

# Real Time Water Quality (RTWQ) Deployment Report NF02YL0012 – Humber River at Humber Village Bridge August 2009 – November 2009

## General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- This monthly report interprets the data from the Humber River at Humber Village Bridge RTWQ station for the period of July 31<sup>st</sup> to November 5<sup>th</sup>, 2009.

## Maintenance and Calibration of Instrumentation

- The instrument was deployed from July 31<sup>st</sup> to November 5<sup>th</sup>, 2009 (96 day deployment period) at which point it was removed for maintenance and calibration. This was a longer than normal deployment period and the instrument appears to have drifted off calibration for several parameters at least.
- The results from comparing the Minisonde values to the Datasonde values can be seen in **Table 1**. Collection of QA/QC readings involves a second set of data readings being collected at the time of removal & installation, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of the QA/QC protocol.
- For installation a ranking of excellent was achieved for temperature and conductivity, while pH had a good rating and dissolved oxygen was fair. For removal a ranking of excellent was achieved for temperature, while conductivity was good and both pH and dissolved oxygen were marginal indicating that they had both drifted off calibration.

**Table 1: QA/QC Data Comparison Rankings for installation – July 31<sup>st</sup> & removal – Nov. 5<sup>th</sup>**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River at Humber Village Bridge	July 31 <sup>st</sup> , 2009	Installation	Excellent	Good	Excellent	Fair
	Nov 5 <sup>th</sup> , 2009	Removal	Excellent	Marginal	Good	Marginal

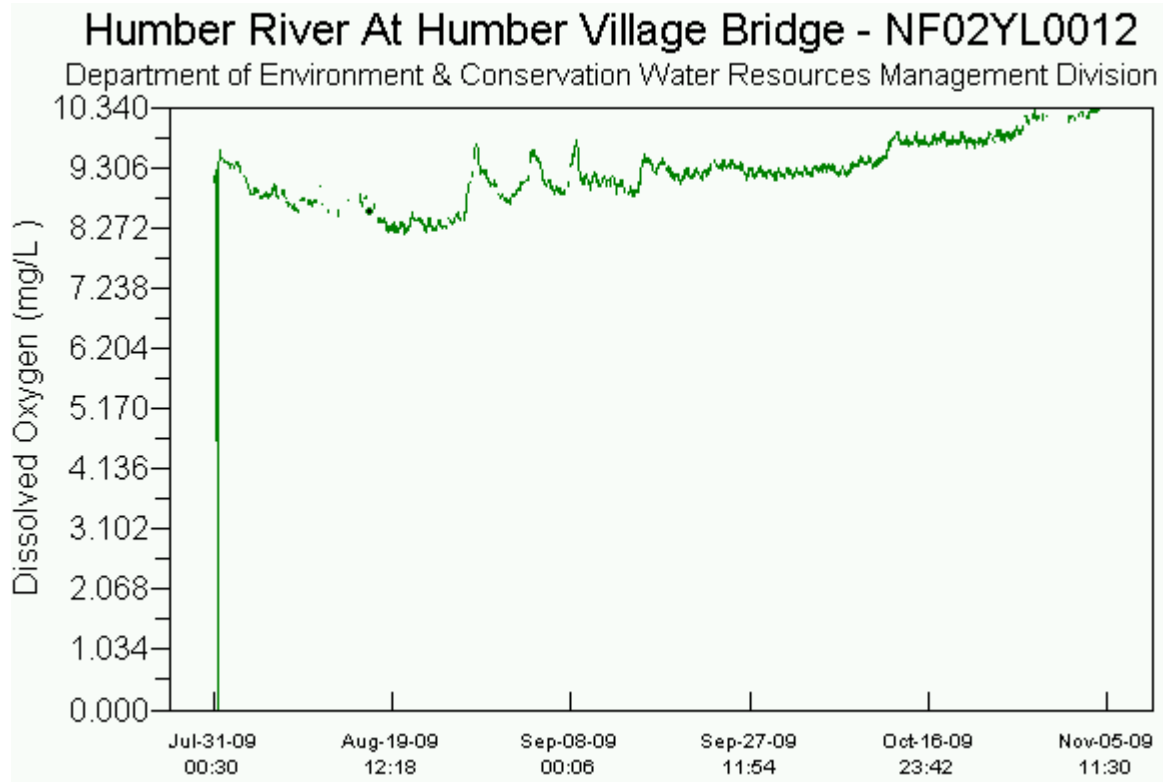
## Data Interpretation

- During the deployment period of July 31<sup>st</sup> to November 5<sup>th</sup>, 2009 the water quality was relatively stable for all water quality parameters with a typical fall seasonal trend and gentle variations throughout the deployment period.
- Water temperature values (**Figure 1**) for the deployment period ranged from 6.5 °c to 19.3 °c with a gradual cooling trend through the fall.



