

# Real Time Water Quality (RTWQ) Deployment Report NF02YL0012 – Humber River at Humber Village Bridge January 2009 – April 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 January 20<sup>th</sup>, 2009 to April 27<sup>th</sup>, 2009.

## Maintenance and Calibration of Instrumentation

- The instrument was deployed from January 20<sup>th</sup>, 2009 to April 27<sup>th</sup>, 2009 (97 day deployment period) at which point it was removed for maintenance and calibration. This is a longer than normal deployment period for this station due to limited staff resources and excessive field commitments.
- The results from comparing the Minisonde values to the Datasonde values are not available at the time of installation on January 20<sup>th</sup> however for removal on April 27<sup>th</sup> they 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 QA/QC protocol.
- For removal a ranking of good was achieved for temperature, while pH and conductivity had a fair ranking and dissolved oxygen had a poor ranking. These QA/QC rankings are consistent with the longer than normal deployment period.

**Table 1: QA/QC Data Comparison Rankings for installation – January 20<sup>th</sup> & removal - April 27<sup>th</sup>**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River at Humber Village Bridge	January 20 <sup>th</sup> , 2009	Installation	NA	NA	NA	NA
	April 27 <sup>th</sup> , 2009	Removal	Good	Fair	Fair	Poor

## Data Interpretation

- During the deployment period of January 20<sup>th</sup>, 2009 to April 27<sup>th</sup>, 2009 the water quality remained relatively stable for all parameters.
- Water temperature values (**Figure 1**) for the deployment period ranged from -0.2 °c to 2.6 °c with a slight warming trend during the early Spring.

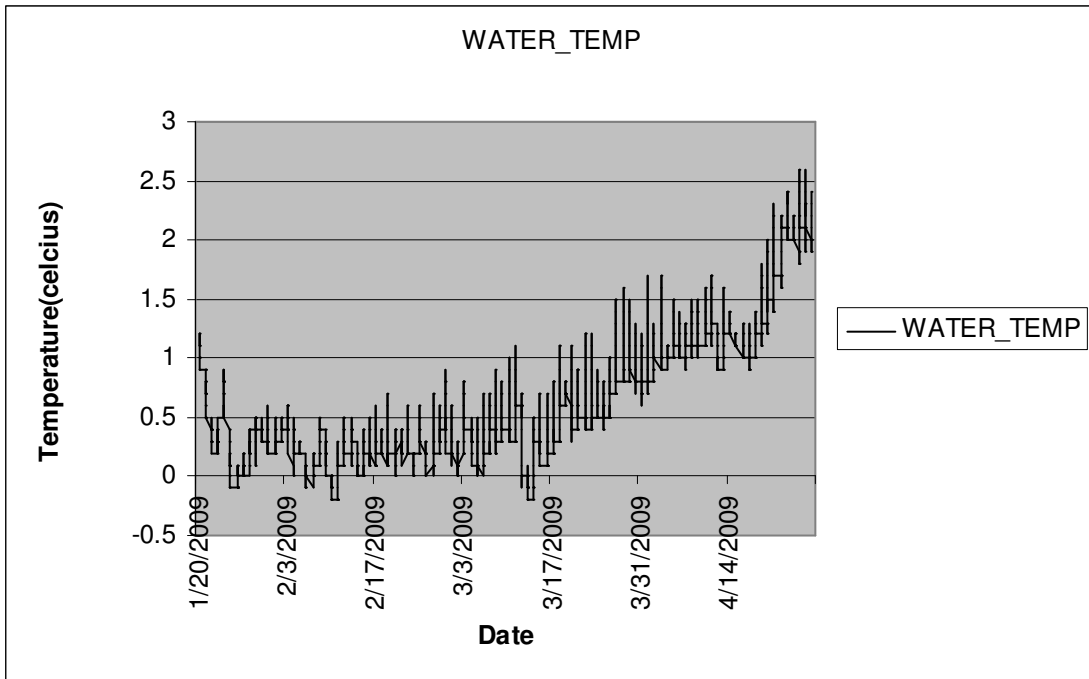


Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period were relatively constant throughout the deployment period and ranged from 12.95 mg/l to 15.54 mg/l.

