Government of Newfoundland and Labrador
Department of Environment and Conservation
Water Resources Management Division

Real Time Water Quality Monthly Report
Waterford River - St. John's NL
October 2008

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 Datasonde was installed and when it was removed at the end of the deployment period for routine cleaning, maintenance and calibration.

Table 1: Table of Datasonde installation and removal:

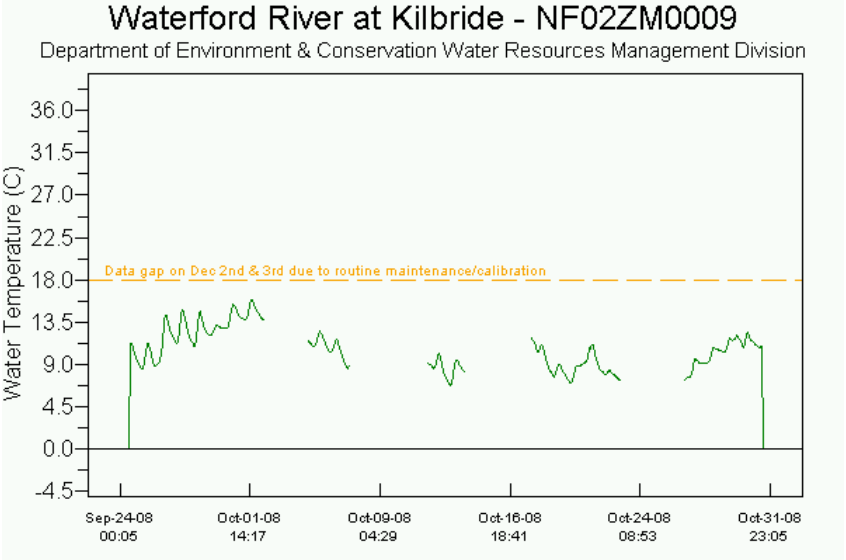
Date Installed	Date Removed
September 24, 2008	October 31, 2008

- Water quality readings were taken with a Hydrolab 4a at the time of installation and removal for QAQC comparison. The Hydrolab 4a was calibrated prior to each use.

Data Interpretation

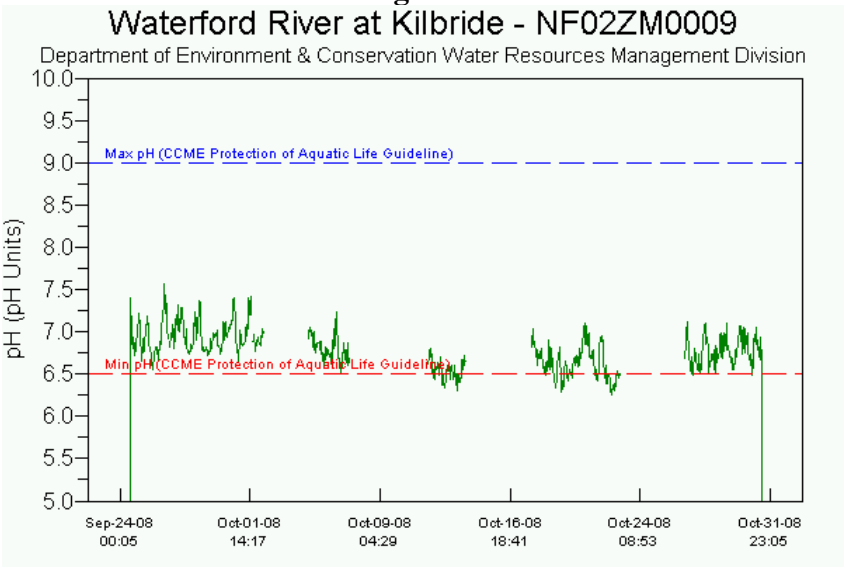
- Technical transmission difficulties were experienced throughout this deployment resulting in several data gaps.
- In general, water quality parameters were stable during the deployment period with expected daily/nightly (diurnal) and seasonal changes occurring.
- Water temperatures fluctuated in response to daily maximum and minimum air temperatures. This is demonstrated by comparing the graph in **Figure 1** below, to the air temperature data in **Appendix 1,** found at the end of this report.

