2003 Hamlet of Tuktoyaktuk Annual Water Licence Report

Prepared by AECOM for the Hamlet of Tuktoyaktuk

October 28, 2009

1.0 Introduction

In 2003, the community infrastructure systems providing water, sewage and solid waste management to the residents of the Hamlet of Tuktoyaktuk were operated and maintained by the community. Figure 1 shows the general layout of the water and sewer systems.

2.0 Water Use

Tuktoyaktuk obtains its drinking water from Kudlak Lake. Water for winter use is pumped from Kudlak Lake to a raw water storage reservoir.

In 2003 the community used a total of 43,561 cubic metres (m^3) of potable water. Monthly water use is shown in the table below. The estimated potable water use is 125 liters per capita per day based upon the 2007 estimated population of 956 (NWT Bureau of Statistics).

Table 1: Water Consumption

Month	Quantity Used (m^3)
January	3,141
February	2,729
March	2,898
April	3,440
May	3,350
June	3,685
July	4,112
August	4,043
September	4,023
October	4,210
November	3,938
December	3,992
Total	**43,561**

3.0 Surveillance Network Program Monitoring

Water sample data is collected periodically to check the performance of the water and waste systems. The SNP station numbers are:

- 0714-1 Supply line to reservoir
- 0714-2 Effluent discharge structure at the Sewage Disposal Facilities
- 0714-3 Water contained within the Solid Waste Lagoon

In 2003 the community collected six samples from the sewage lagoon and three samples from the lagoon at the solids waste landfill, throughout August, September, October and November. SNP sampling results for 2003 are presented in Table 2.

In 2003, to the best of the community's knowledge, the community infrastructure systems providing water, sewage and solid waste management were operating within the water quality criteria of the water licence, with the exception of sewage lagoon pH which was consistently above 9.

4.0 System Modifications, Maintenance and Licence Amendments

According to the INAC inspection report from 2003, the sewage lagoon containment berm was repaired in July 2003 by placing fill to fix erosion from previous years.

5.0 System Studies and Inspections

A Municipal Water Licence Inspection was carried out by Kevin R. Glowa of INAC on October 2, 2003. The report noted five non-compliance items:

1. Terms of reference for Kugmallot Bay report had not been submitted
2. SNP stations 0714-2 and 0714-3 not posted
3. Sewage Lagoon not posted – no warning
4. Solid Waste Disposal Site not posted
5. Sewage lagoon pH effluent quality standards were not met

6.0 System Discharges

The community infrastructure system providing water, sewage and solid waste management to Tuktoyaktuk residents has two licensed discharges. The sewage lagoon discharge is seasonal from the sewage lagoon into a saltwater inlet leading to Kugmallit Bay. The solid waste lagoon discharges into the mouth of a small, adjacent bay.

As noted in the INAC inspection report from October 2003, an emergency decant of the sewage lagoon was authorized to avoid failure of the containment berm, despite high pH in the lagoon water.

7.0 System Excavations

In 2003, there were no trench or sump excavations associated with the community's water, sewer and solid waste management systems.

8.0 Lagoon Sludge

In 2003, there was no removal of sludge from the sewage lagoon.

9.0 Operation and Maintenance Plans

There were no changes to the O&M documentation in 2003.

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Table 2: SNP Sampling Results – Water Licence N7L3-0714

Location (labeled)	SNP #	Sample Date	Fecal Coliforms CFU/100 mL	BOD_5 mg/L		Suspended Solids mg/L		pH (6-9)	Oil/Grease Sheen Yes/No	NO_2/NO_3 mg/L	NH_3 mg/L	Turbidity NTU
			grab	grab	MAC	grab	MAC	grab	grab		grab	grab
Sewage	0714-2	Aug 27 2003	10	53	120	84	180	10.2	No		0.981	
Sewage	0714-2	Sept 8 2003	< 10	246	120	76	180	10.4	No		0.593	
Sewage – Lagoon	0714-3	Sept 8 2003	1	4	120	14	180	8.58				
Sewage	0714-2	Sept 18 2003	30	49	120	90	180	9.58	No		1.06	
Sewage – SWL	0714-3	Sept 30 2003	10		120		180	9.37	No		1.43	45.0
Sewage	0714-2	Oct 14 2003	< 4	43	120		180	9.63	No		2.57	15.7
Sewage – Waste Site	0714-3	Oct 23 2003	1	4	120	22	180	7.98				
Sewage	0714-2	Oct 30 2003	40	9	120	18	180	9	No		3.65	
Sewage	0714-2	Nov 4 2003	496	23	120	14	180	9.32	No		4.41	

