

Real Time Water Quality Monthly Report Lower Humber River at Humber Village Bridge July - August 2006

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.

Maintenance and Calibration of Instrumentation

- The Datasonde was deployed in the river for the period of July 14th – August 14th, 2006 (exactly one month deployment period).
- The Datasonde was removed on August 14th, 2006 for maintenance and calibration and returned to the river on August 15th, 2006.
- Upon removal and redeployment at the station, Minisonde readings were taken for QA/QC purposes. The results from comparing the Minisonde values to the Datasonde values can be seen in **Table 1**. According to the comparison rankings for the installation on August 15th, it appears as though either the Datasonde or the Minisonde did not calibrate properly (ie: marginal; fair and poor readings for conductivity, pH and dissolved oxygen respectively). The most likely scenario is that the Minisonde did not calibrate properly simply because the comparison rankings at the time of removal were also low (ie: fair and poor readings for conductivity and dissolved oxygen respectively). It is unlikely that the conductivity and dissolved oxygen probes drifted to that extent over the one month deployment period. DOEC staff will investigate this issue further to determine the cause of the low QA/QC rankings for some parameters.

Table 1: QA/QC Data Comparison Rankings

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River @ Humber Village Bridge	August 14th, 2006	Removal	Excellent	Good	Fair	Poor
	August 15th, 2006	Installation	Excellent	Fair	Marginal	Poor

- A water sample was taken for laboratory analysis as part of QA/QC procedures upon reinstallation.

Data Interpretation

- During the deployment period of July 14th – August 14th, 2006 the water quality remained relatively stable for most parameters.
- The water temperature (**Figure 1**) remained constant from mid July to mid August only ranging from 14.4°C to 18.9°C. Additionally, the dissolved oxygen (**Figure 2**) and percent saturation (**Figure 3**) graphs also remained constant over this period due to the constant water temperature. Even with warm water temperatures, the dissolved oxygen levels remained well within the acceptable limits to support aquatic life.

