ASSESSMENT STUDY OF WATER AND WASTEWATER SYSTEMS AND ASSOCIATED WATER MANAGEMENT PRACTICES AT CANIM LAKE

A
REPORT
TO
INDIAN AND NORTHERN AFFAIRS CANADA
BC REGION

NovaTec Consultants Inc.
Environmental Engineers and Scientists

December 2002

File No.: 1407.10/15

Appendix C

Water Testing Results

ANALYTICAL REPORT
Form 08052920

Client : HEALTH CANADA
Sampling site :
Submitted by : PATTI JOYCE

Spurcode	Parameter	Unit	MDL	Philip ID : 10028600 Client ID : CANIM LK MAIN	10028601 CANIM LK EAST	10028602 CANIM LK WEST
PHYSICAL						
00041220	pH	pH units	0.1	8.1 *	8.4 *	8.3 *
00021300	Color True	Col.Unit	5	< 5 *	< 5 *	< 5 *
00111160	Specific Conductance	uS/cm	1	1020	595	864
SCCACALC	Computed Conductance	uS/cm		1290	674	1040
CCPDCALC	Conductance % Diff.	%		23	12	18
007H1035	Residue Filterable 1.0u (TDS)	mg/L	10	698 *	370 *	572 *
CTDSCALC	Computed TDS	mg/L		661	345	534
TDSRCALC	TDS % Diff.	%		-5	-7	-7
00151140	Turbidity	NTU	0.10	2.19 *	0.51 *	0.69 *
0107CALC	Hardness Total -T	mg/L		482 *	252 *	331 *
GENERAL INORGANICS						
01011211	Alkalinity Phen. 8.3 as CaCO3	mg/L	1	< 1	5	< 1
01021210	Alkalinity Total as CaCO3	mg/L	1	625	325	493
CO3-CALC	Carbonate as CO3 =	mg/L		< 0.5	6.0	< 0.5
HCO3CALC	Bicarbonate as HCO3-	mg/L		762	384	601
OH--CALC	Hydroxide as OH-	mg/L		< 0.5	< 0.5	< 0.5
ANIONS						
11041334	Chloride Dissolved	mg/L	1.0	2.5	1.7	1.8
11061341	Fluoride Dissolved	mg/L	0.10	0.27	0.33	0.33
IonBCALC	Ion Balance	%		-0.6	0.0	0.5
AnnsCALC	Total Anions	meq/L		13.72	7.13	10.86
CtnsCALC	Total Cations	meq/L		13.55	7.13	10.97
LangCALC	Langelier Index	pH units		1.1	0.8	1.2
pHSACALC	Saturation pH	pH units		7.0	7.6	7.1
NITROGEN						
1110CALC	Nitrate Nitrogen Dissolved (N)	mg/L		0.03	< 0.02	0.11
11091350	Nitrate+Nitrite (N)	mg/L	0.02	0.07	< 0.02	0.11
11111354	Nitrite Nitrogen (N)	mg/L	0.005	0.044	< 0.005	< 0.005
		Matrix :		Water	Water	Water
		Sampled on:		00/05/30	00/05/30	00/05/30

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ANALYTICAL REPORT
Form 08052920

Client : HEALTH CANADA
Sampling site :
Submitted by : PATTI JOYCE

Sparcode	Parameter	Unit	MDL	Philip ID: 10028600 Client ID: CANIM LK MAIN	10028601 CANIM LK EAST	10028602 CANIM LK WEST
SULFATE						
11211405	Sulfate	mg/L	1.0	53.9	27.2	44.8
METALS TOTAL						
Al-T0031	Aluminum	mg/L	0.02	< 0.02	< 0.02	< 0.02
As-TMS31	Arsenic	mg/L	0.001	0.002	0.003	0.006
Ba-T0031	Barium	mg/L	0.001	0.054	0.018	0.027
B--T0031	Boron	mg/L	0.008	0.090	0.069	0.059
Cd-TMS31	Cadmium	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Ca-T0031	Calcium	mg/L	0.01	49.0	21.6	46.5
Cr-T0031	Chromium	mg/L	0.002	< 0.002	< 0.002	< 0.002
Cu-T0031	Copper	mg/L	0.001	0.140	0.006	0.009
Fe-T0031	Iron	mg/L	0.003	0.299	0.063	0.173
Pb-TMS31	Lead	mg/L	0.001	< 0.001	< 0.001	< 0.001
Mg-T0031	Magnesium	mg/L	0.02	87.3	48.0	64.4
Mn-T0031	Manganese	mg/L	0.002	0.053	0.012	0.058
Hg-T0310	Mercury	mg/L	0.00005	< 0.00005	< 0.00005	< 0.00005
K__T0031	Potassium	mg/L	0.4	8.3	6.1	7.9
Se-TMS31	Selenium	mg/L	0.001	< 0.001	< 0.001	< 0.001
Na-T0031	Sodium	mg/L	0.010	85.0	44.6	72.4
U--TLLMS	Uranium	mg/L	0.00001	0.00004	0.00004	0.00111
Zn-T0031	Zinc	mg/L	0.002	0.003	0.004	0.014
			Matrix :	Water	Water	Water
			Sampled on:	00/05/30	00/05/30	00/05/30

PHILIP SERVICES

PHILIP ANALYTICAL

14-Feb-01
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ANALYTICAL REPORT
Form 08085348

Client : HEALTH CANADA
Sampling site :
Submitted by : PATTIE JOYCE

Philip ID :	[redacted]	[redacted]	11006101
Client ID :	[redacted]	[redacted]	CNIM LK-FO REST GROVE

