



Real Time Water Quality Monthly Report Leary's Brook March 2006

General

- Data from the Leary's Brook monitoring station is monitored by the Water Resources Management Division staff on a monthly basis.

Maintenance and Calibration of Instrumentation

- The following table displays the dates when the Datasonde was removed for routine cleaning, maintenance and calibration and when it was redeployed during the month of March.

Table 1: Table of Datasonde removal and installation dates

Date Installed	Date Removed
	March 6, 2006
March 7, 2006	March 16, 2006
March 17, 2006	

- Water quality readings were taken with a Minisonde at the time of removal for comparison purposes. The Minisonde was calibrated prior to use.

Data Interpretation

- Areas in the graphs where the data lines go abruptly down to the x axis and show no readings occur when the datasonde is removed for routine cleaning, maintenance and calibration. The dates where this occurs correspond to Table 1 above.
- In general, water quality parameters were stable during the month of March with expected daily/nightly (diurnal) and seasonal changes occurring.
- Stage height** (water level) rose and fell in response to daily precipitation as seen in **Figure 1**. Increases in stage height correspond to precipitation events as seen in Table 2.
- Water temperature** fluctuated in response to daily maximum and minimum air temperature. This is demonstrated by comparing the graph in **Figure 2** to the air temperature data in **Table 2**. Warmer water temperatures correspond to warmer air temperatures experienced towards the second half of the month.

Table 2: Weather information for St. John's, NL provided by Environment Canada for March 2006

Daily Data Report for March 2006											
Day	Max Temp	Min Temp	Mean Temp	Heat Deg Days	Cool Deg Days	Total Rain	Total Snow	Total Precip	Snow on Grnd	Dir of Max Gust	Spd of Max Gust
	°C	°C	°C	C	C	mm	cm	mm	cm	10's Deg	km/h
01†	-0.1	-11	-5.6	23.6	0	0.6	16.2	16.8	80	11	74
02†	-0.5	-7.4	-4	22	0	0	6.6	6	95	26	83
03†	-2	-7.9	-5	23	0	0	12.5	12	96	26	59
04†	-2.4	-7.7	-5.1	23.1	0	0	T	T	106	26	67
05†	-0.8	-6	-3.4	21.4	0	0	0.8	0.8	104	22	67
06†	0.8	-2.2	-0.7	18.7	0	0	T	T	100	24	41
07†	-1.2	-3.9	-2.6	20.6	0	0	1	1	96	36	43
08†	2	-3.8	-0.9	18.9	0	0	9	8.6	93		<31
09†	-2.3	-3.9	-3.1	21.1	0	1.4	4.8	5.2	97	36	57
10†	-0.9	-8	-4.5	22.5	0	0	T	T	96	33	48
11†	0.7	-4.3	-1.8	19.8	0	14.4	3.4	17.8	90	16E	56E
12†	1.2	-3	-0.9	18.9	0	0	0	0	79	29E	48E
13†	0.3	-3.9	-1.8	19.8	0	0	5.2	4.8	76	29	44
14†	0.5	-2.6	-1.1	19.1	0	0	0.6	0.4	78	31	61
15†	1.6	-2.6	-0.5	18.5	0	13	0.2	13.2	75	25E	61E
16†	3	-1.9	0.6	17.4	0	0	3.2	1.8	68	18	33
17†	0.4	-4.5	-2.1	20.1	0	0	4.4	4.4	67		<31
18†	0.3	-5.7	-2.7	20.7	0	0	6.6	6.6	66	12	44
19†	0.3	-3.4	-1.6	19.6	0	5	0	5	66	1	35
20†	0.7	-2.9	-1.1	19.1	0	0	0.4	0.4	63	20E	56E
21†	0.4	-3.9	-1.8	19.8	0	0	0	0	61		<31
22†	2.3	-5.5	-1.6	19.6	0	0	0	0	59		<31
23†	0.6	-4.5	-2	20	0	0.4	0	0.4	51	2	41
24†	2.1	-1	0.6	17.4	0	0	0.4	0.4	49	2	32
25†	1.8	-1.3	0.3	17.7	0	0	T	T	46		<31
26†	2.5	-1.9	0.3	17.7	0	0	T	T	40	7	44
27†	-1	-2.5	-1.8	19.8	0	1.4	17.8	17.4	38	6E	67E
28†	-1.1	-4.2	-2.7	20.7	0	0	13.8	13.8	54		<31
29†	-0.6	-3.5	-2.1	20.1	0	3.2	1.8	5	65		<31
30†	2	-1.1	0.5	17.5	0	0.4	T	0.4	62		<31
31†	2.9	-0.5	1.2	16.8	0	0	T	T	57		<31
Sum				615	0	39.8	108.7	142.2			
Avg	0.4	-4.1	-1.8								