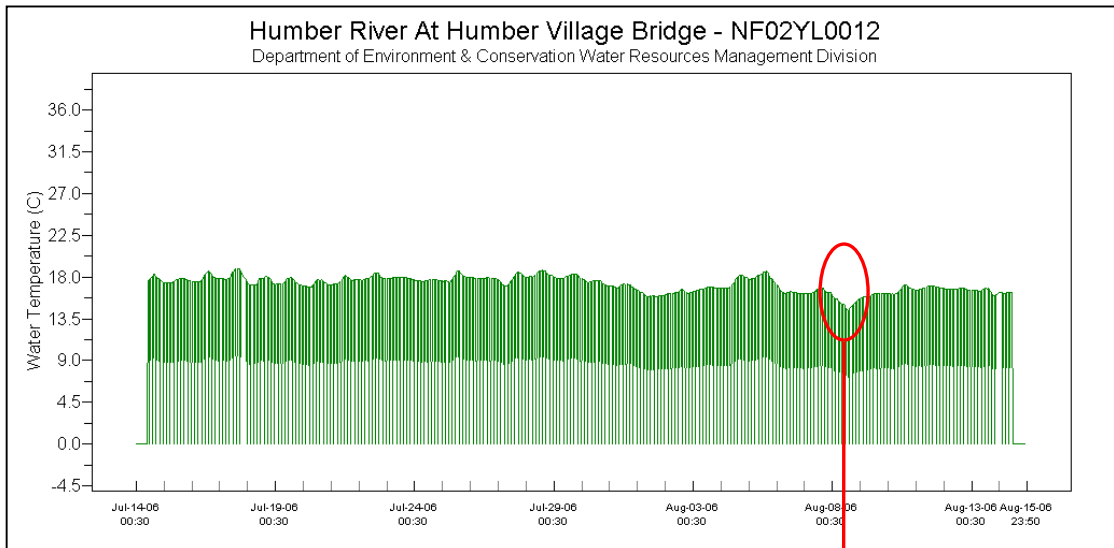


Figure 1

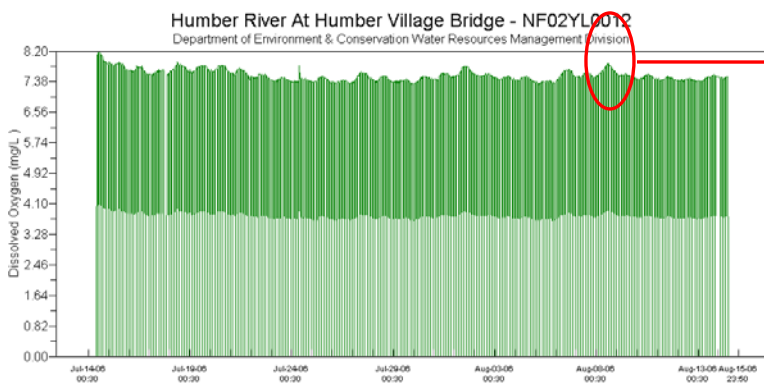


Figure 2

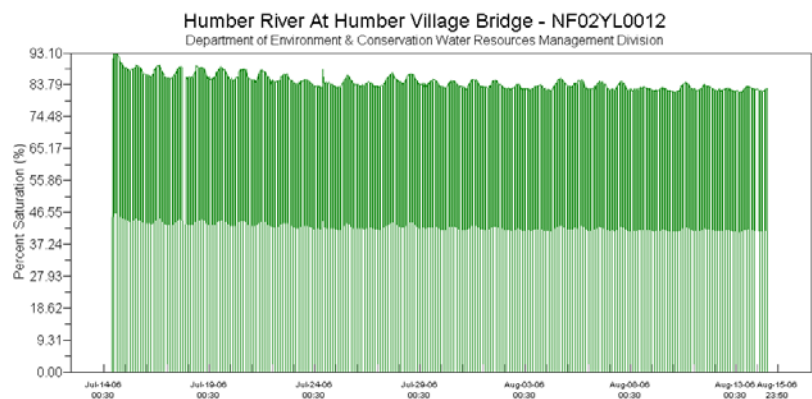


Figure 3

There was a slight decrease in water temperature that corresponds with an increase in dissolved oxygen levels on August 8th.

- pH values (**Figure 4**) from mid July to mid August remained stable at approximately 7.0 units.

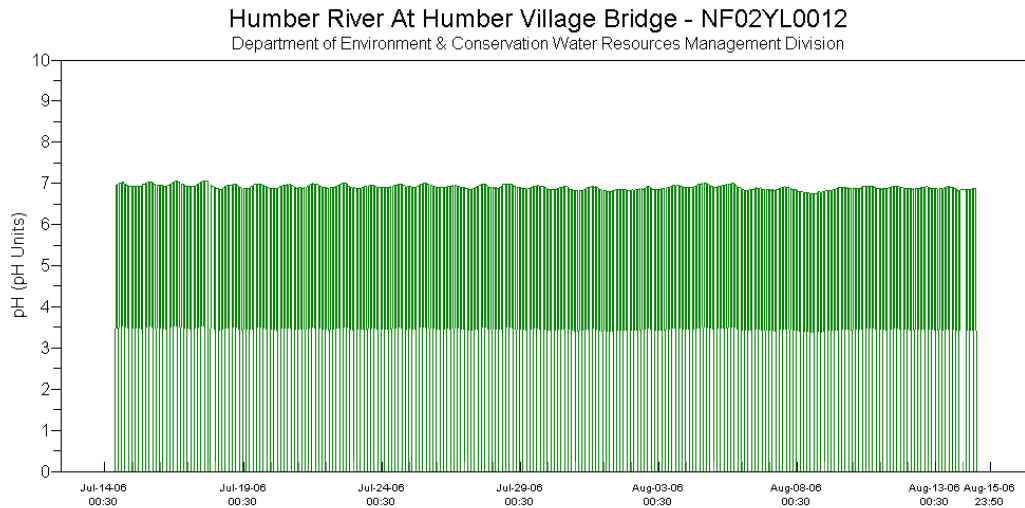


Figure 4

- Conductivity and total dissolved solids values (**Figures 5a and 5b**) remained constant throughout the deployment period. The conductivity values ranged from 38.5uS/cm to 41.1uS/cm.

