Gartner Lee Limited

February 19, 2007

Mr. Doug Sedgwick
Environmental Services
Deloitte & Touche Inc.
79 Wellington Street West, Suite 1900
Toronto, Ontario M5K 1B9

Dear Mr. Sedgwick:

Re: GLL 60-614 – 2006 Town of Faro Water Wells Investigation

We are pleased to submit our final report detailing follow-up work on the Town of Faro Water Wells Investigation. This work follows previous investigations conducted during 2004 - 2005 and is intended to address recommendations outlined in a Gartner Lee report dated February 2006 entitled "Town of Faro Water Wells Investigation". The overall study was initiated to address a condition of water license QZ03-059.

If you have any questions concerning this letter report, please do not hesitate to contact me at (604) 299-4144 x 250.

Yours very truly,
GARTNER LEE LIMITED

Don McCallum, MASc., P.Eng.
Senior Environmental Engineer / Principal

RDM:gc

(60614 FINAL LTR RPT Town of Faro Water Wells 2007Feb19.doc)

Attach:

Figure 1. Sampling Locations
Table 1. Town of Faro Water Supply Quality 2004/2005 – Comparison to Guidelines
Table 2. Vangorda Creek Water Quality 2005/2006 – Comparison to Guidelines

Sperling Plaza, 6400 Roberts Street, Suite 490, Burnaby, BC, V5G 4C9 tel 604.299.4144 fax 604.299.1455
Toronto | Vancouver | Calgary | Montreal | St. Catharines | Whitehorse | Yellowknife | Bracebridge
www.gartnerlee.com

1. Study Objectives

The objectives of the current study are to:

- provide a brief review of routine Vangorda Creek water quality monitoring data collected in 2005 and 2006, focussing on stations V1, V27 and V8;
- discuss the significance of the recently collected Vangorda Creek data with respect to the Town of Faro water supply.
- determine whether additional monitoring or studies are required to complete the Town of Faro Water Wells Investigation.

2. Background

The Gartner Lee (February 2006) report, entitled "Town of Faro Water Wells Investigation", documented the results of investigations undertaken to examine the potential influence of Vangorda Creek on the Town of Faro water supply. The requirement to conduct these investigations is included as a condition of the Anvil Range water license QZ03-059. The study indicated that water is being recharged to the Town of Faro water supply aquifer by Vangorda Creek. However, the study also indicated that the Town of Faro water supply is consistently of very good quality. Further, the Gartner Lee (2006) report noted that metal concentrations measured in Vangorda Creek throughout the study period were well below Canadian Drinking Water Quality Guidelines and therefore posed minimal risks to the Town of Faro water supply.

Continued routine monitoring of Vangorda Creek was recommended in the Gartner Lee (2006) report because of the observed hydraulic connection between Vangorda Creek and the Town of Faro water supply aquifer. It was also observed during the study that concentrations of two compounds - nitrate and chloride - were significantly elevated in the Vangorda Creek samples compared to samples obtained in the Pelly River. All measurements of these compounds were well below the respective Canadian Drinking Water Quality Guidelines. The source of these elevated concentrations (natural or anthropogenic) could not be determined in the study owing to the lack of data from historical monitoring (of these parameters) throughout Vangorda Creek.

3. Results

As part of this study, the most recently reported annual analytical results for the Town of Faro water supply system (2004 – 2005) as well as analytical results obtained for Vangorda Creek stations V1, V8 and V27 (2005 – 2006) were reviewed and compared to Canadian Drinking Water Quality Guidelines. The location of all sampling sites is presented in Figure 1. One nitrate analysis was conducted during August 2006 at V8. Analytical results for the Town of Faro supply system are presented in Table 1, while results for Vangorda Creek sampling stations are presented in Table 2.

3.1 Town of Faro Water Supply

Raw and treated water quality is sampled at several locations within the Town of Faro distribution system which is currently operated under water license #MN05-058, effective September 2006. Prior to September 2006, the supply system was operated under license #MN00-030. Previous reporting (Gartner Lee Limited, 2006) summarized historical supply well water quality from 1990 - 2003 and indicated that the Town of Faro water supply exhibits very good water quality compared to Canadian Drinking Water Quality Guidelines based on historical monitoring of bacteriological parameters, trace metals, nutrients and aesthetic parameters.

