

Real Time Water Quality Monthly Report Leary's Brook- St. John's NL April-June 2008

General

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

Maintenance and Calibration of Instrumentation

- Table 1, below, displays the dates when a water quality instrument was installed at the beginning of the deployment period and later removed at the end of the deployment for routine cleaning, maintenance and calibration.

Table 1 Water Quality Instrument removal and installation dates:

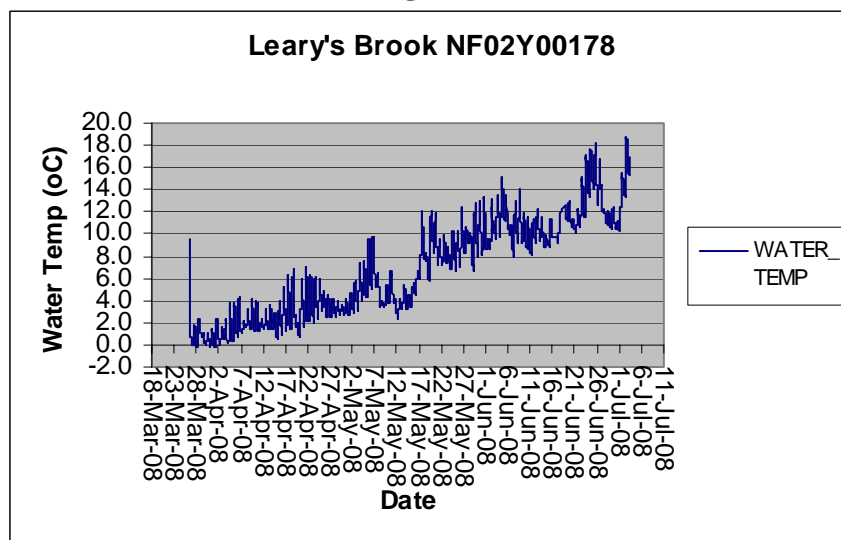
Date Installed	Date Removed
March 26, 2008	July 3, 2008

- Water quality readings were taken with a second water quality instrument at the time of installation and removal for QAQC comparison. The QAQC instrument was calibrated prior to each use.

Data Interpretation

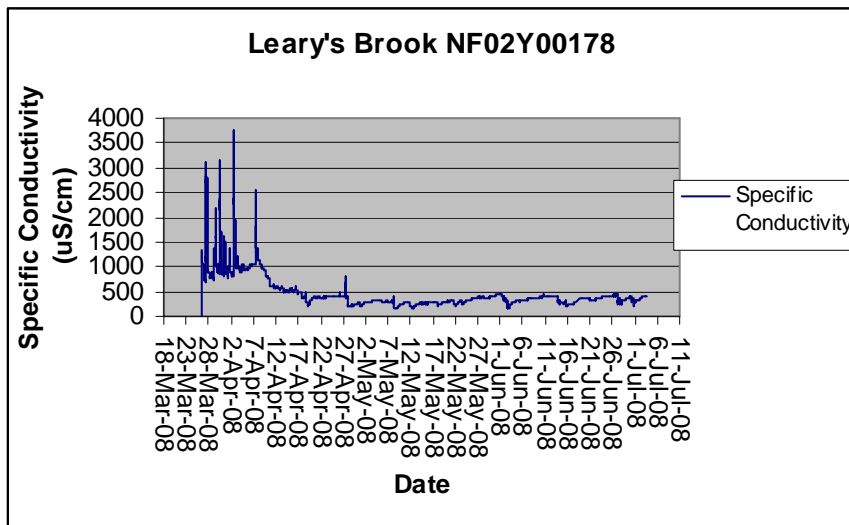
- In general, water quality parameters were stable during the deployment period with expected daily/nightly (diurnal) and seasonal changes occurring.
- Water temperatures displayed a gradual and consistent increase in response to seasonally increasing air temperatures. A graph of water temperature data is found in **Figure 1** below, and daily air temperatures are found in **Appendix 1** at the end of this report.

