology	"		"		"	1
4	Routine	"		"		"	1
5	Nutrients	"		"		"	1
6	Metals	"		"		"	1
7	Phenol	"		"		"	1
8							
9							
10							
11							
12							
13							
14							
15							

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazordous samples

Control #

Page 1 of 1

Lot: 1286111 COC

Shipping: COD Y/N

Cooler temp: 8.1

and size of coolers received: 1 Large

Delivery Method: Bus

Waybill:

Received by:

Exova
7217 Roper Road NW
Edmonton, Alberta
T6B 3J4, Canada

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F: +1 (780) 434-8586
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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	0.002	<0.001	0.003	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.08	0.07	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.20	0.06	0.17	0.02
Calcium	Total	mg/L	220	34.8	31.4	0.2
Iron	Total	mg/L	1.6	0.55	0.97	0.05
Magnesium	Total	mg/L	103	14.6	13.2	0.2
Manganese	Total	mg/L	1.03	0.020	0.408	0.005
Potassium	Total	mg/L	30.1	1.9	1.1	0.4
Silicon	Total	mg/L	4.14	0.28	1.41	0.05
Sodium	Total	mg/L	143	17.5	10.4	0.4
Sulfur	Total	mg/L	218	30.7	39.9	0.3
Mercury	Total	mg/L	0.000007	0.000012	0.000008	0.000005
Antimony	Total	mg/L	<0.0004	<0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0014	0.0008	0.0002
Barium	Total	mg/L	0.081	0.040	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.941	0.018	0.027	0.002
Cadmium	Total	mg/L	<0.00002	<0.00001	0.00002	0.00001
Chromium	Total	mg/L	0.001	<0.0005	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0002	0.0009	0.0001
Copper	Total	mg/L	<0.002	<0.001	0.002	0.001
Lead	Total	mg/L	0.0003	0.0001	0.0001	0.0001
Lithium	Total	mg/L	0.043	0.008	0.010	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0078	0.0021	0.0101	0.0005
Selenium	Total	mg/L	0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.860	0.121	0.106	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0081	<0.0005	0.0023	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1292125-1	1292125-2	1292125-3	
	Sample Date	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018	
	Sample Time	09:00	09:15	08:30	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 3.2°C	Pond S/E of Dump / SNP0036-5 / 3.2°C	Creek N/W of Dump / SNP0036-9 / 3.2°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.002	0.0017	0.0009	0.0001
Zinc	Total	mg/L	0.005	0.003	0.011	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	12	<2	3	2
Routine Water						
pH			8.16	7.91	7.52	
Temperature of observed pH		°C	21.3	21.4	21.4	
Electrical Conductivity	at 25 °C	µS/cm	2170	350	317	1
Electrical Conductivity	at 25 °C	dS/m	2.17	0.350	0.317	0.001
Calcium	Dissolved	meq/L	11.1	1.72	1.56	0.01
Calcium	Dissolved	mg/L	223	34.4	31.2	0.2
Magnesium	Dissolved	meq/L	8.79	1.20	1.09	0.01
Magnesium	Dissolved	mg/L	107	14.6	13.2	0.2
Sodium	Dissolved	meq/L	6.26	0.75	0.45	0.02
Sodium	Dissolved	mg/L	144	17.2	10.3	0.4
Potassium	Dissolved	meq/L	0.75	0.05	0.03	0.01
Potassium	Dissolved	mg/L	29.5	1.8	1.0	0.4
Chloride	Dissolved	mg/L	89.8	14.9	4.0	0.4
Chloride		meq/L	2.53	0.42	0.11	0.01
Sulfate (SO4)	Dissolved	mg/L	675	90.2	118	0.9
Sulfate-S		meq/L	14.0	1.88	2.45	
Sulfate-S	Dissolved	mg/L	225	30.1	39.2	0.3
Total Dissolved Solids	Estimated	mg/L	1390	224	203	1
SAR	Dissolved		2.0	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Anthony Neumann, MSc
Laboratory Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Aug 17, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Aug 17, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Aug 21, 2018	Exova Edmonton
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	Aug 17, 2018	Exova Calgary
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl-E	Aug 20, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Aug 16, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Aug 16, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Aug 17, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Aug 17, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Aug 17, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Aug 17, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Aug 17, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Aug 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5&9	Lot ID:	**1292125**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Aug 16, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Aug 22, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2315147
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
Fax	(867) 777-8601
E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
Copy of Report	

Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results								
	X	E-Mail		Online		PDF		QA/QC Report
		Mail	X	Fax		Excel		

Sample Custody (please print)

Sampled by: Matt O'Rourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 08-15-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Sampler: note weather:

Temp 3 C, precip 0, Wind dir S Vel 16 km/h

Indicate Regulatory Requirements below

This section for Lab use only

Date/Time stamp:

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		9:00A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		9:15A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		9:30A 08-15-18		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

Indicate below any deficiencies in the condition of samples:

	Were Exova supplies used?
	Was there any damage to the shipping container?
	Were the containers packaged well?
	Were the expected number of samples received (document below)?
	Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Control #

Page 1 of 1

Lot: 1292125 COC

Shipping:

COD Y/N

Cooler temp: 3.2

and size of coolers received:

Delivery Method: COURIER

Waybill:

Received by: J NUNEZ

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Report Transmission Cover Page

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Contact	Company	Address
Jason Casault	**AECOM - Edmonton**	101, 18817 Stony Plain Road Edmonton, AB T5S 0C2 Phone: (780) 486-7050 Fax: (780) 486-7070 Email: Jason.Casault@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / COA
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Kim Wainman	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: kwainman@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Contact	Company	Address
Richard Feilden	**AECOM - Edmonton**	17203 - 103 Avenue Edmonton, AB T5S 1J4 Phone: (780) 488-6800 Fax: (780) 488-2121 Email: richard.feilden@aecom.com

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report

Contact	Company	Address
Rick Campbell	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-8615 Fax: (867) 777-8601 Email: rcampbell@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Merge Reports	PDF	COC / Test Report
Email - Single Report	PDF	Invoice

Contact	Company	Address
Utilidor	**Town of Inuvik**	Box 1160, 2 Firth Street Inuvik, NT X0E 0T0 Phone: (867) 777-2607 Fax: (867) 777-2071 Email: utilidor@town.inuvik.nt.ca

Delivery	Format	Deliverables
Email - Single Report	PDF	Invoice

Notes To Clients:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Reference Number	1297946-1	1297946-2	1297946-3
Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018
Sample Time	08:58	08:37	09:10
Sample Location			
Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Biochemical Oxygen Demand	Inhibited	mg/L	<4	<4	<4	4
Phenol		mg/L	<0.001	0.003	<0.001	0.001
Inorganic Nonmetallic Parameters						
Phosphorus	Total	mg/L	0.06	0.14	<0.05	0.05
Metals Dissolved						
Subsample			Lab Filtered	Lab Filtered	Lab Filtered	
Metals Total						
Aluminum	Total	mg/L	0.08	0.34	0.18	0.02
Calcium	Total	mg/L	266	38.7	36.6	0.2
Iron	Total	mg/L	1.0	2.54	0.76	0.05
Magnesium	Total	mg/L	123	14.8	15.4	0.2
Manganese	Total	mg/L	0.919	0.271	0.482	0.005
Potassium	Total	mg/L	25.7	2.3	1.2	0.4
Silicon	Total	mg/L	4.00	1.29	1.67	0.05
Sodium	Total	mg/L	144	18.0	11.4	0.4
Sulfur	Total	mg/L	280	35.0	45.9	0.3
Mercury	Total	mg/L	0.000011	0.000013	0.000012	0.000005
Antimony	Total	mg/L	<0.0004	0.0002	<0.0002	0.0002
Arsenic	Total	mg/L	0.001	0.0029	0.0007	0.0002
Barium	Total	mg/L	0.080	0.075	0.019	0.001
Beryllium	Total	mg/L	<0.0002	<0.0001	<0.0001	0.0001
Bismuth	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Boron	Total	mg/L	0.766	0.020	0.026	0.002
Cadmium	Total	mg/L	0.00002	<0.00001	0.00003	0.00001
Chromium	Total	mg/L	<0.001	0.0008	<0.0005	0.0005
Cobalt	Total	mg/L	0.001	0.0005	0.0011	0.0001
Copper	Total	mg/L	0.002	0.002	0.002	0.001
Lead	Total	mg/L	0.0002	0.0007	<0.0001	0.0001
Lithium	Total	mg/L	0.040	0.009	0.011	0.001
Molybdenum	Total	mg/L	<0.002	<0.001	<0.001	0.001
Nickel	Total	mg/L	0.0076	0.0030	0.0116	0.0005
Selenium	Total	mg/L	<0.0002	0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00002	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.924	0.119	0.108	0.001
Thallium	Total	mg/L	<0.0001	<0.00005	<0.00005	0.00005
Tin	Total	mg/L	<0.002	<0.001	<0.001	0.001
Titanium	Total	mg/L	0.0020	0.0031	0.0013	0.0005