As shown on Table 1, all parameters tested during May 2004 and May 2005 met Canadian Drinking Water Quality Guidelines, confirming that the chemical quality of the Town of Faro water supply is very good. Additionally, there has never been a recorded detection of fecal coliforms or E. coli in raw water samples collected from the water supply system based on a review of annual water use reports from 1990-2005. Some infrequent detections of total coliforms have been recorded.

3.2 Vangorda Creek

Water quality is routinely sampled at a number of locations along Vangorda Creek including V1, V27 and V8. Analytical results for samples collected at V1, V27 and V8 during 2005 and 2006 are presented in Table 2 and have also been compared to Canadian Drinking Water Quality Guidelines. It should be noted that there was no release of treated mine effluent into Vangorda Creek in 2006, as there had been from 2002 through 2005.

Water quality within Vangorda Creek is generally very good when compared to Canadian Drinking Water Quality Guidelines. Guidelines were met on all sampling dates at stations V1 and V27 with the exception of a minor selenium exceedence during one sampling event in June 2005. This exceedence occurred at V1, which is a background sampling location upstream of the Vangorda Pit and in the headwaters of Vangorda Creek. Selenium has only been detected twice in the Town of Faro water supply system; once in October 2001 and once in July 2003 at concentrations of 0.06 mg/L and 0.0005 mg/L, respectively.

On most of the 24 sampling dates through 2005 and 2006, all parameters that were analyzed at V8 met drinking water guidelines with the exception of iron (six samples), manganese (four samples), antimony (one sample) and lead (one sample). Both the antimony and lead exceedances were observed on the same sampling date. Previous and subsequent sampling at V8 indicated that antimony was present at levels below detection limits (0.001 mg/L) for the remainder of 2005 and 2006 and lead was only above detection limits (0.001 mg/L) on four of 24 sampling dates in 2005/06. Total metals concentrations are susceptible to sediment content in samples and often exhibit some variability in concentrations, increasing with suspended sediment content. *Dissolved* metals concentrations for antimony and lead were both below detection limits on the same date that *total* metal concentrations exceeded guidelines. This indicates that the elevated antimony and lead concentrations observed in August 2006 are probably

related to elevated suspended sediment content in samples. Neither antimony, nor lead have ever been detected in the Town of Faro water supply system based on a review of annual water use reports for years between 1990 and 2005. Elevated total suspended solids were observed at location V8 for a brief period during spring and summer in 2006, as has also been observed in preceding recent years. The stream sediment originates from "non-mining sources" downstream of the old ski hill in the West Fork of Vangorda Creek ("Anvil Range Mine Adaptive Management Plan – Annual Review for 2006", prepared for Deloitte & Touche Inc. by Gartner Lee, February 2007).

Iron and manganese were elevated in numerous samples at V8. These compounds are often present at concentrations above guidelines in natural waters. Guidelines for iron and manganese are not human health related and are based on aesthetic concerns such as staining of plumbing fixtures.

A single analysis for nutrients including nitrate, nitrite and phosphate was conducted at V8 in August 2006 and revealed relatively low concentrations of nitrate (0.095 mg/L) during that sampling event.

No spatial or temporal trends were evident from the available data, although concentrations of some parameters are slightly higher at station V8, which is most likely the result of a higher groundwater discharge component to Vangorda Creek within the lower valley. This is not likely related to any potential mining impacts.

4. Conclusions

The following conclusions can be drawn based on the finding of this and previous studies:

- Water quality within the Town of Faro supply system is good when compared to Canadian Drinking Water Quality Guidelines. No parameters exceeded guidelines during 2004 or 2005 sampling events, which is consistent with years previous.
- Surface water quality in Vangorda Creek is generally very good when compared to Canadian Drinking Water Quality Guidelines, exceeding guidelines for aesthetic parameters (iron and manganese) primarily at one location (V8).
- Within Vangorda Creek, rare exceedances of antimony, lead and selenium guideline values are likely related to unusually high suspended sediment concentrations in the particular samples. It is important to note that *dissolved* concentrations of antimony and lead were below detection limits even during the one sampling event where *total* concentrations of lead and antimony exceeded guidelines.
- An assessment of nitrate levels within Vangorda Creek could not be conducted due to a lack of sufficient data. A single nitrate analysis conducted at V8 in August 2006 revealed nitrate levels that were low (0.095 mg/L), but remain above concentrations observed in the Pelly River during 2004/05 (Gartner Lee Limited, 2006).

