

**Real Time Water Quality Monthly Report
 Waterford River - St. John's NL
 December 2006**

General

- Data from the Waterford River monitoring station is monitored by the Water Resources Management Division staff on a monthly basis.

Maintenance and Calibration of Instrumentation

- The following table displays the dates when the Datasonde was removed for routine cleaning, maintenance and calibration and when it was redeployed.

Table 1: Table of Datasonde removal and installation dates

Date Installed	Date Removed
	December 19, 2006
December 22, 2006	

- Water quality readings were taken with a Minisonde at the time of removal for comparison purposes. The Minisonde was calibrated prior to use.

Data Interpretation

- Areas in the graphs where the data lines go abruptly down to the x axis and show no readings occur when the datasonde is removed for routine cleaning, maintenance and calibration. The dates where this occurs correspond to Table 1 above.
- In general, water quality parameters were stable during the month of December with expected daily/nightly (diurnal) and seasonal changes occurring.
- Water temperatures fluctuated in response to daily maximum and minimum air temperatures. This is demonstrated by comparing the graph in **Figure 1** to the air temperature data in **Appendix 1**.

Figure 1

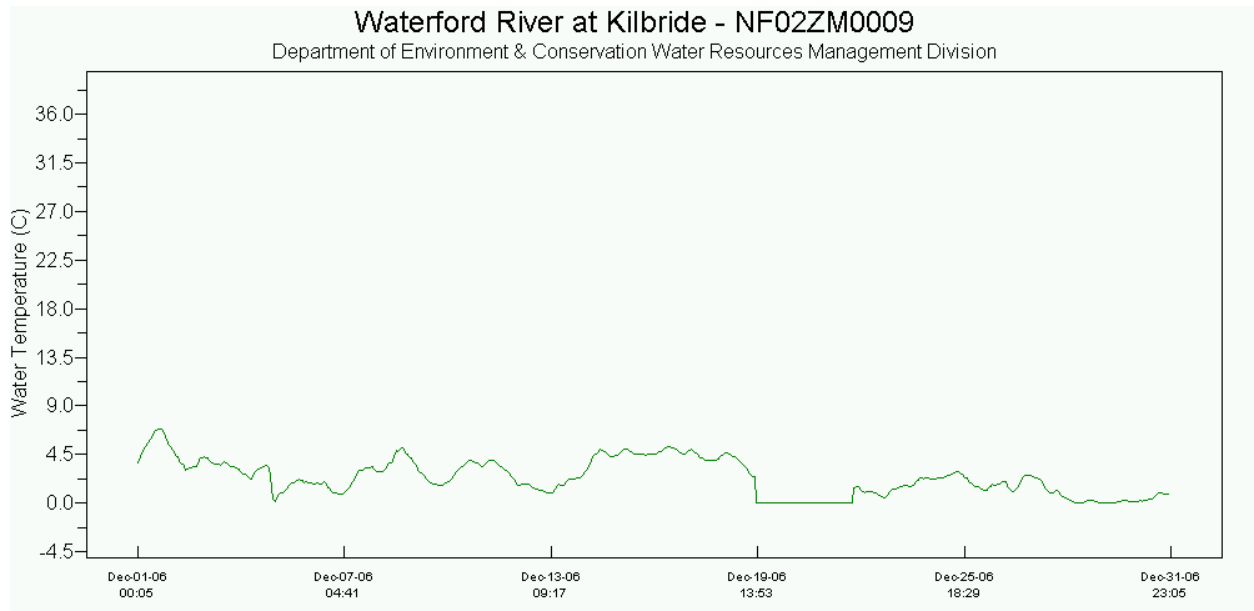
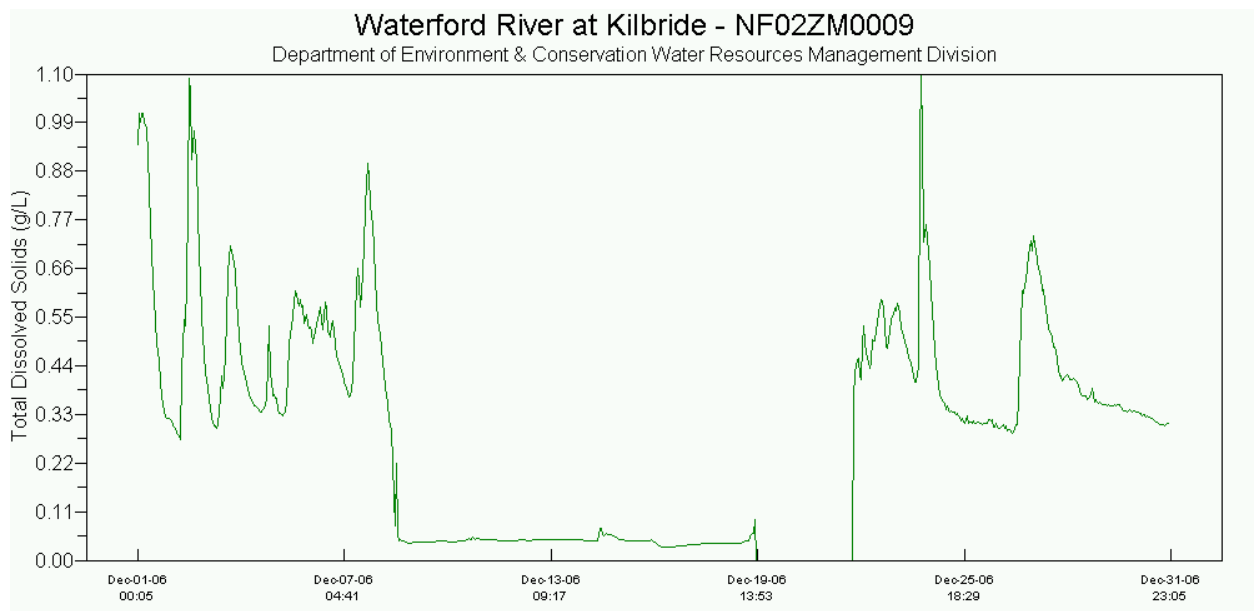
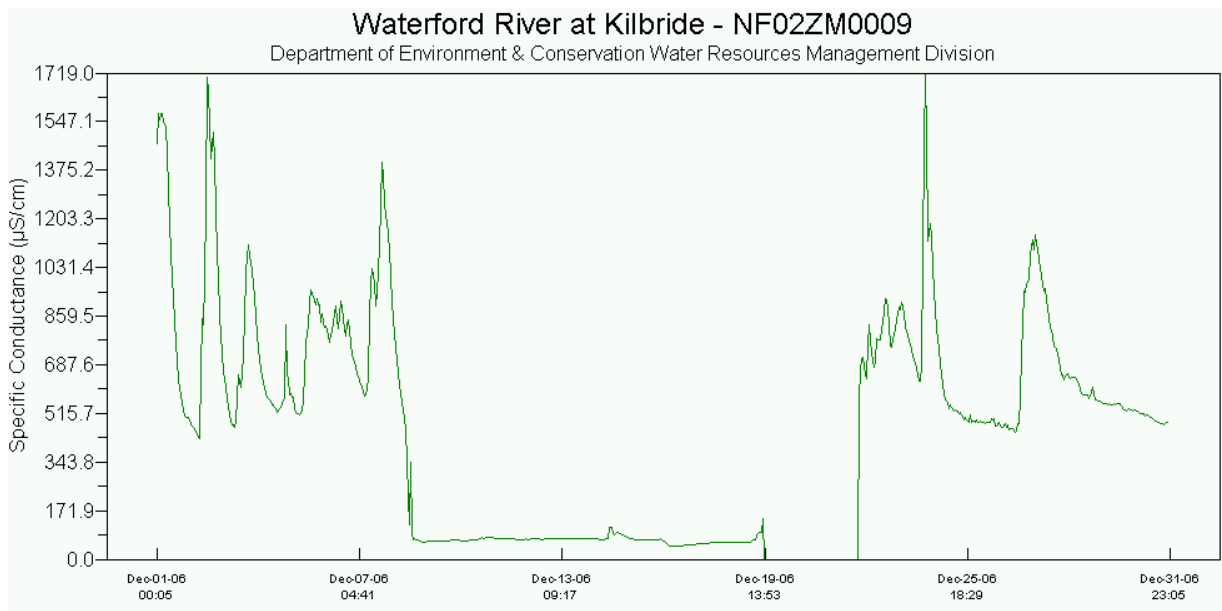


