

F I N A L R E P O R T

KWICKSUTAINIUK FIRST NATION

Assessment Studies of Water and Wastewater Systems and Associated Water Management Practices at Selected First Nation Communities

Table 1.0
Water Quality Data for Kwicksutainneuk Wells

Parameter (notes 1,3)	GCDWQ Upper Limits (note 2)	Well 86-1			Well 95-1				Well 95-2			
		1/7/95	6/4/00	12/6/02	1/7/95	6/4/00	10/1/01	12/6/02	1/7/95	6/4/00	10/1/01	12/6/02
1. Conductivity (µmhos/cm)	400 (note 4)	422	316	317	642	2350	2660	3310	360	1870	3310	978
2. Total Dissolved Solids	500	288	187	207	414	1310	1680	2340	334	1000	2080	611
3. Hardness (as CaCO ₃)	200 (note 5)	17.1	11	8.8	43.4	487	467	779	43.1	269	734	184
4. Alkalinity (as CaCO ₃)	250	128	140	-	108	116	100	-	128	100	106	-
5. Calcium		5.61	3.54	2.72	12.9	150	143	231	14.3	85.9	111	57.8
6. Chloride	250	47.6	7.8	-	120	637	765	-	32.5	505	985	-
7. Iron	0.3	0.032	0.36	0.21	<0.03	0.95	0.05	0.15	0.05	0.22	1.92	0.05
8. Magnesium		0.742	0.52	0.5	2.67	27.3	26.6	49	1.87	13.3	19.9	9.5
9. Manganese	0.05	0.008	0.022	0.028	0.006	0.11	0.035	0.101	<0.005	0.04	0.031	0.005
10. Sodium	200	92.9	72.3	73	65	277	316	355	123	260	230	123
11. Sulphate	500	15.6	12	-	20.4	66	75	-	8.8	34	115	-

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Notes:

1. All units are mg/L unless otherwise shown
2. GCDWQ = Guidelines for Canadian Drinking Water Quality, March 2001
3. All limits are Aesthetic Objectives (AO) unless otherwise stated
4. No specified limit under GCDWQ. European Standards stipulate an aesthetic objective of 400 mg/L.
5. Maximum not established. Levels > 200 mg/L are considered poor but may be tolerated. Levels > 500 mg/L are considered unacceptable



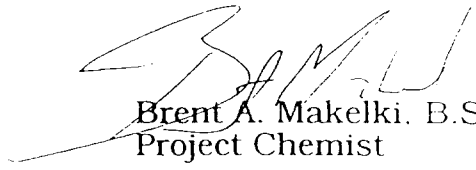
CHEMICAL ANALYSIS REPORT

Date: July 20, 1995
ASL File No. F1864
Report On: 1264 Water Analysis
Report To: **Piteau Assoc. Engineering Ltd.**
215 - 260 West Esplanade
North Vancouver, BC
V7M 3G7
Attention: **Mr. Thierry Carriou**
Received: July 6, 1995

ASL ANALYTICAL SERVICE LABORATORIES LTD.

per:


Joyce Chow, B.Sc.
Project Chemist


Brent A. Makelki, B.Sc.
Project Chemist



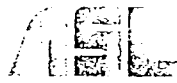
REMARKS

File No. F1864

Please note that from our laboratory analysis of the water, it was determined that the concentration of dissolved iron and manganese exceeds the concentration of the total iron and manganese for some of the samples reported. The cause of this is generally due to the following factors:

- 1) filter contamination in the field during sample collection.
- 2) contamination during transport, or
- 3) analytical variability.

It is highly recommended that filter blanks be submitted along with the samples in order to check for potential contamination; these samples are analyzed at no extra cost.



RESULTS OF ANALYSIS - Water

File No. F1864

86-1
PW-195-2
PW-395-1
PW-2

95 07 01

95 07 04

Physical Tests

Colour	CU	<5	<5	<5
Conductivity	umhos/cm	422	642	360
Total Dissolved Solids		288	414	334
Hardness	CaCO3	17.1	43.4	43.1
pH		8.75	8.43	8.08
Total Suspended Solids		<1	2	<1
Turbidity	NTU	0.32	0.24	1.05

Dissolved Anions

Alkalinity - Total	CaCO3	128	108	128
Chloride	Cl	47.6	120	32.5
Fluoride	F	0.45	1.16	0.25
Silicate	SiO2	27.8	29.1	26.6
Sulphate	SO4	15.6	20.4	8.8

Nutrients

Nitrite/Nitrate Nitrogen	N	<0.005	<0.005	<0.005
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Bacteriological Tests

Coliform Bacteria - Fecal		<2	<2	-
Coliform Bacteria - Total		4	<2	-

Total Metals

Iron	T-Fe	<0.030	<0.030	0.030
Manganese	T-Mn	0.008	0.005	<0.005

Remarks regarding the analyses appear at the beginning of this report. Results are expressed as milligrams per litre except for pH, Colour (CU), Conductivity (umhos/cm), Turbidity (NTU), and Coliform Bacteria (MPN/100ml). A coliform result of <2 will be interpreted by the B.C. Ministry of Health as a value of 0 (zero).

< = Less than the detection limit indicated.



RESULTS OF ANALYSIS - Water

File No. F1864

PW86-1

~~PW95-1~~
PW95-2

PW-2 PW95-1

PW-1

PW-3

PW-2

95 07 01

95 07 04

Dissolved Metals

Aluminum	D-Al	<0.20	<0.20	<0.20
Antimony	D-Sb	<0.20	<0.20	<0.20
Arsenic	D-As	0.0064	0.0240	0.0245
Barium	D-Ba	<0.010	<0.010	<0.010
Beryllium	D-Be	<0.005	<0.005	<0.005
Bismuth	D-Bi	<0.10	<0.10	<0.10
Boron	D-B	0.20	0.44	0.11
Cadmium	D-Cd	<0.0002	<0.0002	<0.0002
Calcium	D-Ca	5.61	14.3	12.9
Chromium	D-Cr	<0.015	<0.015	<0.015
Cobalt	D-Co	<0.015	<0.015	<0.015
Copper	D-Cu	<0.010	<0.010	<0.010
Iron	D-Fe	0.032	0.050	<0.030
Lead	D-Pb	0.001	<0.001	<0.001
Lithium	D-Li	<0.015	<0.015	<0.015
Magnesium	D-Mg	0.742	1.87	2.67
Manganese	D-Mn	0.006	<0.005	0.006
Mercury	D-Hg	<0.00005	<0.00005	<0.00005
Molybdenum	D-Mo	<0.030	<0.030	<0.030
Nickel	D-Ni	<0.020	<0.020	<0.020
Phosphorus	D-P	<0.30	<0.30	<0.30
Potassium	D-K	<2.0	<2.0	<2.0
Selenium	D-Se	<0.0005	<0.0005	<0.0005
Silicon	D-Si	11.7	12.1	11.3
Silver	D-Ag	<0.015	<0.015	<0.015
Sodium	D-Na	92.9	123	65.0
Strontium	D-Sr	0.032	0.087	0.046
Thallium	D-Tl	<0.10	<0.10	<0.10
Tin	D-Sn	<0.30	<0.30	<0.30
Titanium	D-Ti	<0.010	<0.010	<0.010
Tungsten	D-W	<0.10	<0.10	<0.10
Vanadium	D-V	<0.030	<0.030	<0.030
Zinc	D-Zn	<0.005	<0.005	<0.005

Inorganic Parameters

Sulphide	S	0.02	<0.02	-
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Remarks regarding the analyses appear at the beginning of this report. Results are expressed as milligrams per litre except for pH, Colour (CU), Conductivity (umhos/cm), Turbidity (NTU), and Coliform Bacteria (MPN/100ml). A coliform result of <2 will be interpreted by the B.C. Ministry of Health as a value of 0 (zero).