5. Recommendations

The results of this brief review of routine monitoring data collected in 2005 and 2006 support the conclusions presented in the Gartner Lee (2006) report, "Town of Faro Water Wells Investigation". While exceedances of Canadian Drinking Water Quality Guidelines in Vangorda Creek water samples are rare, it is prudent to continue routine monitoring of sampling locations, incorporating drinking water-related parameters. Because the source of somewhat elevated nitrate and chloride concentrations observed in the earlier study (Gartner Lee, 2006) could not be confirmed, a modest and focussed monitoring program in 2007 is recommended. Specific recommendations are outlined below:

- Continue routine monitoring of water quality within Vangorda Creek; annual reporting should incorporate comparisons to Canadian Drinking Water Quality Guidelines and a brief analysis of trends and potential implications for Town of Faro water supply.
- Initiate a focussed sampling and analysis program to determine the source of somewhat elevated nitrate and chloride concentrations in lower Vangorda Creek (relative to Pelly River). This program would involve collecting samples at four locations along Vangorda Creek on three separate occasions in 2007. Proposed sample locations include routine monitoring stations V1, V27, V8, in addition to the lower Vangorda Creek sampling location used in the earlier Gartner Lee study (VCWLS1-04). Analytical parameters would include nitrate and chloride in addition to routine water chemistry parameters (conductivity, hardness, total suspended solids, total dissolved solids and common anions). This sampling program could be conducted by Gartner Lee staff in coordination with other planned activities at the Anvil Range site in 2007. A letter report will be prepared summarizing data collected and discussing the significance of the results. The report will also discuss whether further monitoring related to this issue is warranted.