Figure 2



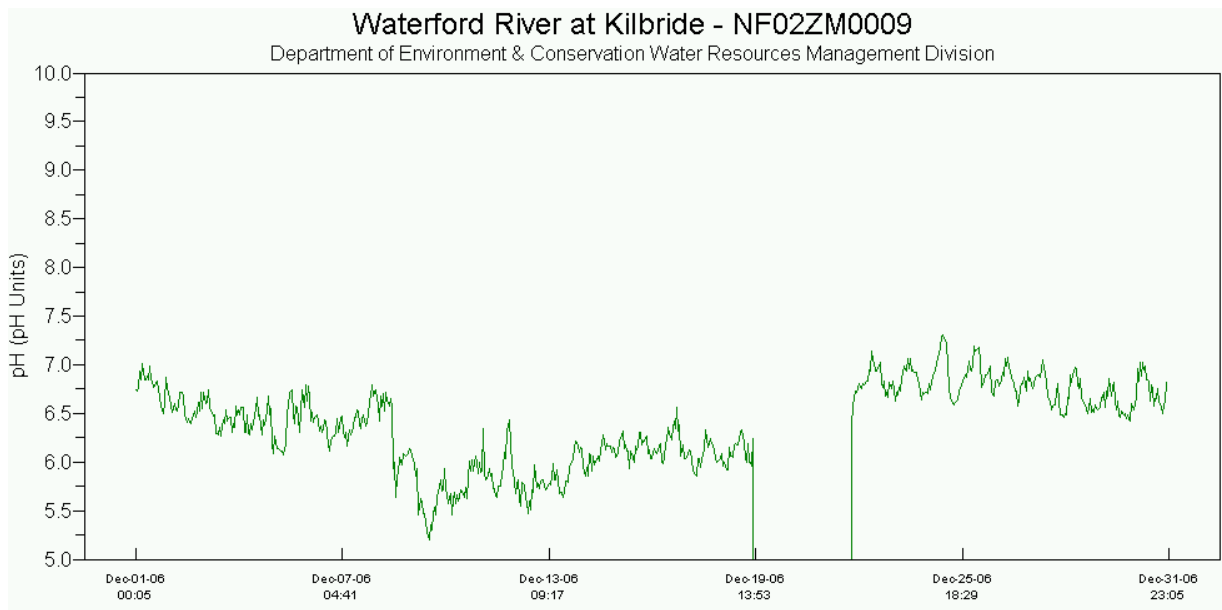
- Total dissolved solids levels reflected the changes in conductivity as observed in Figure 2. Conductivity measurements are a good indication of total dissolved solids and total dissolved ion concentrations, although this is not an exact linear relationship.

