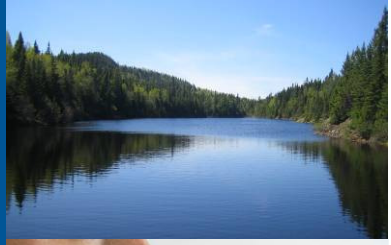
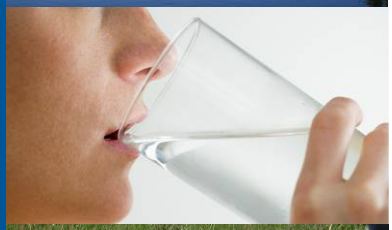
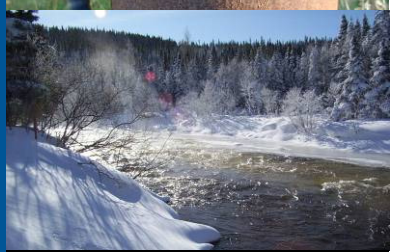







Waterford River @ Kilbride

NF02ZM0009

April 2010

Newfoundland Labrador

Government of Newfoundland & Labrador
Department of Environment and Conservation
Water Resources Management Division
St. John's, NL, A1B 4J6 Canada

Real Time Water Quality Monthly Report
Waterford River - St. John's NL
April 2010

General

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

Maintenance and Calibration of Instrumentation

- The following table displays the dates when the Waterford River water quality probe was installed and removed during this deployment period for routine cleaning, maintenance and calibration.

Table 1: Table of Water Quality Probe Installation and Removal

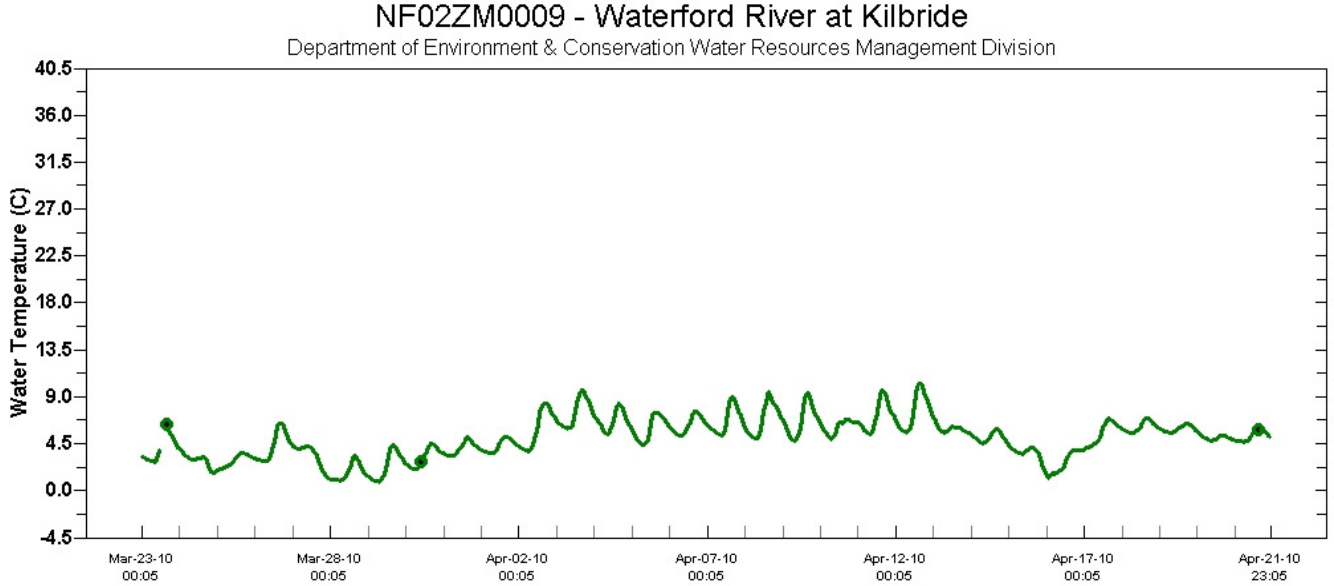
Date Installed	Date Removed
March 23, 2010	April 21, 2010

- Water quality readings were taken with a second water quality instrument at the time of installation and removal for QAQC comparison. The QAQC instrument was calibrated prior to each use.
- There is a technical problem with transmitting dissolved oxygen data to the data logger at Waterford River. A new transmission cable will be installed when weather conditions permit, and dissolved oxygen data will not be reported in the interim.