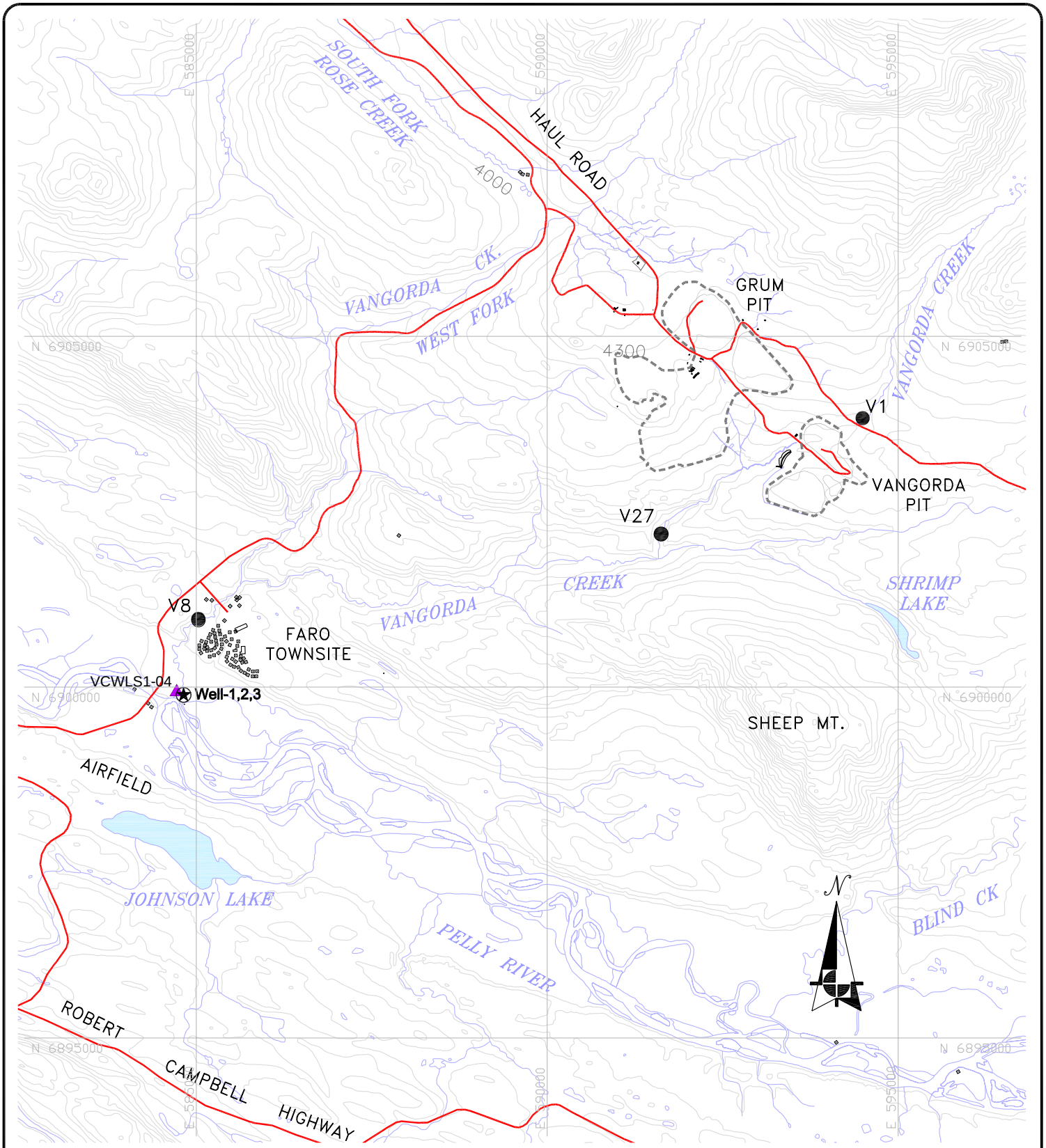
If you have any questions regarding the contents of this report do not hesitate to contact Don McCallum at 604-299-4144 ext. 250.

Report Prepared By:
GARTNER LEE LIMITED

Ryan Mills, M.Sc.
Hydrogeologist

Report Reviewed By:

Don McCallum, MASc., P.Eng.
Senior Environmental Engineer / Principal



LEGEND:

- Main Road
- Surface Drainage
- Footprint of Open Pits and Rock Dumps
- Water Well
- Water Level Sensor
- V27 Key Monitoring Locations

0 500 1000 2000 3000 m

1 : 75,000

COORDINATES ARE UTM NAD83 ZONE 8
CONTOUR INTERVAL 100 FT.

Town of Faro
Water Wells Investigation

DRAWING INFORMATION:

REVIEWED BY:	RM
DRAWN BY:	MP
DATE ISSUED:	Jan, 2007
PROJECT NUMBER:	60-614
FILE NAME:	60614_By1_Fig01_Report.dwg
REVISION:	0