< = Less than the detection limit indicated.



METHODOLOGY

File No. F1864

Samples were analyzed by methods acceptable to the appropriate regulatory agency. Outlines of the methodologies utilized are as follows:

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

These analyses are carried out in accordance with procedures described in "Standard Methods for the Examination of Water and Wastewater" 18th Edition published by the American Public Health Association, 1992. The procedures involve a variety of instrumental analyses including atomic emission spectrophotometry (ICP) and atomic absorption spectrophotometry (AA) to obtain the required detection limit for each element. Specific details are available on request.

End of Report



CHEMICAL ANALYSIS REPORT

Date: April 27, 2000
ASL File No. L6081
Report On: Water Analysis (Gilford Island)
For Denis Hayes, EHO
Report To: **Health Canada - OHSA (Pacific)**
#510 - 1230 Government Street
Victoria, BC
V8W 3Y2
Attention: **Mr. Peter Mazey, Senior E.H.O.**
Received: April 6, 2000

ASL ANALYTICAL SERVICE LABORATORIES LTD.

per:


Joanne Patrick, B.Sc. - Project Chemist
Can Dang, B.Sc. - Project Chemist

cc: Denis Hayes, EHO
Health Canada - Campbell River.



REMARKS

File No. L6081

The water as represented by the samples submitted met the Canadian Drinking Water Guidelines for all parameters analysed with the exception of pH, Turbidity and Iron for the sample "Well 860-1"; Total Dissolved Solids, Hardness, Turbidity, Chloride, Iron, Manganese and Sodium for the sample "Well 950-1"; and Total Dissolved Solids, Hardness, Turbidity, Chloride and Sodium for the sample "Well 960-2". These parameters are usually limited for aesthetic purposes rather than health considerations. See the guidelines attached or contact ASL if you require any additional information.



RESULTS OF ANALYSIS - Water

File No. L6081

Sample ID		Well 860-1	Well 950-1	Well 960-2 95-2
Physical Tests				
Colour	(CU)	<5	<5	<5
Conductivity	(umhos/cm)	316	2350	1870
Total Dissolved Solids		187	1310	1000
Hardness	CaCO3	11.0	487	269
pH		8.56	7.80	7.76
Turbidity	(NTU)	10.5	6.8	6.1
Dissolved Anions				
Alkalinity-Total	CaCO3	140	116	100
Chloride	Cl	7.8	637	505
Fluoride	F	0.37	<0.02	0.52
Sulphate	SO4	12	66	34
Nutrients				
Nitrate Nitrogen	N	<0.005	<0.005	0.005
Nitrite Nitrogen	N	<0.001	0.026	0.012
Total Metals				
Aluminum	T-Al	0.360	<0.05	0.20
Arsenic	T-As	0.0056	0.002	0.001
Barium	T-Ba	0.004	<0.01	<0.01
Boron	T-B	0.10	<0.5	<0.5
Cadmium	T-Cd	<0.0002	<0.002	<0.002
Calcium	T-Ca	3.54	150	85.9
Chromium	T-Cr	0.001	<0.01	<0.01
Copper	T-Cu	0.008	<0.01	<0.01
Iron	T-Fe	0.36	0.95	0.22
Lead	T-Pb	0.005	<0.01	<0.01
Magnesium	T-Mg	0.52	27.3	13.3
Manganese	T-Mn	0.022	0.11	0.04
Mercury	T-Hg	<0.00005	<0.00005	<0.00005
Potassium	T-K	0.39	4.1	1.5
Selenium	T-Se	<0.001	<0.01	<0.01
Sodium	T-Na	72.3	277	260
Uranium	T-U	0.00031	0.0019	0.0002
Zinc	T-Zn	0.009	<0.05	<0.05

Remarks regarding the analyses appear at the beginning of this report.
 Results are expressed as milligrams per litre except where noted.
 VPH = Volatile Petroleum Hydrocarbons.
 < = Less than the detection limit indicated.
 Results are expressed as milligrams per litre except for pH, Colour (CU),
 Conductivity (umhos/cm), and Turbidity (NTU).
 EPH = Extractable Petroleum Hydrocarbons.
 EPH10-19 is equivalent to EHw10-19.



RESULTS OF ANALYSIS - Water

File No. L6081

Sample ID	Well 860-1	Well 950-1	Well 960-2
<u>Halogenated Volatiles</u>			
Bromodichloromethane	<0.001	<0.001	<0.001
Bromoform	<0.001	<0.001	<0.001
Carbon Tetrachloride	<0.001	<0.001	<0.001
Chlorobenzene	<0.001	<0.001	<0.001
Chloroethane	<0.001	<0.001	<0.001
Chloroform	<0.001	<0.001	<0.001
Chloromethane	<0.001	<0.001	<0.001
Dibromochloromethane	<0.001	<0.001	<0.001
1,2-Dichlorobenzene	<0.001	<0.001	<0.001
1,3-Dichlorobenzene	<0.001	<0.001	<0.001
1,4-Dichlorobenzene	<0.001	<0.001	<0.001
1,1-Dichloroethane	<0.001	<0.001	<0.001
1,2-Dichloroethane	<0.001	<0.001	<0.001
cis-1,2-Dichloroethylene	<0.001	<0.001	<0.001
trans-1,2-Dichloroethylene	<0.001	<0.001	<0.001
1,1-Dichloroethylene	<0.001	<0.001	<0.001
Dichloromethane	<0.005	<0.005	<0.005
1,2-Dichloropropane	<0.001	<0.001	<0.001
cis-1,3-Dichloropropylene	<0.001	<0.001	<0.001
trans-1,3-Dichloropropylene	<0.001	<0.001	<0.001
1,1,1,2-Tetrachloroethane	<0.001	<0.001	<0.001
1,1,2,2-Tetrachloroethane	<0.001	<0.001	<0.001
Tetrachloroethylene	<0.001	<0.001	<0.001
1,1,1-Trichloroethane	<0.001	<0.001	<0.001
1,1,2-Trichloroethane	<0.001	<0.001	<0.001
Trichloroethylene	<0.001	<0.001	<0.001
Trichlorofluoromethane	<0.001	<0.001	<0.001
Vinyl Chloride	<0.001	<0.001	<0.001
<u>Non-halogenated Volatiles</u>			
Benzene	<0.0005	<0.0005	<0.0005
Ethylbenzene	<0.0005	<0.0005	<0.0005
Styrene	<0.0005	<0.0005	<0.0005
Toluene	<0.0005	<0.0005	<0.0005
meta- & para-Xylene	<0.0005	<0.0005	<0.0005
ortho-Xylene	<0.0005	<0.0005	<0.0005
Volatile Hydrocarbons (VH6-10)	<0.1	<0.1	<0.1
VPH	<0.1	<0.1	<0.1

Remarks regarding the analyses appear at the beginning of this report.
 Results are expressed as milligrams per litre except where noted.
 VPH = Volatile Petroleum Hydrocarbons.
 < = Less than the detection limit indicated.
 Results are expressed as milligrams per litre except for pH, Colour (CU),
 Conductivity (umhos/cm), and Turbidity (NTU).
 EPH = Extractable Petroleum Hydrocarbons.
 EPH10-19 is equivalent to EHW10-19.



RESULTS OF ANALYSIS - Water

File No. L6081

Sample ID	Well 860-1	Well 950-1	Well 960-2
<hr/>			
<u>Extractable Hydrocarbons</u>			
EPH10-19	<0.3	0.5	<0.3
EPH19-32	<1	<1	<1

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
VPH = Volatile Petroleum Hydrocarbons.
< = Less than the detection limit indicated.
Results are expressed as milligrams per litre except for pH, Colour (CU),
Conductivity (umhos/cm), and Turbidity (NTU).
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.