Data Interpretation

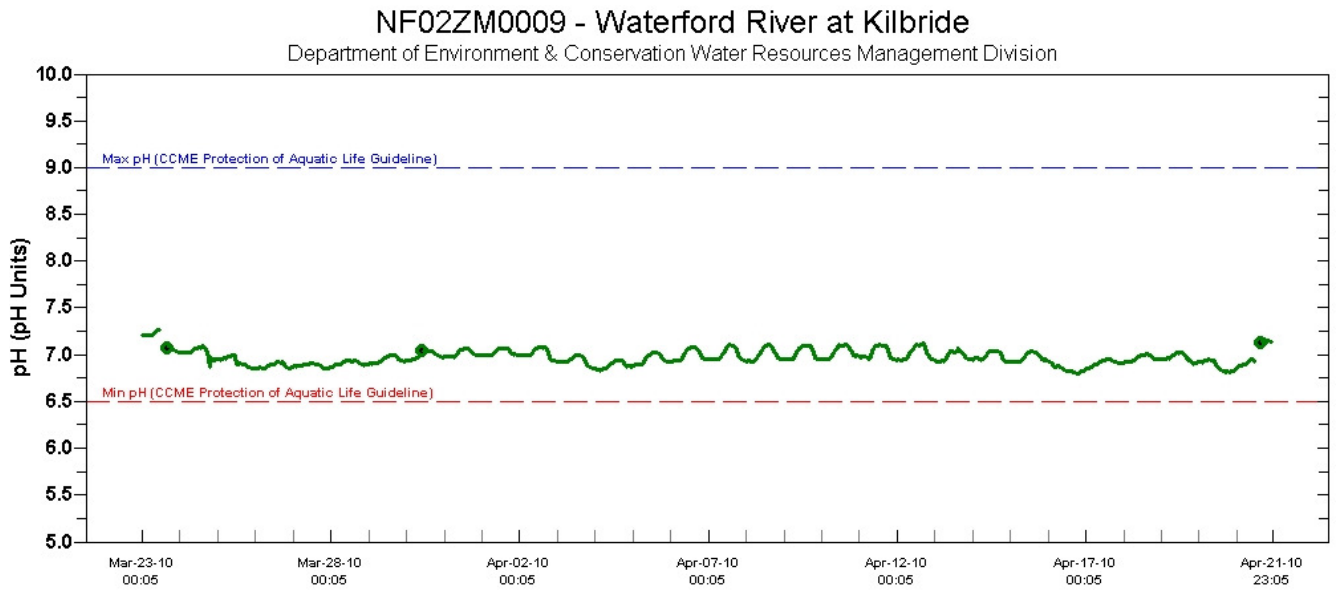
- **Water temperatures** were fairly constant during this deployment showing diurnal variations, as seen in **Figure 1** below. Water temperatures ranged between 0.35 and 9.81^{o}C , which was within the seasonally expected range.

Figure 1: Water Temperature



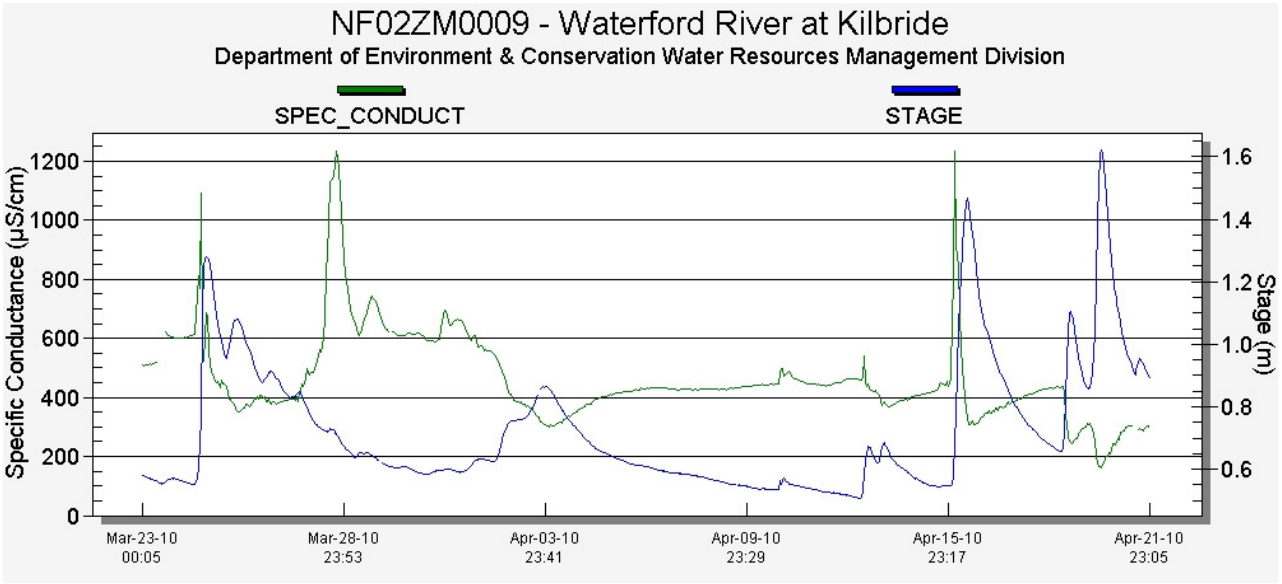
- **pH** levels were fairly constant and within the expected range for this station throughout the deployment, ranging from 6.80 to 7.12 units, as seen in **Figure 2** below. All pH values were within the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 pH units **(Figure 2).**