Location	SNP #	Sample Date	Polychlorinated biphenyls µg/L		Cadmium µg/L	Cobalt µg/L	Chromium µg/L	Copper µg/L	Iron µg/L	Mercury µg/L	Manganese µg/L	Nickel µg/L	Lead µg/L	Zinc µg/L
			grab	MAC	grab	grab	grab	grab	grab	grab	grab	grab	grab	grab
Sewage – SWL	0714-3	Sept 8 2003	< 0.05	25	< 0.1	0.3	0.6	26.8	497	0.01	38.0	2.6	1.5	26
Sewage – Waste Site	0714-3	Oct 23 2003		25	0.1	0.8	0.7	47.3	781	< 0.02	111	4.6	1.5	73
Lagoon	0714-3	Oct 28 2003	< 0.05	25										

Appendix A

Taiga Labs Sample Testing Results

2003 Taiga Labs electronic records for Tuktoyaktuk

233073.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Microbiology	Coliforms, Fecal		10	CFU/100mL	10			8/28/2003	none	SM9222:D
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Nutrients	Ammonia as N		0.981	mg/L	0.005			9/16/2003	none	SM4500-NH3:G
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Nutrients	Oxygen		53	mg/L	2			8/28/2003	none	SM5210:B
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Organic	(Visible)		non-vis					9/3/2003	none	Visual Exam.
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Physicals	pH		10.2	pH units	0.05			9/2/2003	none	SM4500-H:B
Hamlet of Tuktoyatuk	233073	SNP-7142	sewage	Tuktoyaktuk	8/27/2003	28-Aug-03	Physicals	Suspended		84	mg/L	3			9/3/2003	GF/C Filt.	SM2540:D

233808.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Microbiology	Coliforms, Fecal	<	10	CFU/100mL	10			9/9/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Nutrients	Ammonia as N		0.593	mg/L	0.005			9/18/2003	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Nutrients	Oxygen		246	mg/L	2			9/10/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Organic	(Visible)		non-vis					9/11/2003	none	Visual Exam.
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Physicals	pH		10.4	pH units	0.05			9/16/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	233808	N7L3-0714	sewage	Tuktoyaktuk	9/8/2003	09-Sep-03	Physicals	Suspended		76	mg/L	3			9/17/2003	GF/C Filt.	SM2540:D

233809.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Microbiology	Coliforms, Fecal		1	CFU/100mL	1			9/9/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Nutrients	Oxygen		4	mg/L	2			9/10/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Physicals	pH		8.58	pH units	0.05			9/16/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Physicals	Suspended		14	mg/L	3			9/17/2003	GF/C Filt.	SM2540:D
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Sub - Org	Biphenyls	<	0.05	µg/L	0.05			10/1/2003	Solvent Ext.	EPA8082
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Cadmium	<	0.1	µg/L	0.1			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Chromium		0.6	µg/L	0.3			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Cobalt		0.3	µg/L	0.1			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Copper		26.8	µg/L	0.2			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Iron		497	µg/L	30			9/11/2003	Microwave	SM3111:B
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Lead		1.5	µg/L	0.1			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Manganese		38.0	µg/L	0.1			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Mercury		0.01	µg/L	0.01			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Nickel		2.6	µg/L	0.1			9/30/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	233809	N7L3-0714-3	sewage	Lagoon	9/8/2003	09-Sep-03	Total Metals	Zinc		26	µg/L	10			9/30/2003	Microwave	EPA200.8

234036.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Microbiology	Coliforms, Fecal		30	CFU/100mL	10			9/19/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Nutrients	Ammonia as N		1.06	mg/L	0.005			10/1/2003	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Nutrients	Oxygen		49	mg/L	2			9/20/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Organic	(Visible)		non-vis					9/23/2003	none	Visual Exam.
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Physicals	pH		9.58	pH units	0.05			11/12/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	234036	N7L3-0714	sewage	TUKTOYAKTUK	9/18/2003	19-Sep-03	Physicals	Suspended		90	mg/L	3			9/25/2003	GF/C Filt.	SM2540:D

