

Real Time Water Quality Monthly Report Peter's River February 14-April 3, 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 removed from Peter's River on January 4/06 and remained out of the water until on February 14, due to harsh ice conditions during that period. The hydrolab then remained in Peter's River until it was removed for routine maintenance and calibration on April 3/06.
- An annual hydrolab performance test and evaluation was conducted on the datasonde and minisonde on January 30/06, at Campbell Scientific in Edmonton, Alberta. As part of the performance evaluation, a functional test was conducted on all sensors, and both instruments were cleaned, serviced and all parameters were successfully calibrated. A new circulator was installed on the minisonde to replace its malfunctioning circulator. This annual performance evaluation is recommended by the manufacturer.
- Comparative water quality readings were taken with a minisonde during removal and installation of the datasonde at Peter's River. This procedure is part of QA/QC protocol. The minisonde was cleaned and calibrated prior to use when the datasonde was removed from Peter's River; and both instruments were cleaned and calibrated prior to the hydrolab being installed. Water samples were collected for laboratory analysis at the time of installation as part of QA/QC protocol.

Data Interpretation

- All water quality parameters displayed normal behaviour reflective of environmental conditions during the period of measure.
- Environment Canada reported the following daily air temperatures, precipitation and wind gusts for the Central NL region (Gander) during March 2006:

Table 1: Daily Climate Data March 2006

Day	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Total Precip (mm)	Max Wind (km/hr)	Day	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Total Precip (mm)	Max Wind (km/hr)
1	-2.6	-20.5	-11.6	14.4	<31	16	3.7	-13.2	-4.8	0	43
2	-1.5	-5.9	-3.7	10.7	52	17	3.4	-14.8	-5.7	0	<31
3	-3.1	-14	-8.6	0.6	<31	18	2.1	-12.3	-5.1	1.3	<31
4	-0.3	-17.5	-8.9	0.6	43	19	1.7	-7.7	-3	1.2	33
5	2.8	-5	-1.1	1.2	43	20	3.5	-1.5	1	1.8	39
6	2.4	-3.2	-0.4	0.7	<31	21	4.5	-3.4	0.6	0	<31
7	1.1	-8.6	-3.8	0.7	<31	22	2.7	-2.6	0.1	5.9	32
8	5.7	-14.6	-4.5	0.6	<31	23	2.4	-4.1	-0.9	0.7	35
9	-2.4	-19.9	-11.2	0	<31	24	3.3	-1.3	1	0.6	32
10	3	-23.8	-10.4	0	<31	25	4.7	-3	0.9	0	<31
11	2.1	-3.3	-0.6	3.7	35	26	4.1	-3	0.6	0	<31
12	1.4	-3.9	-1.3	0	41	27	0.5	-3	-1.3	1.8	44
13	2.9	-7.1	-2.1	3.2	46	28	2.1	-5.1	-1.5	0.6	39
14	3.1	-5	-1	0.7	33	29	5.1	-4.5	0.3	0	41
15	1	-4.8	-1.9	15.9	32	30	8.8	-4.2	2.3	0	<31
						31	3.2	-2	0.6	0	35

*Data extracted from Environment Canada http://www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html

- Stage height** remained fairly constant, ranging between 0.961 and 1.369m during the period of measure as seen in **figure 1** below. Stage height increased sharply during the first couple of days in

April, probably in response to snow melt as a result of daily mean air temperatures climbing above 0°C from March 29-31, indicated in **table 1**, above.

- **Water temperatures** fluctuated between -0.2 and 4.76 as indicated in **table 2**, below. An increasing trend in water temperature is seen in **figure 2** below, corresponding to an increasing trend in daily mean air temperatures, which can be seen in **table 1**, above.

