



Waterford River @ Kilbride

NF02ZM0009

December 2009 - January 2010



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
December 2009-January 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

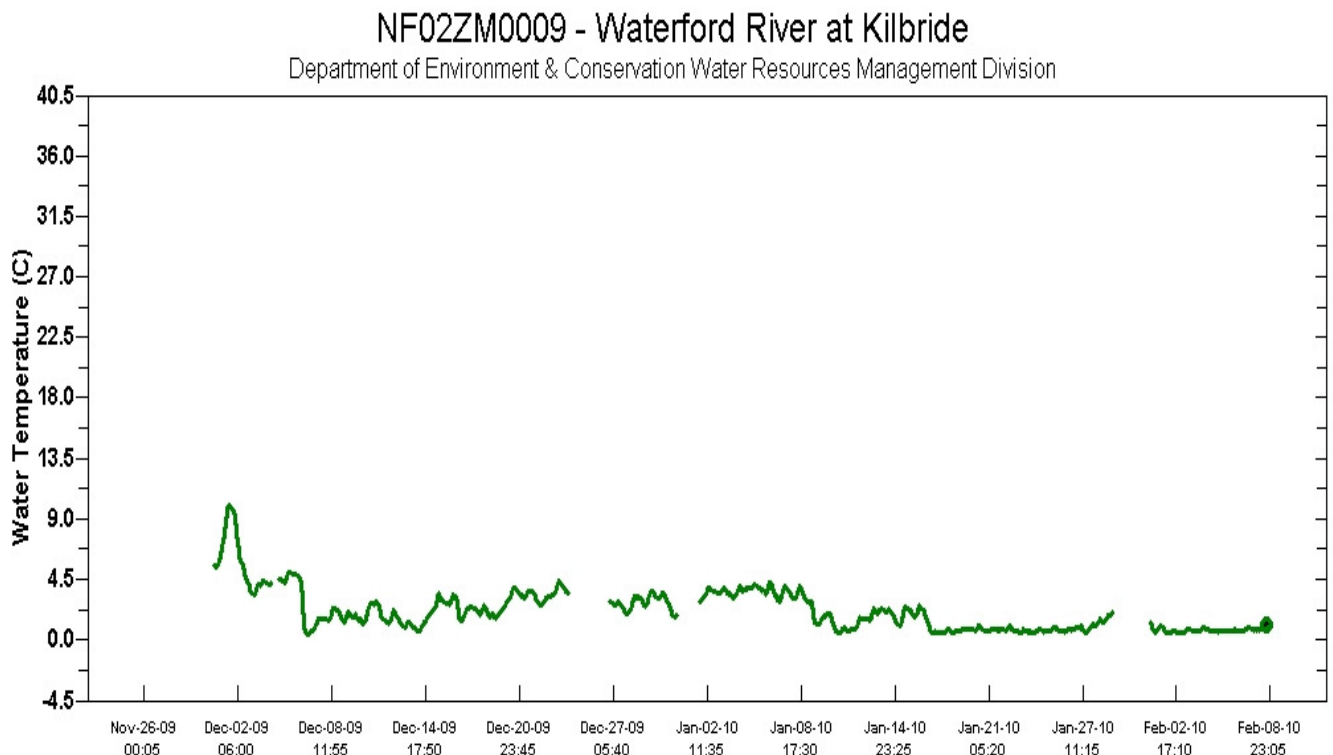
Date Installed	Date Removed
November 26, 2009	February 2, 2010

- 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 collected in the interim.