234252.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Microbiology	Coliforms, Fecal		10	CFU/100mL	1			10/1/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Nutrients	Ammonia as N		1.43	mg/L	0.005			10/1/2003	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Nutrients	Oxygen			mg/L	2			10/1/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Organic	(Visible)		non-vis					10/1/2003	none	Visual Exam.
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Physicals	pH		9.37	pH units	0.05			10/7/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	234252	N7L3-0714	sewage	Tuktoyaktuk	9/30/2003	01-Oct-03	Physicals	Turbidity		45.0	NTU	0.1			10/9/2003	none	SM2130:B

234322.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Microbiology	Coliforms, Fecal	<	4	CFU/100mL	4			10/15/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Nutrients	Ammonia as N		2.57	mg/L	0.005			10/15/2003	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Nutrients	Oxygen		43	mg/L	2			10/16/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Organic	(Visible)		non-vis					10/25/2003	none	Visual Exam.
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Physicals	pH		9.63	pH units	0.05			10/21/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	234322	N7L3-0714	sewage	Tuktoyaktuk	10/14/2003	15-Oct-03	Physicals	Turbidity		15.7	NTU	0.1			11/10/2003	none	SM2130:B

2003 Taiga Labs electronic records for Tuktoyaktuk

234431.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Microbiology	Coliforms, Fecal		1	CFU/100mL	1			10/24/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Nutrients	Oxygen		4	mg/L	2			10/29/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Physicals	pH		7.98	pH units	0.05			11/20/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Physicals	Suspended		22	mg/L	3			10/29/2003	GF/C Filt.	SM2540:D
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Cadmium		0.1	µg/L	0.1			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Chromium		0.7	µg/L	0.3			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Cobalt		0.8	µg/L	0.1			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Copper		47.3	µg/L	0.2			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Iron		781	µg/L	50			11/5/2003	Microwave	SM3111:B
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Lead		1.5	µg/L	0.1			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Manganese		111	µg/L	0.1			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Mercury	<	0.02	µg/L	0.02			11/17/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Nickel		4.6	µg/L	0.1			11/6/2003	Microwave	EPA200.8
Hamlet of Tuktoyaktuk	234431	N7L3-0714-3	sewage	waste site	10/23/2003	24-Oct-03	Total Metals	Zinc		73	µg/L	10			11/6/2003	Microwave	EPA200.8

234458.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyatuk	234458	N7L3-0714-3	matrix unknown	Lagoon	10/28/2003	29-Oct-03	Sub - Org	Biphenyls	<	0.05	µg/L	0.05			11/18/2003	Solvent Ext.	EPA8082

234464.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Microbiology	Coliforms, Fecal		40	CFU/100mL	2			10/31/2003	none	SM9222:D
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Nutrients	Ammonia as N		3.65	mg/L	0.005			11/4/2003	none	SM4500-NH3:G
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Nutrients	Oxygen		9	mg/L	2			11/5/2003	none	SM5210:B
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Organic	(Visible)		non-vis					11/3/2003	none	Visual Exam.
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Physicals	pH		9.19	pH units	0.05			11/21/2003	none	SM4500-H:B
Hamlet of Tuktoyaktuk	234464	N7L3-0714	sewage	Tuktoyaktuk	10/30/2003	31-Oct-03	Physicals	Suspended		18	mg/L	3			11/5/2003	GF/C Filt.	SM2540:D

234475.xls

Client Name	Taiga Sample ID	Client Sample ID	Sample Type	Sampling Location	Sample Collect Date	mple Received D	Lab Section	Parameter Name	Result Flag	Reported Result	Units	Calc MDL	nple Result Quali	lysis Result Qual	Analysis Date	Prep Method	Test Method
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Microbiology	Coliforms, Fecal		496	CFU/100mL	1			11/5/2003	none	SM9222:D
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Nutrients	Ammonia as N		4.41	mg/L	0.005			11/13/2003	none	SM4500-NH3:G
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Nutrients	Oxygen		23	mg/L	2			11/5/2003	none	SM5210:B
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Organic	(Visible)		non-vis					11/12/2003	none	Visual Exam.
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Physicals	pH		9.32	pH units	0.05			11/26/2003	none	SM4500-H:B
Hamlet of Tuktoyatuk	234475	N7L3-0714	sewage	Tuktoyaktuk, NT	11/4/2003	05-Nov-03	Physicals	Suspended		14	mg/L	3			11/16/2003	GF/C Filt.	SM2540:D