Figure 3



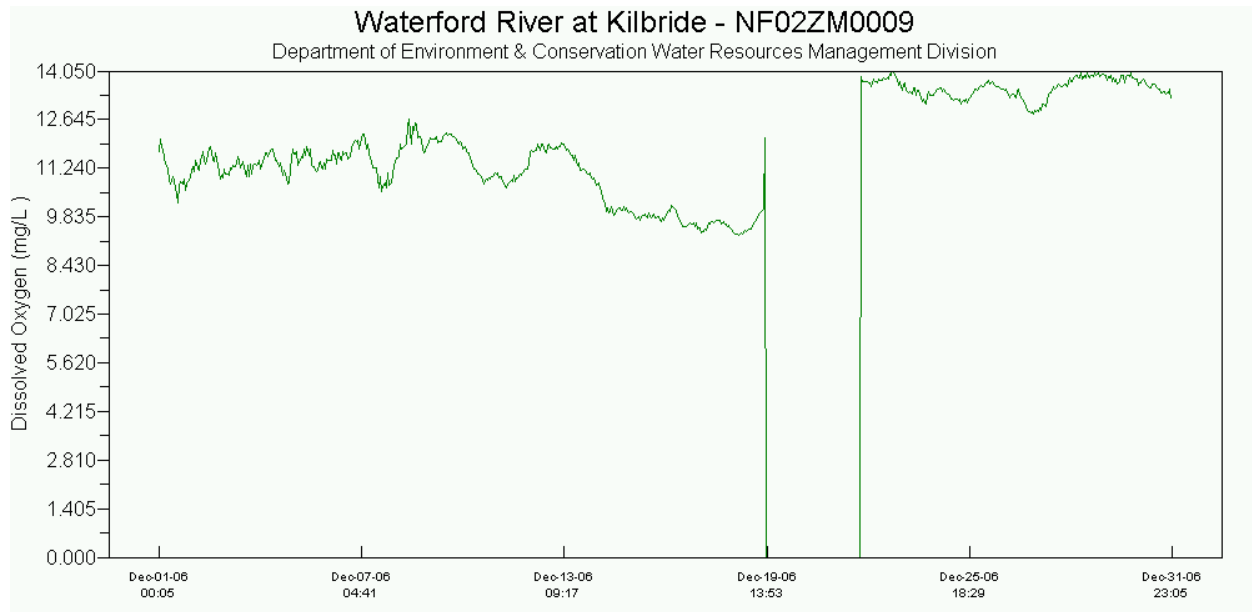
- Conductivity levels fluctuated throughout the month as observed in Figure 3 with many significant spikes. The low readings that were recorded from approximately December 8 to December 19 is likely due to interference from debris around the conductivity probe. Readings returned to normal once the probe was remove, cleaned, calibrated and reinstalled.
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Figure 4



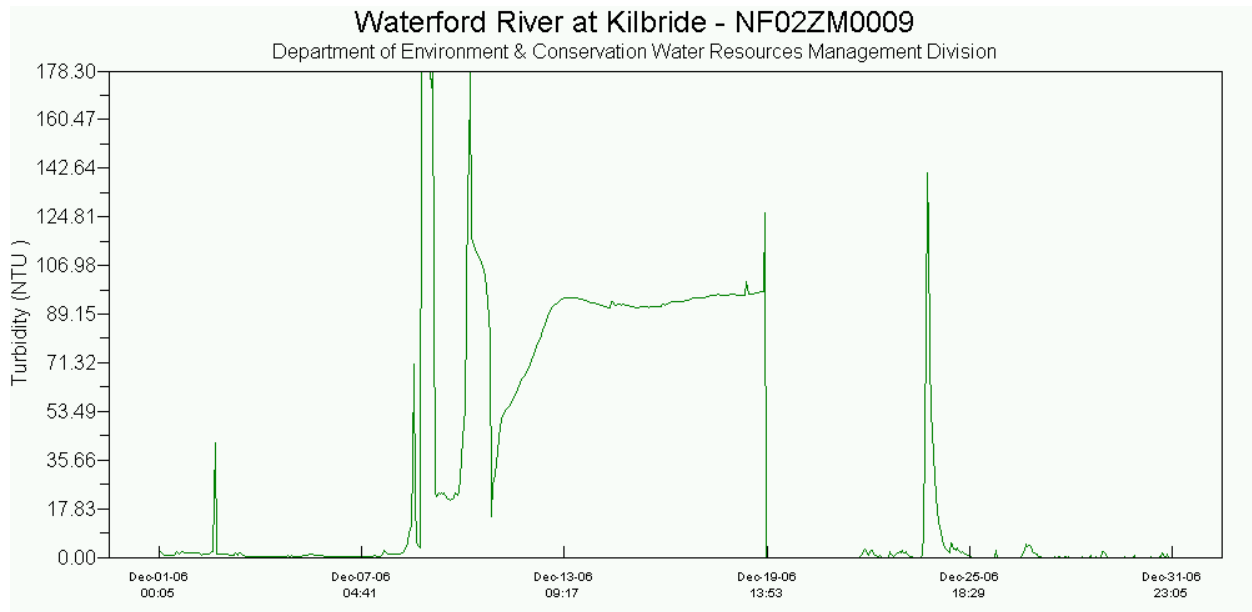
- There were some instances where the pH measurements were outside the CCME recommended Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 (Figure 4). The low pH readings that occurred around December 10th were likely related to the precipitation event on December 10th where 22mm of rain fell.

