Analysis Report

CANTEST LTD.

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REPORT ON: Analysis of Water Samples

REPORTED TO: City of Parksville
Engineering and Operations Dpt
PO Box 1390
Parksville, BC
V9P 2H3

Att'n: Scott Churko

CHAIN OF CUSTODY: VI8040
P.O. NUMBER: 005442

NUMBER OF SAMPLES: 4

REPORT DATE: October 29, 2008

DATE SUBMITTED: October 21, 2008

GROUP NUMBER: 91021119

SAMPLE TYPE: Drinking Water

NOTE: Results contained in this report refer only to the testing of samples as submitted. Other information is available on request.

Aesthetic Objective Summary:

Aesthetic Objectives as set by "Guidelines for Canadian Drinking Water Quality Summary Table" -March 2007. Aesthetic objectives apply to certain substances or characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water. For certain parameters, both aesthetic objectives and health-related guidelines have been derived. Where only aesthetic objectives are specified, these values are below those considered to constitute a health hazard

CLIENT SAMPLE ID	STATUS
River Station	Acceptable
Springwood P/S	Acceptable
Well #5	Unacceptable

Max. Acceptable Concentration Summary:

Maximum Acceptable Concentrations (MAC) for both chemical and microbiological parameters are put forth in the "Guidelines for Canadian Drinking Water Quality Summary Table" - March 2007. For the parameters tested, results are generally categorized by health concerns. Some parameters have no limit value denoted because: a) currently available data indicates no health risk, b) the compound is not permitted in Canada, or c) it refers to a family of compounds.

CLIENT SAMPLE ID	HEALTH	HARDNESS
River Station	Acceptable	Soft

(Continued)

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Anna Becalska, PhD
Coordinator, Trace Metals

Max. Acceptable Concentration SUMMARY: (Continued)

CLIENT SAMPLE ID	HEALTH	HARDNESS
Springwood P/S	Acceptable	Moderate
Well #5	Acceptable	Moderate
Reservoir #2	Acceptable	Not tested

TEST METHODS:

Anions in Water by Ion Chromatography - was determined based on Method 4110 in Standard Methods (21st Edition) and EPA Method 300.0 (Revision 2.1).

Ammonia in Water - was performed using Flow Injection Analysis where the aqueous sample is injected into a carrier stream, which merges a sodium hydroxide stream. Gaseous ammonia is formed, which diffuses through a gas permeable membrane into an indicator stream. This indicator stream is comprised of a mixture of acid-base indicators, which will react with the ammonia gas; resulting in a colour shift which is measured photometrically @ 590 nm.

Total Kjeldahl Nitrogen in Water - was determined based on Method 4500-N in Standard Methods (21st Edition) and Method X325 in the BC Laboratory Manual (2005).

Total Organic Carbon in Water - was determined based on Method 5310 A and B in Standard Methods (21st Edition) and Method X314 in the BC Laboratory Manual (2005).

Conventional Parameters - analyses were performed using procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", (2005 edition) Province of British Columbia and "Standard Methods for the Examination of Water and Wastewater" (21st Edition), published by the American Public Health Association.

Conventional Parameters - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z 7X8): - Analyses performed at Cantest's Victoria facility follow procedures based on those described in the most current editions of "British Columbia Environmental Laboratory Manual" (2005) and/or "Standard Methods for the Examination of Water and Wastewater" (21st Edition).

Langelier Saturation Index - analysis was performed based on Standard Methods for the Examination of Water and Wastewater (21st Edition).

Mercury in Water - analysis was performed using procedures based on U. S. EPA Method 245.7, oxidative digestion using bromination, and analysis using Cold Vapour Atomic Fluorescence Spectroscopy.

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Metals in Water - analysis was performed using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP), Inductively Coupled Plasma-Mass Spectroscopy (ICP/MS).

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition), "Standard Methods for the Examination of Water and Wastewater", 21st Edition (2005) and Colilert Quanti-tray Standard Operating Procedure. Results are reported as Most Probable Number(MPN) per unit volume. <1 MF is equivalent to "Absent". Analysis was performed at CANTEST Ltd - Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC V8Z-7X8).

Microbiological Parameters - analyses were performed using procedures based on those described in "B. C. Environmental Laboratory Manual For the Analysis of Water, Wastewater, Sediment and Biological Materials" (2005 Edition) and "Standard Methods for the Examination of Water and Wastewater", 21st Edition. Analysis was performed at CANTEST Ltd. Victoria Laboratory (1104 - 4464 Markham Street, Victoria, BC, V8Z 7X8).

Volatile Organic Compounds in Water and Soil - analysis was performed using procedures based on U.S. EPA Methods 624/8240/8260, involving sparging with a Purge and Trap apparatus and analysis using GC/MS.