Data Interpretation

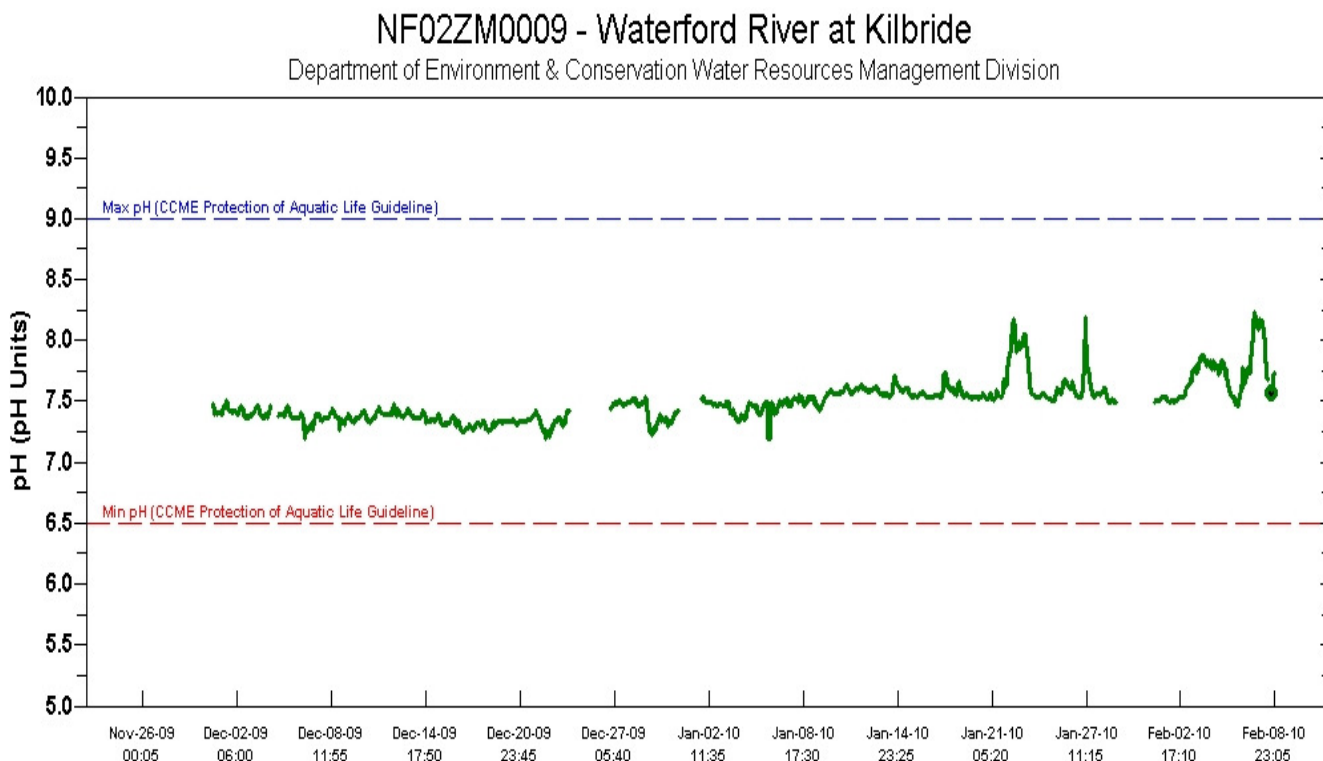
- Water temperatures** demonstrated diurnal fluctuations and a seasonal decreasing trend during this deployment, as shown in **Figure 1** below. Water temperature ranged between -0.06 and 9.51 °C during this deployment, with ice cover periodically forming on the surface.