Figure 5



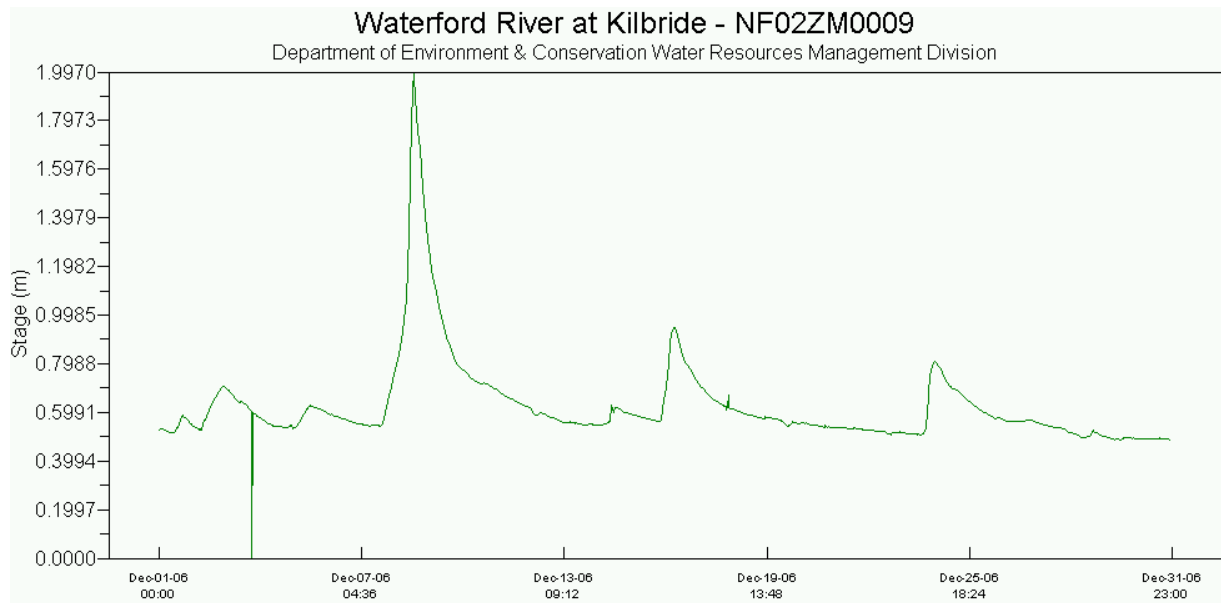
- During the month of December, dissolved oxygen measurements were stable. Higher DO readings occurred after the datasonde was cleaned, calibrated and reinstalled.

Figure 6



- Turbidity levels fluctuated and had several spikes noted throughout the month. The turbidity spikes (Figure 6) are normally in response to precipitation events. Several turbidity spikes exceeded the CCME recommended maximum of 8 NTU above background levels.