Appendix 1 - REGULATORY CRITERIA

File No. L6081

Health Canada

Guidelines for Canadian Drinking Water Quality, Sixth Ed., 1996.
All limits are Maximum Acceptable Concentration (MAC) unless otherwise indicated.

Limits expressed as milligrams per litre except pH, Turbidity, Colour, and Coliform Bacteria.

		Lower Limit	Upper Limit	Notes
Physical Tests				
Colour	(CU)	-	15 CU	1
Total Dissolved Solids		-	500 mg/L	1
Hardness	CaCO ₃	-	-	2
pH		6.5	8.5	1
Turbidity	(NTU)	-	5 NTU	3, 4
Dissolved Anions				
Chloride	Cl	-	250 mg/L	1
Fluoride	F	-	1.5 mg/L	
Sulphate	SO ₄	-	500 mg/L	1, 5
Nutrients				
Nitrate Nitrogen	N	-	10.0 mg/L	
Nitrite Nitrogen	N	-	1.0 mg/L	
Total Metals				
Arsenic	T-As	-	0.025 mg/L	6
Barium	T-Ba	-	1.0 mg/L	
Boron	T-B	-	5.0 mg/L	6
Cadmium	T-Cd	-	0.005 mg/L	
Chromium	T-Cr	-	0.05 mg/L	
Copper	T-Cu	-	1.0 mg/L	1, 3
Iron	T-Fe	-	0.3 mg/L	1
Lead	T-Pb	-	0.01 mg/L	3, 7
Manganese	T-Mn	-	0.05 mg/L	1
Mercury	T-Hg	-	0.001 mg/L	
Selenium	T-Se	-	0.01 mg/L	
Sodium	T-Na	-	200 mg/L	1
Uranium	T-U	-	0.10 mg/L	
Zinc	T-Zn	-	5.0 mg/L	1, 3
Halogenated Volatiles				
Carbon Tetrachloride		-	0.005 mg/L	
Chlorobenzene		-	0.08 mg/L	
1,2-Dichlorobenzene		-	0.2 mg/L	
1,4-Dichlorobenzene		-	0.005 mg/L	

- 1 Aesthetic Objective (AO) (taste, odour, appearance, etc.)
- 2 Maximum not established, levels > 200 mg/L are considered poor but may be tolerated (AO).
- 3 At point of consumption (AO).
- 4 1 NTU maximum allowed for water entering distribution systems.
- 5 There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L.
- 6 Interim Maximum Acceptable Concentration (IMAC)
- 7 First drawn water may be high, flush system before sampling(MAC)



Appendix 1 - REGULATORY CRITERIA

File No. L6081

Health Canada

Guidelines for Canadian Drinking Water Quality, Sixth Ed., 1996.
All limits are Maximum Acceptable Concentration (MAC) unless
otherwise indicated.
Limits expressed as milligrams per litre except pH, Turbidity,
Colour, and Coliform Bacteria.

	Lower Limit	Upper Limit	Notes
<u>Halogenated Volatiles</u>			
1,2-Dichloroethane	-	0.005 mg/L	2
Dichloromethane	-	0.05 mg/L	
Trichloroethylene	-	0.05 mg/L	
<u>Non-halogenated Volatiles</u>			
Benzene	-	0.005 mg/L	
Ethylbenzene	-	0.0024 mg/L	1
Toluene	-	0.024 mg/L	1
meta- & para-Xylene	-	0.3 mg/L	1, 3
ortho-Xylene	-	0.3 mg/L	1, 3

- 1 Aesthetic Objective (AO) (taste, odour, appearance, etc.)
2 Interim Maximum Acceptable Concentration (IMAC)
3 Xylenes (total) should not exceed 0.3 mg/L (AO).

RESULTS OF ANALYSIS - Water

File No. M5931

Sample ID	Well	Well	Clinic
Sample Date	95-1	95-2	Gilford
	01 01 10	01 01 10	01 01 10
Physical Tests			
Colour (CU)	<5	<5	<5
Conductivity (umhos/cm)	2660	3310	2040
Total Dissolved Solids	1680	2080	1180
Hardness CaCO3	487	734	358
pH	7.79	7.88	7.99
Turbidity (NTU)	0.4	18.4	0.6
Dissolved Anions			
Alkalinity-Total CaCO3	100	106	109
Chloride Cl	785	885	550
Fluoride F	0.39	0.19	0.29
Sulphate SO4	75	115	56
Nutrients			
Nitrate Nitrogen N	<0.1	<0.1	<0.1
Nitrite Nitrogen N	<0.1	<0.1	<0.1
Total Metals			
Aluminum T-Al	<0.03	<0.03	<0.03
Arsenic T-As	0.0023	0.0036	0.0019
Barium T-Ba	<0.005	0.007	<0.005
Boron T-B	0.3	<0.3	<0.3
Cadmium T-Cd	<0.001	<0.001	<0.001
Calcium T-Ca	143	220	111
Chromium T-Cr	<0.005	<0.005	<0.005
Copper T-Cu	0.007	0.011	0.029
Iron T-Fe	<0.03	1.92	0.03
Lead T-Pb	<0.005	<0.005	<0.005
Magnesium T-Mg	26.6	44.8	19.9
Manganese T-Mn	0.035	0.130	0.031
Mercury T-Hg	<0.00005	<0.00005	<0.00005
Potassium T-K	1.6	4.3	1.5
Selenium T-Se	<0.001	<0.001	<0.01
Sodium T-Na	318	337	230
Uranium T-U	0.00023	0.00112	0.00029
Zinc T-Zn	<0.03	<0.03	<0.03

Remarks regarding the analyses appear at the beginning of this report.
 Results are expressed as milligrams per litre except for pH, Colour (CU),
 Conductivity (umhos/cm), and Turbidity (NTU).
 < = Less than the detection limit indicated.

DRAFT

Page(s) 004185 to\à 004186

Is(are) under consultation

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed : 2001 MAR 12

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Requisition : A0WW052864
Submitter Ref :

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL RI*

Site Information

Code/Name : 02N3188 - 02N3188

Site Desc : 4075, GILFORD ISLAND, BAND OFFICE, HEALTH CLINIC, GILFORD ISLAND
Locality/Area : Type : COM.W.S.

Source : Well

Specimen

Treatment : UNTREATED

Nature : WATER

Ph Level : Free

Chlorine Level : ppm

Exams Req : Total Coliform

Collector : CAROL MACRAE

Exams : Fecal Coliform

Collected : 2001 MAR 6

Received : 2001 MAR 8

SULTS

Reported on 2001 MAR 12

<u>Test</u>	<u>Result</u>	<u>Units</u>
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration)	L1	FC Count/100ml
L: LESS THAN		
3. MORE THAN 200 BACKGROUND COLONIES NOTED ON TOTAL COLIFORM MEMBRANE FILTER PER 100 ML		

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For inquiries from medical personnel regarding laboratory results, please contact the Central Inquiry Line at 604-660-5100.

Specimen was 48 hours in transit

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed : 2001 MAR 12

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Requisition : A0WW052865
Submitter Ref :

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL RI*

Site Information s.19(1)

Code/Name : 02N3189 - 02N3189

Site Desc : 4076, [REDACTED], KITCHEN TAP, GILFORD ISLAND

Site/Area : Type : COM.W.S.

Source : Well

Specimen

Treatment : UNTREATED

Ph Level : Free Chlorine Level : ppm

Nature : WATER

Exams Req : Total Coliform

Operator : CAROL MACRAE

Exams : Fecal Coliform

Collected : 2001 MAR 6

Received : 2001 MAR 8

SULTS

Reported on 2001 MAR 12

<u>Test</u>	<u>Result</u>	<u>Units</u>
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration)	L1	FC Count/100ml
L: LESS THAN		

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For inquiries from medical personnel regarding laboratory results, please contact the Central Inquiry Line at 604-660-5100.