Figure 1



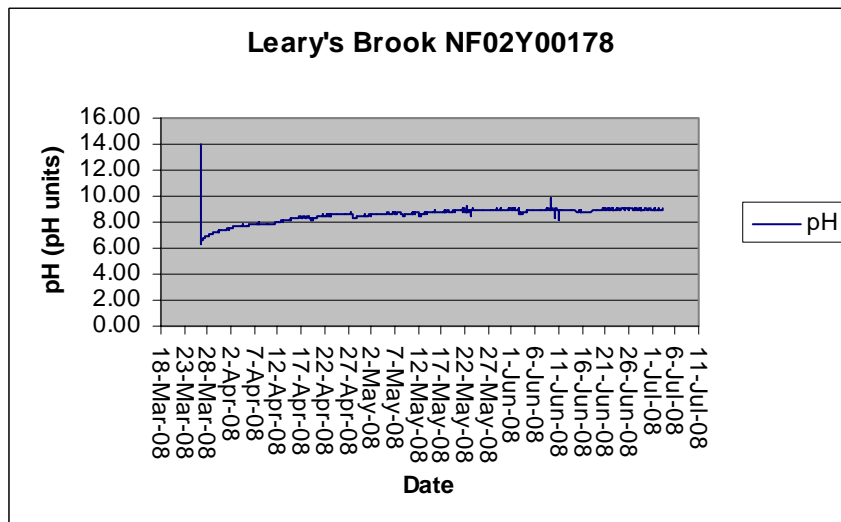
- Specific conductivity levels were quite high at the beginning of the deployment period, probably as a result of the quantity of salt being added to the adjacent urban street for ice control. Conductivity levels decreased in April when warmer weather prevailed, and stayed within the expected range for this station for the remainder of the deployment period, see **Figure 2** below.

Figure 2



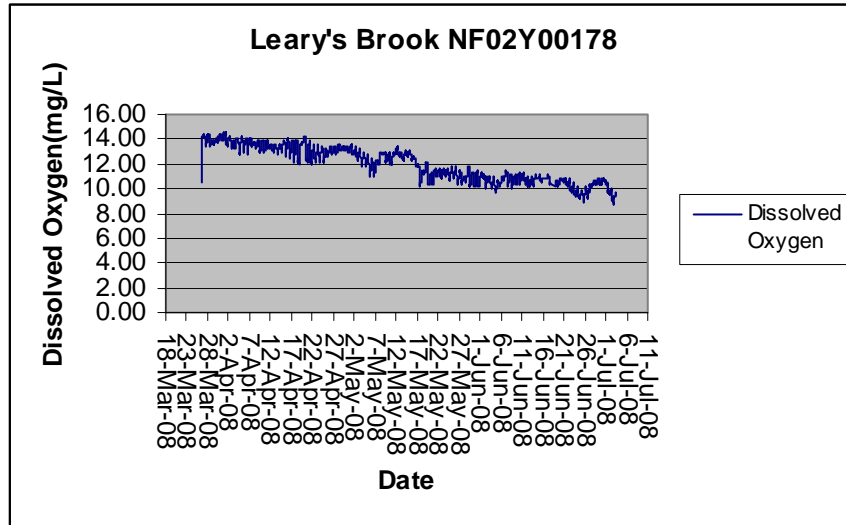
- pH levels were fairly consistent during the deployment period with most measurements falling within the optimum range recommended by the CCME guideline for the Protection of Aquatic Life of 6.5-9.5 pH units (see **Figure 3** below).