COMMENTS:

Determination of THM was performed on a sample submitted with headspace. Possible vaporization of the analyte into the headspace may mean that the sample as analyzed does not reflect the sample at the time of collection. Determination of Heterotrophic Plate Count was initiated slightly past the recommended holding time. Possible resulting changes may mean that the sample as analyzed does not reflect the sample at the time of collection. kdd - Oct. 23, 08

TEST RESULTS:

(See following pages)

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Potability (Aesthetic Criteria) in Water

CLIENT SAMPLE IDENTIFICATION:		River Station	Springwood P/S	Well #5	Aesthetic Objective	UNITS
DATE SAMPLED:		Oct 20/08	Oct 20/08	Oct 20/08		
CANTEST ID:		810210599	810210627	810210636		
Conventional Parameters						
Dissolved Chloride	Cl	7.98	23.3	30.6	250	mg/L
Dissolved Sulphate	SO4	1.28	5.59	3.95	500	mg/L
Conventional Parameters-Victoria Laboratory-						
pH, Laboratory		6.9	7.7	7.5	6.5 - 8.5	pH units
True Color		8	< 5	10	15	CU
Turbidity		0.2	< 0.1	1.2	-	NTU
Total Dissolved Solids		48	158	205	500	mg/L
Alkalinity Total 4.5		22.1	113	127	-	mg/L
Total Metals Analysis						
Copper	Cu	0.006	0.005	< 0.001	1.0	mg/L
Iron	Fe	< 0.05	< 0.05	0.13	0.3	mg/L
Manganese	Mn	0.001	0.007	0.068 X	0.05	mg/L
Sodium	Na	3.17	7.09	8.75	200	mg/L
Zinc	Zn	< 0.005	0.006	0.009	5	mg/L

mg/L = milligrams per liter
CU = color units
NTU = nephelometric turbidity units
< = Less than detection limit
X = Result is outside the Aesthetic Objective

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Potability (Health Criteria at Point of Use) in Water

CLIENT SAMPLE IDENTIFICATION:		River Station	Springwood P/S	Well #5	Reservoir #2	Max. Acceptable Concentration	UNITS
DATE SAMPLED:		Oct 20/08	Oct 20/08	Oct 20/08	Oct 20/08		
CANTEST ID:		810210599	810210627	810210636	810210653		
Conventional Parameters							
Hardness (Total)	CaCO3	24	127	144	-	-	mg/L
Dissolved Fluoride	F	< 0.05	0.05	< 0.05	-	1.5	mg/L
Dissolved Sulphate	SO4	1.28	5.59	3.95	-	-	mg/L
Ammonia Nitrogen	N	0.02	0.05	< 0.01	-	-	mg/L
Conventional Parameters-Victoria Laboratory-							
Conductivity		75.0	317	352	-	-	µS/cm
Nitrate and Nitrite	N	0.08	1.05	1.05	-	10	mg/L
Nitrate by UV	NO3	0.08	1.05	1.05	-	10.0	mg/L
Nitrite	N	< 0.002	< 0.002	< 0.002	-	1.0	mg/L
Total Metals Analysis							
Aluminum	Al	0.027	0.074	0.015	-	-	mg/L
Antimony	Sb	< 0.001	< 0.001	< 0.001	-	0.006	mg/L
Arsenic	As	< 0.001	< 0.001	< 0.001	-	0.010	mg/L
Barium	Ba	0.005	0.011	0.013	-	1.0	mg/L
Boron	B	< 0.05	< 0.05	< 0.05	-	5	mg/L
Cadmium	Cd	< 0.0002	< 0.0002	< 0.0002	-	0.005	mg/L
Calcium	Ca	8.21	29.5	34	-	-	mg/L
Calcium	Ca	7.51	28.8	32.9	-	-	mg/L
Chromium	Cr	< 0.001	< 0.001	< 0.001	-	0.05	mg/L
Lead	Pb	< 0.001	< 0.001	< 0.001	-	0.01	mg/L
Magnesium	Mg	0.94	12.8	14.4	-	-	mg/L
Mercury	Hg	< 0.02	0.02	< 0.02	-	1	µg/L
Potassium	K	0.1	0.7	0.9	-	-	mg/L
Selenium	Se	< 0.001	< 0.001	< 0.001	-	0.01	mg/L
Silver	Ag	< 0.00025	< 0.00025	< 0.00025	-	-	mg/L
Uranium	U	< 0.0005	< 0.0005	< 0.0005	-	0.02	mg/L
Microbiological Analysis-Victoria Laboratory-							
Non-Coliform Bacteria		< 1	< 1	26	-	-	Col./100 mL
Total Coliform		< 1	< 1	< 1	-	not detected	MPN/100mL
E. coli		< 1	< 1	< 1	-	not detected	MPN/100mL
Trihalomethanes							

