

## Real Time Water Quality Monthly Report Waterford River - St. John's NL June 2009

### 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:

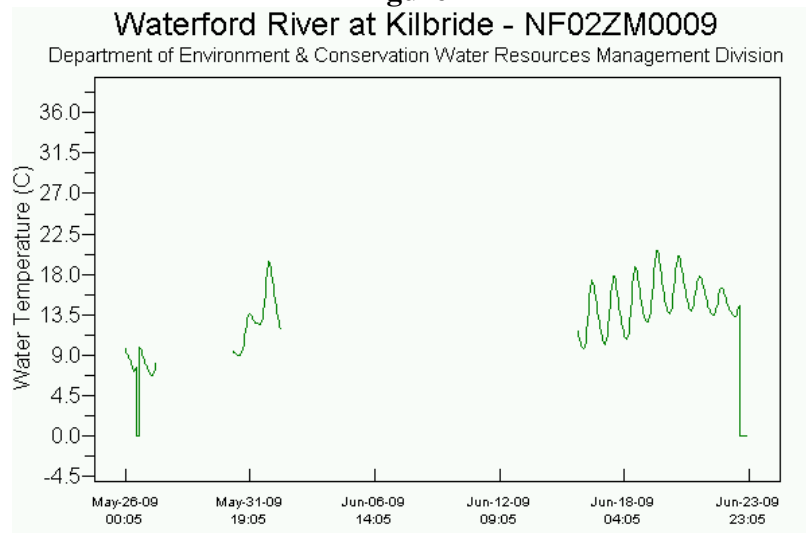
Date Installed	Date Removed
May 26, 2009	June 23, 2009

- 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.

### Data Interpretation

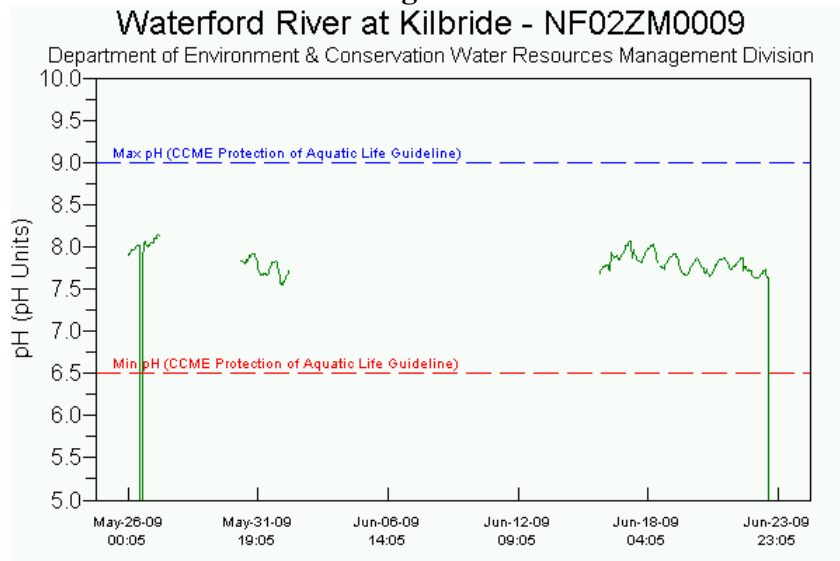
- Technical transmission difficulties were experienced resulting in several data gaps during this deployment period. These operational issues are currently being investigated by Environment Canada.
- In general, water quality parameters were stable during the deployment period with expected diurnal and seasonal variations occurring.
- Water temperatures** fluctuated in response to daily maximum and minimum air temperatures. This is seen by comparing the graph in **Figure 1** below, to the air temperature data in **Appendix 1** at the end of this report. Water temperatures ranged between 6.7 and 20.7 °C during this deployment.