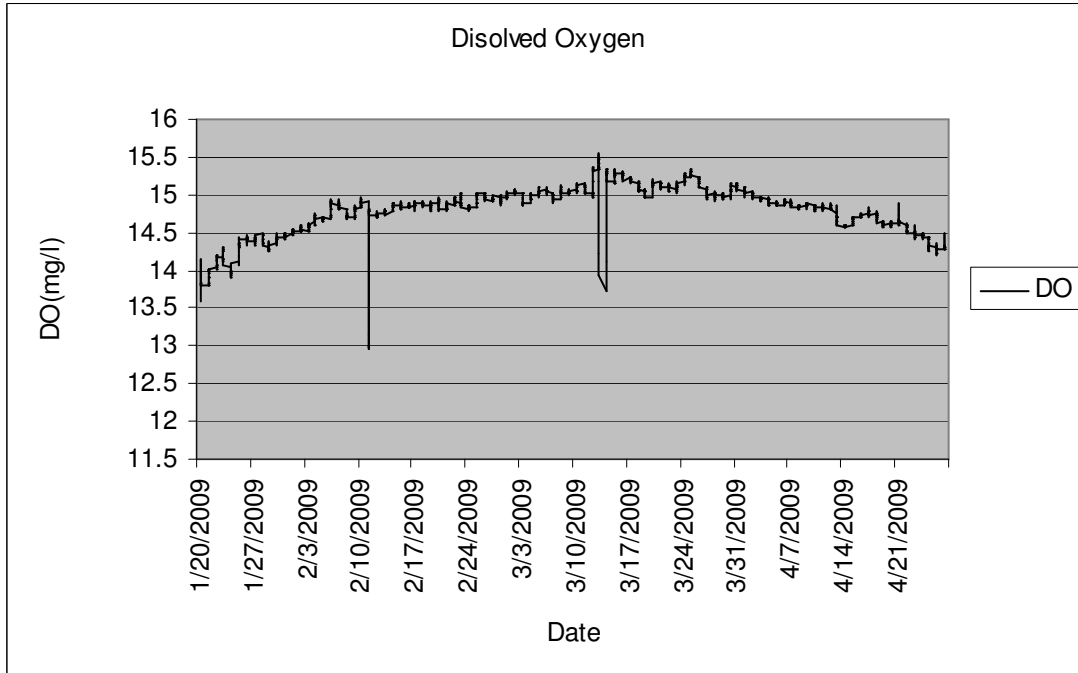
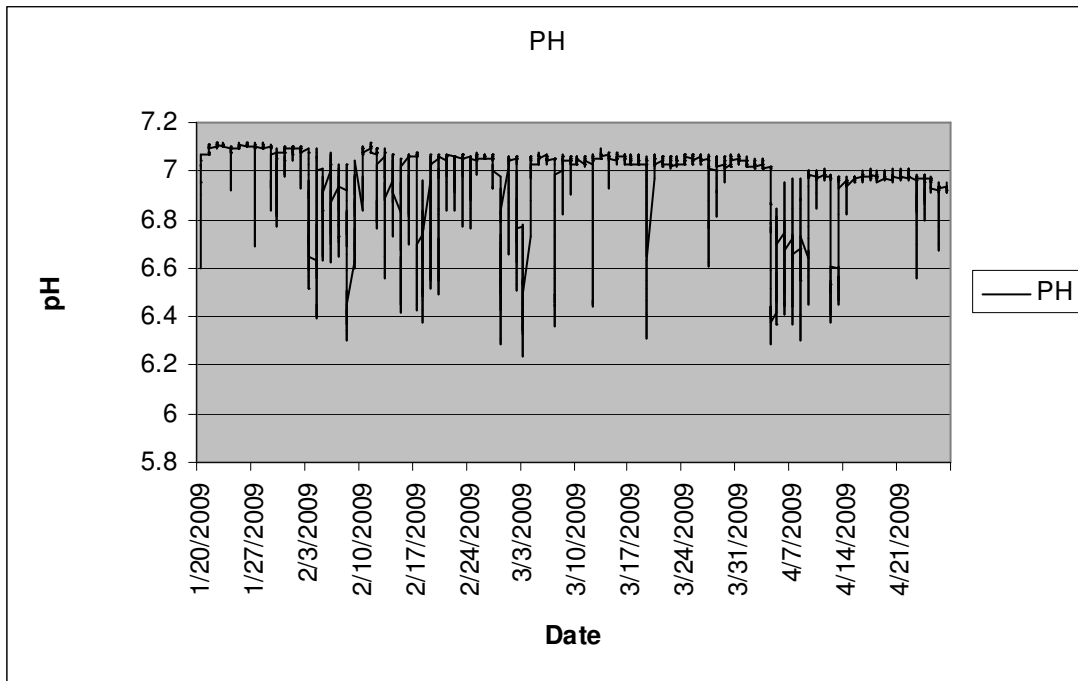