Figure 1: Water Temperature



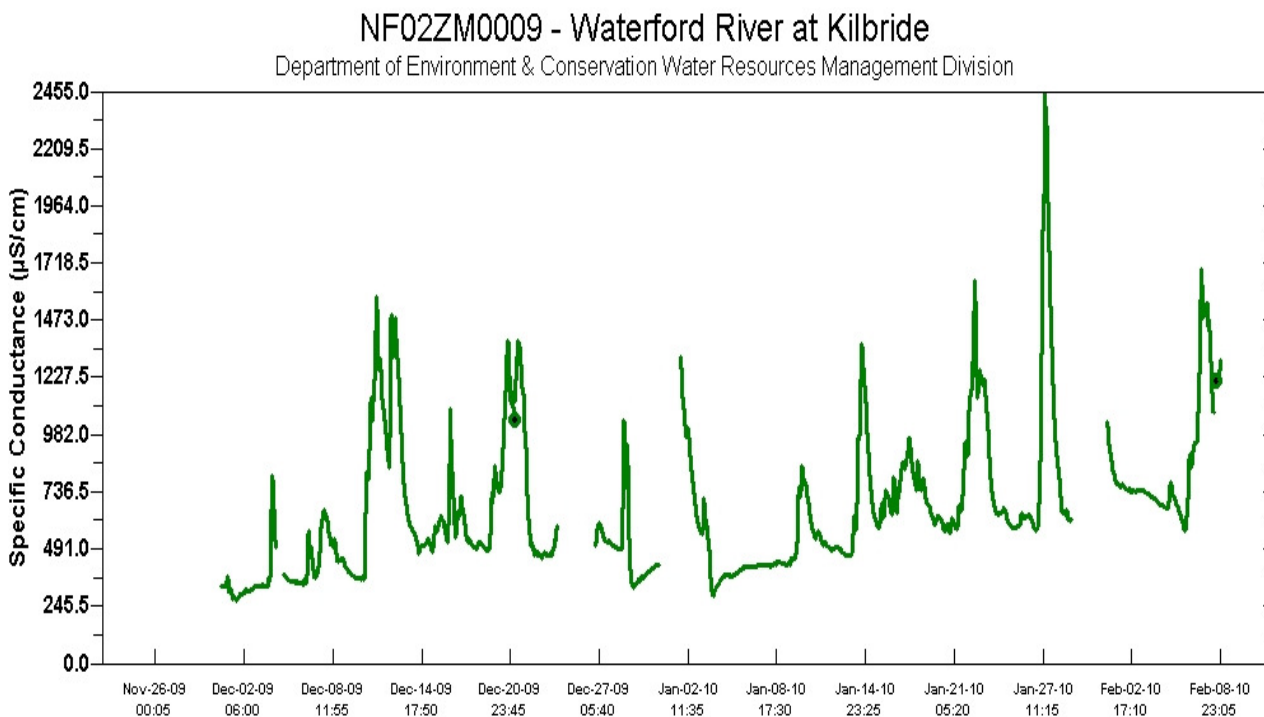
- **pH** levels ranged from 7.19 to 8.23 units, as seen in **Figure 2** below. All pH values were within the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 pH units (**Figure 2**).

Figure 2: pH Levels



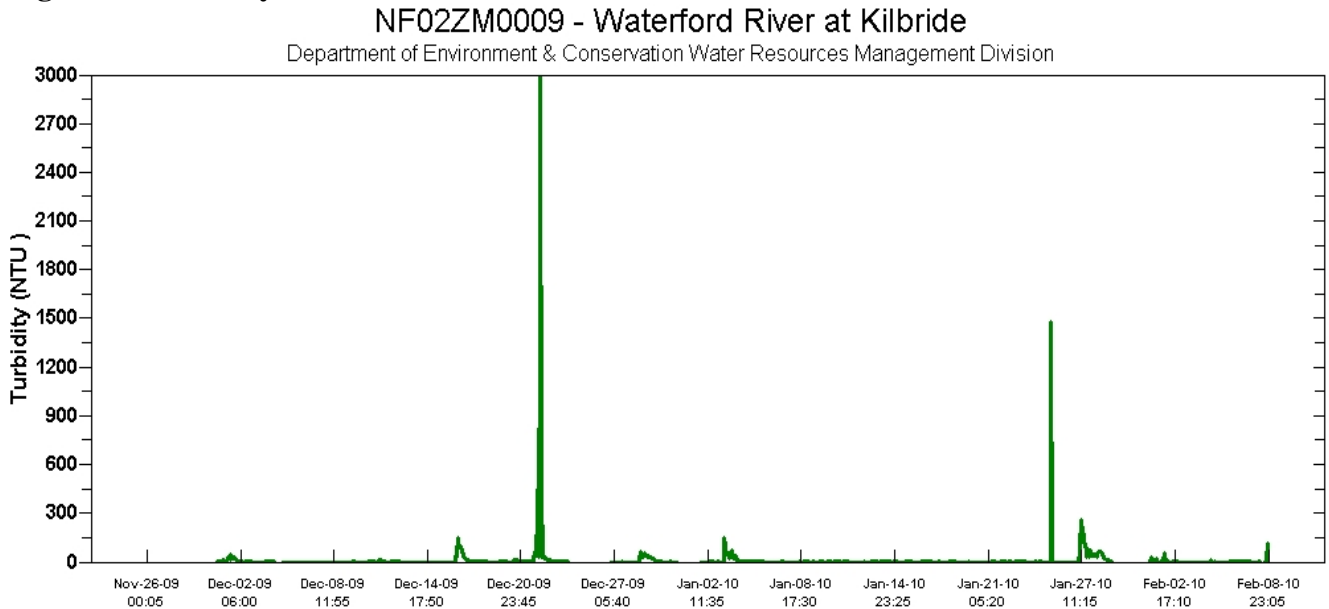
- **Specific conductance** levels are shown in **Figure 3** below. Specific conductance levels were periodically high, ranging between 266 and 2455 $\mu\text{S}/\text{cm}$ during this deployment.