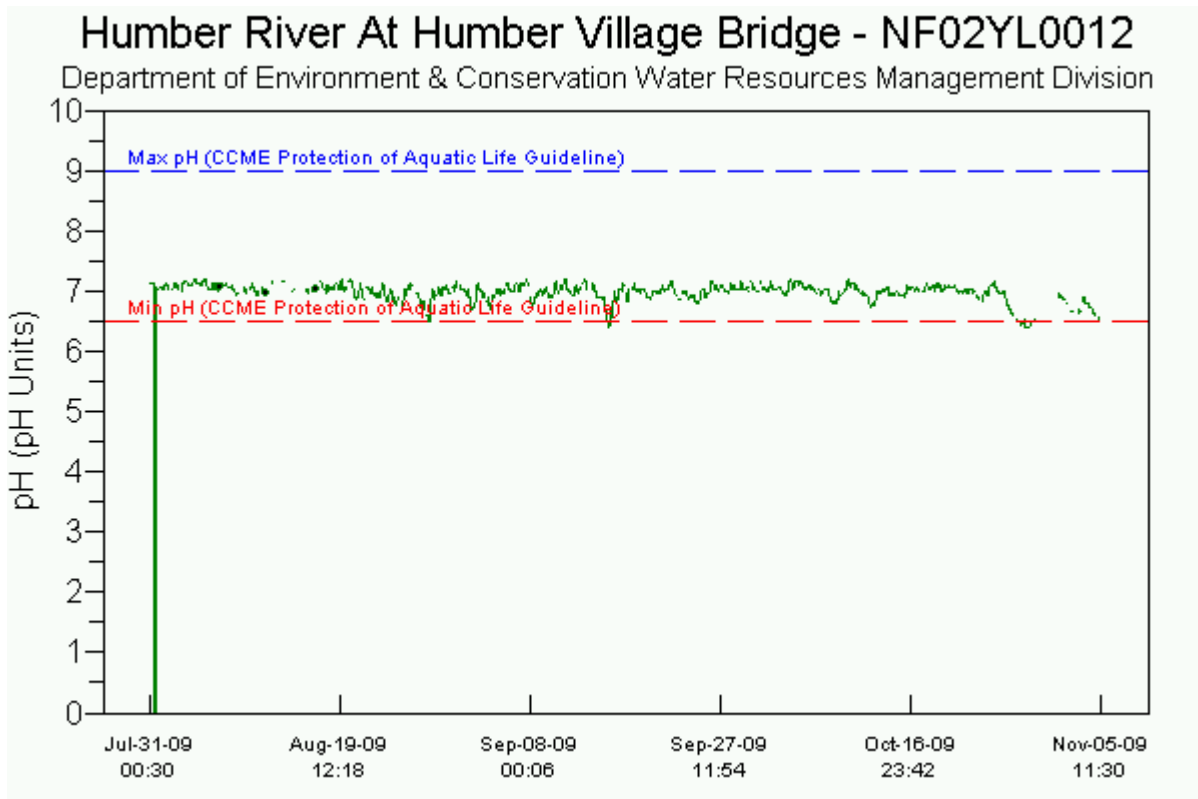
**Figure 1**

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period showed a gently rising trend in relation to falling temperature. During the deployment period oxygen ranged from a high of 10.46 mg/l to a low of 8.17 mg/l which is typical of this period at this station.