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

	Reference Number	1297946-1	1297946-2	1297946-3	
	Sample Date	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018	
	Sample Time	08:58	08:37	09:10	
	Sample Location				
	Sample Description	Pit N/W of Dump / SNP0036-4 / 1°C	Pond S/E of Dump / SNP0036-5 / 1°C	Creek N/W of Dump / SNP0036-9 / 1°C	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Metals Total - Continued						
Uranium	Total	mg/L	<0.001	<0.0005	<0.0005	0.0005
Vanadium	Total	mg/L	0.0008	0.0029	0.0004	0.0001
Zinc	Total	mg/L	0.008	0.004	0.015	0.001
Zirconium	Total	mg/L	<0.002	<0.001	<0.001	0.001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	6	23	5	2
Routine Water						
pH			7.96	7.36	7.13	
Temperature of observed pH		°C	21.7	21.6	21.5	
Electrical Conductivity	at 25 °C	µS/cm	2340	375	357	1
Electrical Conductivity	at 25 °C	dS/m	2.34	0.375	0.357	0.001
Calcium	Dissolved	meq/L	13.5	1.88	1.74	0.01
Calcium	Dissolved	mg/L	270	37.6	34.9	0.2
Magnesium	Dissolved	meq/L	10.1	1.20	1.22	0.01
Magnesium	Dissolved	mg/L	123	14.6	14.9	0.2
Sodium	Dissolved	meq/L	6.31	0.78	0.47	0.02
Sodium	Dissolved	mg/L	145	17.9	10.9	0.4
Potassium	Dissolved	meq/L	0.65	0.06	0.03	0.01
Potassium	Dissolved	mg/L	25.4	2.2	1.1	0.4
Chloride	Dissolved	mg/L	89.5	15.7	4.5	0.4
Chloride		meq/L	2.53	0.44	0.13	0.01
Sulfate (SO4)	Dissolved	mg/L	845	102	134	0.9
Sulfate-S		meq/L	17.6	2.11	2.78	
Sulfate-S	Dissolved	mg/L	282	33.9	44.6	0.3
Total Dissolved Solids	Estimated	mg/L	1500	240	228	1
SAR	Dissolved		1.8	0.6	0.4	
Mono-Aromatic Hydrocarbons - Water						
Benzene		mg/L	<0.001	<0.001	<0.001	0.001
Toluene		mg/L	<0.0004	<0.0004	<0.0004	0.0004
Ethylbenzene		mg/L	<0.0010	<0.0010	<0.0010	0.0010
Total Xylenes (m,p,o)		mg/L	<0.001	<0.001	<0.001	0.001
Volatile Petroleum Hydrocarbons - Water						
F1 -BTEX		mg/L	<0.1	<0.1	<0.1	0.1
F1 C6-C10		mg/L	<0.1	<0.1	<0.1	0.1
F2 C10-C16		mg/L	<0.1	<0.1	<0.1	0.1