Figure 1



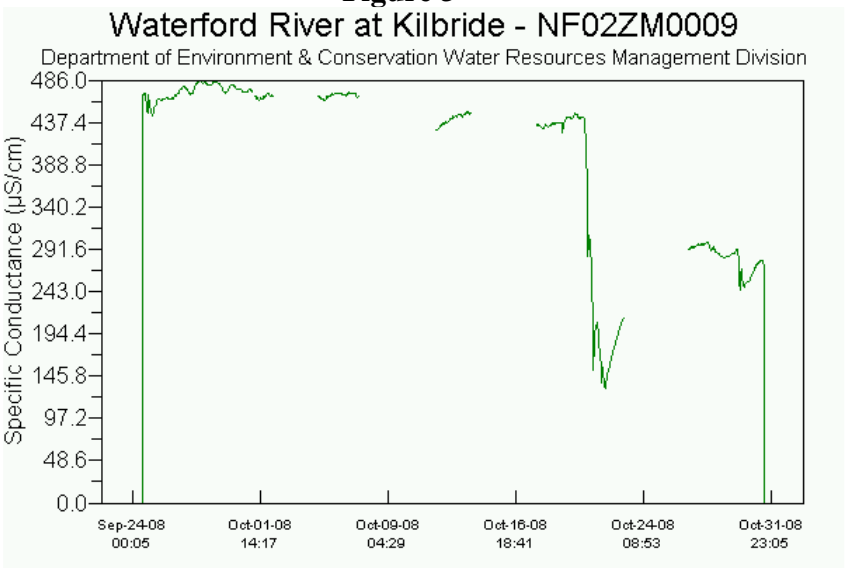
- pH levels during the deployment period were fairly stable, ranging from 6.25 to 7.56 pH units, as seen in **Figure 2**. There were some instances where pH levels were below the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 **(Figure 2).** It is typical for surface water in NL to have pH levels below the recommended guideline, due to the acidic nature of the terrain.

Figure 2



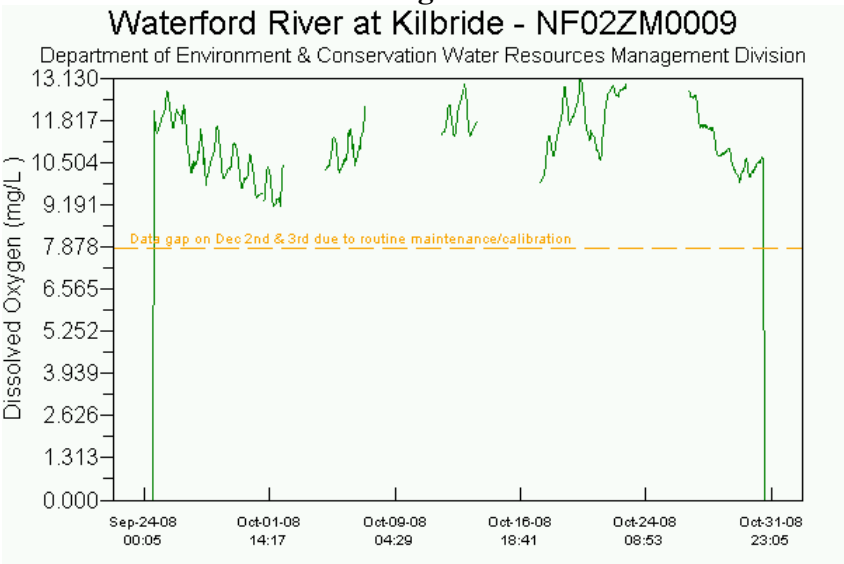
- Conductivity levels displayed sharp decline on October 21st, as seen in **Figure 3**. This was a dilution effect caused by significant rainfall recorded on that date, as seen in **Appendix 1.** Conductivity levels ranged between 132 and 486 µS/cm during this deployment.

Figure 3



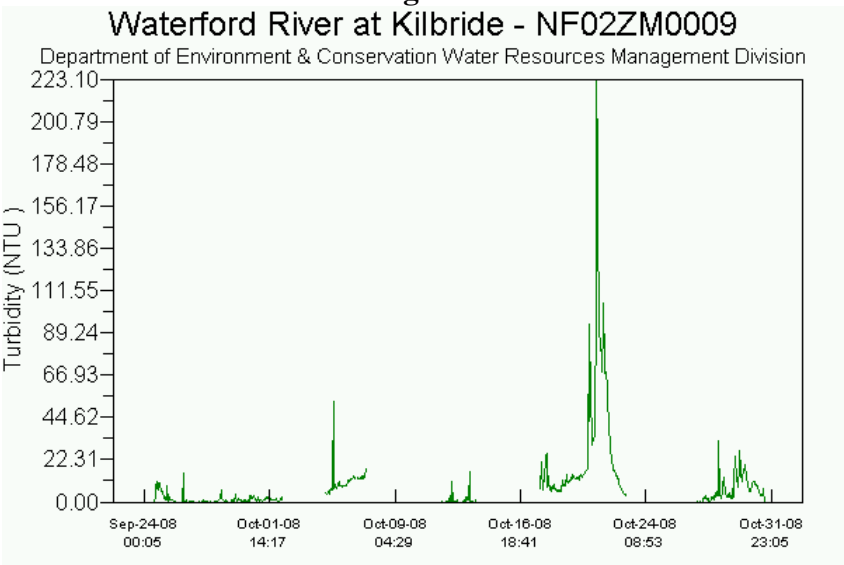
- Dissolved oxygen levels displayed diurnal fluctuations (**see Figure 4**) in response to changes in water temperatures from daytime highs to night time lows (**see Figure 1**). Colder water typically holds more dissolved oxygen than warmer water, so as water temperatures decrease, dissolved oxygen levels typically increase.