Figure 2: pH Levels



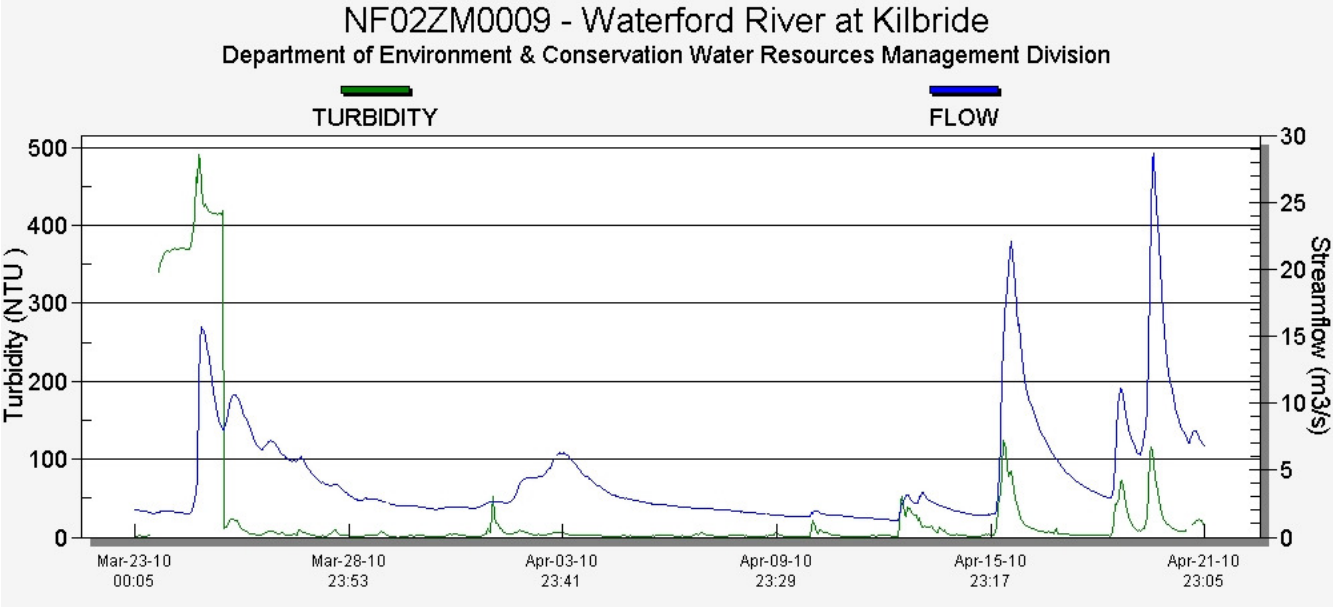
- **Specific conductivity** levels typically share an inverse relationship with stage height, showing decreasing levels as stage height increases due to precipitation. This is caused by the dilution effect increased stage height usually has on conductivity. Conversely, specific conductivity levels typically increase as stage height decreases. Specific conductivity values are shown in green and stage height is shown in blue in **Figure 3** below. Both specific conductivity and stage height spiked on March 24th in response to 33.8mm of rain that fell on that day, as shown in Environment Canada's Climate Data for St. John's, in **Appendix 1** at the end of this report. Specific conductivity values increased again on March 27th, which may be due, in part, to the 9.4mm of rain that fell on that day, and may also have been impacted by increased run-off from snow/ice-melt, due to a sudden increase in air temperature that occurred on March 27th and 28th (see **Appendix 1**). Land run-off at this time of year may contain significant quantities of road salt to temporarily cause conductivity spikes. Specific conductivity values ranged between 161-1235µS/cm during this deployment.

