ANNUAL REPORT

FOR THE HAMLET OF BAKER LAKE

YEAR BEING REPORTED: 2010

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence (3BM-BAK1015) issued to the Hamlet of Baker Lake.

i)- iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

The water quantity results for monitoring station BAK-1 are reported in the table below; the annual volume is reported. Samples for detailed chemical, physical and biological analysis were not taken by the Hamlet at the monitoring stations BAK-2, BAK-3, BAK-4 and BAK-5 in 2010 and results are not available. However follow-up compliance water sampling was completed in October within the sewage treatment wetland and results are attached.

Table 1 – Water quantity data for the water and sewage systems at Baker Lake, NU[a]

Month Reported	Quantity of Water Obtained from all sources (m^3)[b]	Quantity of Sewage Waste Discharged (m^3)[c]
January	-	-
February	-	-
March	-	-
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-
ANNUAL TOTAL	71,394.5[d]	71,394.5

NOTES ON WATER QUANTITY TABLE:

[a] The Hamlet was unable to provide monthly quantities of water; the annual volume is reported.

[b] Quantity of water obtained is equivalent to water quantity monitoring station BAK-1; values

are equivalent to the total quantities of water delivered by the Hamlet.

[c] Quantities of sewage discharged not provided; assumed to be equal to quantity of water consumed.

[d] Total annual volume of water consumed in 2010 is below the licensed maximum permitted quantity of 100,000 m^3

iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

Construction of the wildlife exclusion fence was completed in 2010. Other modifications included upgrades to and the addition of engineered structures to the sewage disposal system (treatment wetland). Engineered structures built as per 100% wetland design drawings submitted in May 2009 by Nunami Stantec Ltd.

v. a list of unauthorized discharges and summary of follow-up action taken;

NONE

vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

NONE

vii. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;

NONE

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

NONE

ix. updates or revisions to the approved Operation and Maintenance Plans.

A new Operations and Maintenance Manual is being developed by Nunami Stantec for the water, sewage, and solid waste facilities in Baker Lake.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

Construction of a new pumphouse, including new filtering and chlorination system, for the water distribution system is expected in mid-2012.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

Follow-up compliance water samples collected in October 2010 were taken in response to compliance concerns raised in a CBC article regarding the Baker Lake sewage and solid waste disposal facilities. Results are attached

Table 1 **Water Quality Results from the Sewage Treatment Wetland**
Baker Lake, NU
October 1, 2010
Project No. 123510069