**Figure 1**



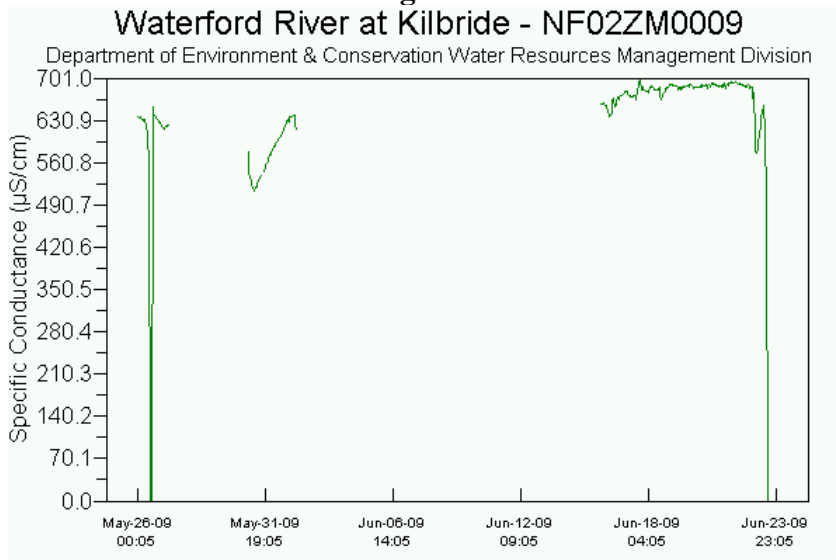
- pH** ranged from 7.55 to 8.14 units, as seen in **Figure 2**. All recorded pH measurements were within the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 (Figure 2).

**Figure 2**



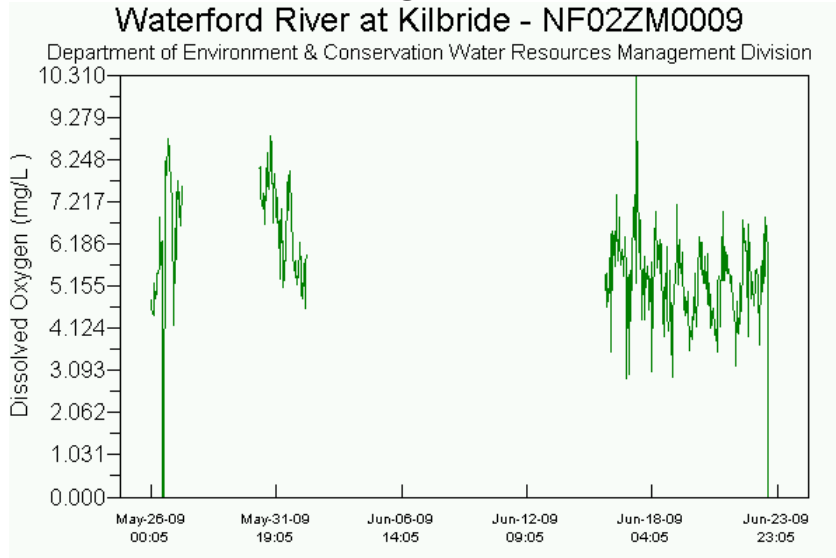
- Specific conductivity** levels ranged from 498 to 701  $\mu\text{S}/\text{cm}$ , as seen in **Figure 3**. This range is quite similar to the specific conductivity range recorded in the previous deployment period, which was 332 to 708  $\mu\text{S}/\text{cm}$ .

**Figure 3**



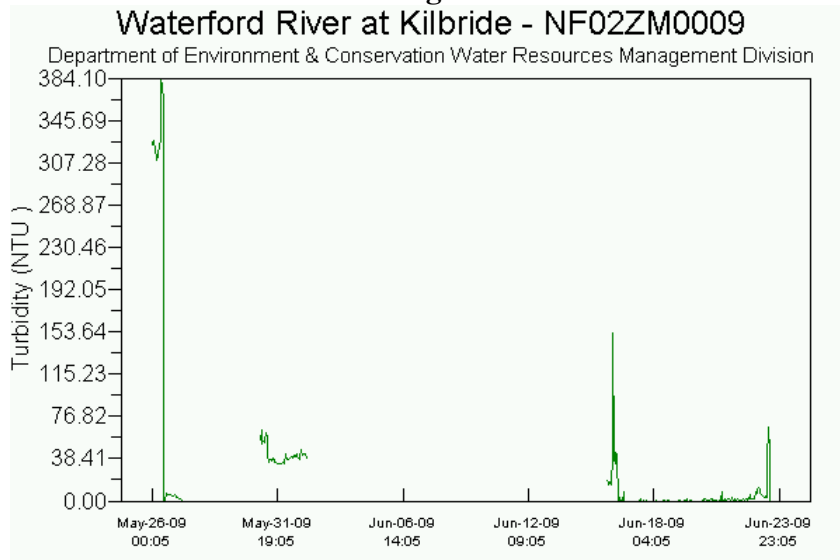
- The **dissolved oxygen (DO)** sensor appears to be malfunctioning, as seen in **Figure 4** below. DO values recorded during this deployment are not reliable. Advance DO sensor maintenance will be conducted on the sensor at the end of this deployment.