Figure 7



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Appendix 1: Weather information for St. John's, NL provided by Environment Canada for December 2006

Daily Data Report for December 2006											
D a y	Max Temp °C 	Min Temp °C 	Mean Temp °C 	Heat Deg Days C 	Cool Deg Days C 	Total Rain mm 	Total Snow cm 	Total Precip mm 	Snow on Grnd cm 	Dir of Max Gust 10's Deg	Spd of Max Gust km/h 
01 †	9.6	-2.0	3.8	14.2	0.0	7.8	0.0	7.8		24	70
02 †	6.7	-3.2	1.8	16.2	0.0	7.8	6.0	13.8	1	28E	67E
03 †	0.4	-4.5	-2.1	20.1	0.0	0.0	2.2	2.2	T	28	44
04 †	0.8	-6.9	-3.1	21.1	0.0	0.0	24.0	24.0	2	9	80
05 †	1.9	-2.8	-0.5	18.5	0.0	7.6	4.6	11.0	25	25	93
06 †	-2.1	-7.2	-4.7	22.7	0.0	0.0	1.4	0.8	29	31	46
07 †	5.9	-6.0	-0.1	18.1	0.0	6.6	0.0	6.6	25	18	63
08 †	11.7	2.4	7.1	10.9	0.0	27.0	0.0	27.0	1	24	65
09 †	2.4	-6.4	-2.0	20.0	0.0	0.0	0.2	0.2	T	28	67
10 †	5.3	-5.3	0.0	18.0	0.0	0.0	T	T	T	27	74
11 †	2.8	-3.9	-0.6	18.6	0.0	0.0	0.8	0.4	T	27	59
12 †	-3.6	-7.7	-5.7	23.7	0.0	0.0	T	T	1	30	67
13 †	0.8	-6.1	-2.7	20.7	0.0	0.0	T	T	T	27	70
14 †	8.1	0.8	4.5	13.5	0.0	4.4	0.0	4.4		27	67
15 †	6.3	2.1	4.2	13.8	0.0	T	0.0	T		26	44
16 †	9.5	2.1	5.8	12.2	0.0	19.8	0.0	19.8		14	54
17 †	4.8	0.1	2.5	15.5	0.0	T	0.0	T		27	50
18 †	4.4	-2.7	0.9	17.1	0.0	0.0	T	T	T		<31
19 †	-2.1	-6.4	-4.3	22.3	0.0	0.0	1.4	0.8	T	33	37
20 †	-2.1	-8.4	-5.3	23.3	0.0	0.0	2.2	1.6	2		<31
21 †	0.9	-6.6	-2.9	20.9	0.0	0.0	0.8	0.4	2	22	35
22 †	-0.3	-6.0	-3.2	21.2	0.0	0.0	6.4	6.2	5	29	61
23 †	-0.8	-7.0	-3.9	21.9	0.0	0.0	T	T	5	29	48
24 †	4.8	-2.0	1.4	16.6	0.0	10.8	0.0	10.8	4	16	59
25 †	2.6	-1.4	0.6	17.4	0.0	2.0	0.0	2.0	T	28	83
26 †	0.7	-2.1	-0.7	18.7	0.0	0.0	3.8	3.2	T	29	70
27 †	-0.4	-5.6	-3.0	21.0	0.0	0.6	2.4	3.1	5		<31
28 †	-5.6	-9.2	-7.4	25.4	0.0	0.0	0.0	0.0	5	28	48
29 †	-7.1	-11.0	-9.1	27.1	0.0	0.0	0.4	0.4	5	28	48
30 †	-5.8	-11.7	-8.8	26.8	0.0	0.0	0.2	0.2	5	29	56
31 †	-2.1	-6.5	-4.3	22.3	0.0	0.0	2.6	1.2	5		<31
Sum				599.8	0.0	94.4	59.4	147.9			