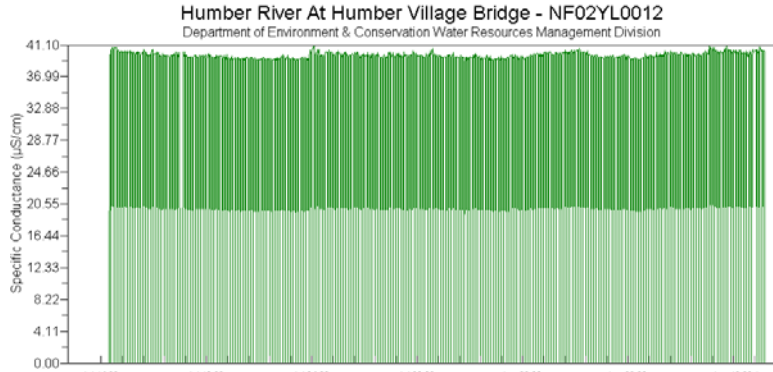


Figure 5a

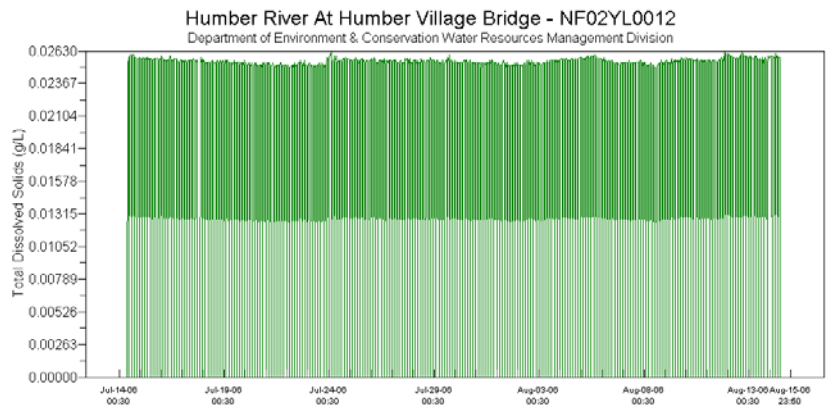
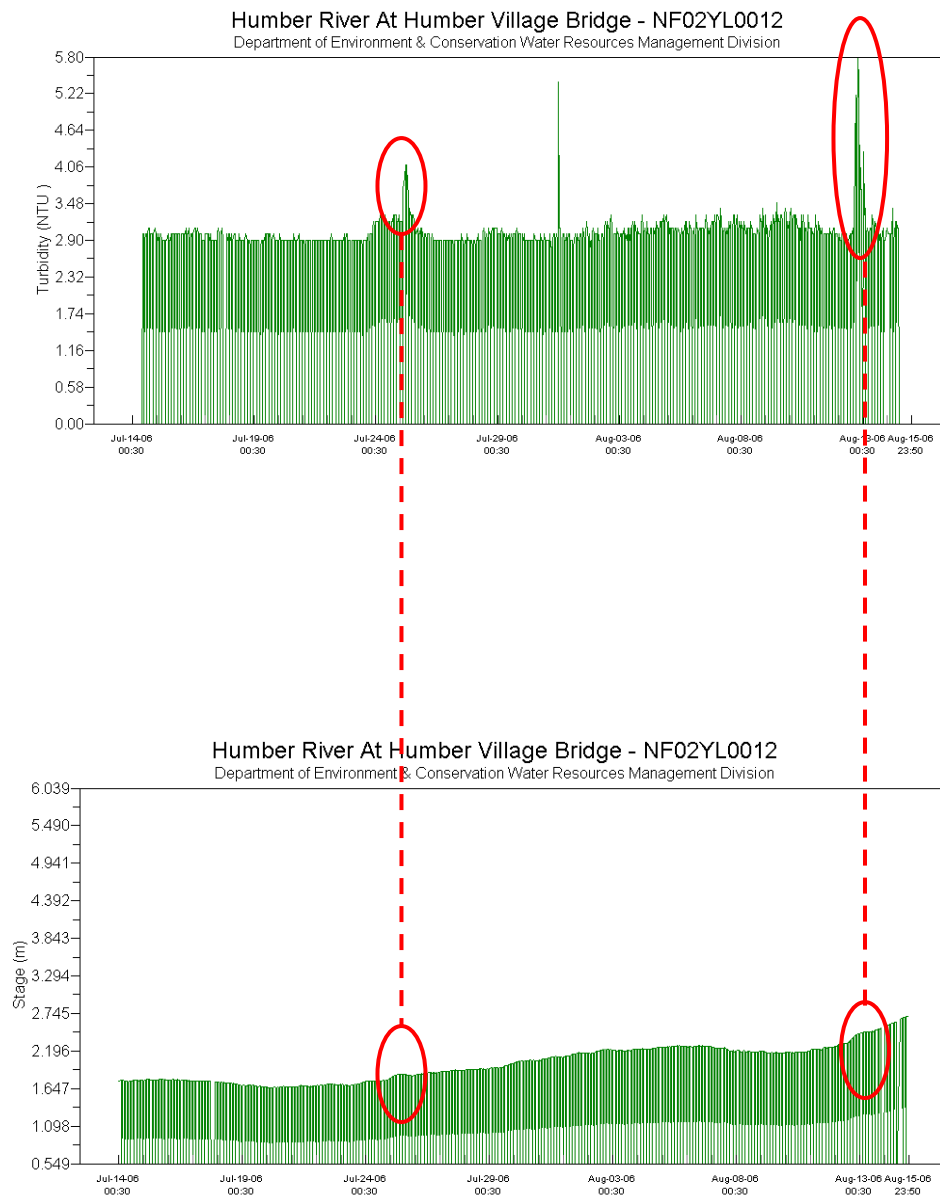