Specimen was 48 hours in transit

Centre for
Disease Control
Society

BCCDC LABORATORY SERVICES
655 12th Avenue West
Vancouver, B.C. V5Z 4R4

Fax: (604) 660-6073

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed : 2001 MAR 12

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Requisition : A0WW052865
Submitter Ref :

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL RI*

Specimen Information

Code/Name : 02N3189 - 02N3189 s.19(1)
Specimen Desc : 4076, [REDACTED], KITCHEN TAP, GILFORD ISLAND
City/Area : [REDACTED] Type : COM.W.S.
Source : Well

Specimen

Treatment : UNTREATED Ph Level : Free Chlorine Level : ppm
Nature : WATER Exams Req : Total Coliform
) : CAROL MACRAE : Fecal Coliform

Collected : 2001 MAR 6
Received : 2001 MAR 8

RESULTS

Reported on 2001 MAR 12

<u>Test</u>	<u>Result</u>	<u>Units</u>
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration)	L1	FC Count/100ml
L: LESS THAN		

DON'T WAIT FOR THESE RESULTS TO ARRIVE IN THE MAIL!

MEDINET delivers lab reports electronically throughout the province--on your computer or on your fax. It's easy, fast and convenient, at no charge to you. Call now, at 737-1477 in Vancouver or toll free at 1-800-737-3771.

For inquiries from medical personnel regarding laboratory results, please contact the Central Inquiry Line at 604-660-5100.

Specimen was 48 hours in transit

BCCDC LABORATORY SERVICES

The Province's centre of expertise in communicable disease control and provider of specialist support services.

Centre for
Disease Control
Society

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655 12th Avenue West
Vancouver, B.C. V5Z 4R4

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ENVIRONMENTAL
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Phone Number :

Printed : 2001 MAR 12

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Requisition : A0WW052864
Submitter Ref :

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL RI*)

Site Information

Code/Name : 02N3188 - 02N3188
Site Desc : 4075, GILFORD ISLAND, BAND OFFICE, HEALTH CLINIC, GILFORD ISLAND
City/Area : Type : COM.W.S.
Source : Well

Specimen

Treatment : UNTREATED
Nature : WATER
Ph Level : Free
Exams Req : Total Coliform
Chlorine Level : ppm
HO : CAROL MACRAE
: Fecal Coliform

Collected : 2001 MAR 6
Received : 2001 MAR 8

RESULTS

Reported on 2001 MAR 12

Test	Result	Units
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration) L: LESS THAN	L1	FC Count/100ml
3. MORE THAN 200 BACKGROUND COLONIES NOTED ON TOTAL COLIFORM MEMBRANE - FILTER PER 100 ML		

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Call now, at 737-1477 in Vancouver or toll free at 1-800-737-3771.

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Specimen was 48 hours in transit

RESULTS OF ANALYSIS - Water

F

Sample ID	Gilford Island 11th Ch.
Sample Date	01 06 20
Sample Time	18:00

<u>Total Metals</u>		
Sodium	T-Na	290

Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed : 2001 JUL 3

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Requisition : A1WW016496
Submitter Ref :

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL RI*

Site Information

Code/Name : 0209632 - 0209632

Site Desc : 4075, GILFORD HEALTH CLINIC, GILFORD ISLAND (KITCHEN TAP-COPIED FROM
SAMPLE BOTTLE LABEL)

City/Area :

Source : Well

Type : Public Waterworks System

Specimen

Treatment : UNTREATED

Ph Level : Free

Chlorine Level : ppm

Nature : WATER

Exams Req : Total Coliform

SHO : CAROL MACRAE

: Fecal Coliform

Collected : 2001 JUN 26

Received : 2001 JUN 28

RESULTS

Reported on 2001 JUL 3

<u>Test</u>	<u>Result</u>	<u>Units</u>
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration)	L1	FC Count/100ml
L: LESS THAN		

DON'T WAIT FOR THESE RESULTS TO ARRIVE IN THE MAIL!

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Call now, at 737-1477 in Vancouver or toll free at 1-800-737-3771.

For inquiries from medical personnel regarding laboratory results, please contact the Central Inquiry Line at 604-660-5100.

Specimen was 48 hours in transit

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed :2002 JAN 14

Requisition :A1WW052104

Submitter Ref :

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Specimen Submitter

:342-HEALTH CANADA (CAMPBELL RI*

Site Information

Code/Name :02S1849 - 02S1849
Site Desc :GILFORD PUMP HOUSE, GUILFORD IS
City/Area : Type :
Source :Well

Specimen

Treatment:UNTREATED Ph Level: Free Chlorine Level: ppm
Nature :WATER Exams Req :Total Coliform

PHO :S.GREEN :Fecal Coliform

Collected:2002 JAN 8
Received :2002 JAN 10

RESULTS

Reported on 2002 JAN 14

<u>Test</u>	<u>Result</u>	<u>Units</u>
1. Total Coliform (Membrane Filtration)	L1	TC Count/100ml
2. Fecal Coliform (Membrane Filtration)	L1	FC Count/100ml
L:LESS THAN		

For inquiries from medical personnel regarding laboratory results,
please contact the Central Inquiry Line at 604-660-5100.

Specimen was 48 hours in transit
Coliform test may NOT be valid if specimen was more than 30 hrs in transit

ENVIRONMENTAL
BACTERIOLOGY

Phone Number :

Printed : 2002 MAR 27

Requisition : A1WW064346
Submitter Ref :

HEALTH CANADA (CAMPBELL RIVER) - 342
OCCUPATIONAL & ENVIRONMENTAL HEALTH
1180 IRONWOOD ST SUITE 119
CAMPBELL RIVER BC V9W 5P7

Specimen Submitter

: 342-HEALTH CANADA (CAMPBELL R

Site Information

Code/Name : 02T2733 - 02T2733

Site Desc : OWEEKENO CLINIC

City/Area :

Source : Lake

Type : COM.W.S.

Specimen

Treatment : UNTREATED

Nature : WATER

Ph Level: Free Chlorine Level: ppm
Exams Req : Total Coliform

EHO : D.HAYES

: Fecal Coliform

Collected: 2002 MAR 25

Received: 2002 MAR 26

RESULTS

Reported on 2002 MAR 27

Test

1. Total Coliform (Membrane Filtration)
 2. Fecal Coliform (Membrane Filtration)
- L: LESS THAN

Result

L1

L1

Units

TC Count/100ml

FC Count/100ml

Specimen was 24 hours in transit
Coliform test may NOT be valid if specimen was more than 30 hrs in transit