Figure 1

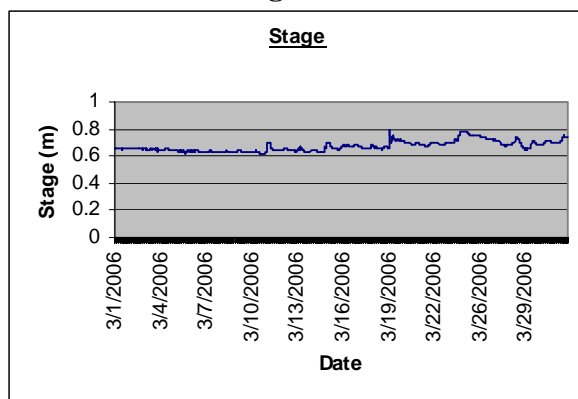
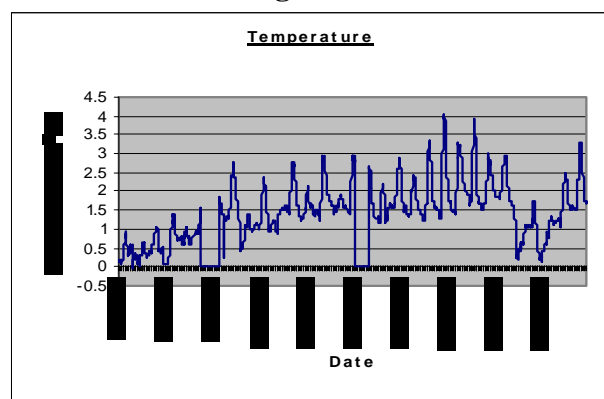


Figure 2



- **Conductivity** levels fluctuated throughout the month with several notable spikes as observed in Figure 3. These spikes usually occurred in response to precipitation events and warmer temperatures causing runoff from melting snow.
- **Total dissolved solids (Figure 4)** levels reflected the changes in conductivity. 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

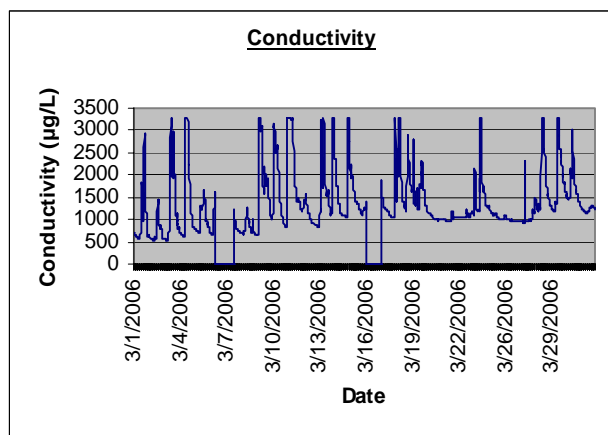
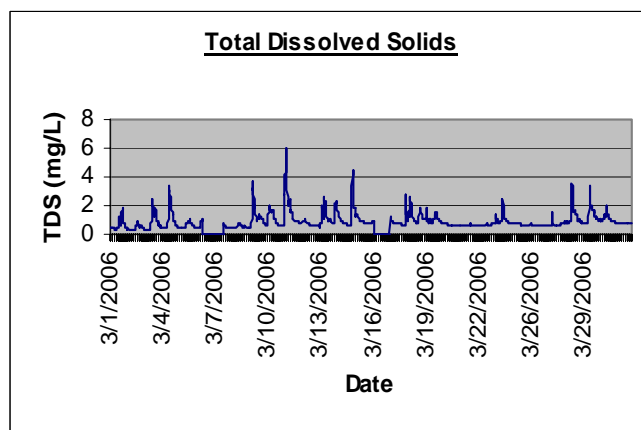


Figure 4



- The pH levels for the month of March ranged from 5.88 to 9.51. There were some instances where the pH measurements were outside the CCME recommended Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 (see Figure 5). The average pH level for March was 6.99. (see Table 3).
- Dissolved oxygen levels ranged between 5.5 mg/L to 13.5 mg/L during the period of measurement (see Figure 6). During the month of March, dissolved oxygen measurements went above the CCME recommended maximum guideline of 9.5 mg/L. The average DO level for the period of measure was 10.69 mg/L (see Table 3).