SAMPLING LOCATIONS

Gartner Lee

FIGURE NO. 1

Table 1. Town of Faro Water Supply Quality
2004/2005 – Comparison to Guidelines

Parameter		Canadian Drinking Water Quality Guidelines[a]		Town of Faro Water Supply	
				May-04	May-05
Physical Tests					
Colour	CU	15	AO	<5	<5
Conductivity	uS/cm	-		-	582
Hardness	CaCO3	-		266	297
pH		6.5-8.5	AO	7.7	7.52
Total Dissolved Solids	mg/L	500	AO	277	370
Turbidity	NTU	5	AO[1]	-	0.2
Dissolved Anions (mg/L)					
Alkalinity-Total	CaCO3	-		177	199
Chloride	Cl	250	AO	0.8	1.6
Fluoride	F	1.5	MAC	0.12	0.1
Sulphate	SO4	500	AO	77	115
Nutrients (mg/L)					
Nitrate Nitrogen	N	10	MAC	0.1	0.32
Nitrite Nitrogen	N	1	MAC	<0.05	<0.03
Phosphate - P	P				<0.001
Total Metals (mg/L)					
Aluminum	T-Al	-		0.026	0.005
Antimony	T-Sb	0.006	IMAC	<0.001	<0.0002
Arsenic	T-As	0.025	IMAC	<0.001	0.0002
Barium	T-Ba	1	MAC	0.086	0.089
Beryllium	T-Be	-		-	-
Boron	T-B	5	IMAC	0.035	0.003
Cadmium	T-Cd	0.005	MAC	<0.00005	0.00002
Calcium	T-Ca	-		57.9	72.6
Chromium	T-Cr	0.05	MAC	<0.002	<0.0005
Cobalt	T-Co	-		-	-
Copper	T-Cu	1	AO	<0.005	0.004
Iron	T-Fe	0.3	AO	<0.5	<0.1
Lead	T-Pb	0.010	MAC	<0.0005	0.0004
Magnesium	T-Mg	-		24.0	28.0
Manganese	T-Mn	0.05	AO	<0.02	<0.005
Mercury	T-Hg	0.001	MAC	<0.0002	<0.0002
Molybdenum	T-Mo	-		-	-
Nickel	T-Ni	-		-	-
Potassium	T-K	-		<2	0.9
Selenium	T-Se	0.01	MAC	0.0016	0.001
Sodium	T-Na	200	AO	3.1	3
Titanium	T-Ti	-		-	-
Uranium	T-U	0.02	IMAC	0.0041	0.0055
Vanadium	T-V	-		-	-
Zinc	T-Zn	5	AO	<0.005	0.009

Notes:

[a]	Summary of Guidelines for Canadian Drinking Water Quality, April 2004
AO	aesthetic objective (taste, odour, appearance, etc.)
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
[1]	1 NTU maximum allowed for water entering distribution systems
<	indicates less than the detection limit
-	indicates no guideline or analysis for this parameter
bold	indicates parameter exceeded guideline

Table 2. Vangola Creek Water Quality
2005/2006 – Comparison to Guidelines

Parameter		Canadian Drinking Water Quality Guidelines[a]		Vangorda Creek Sampling Sites													
				V1								V27					
				07-Mar-05	07-Jun-05	12-Sep-05	01-Dec-05	20-Mar-06	05-Jun-06	09-Jun-06	06-Sep-06	26-May-05	21-Sep-05	29-May-06	01-Aug-06	26-Sep-06
Physical Tests																	
Colour	CU	15	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	
Conductivity	uS/cm	-		-	42	67	104	121	35	73	73	185	152	129	235	221	
Hardness	CaCO3	-		56	18	29	47	59	13	29	29	57	84	55	110	94	
pH		6.5-8.5	AO	-	7	8	8.1	8.1	8.3	8.1	8.1	-	-	8.2	7.9	7.9	
Total Dissolved Solids	mg/L	500	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	
Turbidity	NTU	5	AO1	-	-	-	-	-	-	-	-	-	-	-	-	-	
Dissolved Anions (mg/L)																	
Alkalinity-Total	CaCO3	-		-	18.8		35.5	45.4	14.8	26.2	26.2		48.5				