ANALYTICAL SERVICES

07 May 02
Page 2 of 13

ANALYTICAL REPORT
Form 08097071

Client : HEALTH CANADA
Sampling site :
Submitted by : SANDRA GREEN

Philip ID : 12017364 12017365
Client ID : OWEEKENO GUILFORD

Sparcode	Parameter	Unit	MDL	CDWG		
PHYSICAL						
00041220	pH	pH units	0.1	6.5-8.5	6.5	7.8
00021300	Color True	Col.Unit	5	15	< 5	5
00111160	Specific Conductance	uS/cm	1	---	61	2370
SCCACALC	Computed Conductance	uS/cm	---	---	64	2780
CCPDCALC	Conductance % Diff.	%	---	---	4.3	15.8
00081071	Residue Nonfilterable (TSS)	mg/L	4	---	< 4	< 4
007H1035	Residue Filterable 1.0u (TDS)	mg/L	10	500	44	1540
CTDSCALC	Computed TDS	mg/L	---	---	33	1280
TDSRCALC	TDS % Diff.	%	---	---	-27.7	-18.6
00131140	Turbidity	NTU	0.10	1.0	0.13	0.32
0107CALC	Hardness Total -T	mg/L	---	500	26.0	521
GENERAL INORGANICS						
01011211	Alkalinity Phen. 8.3 as CaCO3	mg/L	1	---	< 1	< 1
01021210	Alkalinity Total as CaCO3	mg/L	1	---	28	95
CO3-CALC	Carbonate as CO3=	mg/L	---	---	< 0.5	< 0.5
HCO3CALC	Bicarbonate as HCO3-	mg/L	---	---	34.1	116
OH-CALC	Hydroxide as OH-	mg/L	---	---	< 0.5	< 0.5
2105AA04	Cyanide(SAD) + Thiocyanam	mg/L	0.0005	0.2	0.0007	0.0005
0125LLH3	Sulfide Total	mg/L	0.005	0.05	< 0.005	< 0.005
ANIONS						
11041334	Chloride Dissolved	mg/L	0.5	< 250	1.1	678
11061341	Fluoride Dissolved	mg/L	0.01	1.5	0.05	0.33
IonBCALC	Ion Balance	%	---	---	1.2	1.1
AnnsCALC	Total Anions	meq/L	---	---	0.65	22.42
CatsCALC	Total Cations	meq/L	---	---	0.67	23.00
LmgCALC	Langelier Index	pH units	---	---	-2.6	0.4
pHRCALC	Saturation pH	pH units	---	---	9.1	7.4
CARBON						
01030912	Organic Carbon - Total	mg/L	0.5	---	< 0.5	0.6

Matrix : Water Water
Sampled on: 02/03/25 16:00 02/03/25 16:00

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ANALYTICAL SERVICES

07-May-02
Page 3 of 13

ANALYTICAL REPORT
Form 08097071

Client : HEALTH CANADA
Sampling site :
Submitted by : SANDRA GREEN

Philip ID : 12017364 12017365
Client ID : OWBEEKENO GUILFORD

Sparscode	Parameter	Unit	MDL	CDWC		
NITROGEN						
11081351	Ammonia Nitrogen (N)	mg/L	0.005	—	< 0.005	< 0.005
1110CALC	Nitrate Nitrogen Dissolved (N)	mg/L		10.0	0.34	0.04
11091350	Nitrate+Nitrite (N)	mg/L	0.02	10.0	0.34	0.05
11111354	Nitrite Nitrogen (N)	mg/L	0.005	1.0	< 0.005	0.006
SULFATE						
11211403	Sulfate	mg/L	0.5	< 500	1.0	66.3
METALS TOTAL						
Al-T0031	Aluminium	mg/L	0.02	—	< 0.02	< 0.02
Sb-TM831	Antimony	mg/L	0.001	—	< 0.001	< 0.001
As-TM831	Arsenic	mg/L	0.001	0.025	< 0.001	< 0.001
Ba-T0031	Barium	mg/L	0.001	1.0	0.005	0.004
B-T0031	Boron	mg/L	0.008	5.0	< 0.008	0.336
Cd-TM831	Cadmium	mg/L	0.0001	0.005	< 0.0001	< 0.0001
Ca-T0031	Calcium	mg/L	0.05	—	8.22	158
Cr-T0031	Chromium	mg/L	0.005	0.05	< 0.005	< 0.005
Co-T0031	Cobalt	mg/L	0.005	—	< 0.005	< 0.005
Cu-T0031	Copper	mg/L	0.005	1.0	0.306	0.011
Fe-T0031	Iron	mg/L	0.005	0.3	< 0.005	0.058
Pb-TM831	Lead	mg/L	0.0005	0.01	0.0012	0.0037
Mg-T0031	Magnesium	mg/L	0.05	—	1.33	30.6
Mn-T0031	Manganese	mg/L	0.001	0.05	< 0.001	0.032
Hg-T0310	Mercury	mg/L	0.00005	0.001	< 0.00005	< 0.00005
Mo-T0031	Molybdenum	mg/L	0.005	—	< 0.005	0.008
Ni-T0031	Nickel	mg/L	0.008	—	< 0.008	< 0.008
K-T0031	Potassium	mg/L	1	—	< 1	3
Se-TM831	Selenium	mg/L	0.001	0.01	< 0.001	0.001
Ag-T0031	Silver	mg/L	0.01	—	< 0.01	< 0.01
Na-T0031	Sodium	mg/L	0.05	200	2.71	285
U-TLLMS	Uranium	mg/L	0.00001	0.1	< 0.00001	0.00039
V-T0031	Vanadium	mg/L	0.005	—	< 0.005	< 0.005
Zn-T0031	Zinc	mg/L	0.005	5.0	< 0.005	0.021

Matrix : Water Water
Sampled on: 02/03/25 16:00 02/03/25 16:00

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ANALYTICAL SERVICES

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ANALYTICAL REPORT
Form 08097071

Client : HEALTH CANADA
Sampling site :
Submitted by : SANDRA GREEN

Philp ID : 12017364 12017365
Client ID : OWEEKENO GUILFORD

Sparcode	Parameter	Unit	MDL	CDWC		
CHLORINATED PHENOLS						
EX9946Z7	Water Prep for CPs	date			02/04/01	02/04/01
MCP2CPWA	2-chlorophenol	mg/L	0.001	--	< 0.001	< 0.001
MCP3CPWA	3-chlorophenol	mg/L	0.001	--	< 0.001	< 0.001
MCP4CPWA	4-chlorophenol	mg/L	0.001	--	< 0.001	< 0.001
CPB1CPWA	2,3-Dichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CPH1CPWA	2,4+3,4-DiClPhenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CPH2CPWA	2,6-Dichlorophenol	ug/L	0.0001	--	< 0.0001	< 0.0001
CP09CPWA	2,6-Dichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CPB3CPWA	3,5-Dichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP03CPWA	2,3,4-Trichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP04CPWA	2,3,5-Trichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP05CPWA	2,3,6-Trichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP06CPWA	2,4,5-Trichlorophenol	ug/L	0.0001	--	< 0.0001	< 0.0001
CP07CPWA	2,4,6-Trichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP44CPWA	3,4,5-Trichlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP02CPWA	2,3,4,5-Tetrachlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
CP01CPWA	2346+2356-TeClPhenol	mg/L	0.0001	--	< 0.0001	< 0.0001
WZ1CPWA	Pentachlorophenol	mg/L	0.0001	--	< 0.0001	< 0.0001
SURROGATE RECOVERY						
DC01SURR	CL2 Phenylacetic acid	%		--	93	90
BR3-CPWA	Tribenzophenol	%	40	--	83	85
HERBICIDES						
EX995351	Prep for Glyphosate	date			02/03/28	02/03/28
A001P012	AMPA	mg/L	0.05	--	< 0.05	< 0.05
HYDROCARBONS						
HD99PT11	VH C6-C10	mg/L	0.1	--	< 0.1	< 0.1
EX995172	Volat. Wat. Pre-Ser.	date			02/03/28	02/03/28
H09/CALC	VPHw	mg/L		--	< 0.1	< 0.1
POLYCYCLIC AROMATIC HYDROCARBONS						
EX9946Z4	PAH Extraction-Water	date			02/04/01	02/04/01
PA05MW02	Benzo(a)pyrene	ug/L	0.00002	0.00001	< 0.00002	< 0.00002
					Matrix : Water	Water
					Sampled on: 02/01/25 16:00	02/03/25 16:00

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ANALYTICAL SERVICES

07-May-02
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ANALYTICAL REPORT
Form 08097071