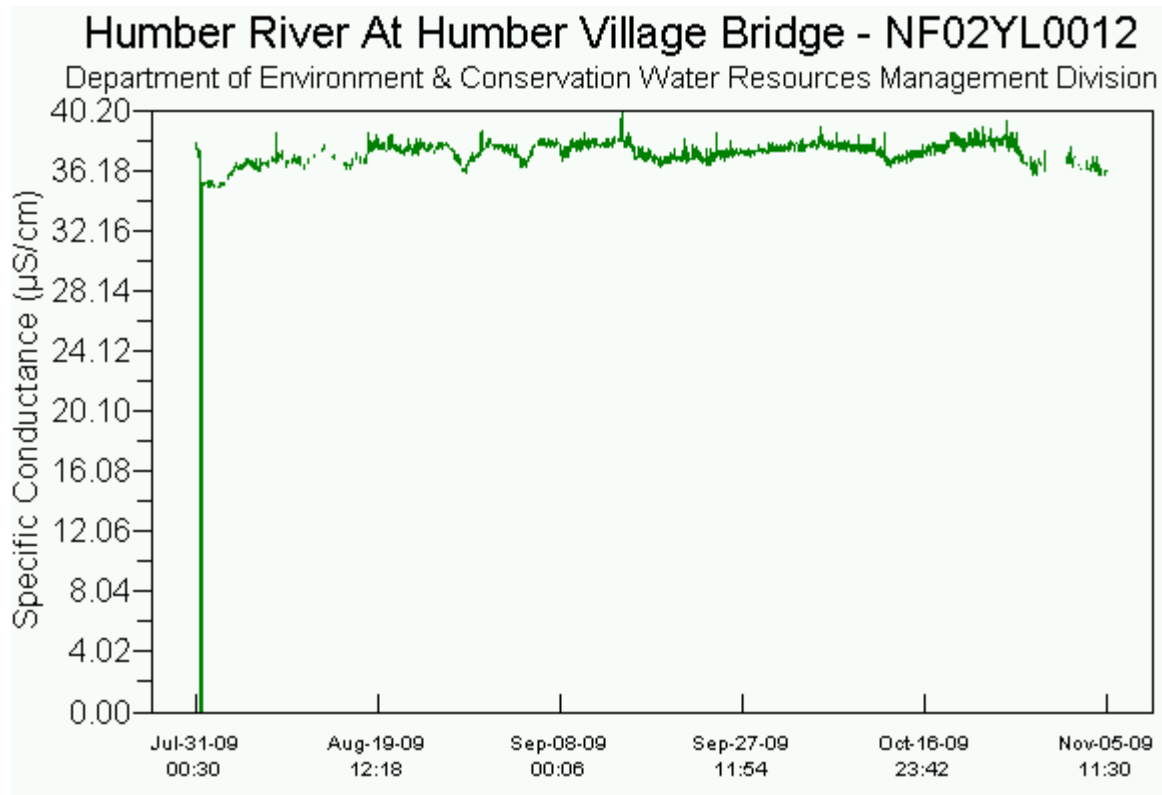
**Figure 2**

- There are 4 different guidelines for DO depending on the life cycle stage and water temperature (cold water/other life stages – above 6.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L; cold water/early life stages – 9.5 mg/L). All guidelines were met during this deployment period. It should be noted that while some levels were below the 9.5 mg/l limit prescribed for the cold water/early life stages, this was a relatively warm period.
- pH values (**Figure 3**) ranged from 6.38 to 7.2 over the deployment period which is a typical range of values for this station. The CCME Guidelines for the Protection of Freshwater Aquatic Life for pH is a range of 6.5 – 9.0 and only a small percentage of the readings were below 6.5. Due to the underlying geology and ecosystem characteristics it is quite common for Newfoundland surface waters to have a pH lower than the range recommended by the CCME Guidelines.