Figure 3: Specific Conductance



Turbidity levels are displayed in Figure 4, below. Turbidity remained near background levels for most of this deployment, with the exception of two peaks which occurred on December 22/09 and January 25/10. Both of these peaks were of very short duration, and maybe the result of suspended debris passing in front of the turbidity sensor when a reading was being recorded. According to Environment Canada climate data presented in Appendix 1 below heavy precipitation, which occurred prior to these peaks, may have contributed to the suspended debris.

Figure 4: Turbidity



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

Daily Data Report for December 2009

<u>D</u> <u>a</u> <u>y</u>	<u>Max</u> <u>Temp</u> °C	<u>Min</u> <u>Temp</u> °C	<u>Mean</u> <u>Temp</u> °C	<u>Heat</u> <u>Deg</u> °C	<u>Cool</u> <u>Deg</u> °C	<u>Total</u> <u>Rain</u> mm	<u>Total</u> <u>Snow</u> cm	<u>Total</u> <u>Precip</u> mm	<u>Snow</u> <u>on</u> <u>Grnd</u> cm	<u>Dir</u> <u>of</u> <u>Max</u> <u>Gust</u> 10's	<u>Spd</u> <u>of</u> <u>Max</u> <u>Gust</u> km/h
01	15.1	2.5	8.8	9.2	0.0	13.4	0.0	13.4	0	22E	91E
02	2.7	-0.1	1.3	16.7	0.0	T	T	T	T	26E	83E
03	4.1	-0.2	2.0	16.0	0.0	0.0	2.0	2.0	0	28E	83E
04	0.8	-0.9	-0.1	18.1	0.0	T	1.4	1.2	2	35E	32E
05	2.9	-1.5	0.7	17.3	0.0	T	T	T	2	25E	35E
06	1.7	-3.2	-0.8	18.8	0.0	0.0	30.0	30.0	0	2E	74E
07	-2.1	-3.9	-3.0	21.0	0.0	0.0	1.2	0.8	35	31E	67E
08	-2.5	-6.8	-4.7	22.7	0.0	0.0	0.2	T	33	30E	50E
09	-3.4	-7.3	-5.4	23.4	0.0	0.0	0.6	0.6	28	30E	39E
10	3.9	-5.2	-0.7	18.7	0.0	0.2	7.2	7.0	27	15E	74E
11	2.6	-3.4	-0.4	18.4	0.0	0.0	4.2	3.6	25	26E	80E
12	-1.4	-5.0	-3.2	21.2	0.0	0.0	3.2	3.2	27	29E	59E
13	-4.7	-8.4	-6.6	24.6	0.0	0.0	1.0	0.2	27	30E	56E
14	0.0	-8.8	-4.4	22.4	0.0	0.0	0.0	0.0	25	29E	37E
15	4.4	-0.3	2.1	15.9	0.0	0.0	0.0	0.0	22	16E	52E
16	2.3	0.2	1.3	16.7	0.0	31.6	T	31.6	17	16E	63E
17	2.2	-2.8	-0.3	18.3	0.0	3.4	5.6	8.6	9	29E	56E
18	-1.9	-8.2	-5.1	23.1	0.0	0.0	T	T	11	22E	37E
19	0.2	-3.8	-1.8	19.8	0.0	2.0	8.6	10.6	14	33E	57E
20	2.7	-0.9	0.9	17.1	0.0	4.0	0.0	4.0	12	15E	46E
21	3.7	-0.3	1.7	16.3	0.0	8.2	T	8.2	8	7E	83E

22	3.5	2.1	2.8	15.2	0.0	8.8	0.0	8.8	5	7E	89E
23	2.6	-0.3	1.2	16.8	0.0	0.4	0.4	0.4	2	5E	41E
24	-0.1	-2.2	-1.2	19.2	0.0	T	0.6	0.6	1	3E	37E
25	0.6	-0.3	0.2	17.8	0.0	0.0	T	T	1	2E	44E
26	-0.1	-2.6	-1.4	19.4	0.0	0.0	0.2	0.2	1	1E	50E
27	-2.4	-7.2	-4.8	22.8	0.0	T	T	T	1	34E	35E
28	1.2	-5.7	-2.3	20.3	0.0	5.4	T	5.4	1	15E	70E
29	5.9	0.3	3.1	14.9	0.0	16.2	0.0	16.2	T	17E	70E
30	2.9	-6.0	-1.6	19.6	0.0	0.0	T	T	T	27E	52E
31	-3.2	-6.2	-4.7	22.7	0.0	0.2	0.2	0.4	T	34E	