Client : HEALTH CANADA
Sampling site :
Submitted by : SANDRA GREEN

Philip ID : 12017364 12017365
Client ID : OWBCKCNO GUILFORD

Spacno	Parameter	Unit	MDL	CDWC		
VOLATILE ORGANICS-MAH						
B020MS11	Benzene	ug/L	0.5	5.0	< 0.5	< 0.5
V919MS11	Chlorobenzene	ug/L	0.5	80.0	< 0.5	< 0.5
V924MS11	1,2-Dichlorobenzene	ug/L	0.5	200.0	< 0.5	< 0.5
V925MS11	1,3-Dichlorobenzene	ug/L	0.3	—	< 0.3	< 0.3
V926MS11	1,4-Dichlorobenzene	ug/L	0.4	5.0	< 0.4	< 0.4
B021MS11	Ethylbenzene	ug/L	0.5	—	< 0.5	< 0.5
V921MS11	Styrene	ug/L	0.4	—	< 0.4	< 0.4
T001MS11	Toluene	ug/L	0.5	24.0	< 0.5	< 0.5
X RR47_9	Xylenes	ug/L	0.5	300.0	< 0.5	< 0.5
X003MS11	m,p - Xylene	ug/L	0.5	—	< 0.5	< 0.5
X002MS11	o - Xylene	ug/L	0.5	—	< 0.5	< 0.5
MTBEM811	Methyl t-butyl ether	ug/L	5	—	< 5	< 5
VOLATILE ORGANICS-CHLORINATED ALIPHATIC						
V903MS11	Bromomethane	ug/L	3	—	< 3	< 3
C034MS11	Carbon tetrachloride	ug/L	1	—	< 1	< 1
V904MS11	Chloroethane	ug/L	4	—	< 4	< 4
V914MS11	2-chloroethylvinylether	ug/L	2	—	< 2	< 2
V901MS11	Chloromethane	ug/L	1	—	< 1	< 1
V909MS11	1,1-Dichloroethane	ug/L	0.7	—	< 0.7	< 0.7
V912MS11	1,2-Dichloroethane	ug/L	0.5	—	< 0.5	< 0.5
V906MS11	1,1-Dichloroethene	ug/L	0.4	—	< 0.4	< 0.4
V910MS11	cis-1,2-Dichloroethene	ug/L	0.4	—	< 0.4	< 0.4
V908MS11	trans-1,2-Dichloroethene	ug/L	0.7	—	< 0.7	< 0.7
V907MS11	Dichloromethane	ug/L	0.9	—	< 0.9	< 0.9
V913MS11	1,2-Dichloropropane	ug/L	0.5	—	< 0.5	< 0.5
V915MS11	cis-1,3-Dichloropropane	ug/L	0.4	—	< 0.4	< 0.4
V916MS11	trans-1,3-Dichloropropane	ug/L	0.3	—	< 0.3	< 0.3
V918MS11	1,2-Dibromoethane	ug/L	1	—	< 1	< 1
V923MS11	1,1,2,2-Tetrachloroethane	ug/L	0.5	—	< 0.5	< 0.5
T030MS11	Tetrachloroethane	ug/L	0.5	30.0	< 0.5	< 0.5
V911MS11	1,1,1-Trichloroethane	ug/L	0.7	—	< 0.7	< 0.7
V917MS11	1,1,2-Trichloroethane	ug/L	0.3	—	< 0.3	< 0.3
T029MS11	Trichloroethene	ug/L	0.6	50.0	< 0.6	< 0.6
V905MS11	Trichlorofluoromethane	ug/L	4	—	< 4	< 4

Matrix : Water Water Water
Sampled on: 02/03/25 16:00 02/03/25 16:00 02/03/25 16:00

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ANALYTICAL SERVICES

07-May-02
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ANALYTICAL REPORT
Form 08097071

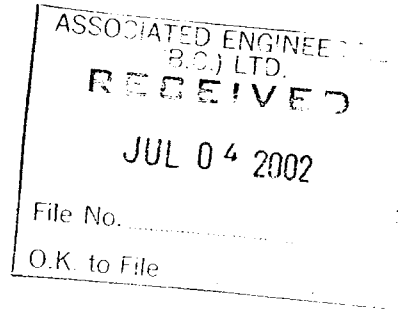
Client : HEALTH CANADA
Sampling site :
Submitted by : SANDRA GREEN

Philp ID : 12017364 12017365
Client ID : OWEEKENO GUILFORD

Sparrade	Parameter	Unit	MDL	CDWC		
V902MS11	Vinyl Chloride	ug/L	1	2.0	< 1	< 1
VOLATILE ORGANICS-TRIHALOMETHANES						
B012MS11	Bromodichloromethane	ug/L	0.5	100.0	< 0.5	< 0.5
B013MS11	Bromoform	ug/L	0.4	100.0	< 0.4	< 0.4
C032MS11	Chloroform	ug/L	0.6	100.0	< 0.6	< 0.6
C033MS11	Dibromochloromethane	ug/L	0.4	100.0	< 0.4	< 0.4
VOC SURROGATE RECOVERY						
V801VSUR	Bromofluorobenzene	%	0	—	85	93
V807VSUR	d4,1,2-dichloroethane	%	0	—	107	99
V803VSUR	d8-Toluene	%	0	—	91	94

Matrix : Water Water
Sampled on: 02/03/25 16:00 02/03/25 16:00

ALS Environmental



CHEMICAL ANALYSIS REPORT

Date: June 24, 2002

ALS File No. P5878

Report On: Kwicksutaineuk Water Syst.
Water Analysis

Report To: **Associated Engineering (BC) Ltd.**
300 - 4940 Canada Way
Burnaby, BC
V5G 4M5

Attention: **Mr. Rob Blakeney**

Received: June 14, 2002

ALS ENVIRONMENTAL

per:

Scott P. Hoekstra, B.Sc. - Project Chemist
Miles Gropen, B.Sc. - Project Chemist

File No. P5878

RESULTS OF ANALYSIS - Water



Sample ID	Kwicksut Well	Kwicksut Well	Kwicksut Well
Sample Date	86-1	95-1	95-22
Sample Time	02 06 12	02 06 12	02 06 12
ALS ID	14:00	14:00	14:00
	1	2	3

Physical Tests

Conductivity	(uS/cm)	317	3310	978
Total Dissolved Solids		207	2340	611
Hardness	CaCO3	8.8	779	184

Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS - Water



Sample ID		Kwicksut Well 86-1	Kwicksut Well 95-1	Kwicksut Well 95-2 1
Sample Date		02 06 12	02 06 12	02 06 12
Sample Time		14:00	14:00	14:00
ALS ID		1	2	3
Total Metals				
Aluminum	T-Al	<0.2	<0.2	<0.2
Antimony	T-Sb	<0.2	<0.2	<0.2
Arsenic	T-As	0.0058	0.0007	0.0016
Barium	T-Ba	<0.01	<0.01	<0.01
Beryllium	T-Be	<0.005	<0.005	<0.005
Bismuth	T-Bi	<0.2	<0.2	<0.2
Boron	T-B	0.1	0.3	0.2
Cadmium	T-Cd	<0.01	<0.01	<0.01
Calcium	T-Ca	2.72	231	57.8
Chromium	T-Cr	<0.01	<0.01	<0.01
Cobalt	T-Co	<0.01	<0.01	<0.01
Copper	T-Cu	0.01	<0.01	<0.01
Iron	T-Fe	0.21	0.15	0.05
Lead	T-Pb	<0.05	<0.05	<0.05
Lithium	T-Li	<0.01	0.02	<0.01
Magnesium	T-Mg	0.5	49.0	9.5
Manganese	T-Mn	0.028	0.101	<0.005
Molybdenum	T-Mo	<0.03	<0.03	<0.03
Nickel	T-Ni	<0.05	<0.05	<0.05
Phosphorus	T-P	<0.3	<0.3	<0.3
Potassium	T-K	<2	5	<2
Selenium	T-Se	<0.2	<0.2	<0.2
Silicon	T-Si	12.1	12.9	8.18
Silver	T-Ag	<0.01	<0.01	<0.01
Sodium	T-Na	73	355	123
Strontium	T-Sr	0.016	1.11	0.328
Thallium	T-Tl	<0.2	<0.2	<0.2
Tin	T-Sn	<0.03	<0.03	<0.03
Titanium	T-Ti	<0.01	<0.01	<0.01
Vanadium	T-V	<0.03	<0.03	<0.03
Zinc	T-Zn	0.020	0.029	0.007

Results are expressed as milligrams per litre except where noted.
 < = Less than the detection limit indicated.