Parameter	Units	D.L.[a]	NWB[b]	CCME PAL[c]	Finger Lake South Shore	Finger Lake Outlet	Airplane Lake West Shore	Garbage Creek Outlet			Field Blank
								Sample	Replicate	RPD[d]	
Physicals											
Conductivity	µS/cm	0.40	-	-	245	251	65.2	75.5	75.3	0.27	1.09
Hardness, Calc. (as $CaCO_3$)	mg/L	0.30	-	-	53.8	56.2	21.3	24.5	24.6	-0.41	<0.30
pH	-	0.10	6 - 9	-	7.48	7.57	7.44	7.46	7.47	-0.13	5.53
Total Suspended Solids	mg/L	5.0	100	-	14	8	7	6	7	-	<5.0
Total Dissolved Solids (Calc.)	mg/L	5.0	-	-	127	130	32.3	38.3	38.4	-0.26	<5.0
Turbidity	NTU	0.10	-	-	2.54	3.86	1.29	1.14	1.73	-41.11	0.65
Anions											
Alkalinity, Total (as $CaCO_3$)	mg/L	1.0	-	-	36.9	37.9	17.0	17.8	17.8	0.00	1.7
Bicarbonate (HCO_3)	mg/L	2.0	-	-	45.0	46.2	20.8	21.7	21.7	0.00	2.1
Carbonate (CO_3)	mg/L	0.60	-	-	<0.60	<0.60	<0.60	<0.60	<0.60	-	<0.60
Hydroxide (OH)	mg/L	0.40	-	-	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40
Bromide (Br)	mg/L	0.10	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10
Chloride (Cl)	mg/L	0.50	-	-	23.10	23.90	5.10	5.38	5.32	1.12	<0.50
Fluoride (F)	mg/L	0.10	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10
Sulfate (SO_4)	mg/L	0.50	-	-	33.00	33.50	5.11	5.50	6.04	-9.36	<0.50
Nutrients											
Ammonia as N	mg/L	0.050	-	0.0152[e]	**1.99**	**1.76**	<0.050	<0.050	<0.050	-	<0.050
Nitrate and Nitrite as N	mg/L	0.071	-	-	1.61	1.64	<0.071	0.766	0.765	0.13	<0.071
Nitrite (as N)	mg/L	0.050	-	0.06	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050
Nitrate (as N)	mg/L	0.050	-	2.9	1.61	1.64	<0.050	0.766	0.765	0.13	<0.050
Ortho Phosphorus Soluble As P	mg/L	0.0010	-	-	0.313	0.316	<0.010	<0.010	<0.010	-	<0.010
Total Phosphorus	mg/L	0.0020	-	-	0.494	0.491	0.0473	0.0389	0.043	-10.01	<0.010
Organics											
Phenols (4AAP)	mg/L	0.0010	-	4.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010
Total Metals											
Aluminum (Al)	µg/L	20	-	100[f]	78.4	97.3	30	21	19.9	-	17.7
Antimony (Sb)	µg/L	1.0	-	-	0.3	0.28	<0.2	<0.2	<0.2	-	<0.2
Arsenic (As)	µg/L	1.0	-	5.0	0.55	0.59	0.33	0.3	0.28	-	<0.2
Barium (Ba)	µg/L	0.50	-	-	43.9	46	51.1	51	50.1	1.78	<0.2
Beryllium (Be)	µg/L	1.0	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Bismuth (Bi)	µg/L	0.50	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Boron (B)	µg/L	30	-	-	65	66	<10	<10	<10	-	<10
Cadmium (Cd)	µg/L	0.20	-	0.0109	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Calcium (Ca)	µg/L	200	-	-	16500	16600	6640	7590	7590	0.00	<100
Cesium (Cs)	µg/L	0.5	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Chromium (Cr)	µg/L	2.0	-	8.9	<1	<1	<1	<1	<1	-	<1
Cobalt (Co)	µg/L	0.50	-	-	0.2	0.24	<0.2	<0.2	<0.2	-	<0.2
Copper (Cu)	µg/L	2.0	-	2[h]	**5.67**	**5.89**	**2.48**	**2.37**	**2.42**	-2.09	**2.74**
Iron (Fe)	µg/L	100	-	300	**320**	**400**	120	<100	<100	-	<100
Lead (Pb)	µg/L	1.0	-	1 - 2[i]	0.168	0.212	<0.09	<0.09	<0.09	-	**1.32**
Lithium (Li)	µg/L	2.0	-	-	3.1	<2	<2	<2	<2	-	<2
Magnesium (Mg)	µg/L	50	-	-	3870	3860	1330	1520	1450	4.71	<10
Manganese (Mn)	µg/L	1.0	-	-	18.8	20.9	10.5	7	6.91	1.29	<0.3
Molybdenum (Mo)	µg/L	0.50	-	73	0.28	0.31	0.34	0.33	0.32	-	<0.2
Nickel (Ni)	µg/L	2.0	-	25 - 65[j]	<2	<2	<2	<2	<2	-	<2
Phosphorus (P)	µg/L	500	-	-	510	550	200	<200	<200	-	<200
Potassium (K)	µg/L	100	-	-	4650	4800	960	1040	1030	0.97	<20
Rubidium (Rb)	µg/L	0.50	-	-	3.92	4.12	0.66	0.77	0.77	-	<0.2
Selenium (Se)	µg/L	5.0	-	1.0	<1	<1	<1	<1	<1	-	<1
Silicon (Si)	µg/L	300	-	-	678	673	690	607	579	4.72	51
Silver (Ag)	µg/L	1.0	-	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Sodium (Na)	µg/L	50	-	-	21800	22000	4050	4220	4140	1.91	<30
Strontium (Sr)	µg/L	0.50	-	-	70.8	71.5	25.3	28.1	27.5	2.16	<0.1
Tellurium (Te)	µg/L	1.0	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Thallium (Tl)	µg/L	5.0	-	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Thorium (Th)	µg/L	1.0	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Tin (Sn)	µg/L	0.60	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Titanium (Ti)	µg/L	1.0	-	-	2.55	2.97	0.8	0.61	0.53	-	0.35
Tungsten (W)	µg/L	2.0	-	-	<1	<1	<1	<1	<1	-	<1
Uranium (U)	µg/L	0.50	-	-	<0.1	0.1	<0.1	0.11	0.11	-	<0.1
Vanadium (V)	µg/L	2.0	-	-	0.44	0.49	0.23	<0.2	<0.2	-	<0.2
Zinc (Zn)	µg/L	20	-	30	7.9	8.2	<5	<5	<5	-	<5
Zirconium (Zr)	µg/L	1.0	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4
Dissolved Metals											
Aluminum (Al)	µg/L	2.0	-	-	16.7	15.6	2.9	2.6	2.9	-	6.3
Antimony (Sb)	µg/L	0.20	-	-	0.32	0.28	<0.2	<0.2	<0.2	-	<0.2
Arsenic (As)	µg/L	0.20	-	-	0.53	0.55	0.29	0.26	0.26		<0.2