**Figure 4**



- Turbidity** values fluctuated near background levels for most of this deployment, but two spikes were recorded on June 16 and June 23, as seen in **Figure 5** below. The spike that occurred on June 16 doesn't appear to be influenced by weather events, and is probably the result of land based activity that occurred upstream and impacted water quality, as recorded at this station. Rain and high winds on June 22 and 23 may have contributed to turbidity on these dates, as recorded in Environment Canada's daily climate data found in Appendix 1 at the end of this report.




**Figure 5**



**APPENDIX 1:** Weather information for St. John's, NL provided by Environment Canada for June 2009:

Daily Data Report for June 2009

Day	<u>Max Temp</u>	<u>Min Temp</u>	<u>Mean Temp</u>	<u>Heat Deg Days</u>	<u>Cool Deg Days</u>	<u>Total Rain</u>	<u>Total Snow</u>	<u>Total Precip</u>	<u>Snow on Grnd</u>	<u>Dir of Max Gust</u>	<u>Spd of Max Gust</u>
	°C	°C	°C	°C	°C	mm	cm	mm	cm	10's	km/h

										Deg	
01†	23.1	5.8	14.5	3.5	0.0	0.2	0.0	0.2		26	41
02†	18.5	5.2	11.9	6.1	0.0	0.0	0.0	0.0		23	56
03†	17.4	7.2	12.3	5.7	0.0	0.0	0.0	0.0		28	57
04†	19.3	5.9	12.6	5.4	0.0	0.0	0.0	0.0		25	39
05†	18.8	8.6	13.7	4.3	0.0	0.0	0.0	0.0		26	39
06†	19.3	6.7	13.0	5.0	0.0	0.0	0.0	0.0		26	52
07†	14.9	5.8	10.4	7.6	0.0	1.4	0.0	1.4			<31
08†	15.4	5.6	10.5	7.5	0.0	2.4	0.0	2.4		25	37
09†	6.5	4.4	5.5	12.5	0.0	3.8	0.0	3.8		1	41
10†	6.2	3.7	5.0	13.0	0.0	0.2	0.0	0.2		36	35
11†	9.7	3.7	6.7	11.3	0.0	T	0.0	T			<31
12†	10.4	5.3	7.9	10.1	0.0	1.6	0.0	1.6		18	63
13†	18.8	3.2	11.0	7.0	0.0	9.2	0.0	9.2		18	65
14†	8.7	1.5	5.1	12.9	0.0	T	0.0	T			<31
15†	12.8	2.0	7.4	10.6	0.0	0.0	0.0	0.0			<31
16†	17.0	5.1	11.1	6.9	0.0	0.0	0.0	0.0			<31
17†	19.1	6.2	12.7	5.3	0.0	0.0	0.0	0.0		14	32
18†	20.2	8.1	14.2	3.8	0.0	0.0	0.0	0.0			<31
19†	26.4	7.2	16.8	1.2	0.0	0.0	0.0	0.0		27	33
20†	22.3	9.4	15.9	2.1	0.0	0.0	0.0	0.0			<31
21†	19.8	10.7	15.3	2.7	0.0	0.0	0.0	0.0			<31
22†	16.5	10.0	13.3	4.7	0.0	5.6	0.0	5.6		13	39
23†	20.9	9.9	15.4	2.6	0.0	23.8	0.0	23.8			<31
24†	18.5	13.2	15.9	2.1	0.0	1.6	0.0	1.6			<31
25†	23.6	14.6	19.1	0.0	1.1	10.6	0.0	10.6		26	35
26†	23.9	15.8	19.9	0.0	1.9	0.2	0.0	0.2		28	32
27†	17.0	9.4	13.2	4.8	0.0	T	0.0	T			<31
28†	16.0	9.5	12.8	5.2	0.0	0.0	0.0	0.0			<31
29†	13.4	8.6	11.0	7.0	0.0	0.0	0.0	0.0		14	33
30†	11.4	7.8	9.6	8.4	0.0	T	0.0	T		13	32
Sum				<b>179.3</b>	<b>3.0</b>	<b>60.6</b>	<b>0.0</b>	<b>60.6</b>			
Avg	<b>16.9</b>	<b>7.3</b>	<b>12.1</b>								
Xtrm	<b>26.4</b>	<b>1.5</b>								<b>18</b>	<b>65</b>

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