Appendix 1 - REGULATORY CRITERIA**Health Canada**

Guidelines for Canadian Drinking Water Quality, March 2001.
All limits are Maximum Acceptable Concentration (MAC) unless
otherwise indicated.

Limits expressed as milligrams per litre except pH, Turbidity,
Colour, and Coliform Bacteria.

		Lower Limit	Upper Limit	Notes
Physical Tests				
Total Dissolved Solids		-	500 mg/L	1
Hardness	CaCO ₃	-	-	2
Total Metals				
Antimony	T-Sb	-	0.006 mg/L	3, 4
Arsenic	T-As	-	0.025 mg/L	3
Barium	T-Ba	-	1 mg/L	
Boron	T-B	-	5 mg/L	3
Cadmium	T-Cd	-	0.005 mg/L	
Chromium	T-Cr	-	0.05 mg/L	
Copper	T-Cu	-	1 mg/L	1, 5
Iron	T-Fe	-	0.3 mg/L	1
Lead	T-Pb	-	0.01 mg/L	5, 4
Manganese	T-Mn	-	0.05 mg/L	1
Selenium	T-Se	-	0.01 mg/L	
Sodium	T-Na	-	200 mg/L	1
Zinc	T-Zn	-	5 mg/L	1, 5

1 Aesthetic Objective (AO) (taste, odour, appearance, etc.)

2 Maximum not established, levels > 200 mg/L are considered poor
but may be tolerated.

3 Interim Maximum Acceptable Concentration (IMAC)

4 First drawn water may be high, flush system before sampling.

5 At point of consumption.

Appendix 2 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Conductivity in Water

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

Recommended Holding Time:

Sample: 28 days

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Solids in Water

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total dissolved solids (TDS) and total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius, TSS is determined by drying the filter at 104 degrees celsius. Total solids are determined by evaporating a sample to dryness at 104 degrees celsius. Fixed and volatile solids are determined by igniting a dried sample residue at 550 degrees celsius.

Recommended Holding Time:

Sample: 7 days

Reference: APHA

For more detail see ALS Environmental "Collection & Sampling Guide"

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

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Appendix 2 - METHODOLOGY - Continued



Recommended Holding Time:

Sample: 6 months

Reference: EPA

For more detail see: ALS "Collection & Sampling Guide"

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End of Report

Table 2.0
Water Usage Data for Kwicksutaineuk Wells

Date	Meter readings (lgal)		Total Flow (lgal)	95-1 hour meter		95-2 hour meter		Flow (l/s)	# run hours	# of days	est. # of people	Usage (l/c/d)		
	start	finish		start	end	start	end						hours	hours
Jun-01	6,478,900	6,827,300	348,400	2740	3033	293	9565	10527	962	0.60	1,255	30	100	523
Sep-01	8,949,800	9,028,800	79,000	4145	4200	55	15106	15238	132	0.14	187	30	100	119
Dec-01	9,103,700	9,192,075	88,375	4255	4319	64	15365	15575	210	0.15	274	31	40	321
Dec 01 - Jun 02	9,192,075	9,625,133	433,058	4319	4687	368	15575	16194	619	0.12	987	192	40	254

Kwicksutaineuk-Ah-Kwaw-Ah-Mish Band

General Delivery
Simoon Sound BC
VOP 150

Phone: (250) 974-3001

Fax: (250) 974-3036

974-5375

Fax:

To: Robert Blakeney From: Violet Jay
Fax: 604-291-663 Fax: 250-974-3036
Phone: 604-293-4111 Phone: 250-974-3001
Attention: _____ No. Pages: 7

Urgent

Please Reply

Comments:

Number of Pages:

If there are any questions or comments regarding this fax please
Call: (250) 974-3001. Thank-you.

ISKATAINEK HAMPHOUSE LOG

JUN

DATE	TIME	METER READINGS	FLOW TOTAL	PUMP 95-1 HRS	TOTAL HRS	PUMP 95-2 HRS	TOTAL HRS	RESERVOIR TOTAL	REMARKS
APRIL 4	9:05 AM	60078.00	414.100	2699.4	90.6	8443.7	1250.1	10.07	
MAY 26	10:40 AM	64219.00	118.00	2690.0	10.3	9693.8	1250.1	13.05	* TOTALS PASSED ON 51 DAYS
MAY 27	12:00 PM	64337.00	904.00	2779.5	79.2	9912.6	193.7	16.21	
JUNE 4	2:00 PM	65241.00	126.00	2791.2	11.7	9938.2	25.6	11.62	
JUNE 5	2:30	65367.00	243.00	2812.4	21.2	9990.0	57.8	11.33	
JUN 6	1:40 HR	65722.00	112.00	2822.1	9.7	10012.6	22.6	9.82	
10 JUN	14:50 HR	65949.00	227.00	2841.0	18.9	10052.7	45.1	9.40	
11 JUN	2:15 HR	66102.00	153.00	2853.6	12.6	10088.1	30.4	9.80	
12 JUN	16:55 HR	66198.00	96.00	2861.9	8.3	10106.7	18.6	23.96	
13 JUN	19:45 HR	66340.00	112.00	2871.3	9.4	10129.4	22.7	19.74	
14 "	13:50 HR	66398.00	88.00	2878.6	7.3	10147.5	18.1	16.87	
15 "	15:30 HR	66526.00	128.00	2889.1	10.5	10173.1	25.6	19.15	
20 "	11:00 HR	67212.00	686.00	2945.1	56.0	10312.0	139.9	22.95	> 4 1/5 DAY READING
21 "	13:00 HR	67345.00	133.00	2956.5	11.4	10339.0	27.0	16.90	
25 "	10:35 HR	67923.00	578.00	3004.3	47.8	10456.4	117.4	13.14	> 4 1/5 DAY READING
28 JUN	11:00 HR	68057.00	128.00	3015.1	10.8	10482.2	25.8	12.05	> 3/4 DAY READING
30 JUN	09:30 HR	68273.00	222.00	3033.5	18.4	10527.8	45.3	12.60	
2 JUL	11:35 HR	68520.00	247.00	3054.1	20.6	10572.6	50.1	15.30	> 2 DAY READING

004208

KWICKSUTAINNEUK PUMPHOUSE LOG

hrs

JULY

DATE	TIME	METER READING	TOTAL FLOW	PUMP 95-1 HOURS	TOTAL HRS	PUMP 95-2 HOURS	TOTAL HRS	RESERVOIR LEVEL
2 JUL	1135Hr	68550.00	247.00	3054.1	20.6	10577.6	50.1	15.30
3 RD	1930	68676.00	156.00	3067.4	13.3	10609.5	31.9	13.35
4 TH	1210	68758.00	82.00	3074.6	7.2	10626.1	16.6	13.98
5 TH	1100	68870.00	112.00	3084.1	9.5	10649.2	23.1	13.14
6	0900	68981.00	116.00	3093.6	9.5	10671.8	22.6	11.30
7	0900	69032.00	57.00	3098.2	4.6	10682.2	10.4	18.6
8	1000	69032.00	57.00	3098.2	4.6	10682.2	10.4	14.4
9	1100	69032.00	57.00	3098.2	4.6	10682.2	10.4	16.10
10	1000	69032.00	51.00	3098.2	4.6	10682.2	10.4	14.84
11	0900	69032.00	51.00	3098.2	4.6	10682.2	10.4	17.1
11	1100	FLUSHED SENSORS						14.1
12	1000	69032.00	57.00	3098.2	4.6	10682.2	10.4	16.99
13	1100	69032.00	57.00	3098.2	4.6	10682.2	10.4	15.64
14	1000	69036.00	4.00	3098.2	4.6	10683.3	1.0	14.16
JUN 11 2002	11:00	96251.33	27215	46879		161941		