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Potability (Health Criteria at Point of Use) in Water

CLIENT SAMPLE IDENTIFICATION:	River Station	Springwood P/S	Well #5	Reservoir #2	Max. Acceptable Concentration	UNITS
DATE SAMPLED:	Oct 20/08	Oct 20/08	Oct 20/08	Oct 20/08		
CANTEST ID:	810210599	810210627	810210636	810210653		
Bromodichloromethane	-	-	-	< 0.1	16	µg/L
Total Trihalomethanes	-	-	-	< 0.1	100	µg/L

mg/L = milligrams per liter
µg/L = micrograms per liter
MPN/100mL = Most Probable Number / 100 mL
< = Less than detection limit

µS/cm = microsiemens per centimeter
Col./100 mL = Colonies per 100 mL

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Conventional Parameters in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Total Organic Carbon C	Total Kjeldahl Nitrogen N	Total Nitrogen N
River Station	Oct 20/08	810210599	3.0	<	<
Springwood P/S	Oct 20/08	810210627	1.8	<	1.0
Well #5	Oct 20/08	810210636	2.1	<	1.0
DETECTION LIMIT			1	0.2	0.2
UNITS			mg/L	mg/L	mg/L

mg/L = milligrams per liter
< = Less than detection limit

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Metals Analysis in Water

CLIENT SAMPLE IDENTIFICATION:		River Station	Springwood P/S	Well #5	DETECTION LIMIT
SAMPLE PREPARATION:		TOTAL	TOTAL	TOTAL	
DATE SAMPLED:		Oct 20/08	Oct 20/08	Oct 20/08	
CANTEST ID:		810210599	810210627	810210636	
Beryllium	Be	<	<	<	0.001
Bismuth	Bi	<	<	<	0.001
Cobalt	Co	<	<	<	0.001
Lithium	Li	0.002	<	0.001	0.001
Molybdenum	Mo	<	<	<	0.0005
Nickel	Ni	<	<	<	0.001
Phosphorus	P	<	<	<	0.15
Silicon	Si	2.2	12.3	12.9	0.25
Strontium	Sr	0.035	0.084	0.12	0.001
Tellurium	Te	<	<	<	0.001
Thallium	Tl	<	<	<	0.0001
Thorium	Th	<	<	<	0.0005
Tin	Sn	<	<	<	0.001
Titanium	Ti	<	<	<	0.001
Vanadium	V	<	0.004	0.002	0.001
Zirconium	Zr	<	<	<	0.01

Results expressed as milligrams per liter (mg/L)
< = Less than detection limit

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Trihalomethanes in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Bromoform	Chloroform	Dibromochloromethane
Reservoir #2	Oct 20/08	810210653	<	<	<
DETECTION LIMIT			0.2	0.3	0.1
UNITS			µg/L	µg/L	µg/L

µg/L = micrograms per liter
< = Less than detection limit

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Trihalomethanes in Water

CLIENT SAMPLE IDENTIFICATION:	CANTEST ID	1,2-Dichloroethane -d4	Toluene-d8	Bromofluorobenzene
DETECTION LIMIT		0.001	0.0005	0.001
UNITS		% Recovery	% Recovery	% Recovery

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Conventional Parameters-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Tannin and Lignin
River Station	Oct 20/08	810210599	0.14
Springwood P/S	Oct 20/08	810210627	<
Well #5	Oct 20/08	810210636	<
DETECTION LIMIT			0.1
UNITS			mg/L

mg/L = milligrams per liter
< = Less than detection limit

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Microbiological Analysis-Victoria Laboratory- in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Heterotrophic Plate Count
River Station	Oct 20/08	810210599	2
Springwood P/S	Oct 20/08	810210627	1
Well #5	Oct 20/08	810210636	40
DETECTION LIMIT			1
UNITS			Col./1 mL

Col./1 mL = Colonies per 1 mL

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Langelier Saturation Index in Water

CLIENT SAMPLE IDENTIFICATION:	SAMPLE DATE	CANTEST ID	Saturation Index at 4.4C	Saturation Index at 60C
River Station	Oct 20/08	810210599	-2.75	-1.71
Springwood P/S	Oct 20/08	810210627	-0.71	0.34
Well #5	Oct 20/08	810210636	-0.81	0.23
DETECTION LIMIT			-	-
UNITS			SI 4.4C	SI 60C

SI 4.4C = Saturation Index at 4.4C

SI 60C = Saturation Index at 60C