Figure 3: Specific Conductance



Turbidity values were less than 100NTU for almost all of the deployment period, with the exception of spikes occurring on April 16th, 19th and 20th. These spikes were the result of increased flows on these dates caused by heavy rainfall. Turbidity data is shown in green and flow data is shown in blue in **Figure 4** below. Climate data on these dates is given in **Appendix 1**. Turbidity values ranged from 0.2-491 NTU during this deployment.

Figure 4: Turbidity



APPENDIX 1: Weather information for St. John's, NL provided by Environment Canada for March 23-31, 2010:

Daily Data Report for March 2010

Day	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
23	3.4	-1.8	0.8	17.2	0.0	0.0	0.0	0.0	2		<31
24†	1.1	-1.5	-0.2	18.2	0.0	33.8	T	34.8	2	13E	56E
25	3.9	0.6	2.3	15.7	0.0	11.0	0.0	11.0	1	32E	44E
26	10.4	1.1	5.8	12.2	0.0	T	0.0	T	1	33E	41E
27†	7.3	-7.0	0.2	17.8	0.0	1.0	10.6	9.4	T	2	46
28†	-4.1	-9.7	-6.9	24.9	0.0	0.0	0.4	0.2	6	36	50
29	-1.6	-9.4	-5.5	23.5	0.0	0.0	0.0	0.0	6		<31
30	3.1	-3.4	-0.2	18.2	0.0	0.0	0.0	0.0	4	17E	41E
31	4.2	-0.1	2.1	15.9	0.0	1.2	0.0	1.2	3		<31
Sum				**566.9**	**0.0**	**231.8**	**22.4**	**252.6**			
Avg	**2.6**	**-3.2**	**-0.29**								
Xtrm	**10.4**	**-9.7**								**28***	**61***

Weather information for St. John's, NL provided by Environment Canada for April 1-21,2010:

Daily Data Report for April 2010

Day	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†	2.0	0.4	1.2	16.8	0.0	0.6	0.0	0.6	2	12	32
02†	15.7	0.9	8.3	9.7	0.0	0.2	0.0	0.2	1		<31
03†	12.5	5.5	9.0	9.0	0.0	0.0	0.0	0.0	T	27	48
04†	5.8	-2.0	1.9	16.1	0.0	0.0	0.0	0.0	T		<31
05†	9.6	-2.0	3.8	14.2	0.0	0.0	0.0	0.0	T	23	39
06†	5.4	1.0	3.2	14.8	0.0	0.0	0.0	0.0	T	28	50
07†	7.2	-0.7	3.3	14.7	0.0	0.0	0.0	0.0	T	29	50
08†	7.4	-0.4	3.5	14.5	0.0	T	0.0	T	T	33	48
09†	7.9	-1.3	3.3	14.7	0.0	0.0	0.0	0.0		33	50
10†	7.7	-1.0	3.4	14.6	0.0	2.6	0.0	2.6		19	63
11†	10.4	2.0	6.2	11.8	0.0	T	0.0	T		23	65
12†	11.8	-0.2	5.8	12.2	0.0	0.0	0.0	0.0		26	57
13†	6.6	0.2	3.4	14.6	0.0	15.4	0.0	15.4		34	39
14†	2.0	-2.2	-0.1	18.1	0.0	0.2	0.2	0.2	T	36	50
15†	0.5	-1.2	-0.4	18.4	0.0	8.8	8.2	17.0	T	3	67
16†	5.2	0.1	2.7	15.3	0.0	43.6	0.0	43.6	2	11	70
17†	5.3	3.2	4.3	13.7	0.0	0.2	0.0	0.2	T	11	52
18†	5.0	2.2	3.6	14.4	0.0	T	0.0	T	T		<31
19†	5.3	0.0	2.7	15.3	0.0	23.0	0.0	23.0	T	13	41
20†	3.8	-0.1	1.9	16.1	0.0	39.0	0.0	39.0		7	67
21†	3.5	1.0	2.3	15.7	0.0	5.2	1.2	6.4		34	48

Report prepared by:

Joanne Sweeney
Environmental Scientist
Water Resources Management Division
Department of Environment and Conservation
Confederation Building West Block 4th Floor
St. John's NL A1B 4J6
Ph. (709) 729-0351