Figure 5b

- The turbidity values (**Figure 6**) generally remained at approximately 3 NTU which is the typical background concentration for this station. There were three spikes in turbidity over the deployment period (4.1 NTU – July 25th; 5.4 NTU – July 31st; 5.8 NTU – August 12th). In the case of the first spike on July 25th and the last spike on August 12th, the values rose and fell within approximately 7 hours. These spikes are most likely due to an increase in rainfall at the same times as can be seen in the stage graph (**Figure 7**) and the corresponding table of precipitation amounts (**Table 2**). The second spike in turbidity occurred and immediately returned to background levels within one hour. This increase was more sporadic in nature indicating a possible disturbance to the probe (ie: leaf, debris, etc.) or it may also have been due to the increasing stage trend at that time.



Appendix A:

- The following table provides summary statistics on **corrected** water quality data from the Humber River station for the time period of July 14th – August 14th, 2006.

	Temp- Water (°C)	pH	Conductance (uS/cm)	Diss- Solids (g/L)	% Saturation	Dissolved Oxygen (mg/L)
Max	18.91	7.22	40.67	0.0260	112.36	10.17
Min	14.50	6.90	33.75	0.0211	87.88	7.78
Average	17.03	7.08	36.13	0.0231	100.02	8.99
Standard Deviation	0.80	0.07	1.70	0.0011	6.98	0.71

- The following table provides summary statistics on **corrected** water quality data for the Humber River station dating back to December 2003.

	Temp- Water (°C)	pH	Conductance (uS/cm)	Diss- Solids (g/L)	% Saturation	Dissolved Oxygen (mg/L)
Max	20.67	7.68	44.85	0.0287	148.1	20.01
Min	-0.1	5.44	29.52	0.0189	87.71	7.78
Average	7.47	6.83	37.12	0.0238	99.93	12.03
Standard Deviation	5.82	0.32	2.92	0.0018	8.45	2.08

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