Figure 3



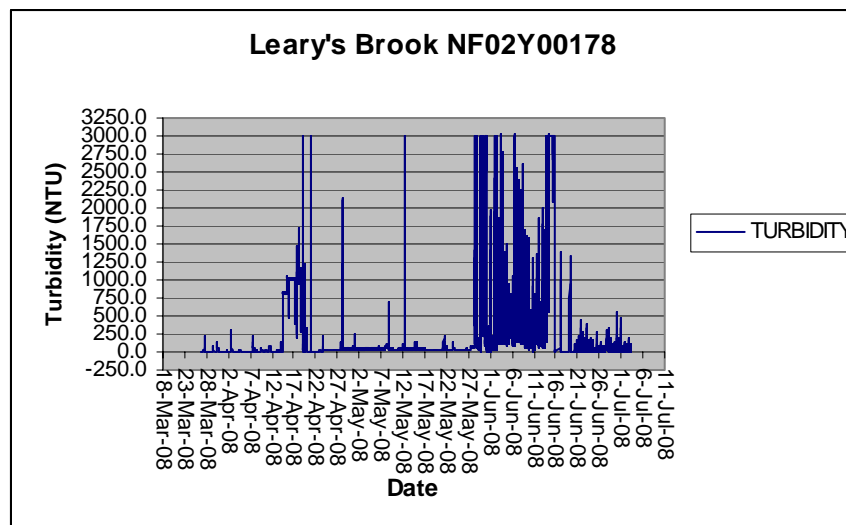
- Dissolved oxygen levels displayed an overall decrease during the deployment period (see **Figure 4** below). The decrease is in response to seasonally increasing water temperatures, as colder water typically holds more dissolved oxygen than warmer water. All dissolved oxygen values were above the minimum range recommended by the CCME Guideline for the Protection of Aquatic Life of 6.5-8.5 mg/L.

Figure 4



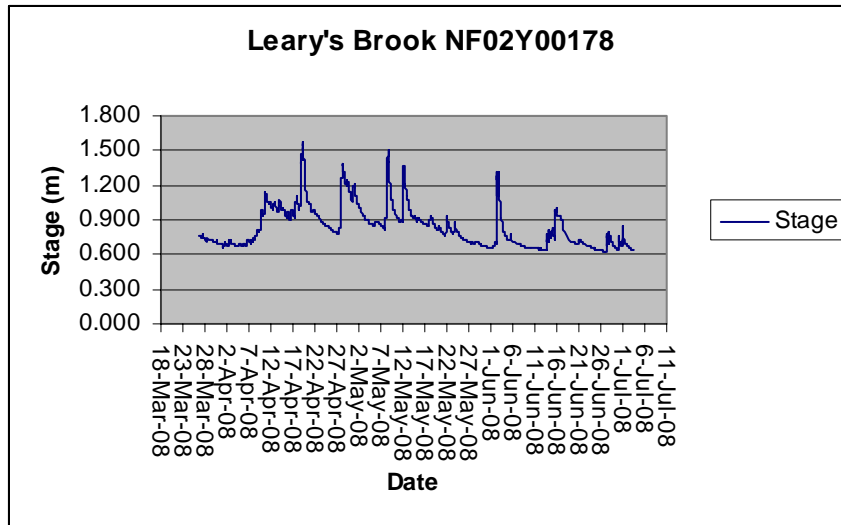
- Turbidity levels displayed several spikes throughout the deployment period (see **Figure 5**). Turbidity data from March 26th to May 28th appears to reflect typical levels for springtime, with spikes occurring during periods of significant precipitation and snowmelt, and then returning to usual levels. Spikes that reach sensor saturation at 3000NTU and then return quickly to baseline measurements usually indicate that suspended debris passed in front of the turbidity sensor at the instant a measurement was taken. Turbidity data appeared to reach the sensor saturation point and then sustained extremely high measurements from May 28th to the remainder of the deployment period. The water quality instrument had been deployed for 63 days on May 28th and it is quite likely that the turbidity sensor was fouled and required cleaning and calibration.

Figure 5



- Stage levels fluctuated throughout the deployment period, with spikes occurring during periods of significant precipitation and snowmelt (see **Figure 6**).