Weather information for St. John's, NL provided by Environment Canada for January/10:
Daily Data Report for January 2010

D a y	<u>Max</u> Temp °C 	<u>Min</u> Temp °C 	<u>Mean</u> Temp °C 	<u>Heat</u> Deg Days °C 	<u>Cool</u> Deg Days °C 	<u>Total</u> Rain mm 	<u>Total</u> Snow cm 	<u>Total</u> Precip mm 	<u>Snow</u> on Grnd cm 	<u>Dir</u> of Max Gust 10's Deg	<u>Spd</u> of Max Gust km/h 
01	1.5	-5.0	-1.8	19.8	0.0	0.2	1.0	1.2	1	31E	63E
02	3.2	1.3	2.3	15.7	0.0	0.2	0.0	0.2	T	9E	50E
03	3.0	1.4	2.2	15.8	0.0	29.4	0.0	29.4	T	9E	56E
04	3.7	1.3	2.5	15.5	0.0	8.4	0.0	8.4	T	22E	59E
05	3.0	1.1	2.1	15.9	0.0	2.4	T	2.4	T	27E	50E
06	4.7	-2.2	1.3	16.7	0.0	0.4	0.0	0.4	0	21E	35E
07	2.4	-1.7	0.4	17.6	0.0	0.0	T	T	0		<31
08	2.4	-2.0	0.2	17.8	0.0	0.0	T	T	0		<31
09	-0.6	-2.8	-1.7	19.7	0.0	0.0	14.8	14.4	T	36E	63E
10	-0.7	-7.5	-4.1	22.1	0.0	0.0	0.6	0.4	14	28E	70E
11	-2.9	-8.3	-5.6	23.6	0.0	0.0	T	T	12	28E	80E
12	-0.6	-4.1	-2.4	20.4	0.0	0.0	0.0	0.0	12	27E	76E
13	0.0	-3.0	-1.5	19.5	0.0	T	0.6	0.6	11	1E	46E
14	-0.2	-5.8	-3.0	21.0	0.0	T	0.4	0.4	11	36E	54E
15	1.4	-5.4	-2.0	20.0	0.0	0.0	0.8	0.2	11	26E	69E
16	1.8	-6.1	-2.2	20.2	0.0	0.0	4.0	3.4	11	27E	39E
17	-6.1	-13.0	-9.6	27.6	0.0	0.0	5.0	3.2	15	31E	74E
18	-5.8	-11.9	-8.9	26.9	0.0	0.0	T	T	13	31E	41E
19	-3.0	-6.1	-4.6	22.6	0.0	0.0	0.0	0.0	13	M	M
20	-3.0	-8.3	-5.7	23.7	0.0	0.0	0.0	0.0	13		<31
21	-1.8	-7.6	-4.7	22.7	0.0	0.0	9.6	8.2	13	35E	56E
22	-4.3	-8.9	-6.6	24.6	0.0	T	T	T	22	32E	48E
23	-7.6	-13.9	-10.8	28.8	0.0	0.0	2.2	0.4	22	29E	39E
24	-7.3	-10.6	-9.0	27.0	0.0	0.0	T	T	22		<31
25	-5.4	-13.9	-9.7	27.7	0.0	0.0	T	T	22	33E	41E
26	-0.3	-10.4	-5.4	23.4	0.0	0.0	0.4	0.4	22	16E	76E
27	4.0	-0.4	1.8	16.2	0.0	15.2	T	15.2	21	16E	70E
28	4.6	0.9	2.8	15.2	0.0	22.2	0.0	22.2	8		<31
29	3.1	-3.1	0.0	18.0	0.0	4.0	2.0	4.8	6	18E	56E
30	-0.9	-5.4	-3.2	21.2	0.0	0.0	5.6	3.8	8	26E	65E
31	-3.7	-8.3	-6.0	24.0	0.0	0.0	3.6	2.4	10	28E	56E

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