Chloride	Cl	250	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fluoride	F	1.5	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sulphate	SO4	500	AO	10.7	4.6	10.5	10.8	10.8	3.62	9.71	9.71	28.5	48.5	25.3	56.4	52	
Nutrients (mg/L)																	
Nitrate Nitrogen	N	10	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nitrite Nitrogen	N	1	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	
Phosphate - P	P			-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Metals (mg/L)																	
Aluminum	T-Al	-		0.012	0.043	0.013	0.006	0.99	0.099	0.024	0.024	0.12	0.023	0.083	0.021	< 0.005	
Antimony	T-Sb	0.006	IMAC	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Arsenic	T-As	0.025	IMAC	< 0.001	0.002	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Barium	T-Ba	1	MAC	0.037	0.016	0.025	0.037	0.12	0.013	0.025	0.025	0.018	0.026	0.019	0.032	0.029	
Beryllium	T-Be	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Boron	T-B	5	IMAC	< 0.05	0.07	< 0.05	< 0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Cadmium	T-Cd	0.005	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
Calcium	T-Ca	-		17.9	6.03	9.61	14.7	18.7	4.31	9.48	9.48	14.3	22.3	14.9	28.2	24.2	
Chromium	T-Cr	0.05	MAC	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	T-Co	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Copper	T-Cu	1	AO	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.002	0.002	< 0.001	
Iron	T-Fe	0.3	AO	0.08	0.09	< 0.05	< 0.05	< 0.05	0.14	< 0.05	< 0.05	0.19	< 0.05	0.16	0.06	< 0.05	
Lead	T-Pb	0.010	MAC	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.002	< 0.001	< 0.001	
Magnesium	T-Mg	-		2.87	0.75	1.3	2.46	2.89	0.64	1.4	1.4	5.25	6.83	4.37	9.46	8.2	
Manganese	T-Mn	0.05	AO	< 0.001	0.002	0.001	< 0.001	< 0.001	0.005	< 0.001	< 0.001	0.008	0.008	0.023	0.004	0.003	
Mercury	T-Hg	0.001	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.02	< 0.02	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.02	
Molybdenum	T-Mo	-		0.0006	< 0.0005	< 0.0005	0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
Nickel	T-Ni	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Potassium	T-K	-		1.4	0.8	0.3	0.6	0.6	0.4	0.3	0.3	0.6	0.5	0.8	0.6	0.5	
Selenium	T-Se	0.01	MAC	< 0.001	0.011	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Sodium	T-Na	200	AO	2.71	1.61	1.7	1.89	2.27	0.87	1.79	1.79	1.39	2.03	1.22	2.14	2.05	
Titanium	T-Ti	-		< 0.001	0.001	< 0.001	< 0.001	0.001	0.003	< 0.001	< 0.001	0.003	0.001	0.001	< 0.001	< 0.001	
Uranium	T-U	0.02	IMAC	0.0014	< 0.0005	< 0.0005	0.0006	0.0012	< 0.0005	< 0.0005	< 0.0005	0.001	0.0009	0.0009	0.0014	0.0013	
Vanadium	T-V	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Zinc	T-Zn	5	AO	0.011	0.006	< 0.005	< 0.005	0.038	< 0.005	< 0.005	< 0.005	0.031	0.017	0.022	0.018	0.023	