Figure 2

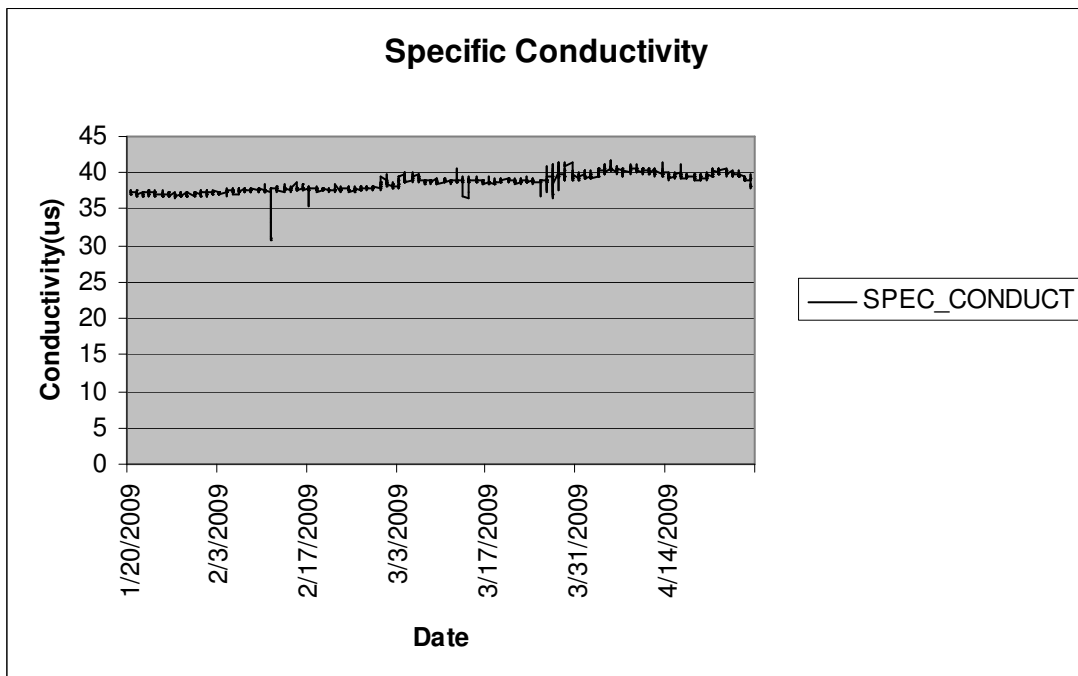
- There are 4 different guidelines for DO depending on the life cycle stage and water temperature (cold water/other life stages – above 6.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L; cold water/early life stages – 9.5 mg/L). All guidelines were met during this deployment period.

- pH values (**Figure 3**) ranged from 6.24 to 7.12 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 approximately 4 % of the readings were slightly below this limit. 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.