Figure 5

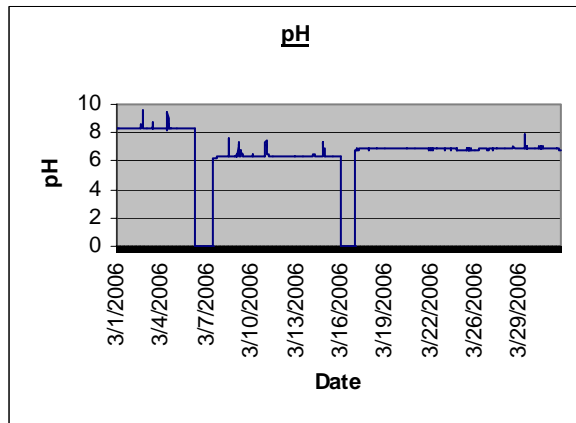
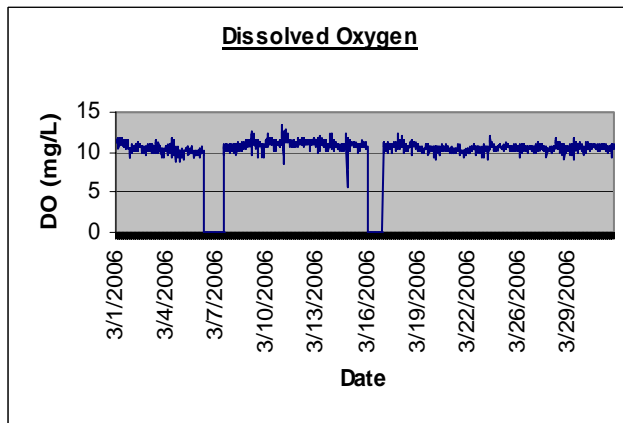
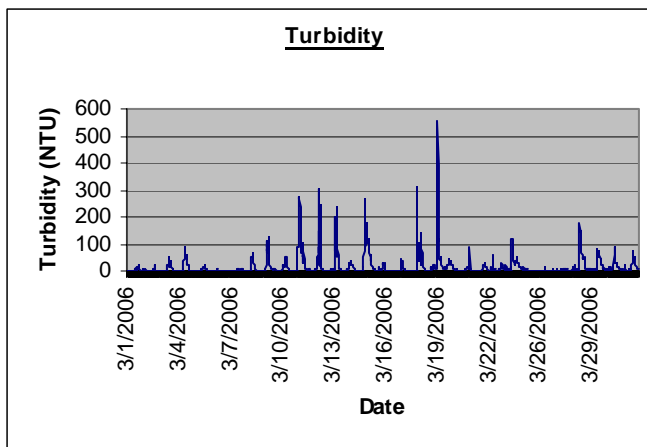


Figure 6



- **Turbidity** levels fluctuated and had several spikes noted throughout the month. The turbidity spikes (see **Figure 7**) are normally in response to precipitation events. The high turbidity readings can be attributed to warm air temperatures causing snow melt and subsequent runoff and precipitation events. Many turbidity spikes exceeded the CCME recommended maximum of 8 NTU above background levels.

Figure 7



Additional Information

- Table 3 provides summary statistics on water quality parameters for Leary’s Brook during the month of March 2006.

Table 3: Summary statistics for March 2006.

	Water Temperature	pH	Conductance	Dissolved Solids	Percent Saturated	Dissolved Oxygen	Turbidity
Max	4.03	9.51	3276.7	5.97	97.9	13.5	557
Min	-0.03	5.88	530	0.34	40	5.5	0
Average	1.49	6.99	1386.09	0.92	76.69	10.69	16.01
Standard Deviation	0.76	0.70	672.10	0.57	4.14	0.51	36.87

Report prepared by:

Kent Slaney
 Watershed Management Specialist
 Water Resources Management Division
 Department of Environment and Conservation
 Confederation Building West Block 4th Floor
 PO Box 8700
 St. John’s NL A1B 4J6

Ph. (709) 729-1157
 Fax (709) 729-0320