Notes:

[a]	Summary of Guidelines for Canadian Drinking Water Quality, April 2004
AO	aesthetic objective (taste, odour, appearance, etc.)
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
[1]	1 NTU maximum allowed for water entering distribution systems
<	indicates less than the detection limit
-	indicates no guideline or analysis for this parameter
bold	indicates parameter exceeded guideline

Table 2. Vangola Creek Water Quality
2005/2006 – Comparison to Guidelines

Parameter		Canadian Drinking Water Quality Guidelines[a]		Vangorda Creek Sampling Sites													
				V8													
				21-Jan-05	08-Feb-05	15-Mar-05	11-Apr-05	09-May-05	20-Jun-05	25-Jul-05	22-Aug-05	05-Sep-05	10-Oct-05	01-Nov-05	14-Dec-05	24-Jan-06	13-Feb-06
Physical Tests																	
Colour	CU	15	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm	-		628	632	661	662	174	390	581	716	267	237	302	614	673	694
Hardness	CaCO3	-		373	374	395	382	116	214	321	449	210	237	275	328	384	381
pH		6.5-8.5	AO	7.3	8.3	8.3	8	8.1	8.1	8	8.1	8.3	8.5	8.3	8.1	8.1	8
Total Dissolved Solids	mg/L	500	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	5	AO[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Anions (mg/L)																	
Alkalinity-Total	CaCO3	-		225	241	231	236	78.6	96.7	121	133	134	137	168	192	207	214
Chloride	Cl	250	AO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoride	F	1.5	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulphate	SO4	500	AO	159	155	176	175	33.3	133	238	312	102	82.1	112	139	166	191
Nutrients (mg/L)																	
Nitrate Nitrogen	N	10	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite Nitrogen	N	1	MAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate - P	P			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Metals (mg/L)																	
Aluminum	T-Al	-		0.012	0.009	0.007	0.011	1.05	0.078	0.28	0.048	0.04	0.024	0.018	0.019	0.012	0.017
Antimony	T-Sb	0.006	IMAC	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	T-As	0.025	IMAC	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium	T-Ba	1	MAC	0.077	0.073	0.081	0.072	0.065	0.056	0.083	0.074	0.044	0.053	0.058	0.07	0.073	0.078
Beryllium	T-Be	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Boron	T-B	5	IMAC	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	T-Cd	0.005	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Calcium	T-Ca	-		87.5	87.1	97	88.1	28.8	55.4	84.4	120	51.8	55.8	65.4	77.4	87.6	87.2
Chromium	T-Cr	0.05	MAC	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	0.003	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	T-Co	-		< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Copper	T-Cu	1	AO	< 0.001	< 0.001	< 0.001	0.001	0.006	0.002	0.002	< 0.001	0.001	< 0.001	0.045	< 0.001	< 0.001	< 0.001
Iron	T-Fe	0.3	AO	0.18	< 0.05	0.26	0.13	**1.92**	0.27	**0.44**	< 0.05	0.19	< 0.05	0.05	0.13	0.14	0.07
Lead	T-Pb	0.010	MAC	< 0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.007	< 0.001	< 0.001	< 0.001
Magnesium	T-Mg	-		37.5	37.8	36.9	39.4	10.7	18.4	26.8	36.3	19.6	23.7	27	32.6	39.9	39.5
Manganese	T-Mn	0.05	AO	0.035	0.034	0.037	0.033	**0.094**	0.047	**0.32**	**0.38**	0.016	0.015	0.015	0.028	0.029	0.028
Mercury	T-Hg	0.001	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Molybdenum	T-Mo	-		0.0011	0.0011	0.0013	0.0013	< 0.0005	< 0.0005	0.0005	0.0005	0.0015	0.0007	0.0008	0.0009	0.0011	0.0011
Nickel	T-Ni	-		0.002	0.002	0.003	0.002	0.007	0.001	0.002	< 0.001	0.002	0.001	0.001	< 0.001	0.002	0.002
Potassium	T-K	-		1.3	1.3	1.3	1.4	1.2	0.9	1.1	1.3	0.9	0.9	0.9	1.1	1.1	1.4
Selenium	T-Se	0.01	MAC	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.002	< 0.001	< 0.001	0.001	< 0.001	0.002
Sodium	T-Na	200	AO	4.55	4.71	5.31	5.04	1.5	2.64	3.2	3.73	2.87	3.25	3.2	4.15	4.89	5.01
Titanium	T-Ti	-		< 0.001	< 0.001	< 0.001	< 0.001	0.025	0.001	0.007	0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Uranium	T-U	0.02	IMAC	0.0071	0.0074	0.0082	0.008	0.0014	0.0021	0.0028	0.0034	0.0031	0.003	0.0047	0.0052	0.0067	0.0071
Vanadium	T-V	-		< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	T-Zn	5	AO	0.012	0.014	0.009	0.011	0.037	0.022	0.024	0.015	0.026	0.007	0.031	0.022	0.015	0.017

Notes:

[a]	Summary of Guidelines for Canadian Drinking Water Quality, April 2004
AO	aesthetic objective (taste, odour, appearance, etc.)
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
[1]	1 NTU maximum allowed for water entering distribution systems
<	indicates less than the detection limit
-	indicates no guideline or analysis for this parameter
bold	indicates parameter exceeded guideline