Appendix B

INAC Inspection Report

Indian and Northern Affairs Canada | Affaires Indiennes et du Nord Canada

MUNICIPAL WATER USE INSPECTION FORM

DATE:	October 2, 2003	**COMPANY REP:**	Paul Nogasak (foreman)
LICENSEE:	Hamlet of Tuktoyaktuk	**LICENCE #:**	N7L3-0714

WATER SUPPLY – Figures 1-3 attached

Source:	Kudlak Lake	Quantity Used:	Refer to Annual Reports
Owner/Operator:	Hamlet of Tuktoyaktuk		

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Intake Facilities:	A	Storage Structures:	A	Treatment Systems:	A	Chem. Storage:	A
Flow Meas. Device:	A	Conveyance Lines:	A	Pumping Stations:	A	Modifications:	N/A

Concerns:

1. Treatment Facility (Tuk. Truckfill Station) (figure 1) diesel fuel storage container (figure 2) has no double containment and has corroded transfer line (figure 3). In addition the transfer line is not protected. Careful inspection of the line and use of a double contained container should be considered. There is potential for a fuel spill. If fuel spill does occur fuel will travel south east and enter a pond approximately 25 m away. Currently this pond does not serve any particular use.
2. Old 200 L drum (figure 2) should be removed and disposed of at an appropriate area.

Comments:

- Water Reservoir was filled in September.
- Dave Krengnekak takes care of the Water Treatment Facility. Dave samples 2x per week from the distribution trucks.
- Water meters are working properly.
- Records in good order.
- Area is fully secure.

WASTE DISPOSAL – Figures 4-16 attached

Sewage	Sewage Treatment System (primary, secondary, or tertiary):	Primary				
	Natural Water Body:	✓	Continuous Discharge (land or water)			
	Seasonal Discharge	✓	Wetlands Treatment:		Trench:	

Solid Waste	Owner/Operator:	Hamlet of Tuktoyaktuk				
	Landfill:		Burn & Landfill:	✓	Other;	

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Discharge Quality:	U[1]	Construction	N/A	Disch. Meas. Dev.	N/A	Freeboard:	A
Decant Structures:	A	O&M Plan:	Incomplete	Dams, Dykes:	U[8]	Seepages:	None Reported
Dyke Inspections:	A	A&R Plan:	N/A	Erosion:	A	Spills:	None Reported

Periods of Discharge:	Sewage Lagoon was decanted at the end of October. SWDS pond was decanted in October.	Effluent Discharge Rate:	Equal to pump rate.

Concerns:

1. Discharge of the Sewage Lagoon (figures 4-7) was requested on August 26, 2003. Approval of the discharge was rejected due to high pH levels that could potentially harm aquatic ecosystems (above pH 9). As per our letter dated October 22, 2003 fall emergency decant was authorized to maintain structural integrity of the containment berm (Figure 4,5) and thus Sewage Lagoon. All other parameters were sampled on time and met license effluent quality standards. After review of previous year's analytical results this trend was not seen. In the future, industrial discharges to this lagoon will be discouraged until the Hamlet can meet their License Discharge criteria. As a note the Hamlet was diligent and made every effort, through sampling and delaying discharge, to meet discharge criteria.
2. Currently there is no disposal area for old lead acid batteries. This issue should be addressed.
3. Oil and fluids in old vehicles disposed of at the metal waste storage area (figure 12, 13) are not drained and removed. It is a matter of time before this material escapes causing contamination of ground and/or surface water.
4. Many propane and Freon bottles in bulk metal wastes storage area as well as old fridges and stoves. It is recommended that these materials be separated.
5. Fence around the SWDS needs repair. There are various areas that show damage.
6. Like many communities the waste oil and hazardous materials area (Figure 14, 15) are becoming permanent storage areas. It is recommended that every effort be made to dispose of these materials at a certified disposal facility. Long term/permanent storage of this material is not recommended. It is only a matter of time before spills occur and this becomes a liability. It is understood that there is a plan to dispose of this material at Grubens. However, there is no timeline. Plans should be made to address this issue and should be addressed in the O&M Plan.
7. Hazardous waste storage area (figure 14, 15) needs to be designed appropriately.

8. Solid waste Disposal Site (SWDS) North West containment berm (figure 16) needs repair. This is an area of potential failure. As indicated during the inspection there are plans to fix the berm at this location.
9. O&M plan was submitted in September 2001. Upon consultation with the board this plan has not been accepted because of outstanding information required by the Hamlet.