PUMPS TRK OFF
 PMP STILL ON
 PMP STOPPED
 PMP STILL ON
 PMP STILL ON
 PMP OFF
 PMP ON

KWICKSUTAINNEK PUMPHOUSE LOG

887 01

DATE	TIME	METER READING	GALLONS TOTAL FLOW	PUMP 95-1 HOURS	TOTAL HRS	PUMP 95-2 HOURS	TOTAL HRS	RESERVOIR LEVEL
20	1100	8923.1	6.1	4126.5	4.3	15062.8	10.6	52
21	1100	8924.5	1.4	4137.5	1.0	15062.9	2.1	50
24	1100	8934.8	10.3	4134.5	7.0	15081.1	18.2	50
25	1630	8938.6	3.8	4137.4	2.9	15087.1	6.0	55
26	1000	8940.2	1.6	4138.5	1.1	15090.1	3.0	50
27	1000	8942.2	—	4138.8	—	15090.1	—	50
28	1000	8945.0	5.0	4142.0	3.5	15095.2	8.1	50
1	1200	8949.8	10.48	4145.3	3.3	15106.2	8.1	50
2	1000	8949.8	—	4145.3	—	15106.2	—	50
3	0900	8954.3	4.5	4148.4	3.1	15114.0	2.3	50
06	1100	8959.9	5.6	4152.9	4.4	15123.1	9.1	55
07	1100	8968.2	8.3	4158.3	5.5	15137.8	14.7	50
08	1000	8968.2	—	4158.3	—	15137.8	—	50
9	1000	8970.3	2.1	4160.8	1.7	15141.1	3.3	55
10	1000	8973.1	2.8	4161.8	1.8	15146.0	4.9	50
11	1100	8973.1	—	4161.8	—	15146.0	—	50
12	1030	8978.3	5.2	4165.5	3.7	15154.4	8.4	50
15	1000	8983.5	5.2	4169.3	3.8	15162.9	8.5	50

CONDUCTIVITY
 144
 142
 145
 140
 143
 142 No CHANGE
 142
 140
 141 No CHANGE
 140
 139
 141
 141
 138 RUNNER
 137
 137
 134
 12-

OVERCAST & SWIRLY CLOUDS
 RAIN / VERY LIGHT SWIRLY CLOUDS
 CLOUDY
 RAIN / CLOUDY
 RAIN / CLOUDY
 CLOUDY / RAIN
 SWIRLY CLOUDS
 CLOUDY / SWIRLY CLOUDS
 OVERCAST
 RAIN / RAIN
 RAIN / RAIN
 RAIN
 LIGHT SWIRLY CLOUDS
 OVERCAST
 WIND

→ WEEK END.

KWICKSUTAINNEUK PUMPHOUSE LOG

NOV 01 - DEC 01

* Pump Running

DATE	TIME	METER READING	TOTAL FLOW	PUMP 95-1 HOURS	TOTAL HRS	PUMP 95-2 HOURS	TOTAL HRS	RESERVOIR LEVEL
28	1030	91098.408	5.0	4257.5	3.8	15356.8	8.5	50
29	1100	9103.700	5.3	4255.5	4.0	15365.6	8.8	50
30	1130	9105.700	—	4255.5	—	15365.6	—	50
3	1130	9113.800	10.1	4263.1	7.6	15384.2	18.6	50
7	1100	9124.276	10.496	4270.6	7.5	15401.2	17.0	50
11	1130	9129.134	4.858	4274.0	3.4	15400.4	8.2	50
12	1300	9134.335	5.201	4277.8	3.8	15417.8	8.4	50
17	1130	9152.243	17.708	4290.3	12.5	15448.9	31.1	50
18	1100	9157.043	—	4290.3	—	15448.9	—	50
24	1000	9176.176	24.133	4307.2	16.9	15489.0	40.1	50
26	1200	9181.459	5.283	4311.1	3.9	15497.6	8.6	50
27	1700	9184.275	2.816	4313.4	2.3	15501.9	4.3	50
28	1300	9186.983	2.708	4315.3	1.9	15506.5	4.6	50
31	1200	9192.075	5.042	4318.9	3.6	15514.8	8.3	50

HIGH TIDE / RAIN

WIND / CLOUD

HIGH TIDE

OVERCAST / CLOUD

HIGH TIDE

MID TIDE

RAIN / LOW TIDE

RAIN / HIGH TIDE

WIND

RAIN / MID TIDE

OVERCAST / HIGH TIDE

WIND / HIGH TIDE

RAIN / LOW TIDE

OVERCAST / HIGH TIDE

WIND / HIGH TIDE

121
119
118
116 COLD
117 OVERCAST
114
115
113
114
114
116
116
116

AVE
445 / 205C
LIGHT ON

KWICKSUTAINNEUK PUMPHOUSE LOG

APR. 01

DATE	TIME	METER READING	TOTAL FLOW	PUMP 95-1 HOURS	TOTAL HRS	PUMP 95-2 HOURS	TOTAL HRS	PUMP 95-2 HOURS	TOTAL HRS	RESERVE	COND
16	0900	8322.2 ⁰⁰	21.7	3692.1	14.7	14028.3	38.1	50	50	130	
20	1200	8336.2 ⁰⁰	14.0	3701.7	9.6	14050.9	22.6	50	50	126	
22	1100	8338.6 ⁰⁰	2.4	3703.5	1.8	14054.7	3.8	50	50	131	
23	1000	8338.6 ⁰⁰	—	3703.5	—	14054.7	—	50	50	132	
24	1000	8348.8 ⁰⁰	5.2	3707.0	3.4	14063.9	9.2	50	50	130	
25	1000	8343.8 ⁰⁰	—	3707.0	—	14063.9	—	50	50	131	
27	1300	8356.5 ⁰⁰	12.7	3715.8	8.9	14083.4	19.5	50	50	133	
28	1300	8356.5 ⁰⁰	—	3715.8	—	14083.4	—	50	50	133	
29	1230	8361.3 ⁰⁰	4.8	3719.1	3.3	14091.1	7.7	50	50	130	
30	1215	8361.3 ⁰⁰	—	3719.1	—	14091.1	—	50	50	131	
1	1330	8367.9 ⁰⁰	6.6	3723.5	4.4	14101.8	10.7	50	50	130	
2	1030	8374.7 ⁰⁰	6.8	3728.2	4.7	14120.8	11.0	50	50	128	
3	1230	8378.7 ⁰⁰	4.0	3731.2	3.0	14118.9	6.1	50	50	130	
4	1200	8379.6 ⁰⁰	0.9	3731.8	0.6	14121.1	2.2	50	50	122	
5	1400	8384.6 ⁰⁰	5.0	3735.0	3.2	14128.9	7.8	50	50	122	
6	1430	8385.6 ⁰⁰	1.0	3736.0	1.0	14129.9	1.0	55	55	123	
7	1400	8390.5 ⁰⁰	4.9	3738.0	2.0	14138.4	8.5	50	50	—	
8	8am	8390.5 ⁰⁰	4.9	3738.0	—	14138.4	11.63	—	—	—	

001

MAY