Figure 1: Stage Height

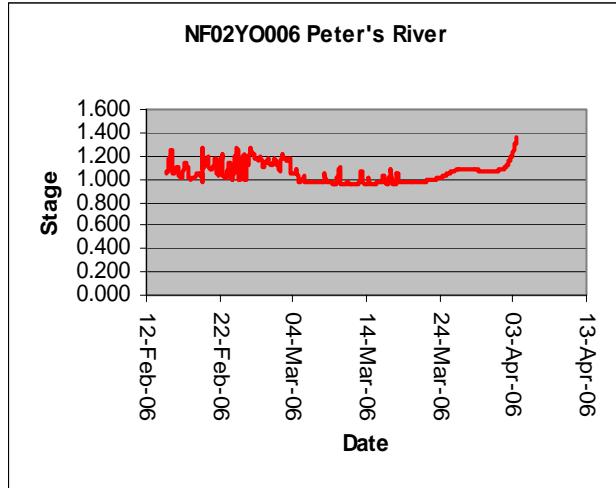
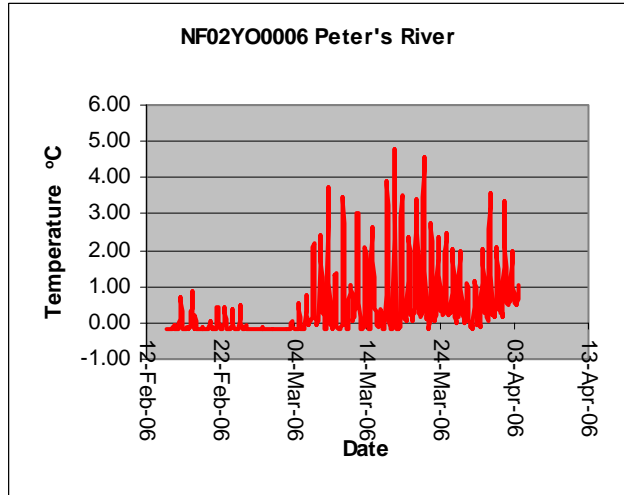


Figure 2: Water Temperature



- **Specific conductivity** levels ranged from 40-70µS/cm during the period of measure, as indicated in **figure 3** below. This range is reflective of natural background conditions in Peter's River at this time of year. The increasing stage height that occurred during the first couple of days in April (see **figure 1**) probably had a dilution effect on conductivity, which showed a decreasing trend during the same period (see **figure 3**).
- **Total dissolved solids** values reflect the close relationship between specific conductance and total dissolved solids, as seen in **figure 4**. Conductivity measurements are a good indication of total dissolved solids and total dissolved ion concentrations, although this is not an exact linear relationship.

Figure 3: Specific Conductance

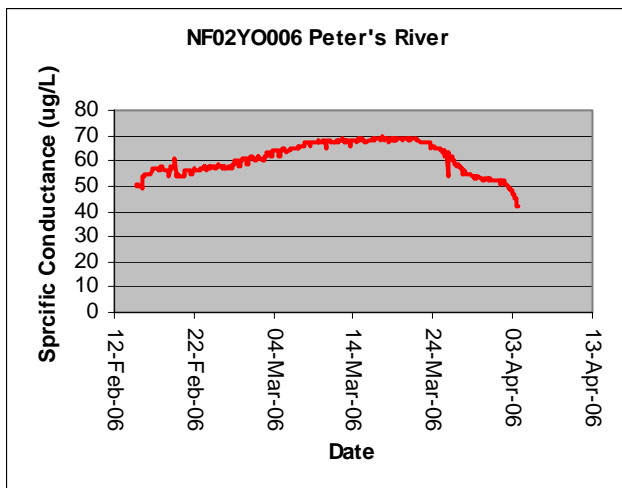
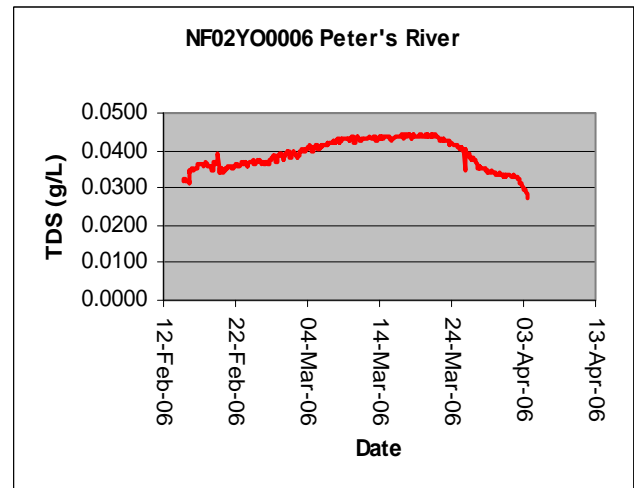


Figure 4: Total Dissolved Solids



- **pH** levels were fairly constant and fluctuated near the minimum recommended CCME guideline of 6.5 pH units for the protection of freshwater aquatic life, as seen in **figure 5**, below. These values are within the expected natural background pH range for Peter's River.
- Dissolved oxygen (DO) levels were fairly constant during this period of measure, ranging from 11.36-13.03mg/L, as seen in **figure 6**, below.