Sparcode	Parameter	Unit	MDL	CDWG			
PHYSICAL							
00041220	pH	pH units	0.1	6.5-8.5	[redacted]	[redacted]	8.2
00021300	Color True	Col.Unit	5	15	[redacted]	[redacted]	5
00111160	Specific Conductance	uS/cm	1	---	[redacted]	[redacted]	543
SCCACALC	Computed Conductance	uS/cm		---	[redacted]	[redacted]	603
CCPDCALC	Conductance % Diff.	%		---	[redacted]	[redacted]	10.5
007H1035	Residue Filterable 1.0u (TDS)	mg/L	10	500	[redacted]	[redacted]	316
CTDSCALC	Computed TDS	mg/L		---	[redacted]	[redacted]	323
TDSRCALC	TDS % Diff.	%		---	[redacted]	[redacted]	2.3
00151140	Turbidity	NTU	0.10	1.0	[redacted]	[redacted]	0.47
0107CALC	Hardness Total -T	mg/L		500	[redacted]	[redacted]	158
GENERAL INORGANICS							
01011211	Alkalinity Phen. 8.3 as CaCO3	mg/L	1	---	[redacted]	[redacted]	< 1
01021210	Alkalinity Total as CaCO3	mg/L	1	---	[redacted]	[redacted]	297
CO3-CALC	Carbonate as CO3=	mg/L		---	[redacted]	[redacted]	< 0.5
HCO3CALC	Bicarbonate as HCO3-	mg/L		---	[redacted]	[redacted]	362
OH-CALC	Hydroxide as OH-	mg/L		---	[redacted]	[redacted]	< 0.5
ANIONS							
11041334	Chloride Dissolved	mg/L	1.0	< 250	[redacted]	[redacted]	< 1.0
11061341	Fluoride Dissolved	mg/L	0.10	1.5	[redacted]	[redacted]	0.17
IonBCALC	Ion Balance	%		---	[redacted]	[redacted]	0.3
AnnsCALC	Total Anions	meq/L		---	[redacted]	[redacted]	6.36
CtnsCALC	Total Cations	meq/L		---	[redacted]	[redacted]	6.40
LangCALC	Langelier Index	pH units		---	[redacted]	[redacted]	0.6
pHSACALC	Saturation pH	pH units		---	[redacted]	[redacted]	7.6
CARBON							
01030912	Organic Carbon - Total	mg/L	1.0	---	[redacted]	[redacted]	---
NITROGEN							
1110CALC	Nitrate Nitrogen Dissolved (N)	mg/L		10.0	[redacted]	[redacted]	0.61
11091350	Nitrate+Nitrite (N)	mg/L	0.02	10.0	[redacted]	[redacted]	0.61
11111354	Nitrite Nitrogen (N)	mg/L	0.005	1.0	[redacted]	[redacted]	< 0.005

Matrix :	Water	Water	Water
Sampled on:	01/02/06 16:00	01/02/06 16:00	01/02/06 16:00

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PHILIP SERVICES

PHILIP ANALYTICAL

14-Feb-01

ANALYTICAL REPORT
Form 08085348

Client : HEALTH CANADA
Sampling site :
Submitted by : PATTIE JOYCE

Philip ID :	[redacted]	[redacted]	11006101
Client ID :			CNIM LK-FO REST GROVE

Sparcode	Parameter	Unit	MDL	CDWG			
SULFATE							
11211405	Sulfate	mg/L	1.0	< 500	[redacted]	[redacted]	17.3
METALS TOTAL							
EX994201	HNO3 Digest 100mL	date			[redacted]	[redacted]	—
Al-T0031	Aluminum	mg/L	0.02	—			< 0.02
As-TMS31	Arsenic	mg/L	0.001	0.025			0.006
Ba-T0031	Barium	mg/L	0.001	1.0			0.008
B--T0031	Boron	mg/L	0.008	5.0			0.068
Cd-TMS31	Cadmium	mg/L	0.0001	0.005			< 0.0001
Ca-T0031	Calcium	mg/L	0.05	—			27.3
Cr-T0031	Chromium	mg/L	0.002	0.05			< 0.002
Cu-T0031	Copper	mg/L	0.001	1.0			0.030
Fe-T0042	Iron	mg/L	0.005	0.3			—
Fe-T0031	Iron	mg/L	0.005	0.3			0.044
Pb-TMS31	Lead	mg/L	0.001	0.01			< 0.001
Mg-T0031	Magnesium	mg/L	0.05	—			21.8
Mn-T0042	Manganese	mg/L	0.001	0.05			—
Mn-T0031	Manganese	mg/L	0.001	0.05			0.002
Hg-T0310	Mercury	mg/L	0.00005	0.001			< 0.00005
K__T0031	Potassium	mg/L	0.4	—			3.0
Se-TMS31	Selenium	mg/L	0.001	0.01			< 0.001
Na-T0031	Sodium	mg/L	0.010	200			72.8
U--TLLMS	Uranium	mg/L	0.00001	0.1			0.00065
Zn-T0031	Zinc	mg/L	0.002	5.0			0.039
VOLATILE ORGANICS-TRIHALOMETHANES							
EX995172	Volat. Wat. Pre-Scr.	date			[redacted]	[redacted]	—
B012MS01	Bromodichloromethane	ug/L	0.4	—			—
B013MS01	Bromoform	ug/L	0.3	—			—
C032MS01	Chloroform	ug/L	0.4	—			—
C033MS01	Dibromochloromethane	ug/L	0.4	—			—

Matrix :	Water	Water	Water
Sampled on:	01/02/06 16:00	01/02/06 16:00	01/02/06 16:00

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Appendix 1 - REGULATORY CRITERIA

File No. L6925

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	CaCO3		-	-		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	SO4		-	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

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)

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Is(are) under consultation