Table 2. Vangola Creek Water Quality
2005/2006 – Comparison to Guidelines

Parameter		Canadian Drinking Water Quality Guidelines[a]		Vangorda Creek Sampling Sites V8									
				24-Mar-06	24-Apr-06	17-May-06	19-Jun-06	17-Jul-06	21-Aug-06	11-Sep-06	16-Oct-06	14-Nov-06	13-Dec-06
Physical Tests													
Colour	CU	15	AO	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm	-		781	737	272	220	271	580	339	434	585	633
Hardness	CaCO3	-		402	356	143	118	143	309	166	230	312	328
pH		6.5-8.5	AO	7.8	8.2	8.5	8	8.1	8.1	8.4	8	8	8.2
Total Dissolved Solids	mg/L	500	AO	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	5	AO[1]	-	-	-	-	-	-	-	-	-	-
Dissolved Anions (mg/L)													
Alkalinity-Total	CaCO3	-		231	222	89.1	76.6	101	214	119	160	212	222
Chloride	Cl	250	AO	-	-	-	-	-	-	-	-	-	-
Fluoride	F	1.5	MAC	-	-	-	-	-	-	-	-	-	-
Sulphate	SO4	500	AO	204	184	51.9	35		85	58.7	84	130	144
Nutrients (mg/L)													
Nitrate Nitrogen	N	10	MAC	-	-	-	-	-	0.095	-	-	-	-
Nitrite Nitrogen	N	1	MAC	-	-	-	-	-	< 0.005	-	-	-	-
Phosphate - P	P			-	-	-	-	-	0.008	-	-	-	-
Total Metals (mg/L)													
Aluminum	T-Al	-		< 0.005	< 0.005	0.9	0.5	0.39	0.1	0.13	0.22	0.026	0.018
Antimony	T-Sb	0.006	IMAC	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.05	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	T-As	0.025	IMAC	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001
Barium	T-Ba	1	MAC	0.082	0.065	0.067	0.045	0.042	0.084	0.042	0.056	0.068	0.073
Beryllium	T-Be	-		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Boron	T-B	5	IMAC	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.001	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	T-Cd	0.005	MAC	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Calcium	T-Ca	-		91.6	82.1	34.8	29.9	34.7	76.1	38.8	53.3	69.2	77.3
Chromium	T-Cr	0.05	MAC	< 0.001	< 0.001	0.002	0.002	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	T-Co	-		< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.007	< 0.001	< 0.001	< 0.001	< 0.001
Copper	T-Cu	1	AO	< 0.001	< 0.001	0.006	0.003	0.002	0.006	< 0.001	0.001	< 0.001	< 0.001
Iron	T-Fe	0.3	AO	< 0.05	< 0.05	1.71	0.82	0.64	0.049	0.25	0.42	0.12	0.08
Lead	T-Pb	0.010	MAC	< 0.001	< 0.001	0.005	0.002	< 0.001	0.04	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium	T-Mg	-		42	36.6	13.7	10.6	13.8	36.6	16.8	23.5	33.7	32.8
Manganese	T-Mn	0.05	AO	0.035	0.029	0.098	0.03	0.018	0.014	0.011	0.024	0.016	0.017
Mercury	T-Hg	0.001	MAC	< 0.00002	< 0.00002	< 0.00002	< 0.02	< 0.02	< 0.00002	< 0.00002	< 0.02	< 0.00002	< 0.00002
Molybdenum	T-Mo	-		0.0012	0.0012	0.0006	< 0.0005	0.0005	0.02	0.0005	0.0007	0.001	0.0009
Nickel	T-Ni	-		0.002	0.003	0.006	0.002	0.002	< 0.02	0.001	0.002	0.001	0.002
Potassium	T-K	-		1.4	1.3	1.6	0.8	0.7	0.8	0.6	0.9	0.9	1.1
Selenium	T-Se	0.01	MAC	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001
Sodium	T-Na	200	AO	5.16	4.45	1.67	1.97	2.34	4.3	2.7	3.42	4.09	4.28
Titanium	T-Ti	-		< 0.001	< 0.001	0.022	0.014	0.008	< 0.002	0.003	0.006	0.004	< 0.001
Uranium	T-U	0.02	IMAC	0.0081	0.0067	0.002	0.0018	0.0017	0.0022	0.0021	0.0038	0.0057	0.0071
Vanadium	T-V	-		< 0.001	< 0.001	0.002	0.001	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001
Zinc	T-Zn	5	AO	0.019	0.013	0.022	0.011	0.01	0.028	0.01	0.011	0.013	0.028

Notes:

[a]	Summary of Guidelines for Canadian Drinking Water Quality, April 2004
AO	aesthetic objective (taste, odour, appearance, etc.)
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
[1]	1 NTU maximum allowed for water entering distribution systems
<	indicates less than the detection limit
-	indicates no guideline or analysis for this parameter
bold	indicates parameter exceeded guideline