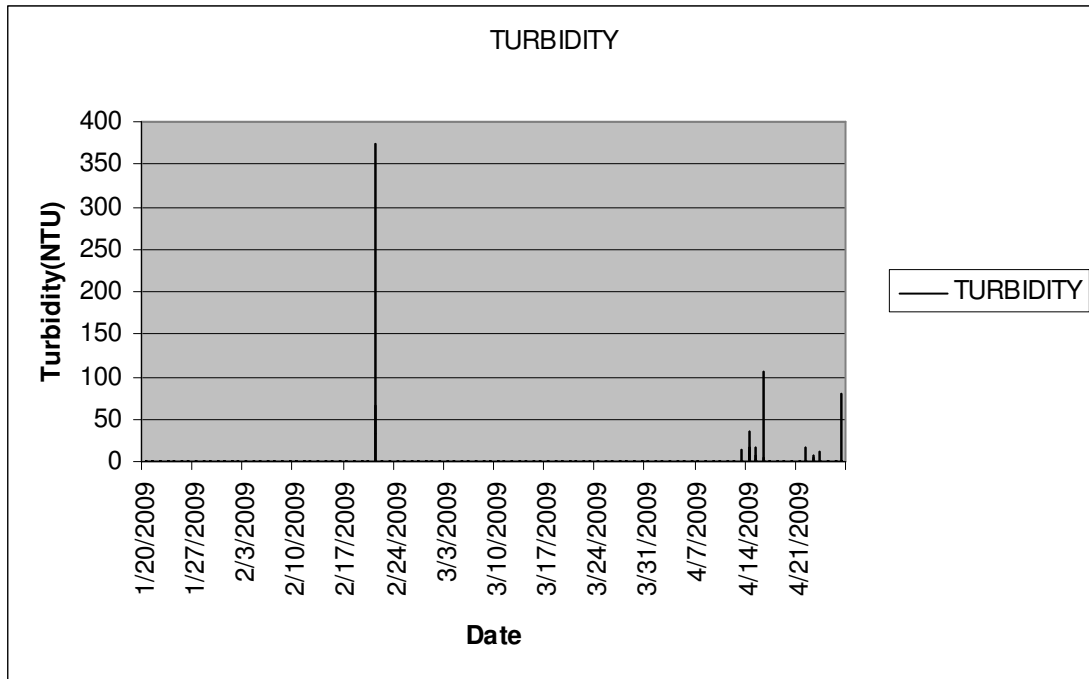
**Figure 3**

- Specific conductance values (**Figure 4**) were relatively consistent over the deployment period, however there is a slight rising trend which can be attributed to calibration drift due to the extended deployment period. Values ranged from 30.6 to 41.6  $\mu\text{S}/\text{cm}$ , which is typical for this station.



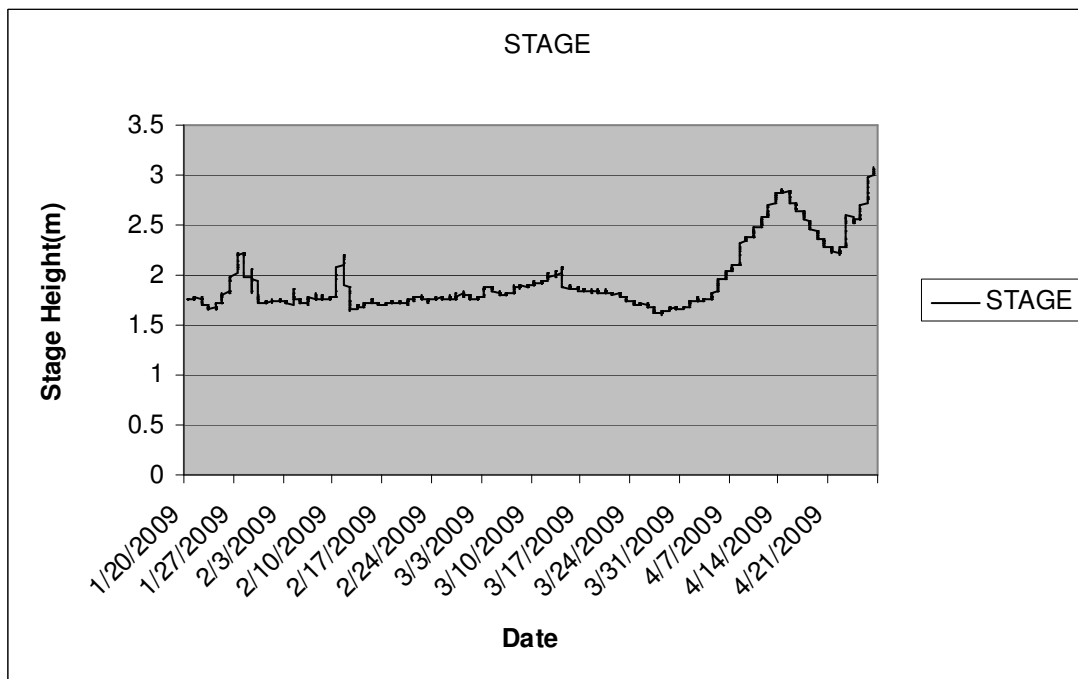
**Figure 4**

- Turbidity values (**Figure 5**) were generally at zero however there are a number of spikes which are most likely due to vegetative debris entrained in the turbidity probe. The higher turbidity levels towards the end of the deployment may be related to the increased flow which is clearly shown in the stage height graph(**Figure 6**).



**Figure 5**

- Stage readings (**Figure 6**) were reasonably consistent over most of the deployment period with an increase in the early spring period due to snowmelt and rainfall. The height of the river ranged from 1.61 m to 3.071 m, which translates to a range of 161 m<sup>3</sup>/s to 422 m<sup>3</sup>/s.



**Figure 6**

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