Figure 6










Appendix 1: Weather information for St. John’s, NL provided by Environment Canada for April, May and June 2008:

Daily Data Report for April 2008								
D a y	Max Temp °C 	Min Temp °C 	Mean Temp °C 	Total Rain mm 	Total Snow cm 	Total Precip mm 	Snow on Grnd cm 	Spd of Max Gust km/h
01	-1.7	-14.1	-7.9	0.0	0.0	0.0	35	<31
02	3.4	-4.1	-0.4	5.0	3.2	8.2	38	63E
03	-0.8	-5.5	-3.2	0.0	0.4	T	34	74E
04	1.7	-4.2	-1.3	0.0	T	T	34	67E
05	1.9	-6.2	-2.2	0.0	0.0	0.0	32	<31
06	1.4	-4.3	-1.5	0.0	T	T	30	41E
07	0.7	-2.1	-0.7	5.6	T	5.6	26	52E
08	4.4	0.5	2.5	0.8	0.0	0.8	22	<31
09	8.3	0.7	4.5	0.0	0.0	0.0	17	<31
10	11.0	3.3	7.2	0.0	0.0	0.0	15	<31
11	4.0	1.2	2.6	3.6	0.0	3.6	5	<31
12	4.8	0.9	2.9	0.4	0.0	0.4	2	32E
13	6.4	0.0	3.2	6.4	T	6.4	1	<31
14	3.4	-1.4	1.0	T	T	T	1	72E
15	4.8	-2.5	1.2	0.0	T	T	1	72E
16	8.8	-2.7	3.1	0.0	0.0	0.0	1	59E
17	13.4	2.1	7.8	0.0	0.0	0.0	1	67E
18	15.9	2.4	9.2	20.8	0.0	20.8	T	52E
19	4.8	-4.1	0.4	11.8	0.8	12.6	T	39E
20	7.2	-5.0	1.1	0.0	0.0	0.0	1	37E

<u>21</u>	10.7	-2.3	4.2	0.0	0.0	0.0	0	39E
<u>22</u>	4.4	-5.2	-0.4	0.0	T	T	0	37E
<u>23</u>	4.4	-6.8	-1.2	0.0	0.0	0.0	0	32E
<u>24</u>	6.9	-2.7	2.1	0.0	T	T	T	<31
<u>25</u>	-0.2	-2.8	-1.5	0.0	0.2	0.2	0	<31
<u>26</u>	0.9	-2.9	-1.0	0.0	T	T	T	37E
<u>27</u>	3.8	-0.9	1.5	21.2	0.0	21.2	0	52E
<u>28</u>	3.9	1.9	2.9	16.0	0.0	16.0	0	46E
<u>29</u>	4.3	1.1	2.7	4.2	0.0	4.2	0	32E
<u>30</u>	3.6	0.8	2.2	9.2	0.0	9.2	0	48E

Daily Data Report for May 2008							
D a y	Max Temp °C 	Min Temp °C 	Mean Temp °C 	Total Rain mm 	Total Snow cm 	Total Precip mm 	Spd of Max Gust km/h 
<u>01</u> †	3.9	-0.7	1.6	T	0.0	T	37
<u>02</u> †	1.7	-1.2	0.3	0.0	T	T	33
<u>03</u> †	5.1	-1.8	1.7	0.2	0.0	0.2	32
<u>04</u> †	6.4	-0.3	3.1	T	0.0	T	<31
<u>05</u> †	17.5	0.9	9.2	0.0	0.0	0.0	<31
<u>06</u> †	8.7	-0.4	4.2	0.0	0.0	0.0	<31
<u>07</u> †	3.3	-0.6	1.4	2.0	0.0	2.0	41
<u>08</u> †	3.1	0.4	1.8	31.0	0.0	31.0	63
<u>09</u> †	3.4	1.1	2.3	0.8	0.0	0.8	35
<u>10</u> †	6.2	-0.7	2.8	0.3	0.0	0.3	33E
<u>11</u> †	2.0	-0.7	0.7	12.4	2.0	14.4	57
<u>12</u> †	2.5	0.6	1.6	26.4	0.0	26.4	52
<u>13</u> †	3.4	-0.5	1.5	0.2	0.0	0.2	50
<u>14</u> †	2.0	-0.7	0.7	2.6	0.0	2.6	46
<u>15</u> †	3.8	0.4	2.1	3.8	0.0	3.8	<31
<u>16</u> †	8.4	1.7	5.1	3.0	0.0	3.0	33
<u>17</u> †	19.6	4.3	12.0	5.2	0.0	5.2	33
<u>18</u> †	8.4	4.3	6.4	3.8	0.0	3.8	57
<u>19</u> †	21.5	3.8	12.7	0.0	0.0	0.0	44
<u>20</u> †	16.6	3.3	10.0	2.4	0.0	2.4	48
<u>21</u> †	14.3	3.2	8.8	11.4	0.0	11.4	63
<u>22</u> †	10.9	4.1	7.5	0.0	0.0	0.0	59
<u>23</u> †	11.1	3.2	7.2	8.4	0.0	8.4	37
<u>24</u> †	12.8	3.1	8.0	T	0.0	T	44
<u>25</u> †	11.9	2.2	7.1	0.0	0.0	0.0	46
<u>26</u> †	18.0	2.4	10.2	0.0	0.0	0.0	57
<u>27</u> †	15.0	8.9	12.0	1.4	0.0	1.4	67