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Analytical Report

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Approved by:

Murray Klutz
Senior Agronomist

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

Method of Analysis

Method Name	Reference		Method	Date Analysis Started	Location
Alkalinity, pH, and EC in water	APHA	*	Conductivity, 2510 B	Sep 17, 2018	Exova Edmonton
Alkalinity, pH, and EC in water	APHA	*	pH - Electrometric Method, 4500-H+ B	Sep 17, 2018	Exova Edmonton
BOD (Carbonaceous) in water	APHA	*	5 Day, 5210 B	Sep 14, 2018	Exova Edmonton
BTEX-CCME - Water	US EPA	*	Volatile Organic Compounds in Various Sample Matrices Using Equilibrium Headspace Analysis/Gas Chromatography Mass Spectrometry, 5021/8260	Sep 14, 2018	Exova Calgary
Chloride in Water	APHA	*	Automated Ferricyanide Method, 4500-Cl-E	Sep 13, 2018	Exova Edmonton
Mercury (Total) in water	EPA	*	Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	Sep 15, 2018	Exova Edmonton
Mercury (Total) in water	US EPA	*	Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	Sep 15, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	APHA/USEPA	*	Metals By Inductively Coupled Plasma/Mass Spectrometry, APHA 3125 B / USEPA 200.2, 200.8	Sep 14, 2018	Exova Edmonton
Metals ICP-MS (Total) in water	US EPA	*	Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	Sep 14, 2018	Exova Edmonton
Metals Trace (Dissolved) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Metals Trace (Total) in water	APHA	*	Inductively Coupled Plasma (ICP) Method, 3120 B	Sep 14, 2018	Exova Edmonton
Phenol in water	APHA	*	Direct Photometric Method, 5530 D	Sep 18, 2018	Exova Edmonton
Phosphorus - Total in Water	APHA	*	Automated Ascorbic Acid Reduction Method, 4500-P F	Sep 18, 2018	Exova Edmonton
Solids Suspended (Total, Fixed and Volatile)	APHA	*	Total Suspended Solids Dried at 103-105'C, 2540 D	Sep 17, 2018	Exova Edmonton

** Reference Method Modified*

References

APHA	Standard Methods for the Examination of Water and Wastewater
APHA/USEPA	Standard Methods For Water/ Environmental Protection Agency
EPA	Environmental Protection Agency Test Methods - US
US EPA	US Environmental Protection Agency Test Methods

Comments:

- Sep 19, 2018 - Some trace total metal results were less than dissolved metal results for sample #1297946-1. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

Bill To:	Town of Inuvik	Project ID:	SNP 0036-4,5 & 9	Lot ID:	**1297946**
	Box 1160	Project Name:		Control Number:	
	2 Firth Street	Project Location:	Inuvik	Date Received:	Sep 13, 2018
	Inuvik, NT, Canada	LSD:		Date Reported:	Sep 19, 2018
	X0E 0T0	P.O.:	100104	Report Number:	2322893
Attn:	Rick Campbell	Proj. Acct. code:			
Sampled By:	Matt O'Rourke				
Company:	Town of Inuvik				

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Billing Information:

Company	Town of Inuvik
Address	Box 1160 2 Firth Street
	Inuvik, NT X0E 0T0
Attention	Rick Campbell
Phone	(867) 777-8615
Cell	(867) 678-5388
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E-mail	rcampbell@town.inuvik.nt.ca
Agreement ID	2909
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Copy of Report To:

Company	Aecom - Edmonton
Address	17203-103rd Avenue
	Edmonton, AB T5S 1J4
Attention	Richard Feilden
Phone	(780) 488-6800
Cell	
Fax	(780) 488-2121
E-mail	richard.feilden@aecom.com
Copy of invoice	