Comments:

- Work was done to sewage lagoon containment berm this year (July). In general fill material was placed on berm to fix erosion that had occurred in previous years. Berm is now in good condition.
- Sewage Lagoon was a nice green color at the time. There was ~0.75" of ice on the surface.
- No signs posed indicating sewage lagoon and SNP station 0714-2.
- Good signage for areas of disposal (domestic garbage, animal pit, honey bag pit, metal wastes).
- No recycling programs as logistics make it difficult.
- ~7 monitoring wells around SWDS. These have not been tested in the last few years.
- As per our letter dated October 3, 2003 the SWDS Lagoon was approved for discharge. The last time this lagoon was discharged was ~ 5 years ago. Hamlet did take sample as per permit conditions. All parameters were acceptable for discharge. As an additional check INAC took a ten part composite around the perimeter of the lagoon. Results pending.
- Currently the landfill does not accept hazardous wastes (used oil, batteries, etc). Currently used oil is disposed of at Grubens and is incinerated. Public does not drop off used oil at this facility.

FUEL STORAGE – Please see concerns under "Water Supply" above.

SURVEILLANCE NETWORK PROGRAM – No figures attached.

Samples Collected	(Hamlet)	-Hamlet collected ~5 samples prior to decanting the Sewage Lagoon in 2003. -Hamlet collected a sample at the SNP 0714-3 prior to discharge in October 2003.
	(DIAND)	-Samples taken at SNP station 0714-1, 2, 3. -Also a ten part composite sample was taken at the SWDS pond at various locations. -All results pending.

Signs Posted: SNP	-No sign posted for Sewage Lagoon. -No sign posed for SNP station 0714-2 and 3. -No sign for SWDS at south (active) entrance. A sign was posted at the north entrance.	Warning	No warnings seen.

Record & Reporting:	-All Annual Reports have been received. -As indicated by the board the O&M plan submitted in 2001 is incomplete. -Unclear if supplement to O&M plan for "Operation and Maintenance of Waste Disposal Facilities…" was submitted to the board. -Terms of reference for "Assessment of the Effects of Sewage Discharge on the Waters of Kugmallit Bay" have not been received by the board. **The final report is Due December 01, 2003.**
Geotechnical Inspection	Apart of the O&M plans.

Concerns:

1. SNP stations at 0714-2 and 3 are not posted. This was also reported in 2001.

General Comments:

- The Water License expires April 29, 2005. Please make the necessary plans to send an application some time in 2004, at least 6 months prior to the expiry date.

Violations/ Non-Compliance of Act of Licence:	1. *Part D, section 9. Terms of reference for Kugmallot Bay report not received by Board. This was due Jun 1, 2001.* 2. *Part B, section 5. SNP stations 0714-2 and 3 not posted.* 3. *Part B, section 6. Sewage Lagoon not posted. No warning* 4. *Part B, section 6. SWDS not posted. A sign should be at the main entrance.* 5. *Part D, section 2. pH Effluent Quality Standards not met. See concern #1 under "Waste Disposal"*

Inspectors Name *Kevin R. Glowa* *Water Resource Officer*	***Inspectors Signature***

List of Figures for Municipal Water Licence Inspection Report

Date: October 2, 2003 **Company Rep:** Paul Nogasak (foreman)

Licencee: Hamlet of Tuktoyakyuk **Licence #:** N7L3-0714

Figure 1. Water Supply. Water treatment plant and transfer station

Figure 2. Water Supply. Fuel storage at water treatment plant.

Figure 3. Water Supply. Fuel storage at water treatment plant. Corroded/exposed pipe.

Figure 4. Waste Disposal. Sewage lagoon (south west end) at containment berm.

Figure 5. Waste Disposal. Sewage lagoon (south west end) at containment berm.

Figure 6. Waste Disposal. Sewage lagoon (south west end) discharge location.

Figure 7. Waste Disposal. Sewage lagoon intake structure.

Figure 8. Waste Disposal. Landfill domestic garbage disposal area.

Figure 9. Waste Disposal. Landfill general north view.

Figure 10. Waste Disposal. Landfill north view with metal waste (bulk) storage area in distance.

Figure 11. Waste Disposal. Landfill north view.

Figure 12. Waste Disposal. Landfill north west view with metal waste storage area in background.

Figure 13. Waste Disposal. Landfill east view with metal wastes storage area in background.

Figure 14. Waste Disposal. Landfill waste oil and hazardous wastes area.

Figure 15. Waste Disposal. Landfill waste oil and hazardous wastes area.

Figure 16. Waste Disposal. Landfill north west containment berm.