<u>28†</u>	11.1	3.4	7.3	3.6	0.0	3.6	65
<u>29†</u>	16.3	2.5	9.4	0.0	0.0	0.0	44
<u>30†</u>	14.9	5.1	10.0	0.0	0.0	0.0	61
<u>31†</u>	17.3	4.6	11.0	0.0	0.0	0.0	52

Daily Data Report for June 2008							
D a y	Max Temp °C 	Min Temp °C 	Mean Temp °C 	Total Rain mm 	Total Snow cm 	Total Precip mm 	Spd of Max Gust km/h 
<u>01†</u>	13.9	3.9	8.9	11.4	0.0	11.4	52
<u>02†</u>	15.4	7.3	11.4	31.2	0.0	31.2	37
<u>03†</u>	17.9	7.9	12.9	0.0	0.0	0.0	46
<u>04†</u>	21.2	6.8	14.0	T	0.0	T	35
<u>05†</u>	17.9	5.0	11.5	3.4	0.0	3.4	<31
<u>06†</u>	8.2	1.0	4.6	T	0.0	T	46
<u>07†</u>	9.5	0.2	4.9	0.0	0.0	0.0	<31
<u>08†</u>	14.9	2.8	8.9	0.0	0.0	0.0	35
<u>09†</u>	10.3	3.5	6.9	0.0	0.0	0.0	<31
<u>10†</u>	8.4	4.3	6.4	0.4	0.0	0.4	65
<u>11†</u>	11.7	4.7	8.2	0.6	0.0	0.6	39
<u>12†</u>	16.3	5.6	11.0	T	0.0	T	<31
<u>13†</u>	10.3	5.6	8.0	9.0	0.0	9.0	35
<u>14†</u>	8.9	5.6	7.3	13.8	0.0	13.8	<31
<u>15†</u>	10.7	5.5	8.1	7.2	0.0	7.2	39
<u>16†</u>	10.3	6.2	8.3	19.0	0.0	19.0	<31
<u>17†</u>	14.7	6.5	10.6	0.8	0.0	0.8	<31
<u>18†</u>	14.7	7.2	11.0	1.2	0.0	1.2	<31
<u>19†</u>	14.0	7.3	10.7	0.2	0.0	0.2	<31
<u>20†</u>	10.2	7.2	8.7	4.6	0.0	4.6	37
<u>21†</u>	12.5	7.9	10.2	2.4	0.0	2.4	<31
<u>22†</u>	21.6	9.0	15.3	0.0	0.0	0.0	33
<u>23†</u>	24.2	9.3	16.8	0.0	0.0	0.0	39
<u>24†</u>	24.2	13.5	18.9	T	0.0	T	46
<u>25†</u>	22.6	12.4	17.5	0.0	0.0	0.0	52
<u>26†</u>	21.2	8.0	14.6	0.8	0.0	0.8	48
<u>27†</u>	10.2	8.1	9.2	13.0	0.0	13.0	<31
<u>28†</u>	10.5	7.6	9.1	0.8	0.0	0.8	<31
<u>29†</u>	11.7	7.0	9.4	T	0.0	T	<31
<u>30†</u>	12.4	7.4	9.9	9.4	0.0	9.4	57

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