RUSH Priority

Upon filling out this section, client accepts that surcharges will be applied to the analysis

Date Required

As Indicated [ ] All Analysis

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples

Signature

Project Information

Project ID	SNP 0036- 4,5 & 9.
Project Name	
Project Location	Inuvik
Legal Location	
PO/AFE#	100104
Proj. Acct.Code	

Report Results

	X	E-Mail		Online		PDF	
		Mail	X	Fax		Excel	

QA/QC Report

Sample Custody (please print)

Sampled by: Matt ORourke

Company Town of Inuvik

I authorize Exova to proceed with the work indicated on this form:

Date: 09-12-18 Initial: MO

Special Instructions/Comments (please include contact information including ph. # if different from above). Dissolved S,P,C is Sodium, Potassium and Calcium.

Indicate Regulatory Requirements below

Sampler: note weather:

Temp -4 C, precip 0, Wind dir E Vel 13 km/h

	Sample Identification	Location	Depth in cm m	Date/Time sampled	Matrix	Sampling method	Number of Containers	CCMEBF12W	Total Metal+Total mercury	pH	CBOD5	Suspended Solids	Total Phosphate	Sulphate	Total Phenols	Conductivity	Dissolved S,P,C
1	SNP0036-4	Pit N/W of Dump		09-12-18 / 858 A		Dip	8	x	x	x	x	x	x	x	x	x	x
2	SNP0036-5	Pond S/E of Dump		09-12-18 / 837A		Dip	8	x	x	x	x	x	x	x	x	x	x
3	SNP0036-9	Creek N/Wof Dump		09-12-18/ 910A		Dip	8	x	x	x	x	x	x	x	x	x	x
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	

This section for Lab use only

Date/Time stamp:

SEP 13 PM 1:07

Indicate below any deficiencies in the condition of samples:

- Were Exova supplies used?
- Was there any damage to the shipping container?
- Were the containers packaged well?
- Were the expected number of samples received (document below)?
- Are samples within recommended holding times/temp?

Environmental Sample Information Sheet

Note: Proper completion of this form is required in order to proceed with analysis

Please indicate any potentially hazardous samples

Indi

Lot: 1297946 COC

Shipping: COD Y/N

Cooler temp: 1

and size of coolers received:

Delivery Method: Courier

Waybill:

Received by: NC

Control #

Page 1 of 1

AECOM Imagine it. Delivered.

Appendix C

Lagoon Berm Inspection Report

AECOM
4916 47th Street, Floor 3
GoGa Cho Building (PO Box 1259)
Yellowknife, NT, Canada X1A 2N9
www.aecom.com

867 873 6316 tel
867 873 6407 fax

February 15, 2019

Mr. Leonard DeBastien
Executive Director
Gwich'in Land and Water Board
Box 2018
Inuvik, N.W.T.
X0E 0T0

Mr. Rolland Malegana
Regional Environmental Assessment Coordinator
Energy and Natural Resources
Box 2749
Inuvik, N.T.
X0E 0T0

Dear Sir:

Project No: 60589867

Regarding: Town of Inuvik - Water Licence No. G17L3-001
Licence Condition D8, Lagoon Earthen Water Retaining Structures

On behalf of Inuvik, we wish to respond to Water License Condition D8 for year 2018.

Water Licence Condition D8 states, "The dams, dykes and other engineered earth structures designed to contain waste within the Sewage Disposal facilities shall be inspected annually by a professional engineer to determine the stability of the structures". In Water Licence A2, Definitions, “Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientist, and whose principal field of specialization is appropriate to address the components of the undertaking at hand”.

The lagoon's west dyke was built on native permafrost soils in the late 1950's. The interior dykes forming the sludge cells and primary lagoon cells were added in 1981. The west dyke was rebuilt at the same time. In 1987-88, initial settlement of the new interior dikes and further erosion of the west dike were restored in a major re-grading project. In 2003, subsidence and erosion of the inner face of the west dike was again repaired, and the inner face was armored with geotextile and blast rock. In 2006, subsidence of the interior dikes was repaired by raising the dike crests back to designed level. In 2015, subsidence of the dike along the north end of the lagoon was repaired by raising the dike crests back to designed level.

