

CITY OF CHARLOTTETOWN
WATER & SEWER UTILITY



**WATER REPORT
2008**



COMMITTEE MEMBERS

Danny Redmond, Chair
Mitchell Tweel, Vice-Chair
Melissa Hilton, Member at Large

Craig Walker, Manager

Environment Canada calls groundwater “Nature’s Hidden Treasure”. Prince Edward Island is 100% dependent on groundwater for its drinking water. The City of Charlottetown Water and Sewer Utility is committed to provide its residents with safe drinking water. It is also committed to the protection of its watersheds and conservation of this vital resource.

DID YOU KNOW???

In 1936, the Commissioners of Sewer and Water Supply dealt with the issue of introducing chlorine into the Charlottetown water supply. Since the common belief was that no raw water was safe, many Canadian cities had begun to treat their water supplies.

Unknown to the Commissioners, the Federal Department of Health took Charlottetown’s name off the list of accredited ports because the port was not supplied treated water. Ships still came and continued to take water from Charlottetown.

In December 1936, testing by the Provincial Health Department reported that Charlottetown’s water met the high standards of the Federal Health Department. Since the water was not tested daily, there was concern that bacteria might be present at interval periods. The chlorine question was still being studied.

In 1937, the Provincial Health Department conducted routine analysis almost daily. Excellent quality showed in the results with the exception of a few days between July and November. The situation was similar with the three sources of supply. As a result, chlorinators were installed at Malpeque and Brackley to ensure “that sterile water was available by tap at all times, and Charlottetown returned to an equal footing with other Maritime ports.” (*Charlottetown Water Commission – 100 Yrs. Of Service*)

Today, the water is still chlorinated and, although excellent results are seen in sampling of raw (non-chlorinated) water, there are still a couple of times of year that results exceed the minimum requirements.

WATER METER REPLACEMENT

Currently there are 2,248 meters in place within the Utility’s system that measure the water use by commercial, industrial, institutional and multi-unit residential customers. Of this inventory there are approximately 1,248 meters that require replacement and an additional 1,000 meters that require reading system upgrading. Replacement is necessary because of the age and condition of the existing meters.

During 2008, the Utility completed the first of a three or four year program of meter replacements and upgrades. This included the replacement of 280 meters and the upgrades of an additional 270 meters to include radio transmitters. Also included in the 2008 program was the installation of the drive by meter reading systems and automated downloading from the reading to billing systems.

The purpose of this project is to improve customer service, reliability and accuracy of meter reading and to improve the efficiency of meter reading.

DETAILED CHEMISTRY ANALYSIS

In 2008, the Utility hired Dillon Consultant Limited to sample and provide the groundwater analytical results for Suffolk and Brackley Wellfields. Water samples were taken from each well and sent to an off-Island accredited laboratory for detailed chemical analysis. The analysis included metals, general chemistry (inorganic constituents), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and phenols. Not all parameters have a maximum acceptable concentration (MAC) established by the *Guidelines for Canadian Drinking Water Quality* (GCDWQ). The parameters tested that do have a MAC were below the GCDWQ criteria.

PESTICIDE MONITORING

The provincial government does an Island wide pesticide monitoring of ground water on a yearly basis. The program includes the monitoring of the Utility’s supply system. Based on records dating back to 2003 up to and including 2008, there was no detection of the pesticides tested. In 2008, samples were taken from each of the wellfields.

Total Coliform Bacteria (Distribution System)			
	# of Samples	Positive TC Tests	# of Non-Compliant Samples (TC>10)
January	29		
February	29		
March	30		
April	34		
May	29	1	1
June	29		
July	30	1	
August	30	2	
September	30	1	
October	30		
November	28	2	
December	31		
Total	359	7*	1*
Detection %		1.95	0.28

* All re-tests reported negative

Total Background Growth			
	# of Samples	Positive BG Tests	# of Non-Compliant Samples (BG>200)
January	29	2	
February	29	3	1
March	30		
April	34		1
May	29	3	
June	29	1	
July	30	1	
August	30		
September	30	1	
October	30		
November	28	2	
December	31		
Total	359	13*	2
Detection %		3.62	0.56

* All re-tests reported negative

UNTREATED WATER (SAMPLES FROM WELLS)										
	Malpeque	Brackley	Union	Suffolk	Total	TC	TC	Ecoli	BG	>200 BG
							>10			
January		3	5	4	12					
February		3	5	4	12	1				
March		3	5	4	12	3			4	
April	1	3	5	4	13	1				1
May	1	3	5	4	13	4	1		3	
June	1	4	5	4	14		1		1	
July		5	5	4	14	4			1	
August	1	4	5	4	14	7			4	
September		6	7	4	17	6	5	2*	6	
October		4	5	4	13	8			7	
November	1	4	5	4	14	6	1		2	
December		3	5	4	12	7			3	
Total	5	45	62	48	160	47	8	2	31	1

* was not confirmed

During the course of the year, samples for chemical analysis are taken from the distribution system. Based on the information gathered, the following is a typical chemical analysis of the water the City of Charlottetown provides its customers.

Typical Chemical Analysis	
Chemical	Concentration, (mg/l)
Alkalinity Total	129.48
Cadmium	< 0.005
Calcium	31.58
Chloride	13.53
Chromium	< 0.05
Copper	<0.02
Iron	< 0.1
Lead	<0.002
Magnesium	17.84
Manganese	< 0.020
Nickel	< 0.05
Nitrate-N	3.56
pH	8.1
Phosphorus	0.04
Potassium	1.53
Sodium	8.06
Sulfate	6.79
Zinc	<0.02
Total Hardness	152

The concentration indicated falls below the Maximum Acceptable Concentration and the Aesthetic Objective set under the *Guidelines for Canadian Drinking Water Quality* from Health Canada.

Homeowners purchasing dishwashers often ask how hard the City's water is in grains. Grain is a unit used to measure the hardness of water. The City's water averages about 8 grains/US gallon or 10 grains/Imperial gallon.

WASTE WATER TREATMENT

As per Section 17(2) of the Environmental Protection Act Drinking Water and Wastewater Facility Operating Regulations, the owner of a Class IV "wastewater treatment facility shall ensure that samples of treated wastewater are collected and analyzed for

- (a) biological oxygen demand, suspended solids and fecal coliform on a monthly basis;
- (b) ammonia, total phosphorus and total nitrogen on a yearly basis . . ."

Average Analysis for 2008			
	Permit Requirements	Treatment Plant	East Royalty Lagoon*
Fecal Coliform (MPN/100m L)	200	7.2	1289.8
c BOD (mg/L)	25	10	11.4
Suspended Solids (mg/L)	25	5.5	22
Ammonia-N (mgN/L)	<16	0.1	3.11
Total Nitrogen (mg/L)	N/A	19	4.8
Total Phosphorus (µg/L)	N/A	1869	1711

* no regulatory requirements at this time