Parameter	Units	D.L.[a]	NWB[b]	CCME PAL[c]	Finger Lake South Shore	Finger Lake Outlet	Airplane Lake West Shore	Garbage Creek Outlet			Field Blank
								Sample	Replicate	RPD[d]	
Barium (Ba)	µg/L	0.20	-	-	39.5	40	50.1	51.1	50.9	0.39	<0.2
Beryllium (Be)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Bismuth (Bi)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Boron (B)	µg/L	10	-	-	67	69	12	12	13	-	<10
Cadmium (Cd)	µg/L	0.010	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01
Calcium (Ca)	µg/L	50	-	-	15000	15100	6120	7130	6940	2.70	<50
Cesium (Cs)	µg/L	0.10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Chromium (Cr)	µg/L	2.0	-	-	<2	<2	<2	<2	<2	-	<2
Cobalt (Co)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Copper (Cu)	µg/L	0.20	-	-	4.25	4.14	2.03	1.88	2.01	-6.68	2.39
Iron (Fe)	µg/L	10	-	-	120	117	18	18	18	-	<10
Lead (Pb)	µg/L	0.090	-	-	<0.09	<0.09	<0.09	<0.09	<0.09	-	1.13
Lithium (Li)	µg/L	2.0	-	-	<2	<2	<2	<2	<2	-	<2
Magnesium (Mg)	µg/L	10	-	-	3440	3450	1190	1380	1360	1.46	<10
Manganese (Mn)	µg/L	0.10	-	-	11.5	13.2	0.14	0.13	0.15	-	<0.1
Molybdenum (Mo)	µg/L	0.10	-	-	0.27	0.25	0.29	0.28	0.27	3.64	<0.1
Nickel (Ni)	µg/L	1.0	-	-	<1	<1	<1	<1	<1	-	<1
Phosphorus (P)	µg/L	100	-	-	350	330	<100	<100	<100	-	<100
Potassium (K)	µg/L	20	-	-	4290	4460	883	974	955	1.97	<20
Rubidium (Rb)	µg/L	0.2	-	-	3.73	3.9	0.57	0.7	0.69	-	<0.2
Selenium (Se)	µg/L	1.0	-	-	<1	<1	<1	<1	<1	-	<1
Silicon (Si)	µg/L	50	-	-	492	450	575	523	515	1.54	<50
Silver (Ag)	µg/L	0.10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Sodium (Na)	µg/L	20	-	-	19000	19400	3620	3860	3770	2.36	<20
Strontium (Sr)	µg/L	0.10	-	-	67.3	68.2	23.5	27	26.2	3.01	<0.1
Tellurium (Te)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Thallium (Tl)	µg/L	0.10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Thorium (Th)	µg/L	0.10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Tin (Sn)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Titanium (Ti)	µg/L	0.20	-	-	0.64	0.62	<0.2	<0.2	<0.2	-	<0.2
Tungsten (W)	µg/L	0.20	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2
Uranium (U)	µg/L	0.10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Vanadium (V)	µg/L	0.20	-	-	0.34	0.36	<0.2	<0.2	<0.2	-	<0.2
Zinc (Zn)	µg/L	2.0	-	-	5.4	4.9	<2	<2	<2	-	<2
Zirconium (Zr)	µg/L	0.40	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4
BTEX											
Benzene	mg/L	0.0005	-	0.37	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050
Toluene	mg/L	0.001	-	0.002	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010
Ethyl benzene	mg/L	0.0005	-	0.09	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050
o-Xylene	mg/L	0.0005	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050
m+p-Xylenes	mg/L	0.0005	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050
Xylenes	mg/L	0.0015	-	-	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	-	<0.0015
F1 - F4 Hydrocarbons											
F1 (C6-C10)	mg/L	0.1	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10
F2 (C10-C16)	mg/L	0.25	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	-	<0.25
F3 (C16-C34)	mg/L	0.25	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	-	<0.25
F4 (C34-C50)	mg/L	0.25	-	-	<0.25	<0.25	<0.25	<0.25	<0.25	-	<0.25

NOTES:

a. D.L. = laboratory detection limit
b. Nunavut Water Board License 3BM-BAK1015 Water Quality Criteria
c. CCME PAL - Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (Freshwater)
d. RPD = Relative Percent Difference between replicate samples when both results are > 5x the detection limit
e. CCME PAL Ammonia Guideline provided as a reference. Actual Guideline is temperature and pH dependent; see Ammonia factsheet for more information
f. CCME PAL Total Aluminum guideline is 100 µg/L when pH > 6.5
g. CCME PAL Total Cadmium guideline = $10^{[0.86[Log(hardness)] - 3.2]}$
   Average hardness = 27.4
   Cadmium Guideline = 0.0109
h. CCME FAL Total Copper guideline:
   2 µg/L when [CaCO3] is 0 - 120 mg/L
i. CCME FAL Total Lead guideline:
   1 µg/L when [CaCO3] is 0 - 60 mg/L
   2 µg/L when [CaCO3] is 60 - 120 mg/L
j. CCME FAL Total Nickel guideline:
   25 µg/L when [CaCO3] is 0 - 60 mg/L
   65 µg/L when [CaCO3] is 60 - 120 mg/L
k. **Bolded** result implies a guideline exceedance
l. Data outlier - field blank result greater than five times the detection limit and result confirmed by laboratory; field blank likely contaminated