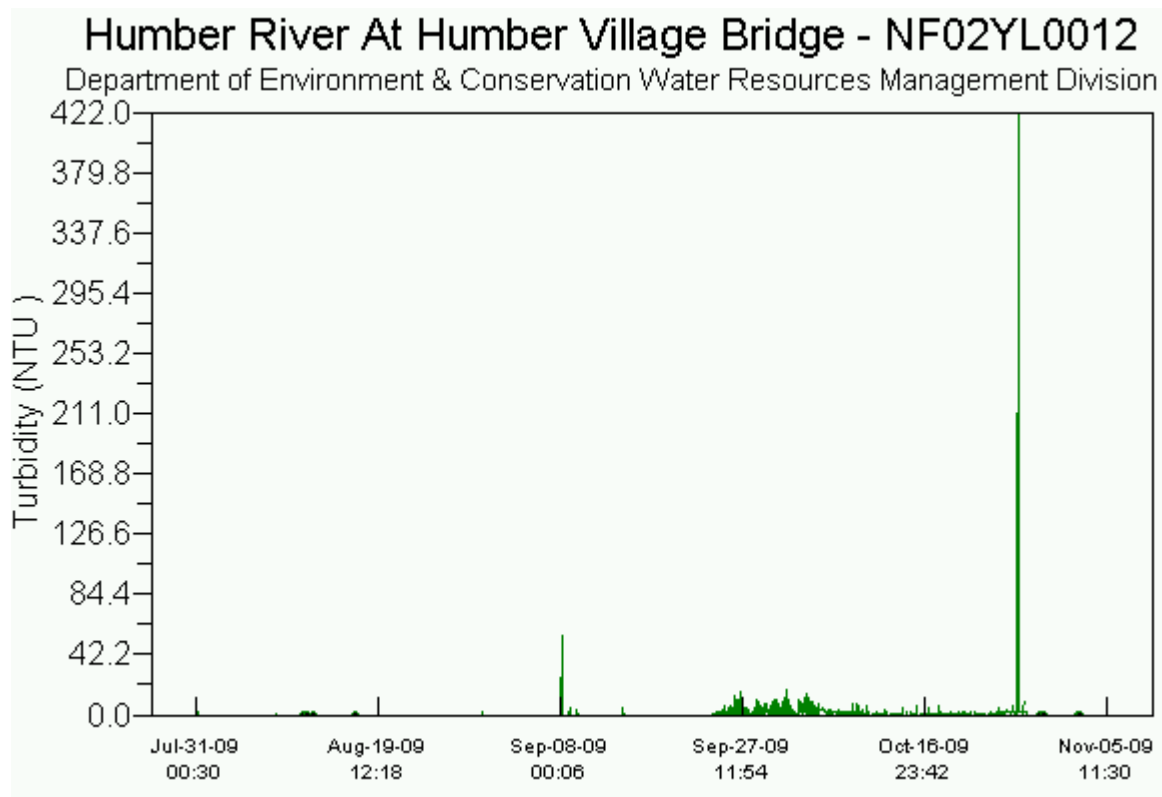
**Figure 3**

- Specific conductance values (**Figure 4**) were relatively consistent over the deployment period with some day to day variation. Values ranged from 35.1  $\mu\text{S}/\text{cm}$  to 40.2  $\mu\text{S}/\text{cm}$ , which is typical for this station.



**Figure 4**

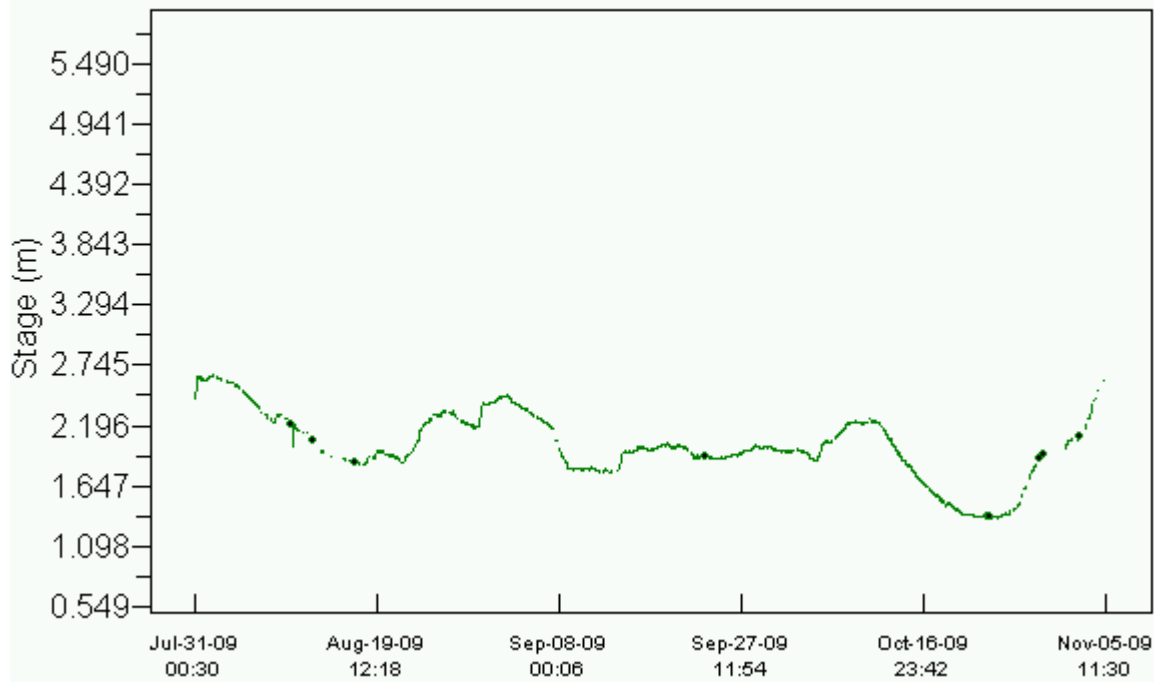
- Turbidity values (Figure 5) showed some low level variation throughout the deployment period with several marked peaks. These peaks are most likely due to vegetative matter such as leaves or other plant matter blocking the turbidity probe for short periods before getting washed away.



**Figure 5**

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**Figure 6**

- Stage height readings (**Figure 6**) showed relatively stable levels through the deployment period with some gentle undulations. During the deployment period the height of the river ranged from 1.356 m to 2.658 m, which translates to a range of 126 m<sup>3</sup>/s to 343 m<sup>3</sup>/s.

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