Figure 4



- Turbidity levels spiked significantly on October 21st, as seen in **Figure 5,** in response to heavy rainfall that occurred on that date, as recorded in the climate data chart in **Appendix 1.**

Figure 5



APPENDIX 1: Weather information for St. John's, NL provided by Environment Canada for October 2008:

Daily Data Report for October 2008											
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	18.1	13.0	15.6	2.4	0.0	1.6	0.0	1.6	0	26E	35E
02	16.7	9.9	13.3	4.7	0.0	T	0.0	T	0	27E	39E
03	17.8	9.5	13.7	4.3	0.0	0.0	0.0	0.0	0	26E	54E
04	14.6	9.5	12.1	5.9	0.0	1.8	0.0	1.8	0	26E	67E

05	12.8	4.3	8.6	9.4	0.0	T	0.0	T	0	30E	54E
06	12.2	4.3	8.3	9.7	0.0	0.0	0.0	0.0	0	27E	46E
07	8.8	3.4	6.1	11.9	0.0	4.2	0.0	4.2	0	M	M
08	6.6	2.1	4.4	13.6	0.0	4.0	T	4.0	0	M	M
09	12.2	2.3	7.3	10.7	0.0	1.8	0.0	1.8	0	28E	48E
10	13.0	8.3	10.7	7.3	0.0	14.2	0.0	14.2	0	27E	56E
11	8.7	2.5	5.6	12.4	0.0	T	0.0	T	0		<31
12	8.4	1.9	5.2	12.8	0.0	0.0	0.0	0.0	0		<31
13	10.7	4.0	7.4	10.6	0.0	T	0.0	T	0	4E	37E
14	8.4	3.0	5.7	12.3	0.0	T	0.0	T	0		<31
15	13.2	5.2	9.2	8.8	0.0	T	0.0	T	0	22E	52E
16	14.5	6.9	10.7	7.3	0.0	3.8	0.0	3.8	0		<31
17	14.6	8.6	11.6	6.4	0.0	2.4	0.0	2.4	0	34E	35E
18	9.4	3.3	6.4	11.6	0.0	T	0.0	T	0	30E	56E
19	8.5	1.6	5.1	12.9	0.0	1.6	0.0	1.6	0		<31
20	9.1	2.2	5.7	12.3	0.0	19.8	0.0	19.8	0	12E	44E
21	15.6	3.7	9.7	8.3	0.0	65.2	0.0	65.2	0	3E	83E
22	5.3	1.8	3.6	14.4	0.0	1.0	T	1.0	0	36E	65E
23	3.1	0.5	1.8	16.2	0.0	T	T	T	0	4E	50E
24	7.5	0.0	3.8	14.2	0.0	0.0	0.0	0.0	0		<31
25	10.6	0.1	5.4	12.6	0.0	0.0	0.0	0.0	0		<31
26	12.3	2.7	7.5	10.5	0.0	0.0	0.0	0.0	0		<31
27	10.8	6.1	8.5	9.5	0.0	0.4	0.0	0.4	0		<31
28	12.8	7.3	10.1	7.9	0.0	4.2	0.0	4.2	0		<31
29	17.2	10.5	13.9	4.1	0.0	6.0	0.0	6.0	0	18E	67E
30	18.8	8.8	13.8	4.2	0.0	T	0.0	T	0	23E	37E
31	11.5	6.9	9.2	8.8	0.0	2.2	0.0	2.2	0	26E	65E
Sum				**298.0**	**0.0**	**134.2**	**T**	**134.2**			
Avg	**11.7**	**5.0**	**8.4**								
Xtrm	**18.8**	**0.0**								**3***	**83***

Report prepared by:

Joanne Sweeney
Environmental Scientist
Water Resources Management Division
Department of Environment and Conservation
Confederation Building West Block 4th Floor
PO Box 8700
St. John's NL A1B 4J6

Ph. (709) 729-0351
Fax (709) 729-0320