Figure 5: pH

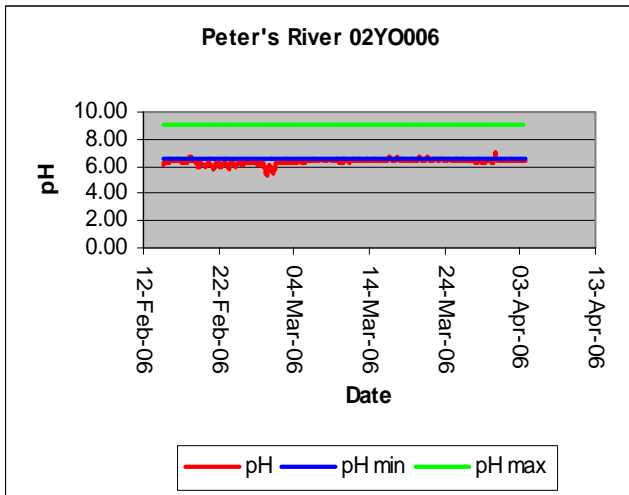
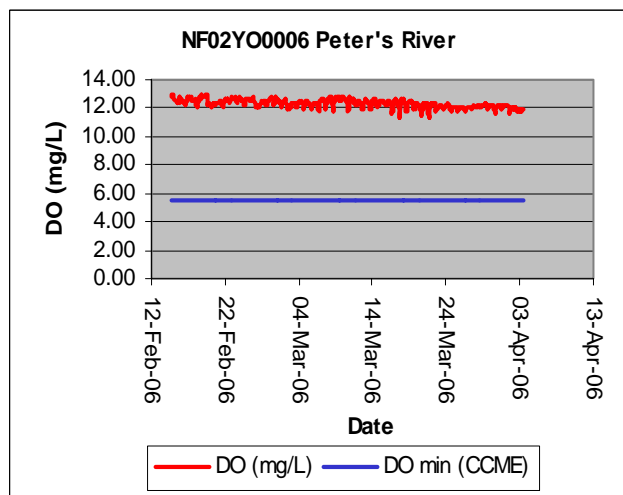
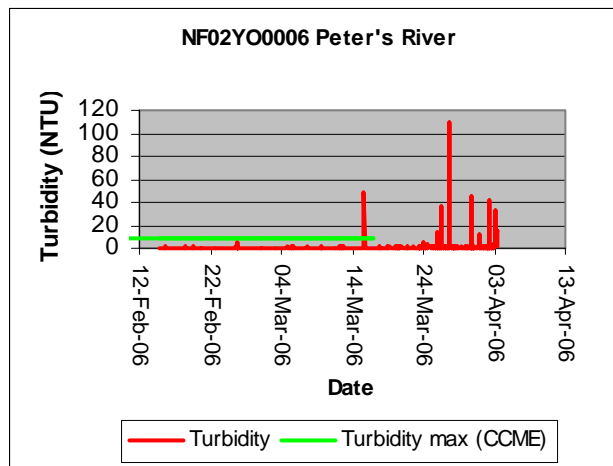


Figure 6: DO (mg/L)



- Turbidity** levels were constant at 0-1NTU for most of the period of measure, as seen below in **figure 7**. The turbidity spikes that are seen in **figure 7**, below, were each of short in duration, and were probably the result of suspended matter that passed near the turbidity sensor just as a reading was being taken.

Figure 7: Turbidity (NTU)



Additional Information

- Table 2** provides summary statistics on water quality parameters for Peter’s River during the period of measure, from February 14-April3/06.

Table 2: Summary Statistics

	Stage	Temp °C	pH	SpC	TDS	DO %r	DO mg/L	Turbidity
Minimum	0.961	-0.20	5.35	42	0.0270	87.9	11.36	0.00
Maximum	1.369	4.76	6.99	70	0.0446	96.0	13.03	110.00
Average	1.055	0.43	6.34	61	0.0390	91.8	12.31	0.44
St Dev	0.083	0.89	0.19	6	0.0040	1.6	0.28	4.31

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