Inuvik has the dikes inspected by its engineers, AECOM, at least annually.

Gradual uneven settlement of the dikes has been ongoing since they were first built. Settlement is believed to be due primarily to thawing of the permafrost under the dykes, and subsequent consolidation of the soils. Historically, slow subsidence has not threatened the integrity or water tightness of the dikes and it is not expected to do so as long as it is countered by periodic restoration.

In some years significant thaw-subsidence occurs in the portion of the lagoon system’s west dike that runs between the west sludge cell and “Gate Pond” (as named in the SNP program). Gate Pond was formed early in Inuvik’s history by gravel borrowing, and is thought to have been deepened (and probably enlarged) by subsequent thaw-subsidence. Gate pond probably is the main heat source

causing the recurrent dike thaw-subsidence in the vicinity. Routinely, the dike is restored to designed levels and lines whenever significant thaw-subsidence has occurred.

Undercutting and sloughing of inner faces has also been ongoing since the dikes were first built, caused by soft subsoils and the flat slopes that the dike soils trend toward under water. Permafrost thaw subsidence and seasonal freeze-thaw may contribute locally. Sloughing narrows the crest. From time to time, dikes need to be restored to designed width in order to maintain water tightness, stability, and safe vehicle access along the crests. Sloughing affects all dikes, and major restoration projects have been needed roughly every ten to fifteen years. The 2003 armoring work was intended to reduce sloughing of the inner face of the west dike. Dikes around the smaller cells have not been armored.

Over the years the two karst ponds just outside the west dike, toward its downstream end, have shown a tendency to grow. There has been some undercutting and sloughing of the outer face of the west dike along the pond shorelines. Fill was added to slope toes in the fall of 2006 and again in 2007 and 2009. It is reasonably certain similar restoration work will be needed in future at these locations, probably in most years.

In late 2010 the dykes separating the inner ponds were rebuilt and the west dyke was graded to fill all the cracks. During summer 2015, the north dyke was raised about 0.5 metre to restore grade, and the surface of all other dykes was graded.

During spring of 2016, the Town of Inuvik hired a local contractor to drill test holes along the lagoon dykes and obtain soils samples at various depths. The samples were sent to AECOM for laboratory testing. According to the results the soil beneath the dykes generally consists of ice rich clays, silts and sands.

The 2018 annual inspection was carried out on September 26, 2018. All dykes were found to be in satisfactory condition. No unusual longitudinal cracks or fissures were noted. Maintenance activities carried out in 2018 included grading of all the dykes to fill longitudinal cracks. Construction was underway south of the primary cells to rehabilitate the discharge pipe and to add a truck dumping station.

The longitudinal cracking that occurs on an annual basis confirms that subsidence and undercutting continue to occur at a slow rate, and in some future year major restoration work will be required. This underscores the need for continued maintenance. Nevertheless all dikes appear to remain at or very near to designed shapes and levels, and on that basis we believe that all of the dikes in Inuvik's lagoon at this time are safe and adequate water retaining structures.

We trust that this submission fulfills the requirements of the Town of Inuvik water license Condition D8 for year 2018.

Sincerely,
AECOM Canada Ltd.

Michel Lanteigne, P.Eng.
Manager, Northwest Territories
Michel.lanteigne@aecom.com

Reviewed by

Jordan Hoffart, P.Eng.
Project Engineer, Municipal Infrastructure
jordan.hoffart@aecom.com

ML:sw

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cc: Mr. Rick Campbell, Town of Inuvik
Mr. Grant Hood, S.A.O., Town of Inuvik
Inuvik Utilidor Crew Foreman
Inuvik Public Works Committee

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- may be based on information provided to Consultant which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
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AECOM: 2012-01-06