

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

### General

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

### Maintenance and Calibration of Instrumentation

- The following table displays the dates when the water quality probe was installed and later removed at the end of the deployment period for routine cleaning, maintenance and calibration:

**Table 1:** Table of probe installation and removal dates

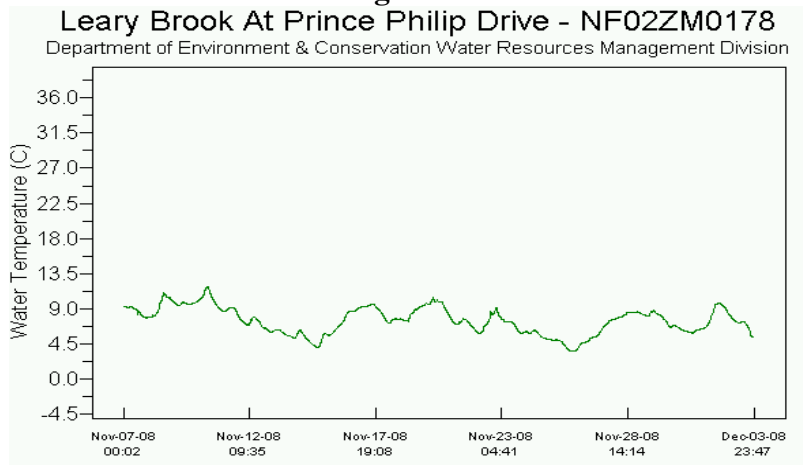
Date Installed	Date Removed
November 7, 2008	December 3, 2008

- Water quality readings were taken with a second, freshly calibrated water quality probe at the time of installation and removal for QAQC comparison.

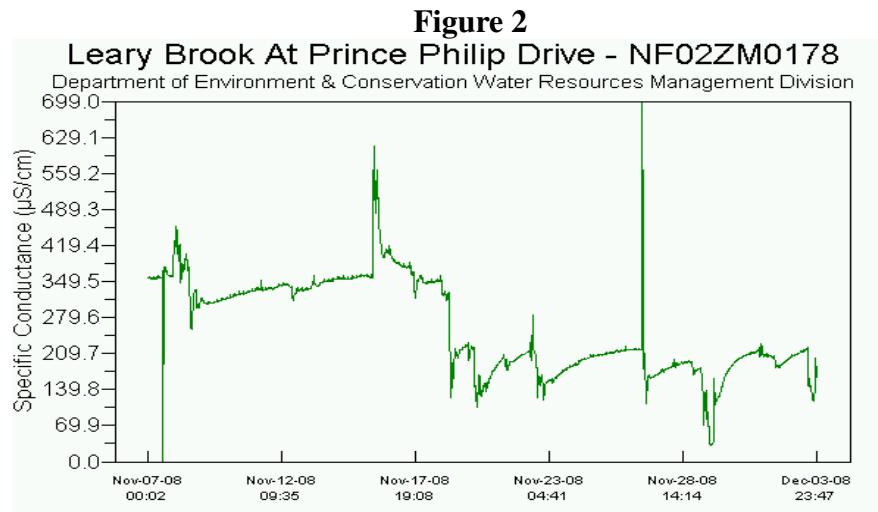
### Data Interpretation

- Water quality parameter levels fluctuated within expected ranges during the deployment period with diurnal and seasonal variations.
- There was a data gap from October 31 to November 7, as the probe was removed and redeployed several times within this period due to operational difficulties with the turbidity sensor.
- Water temperatures** ranged between 3.55 and 11.8 °C, as seen in **Figure 1**, in response to daily maximum and minimum air temperatures.

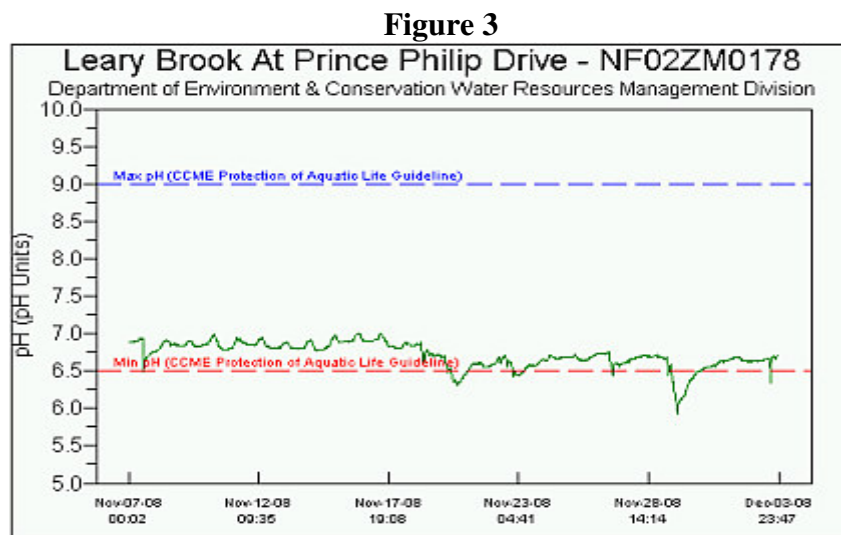
**Figure 1**



- Conductivity** levels fluctuated during the deployment period as observed in **Figure 2**, ranging from 32 to 699  $\mu\text{S}/\text{cm}$ . A significant spike in conductivity was recorded on November 16<sup>th</sup>, which was preceded by 4 days of temperatures dropping below 0°C and a light rain on the 16<sup>th</sup>. Road salting operations were most likely in effect on roads, which impacted conductivity levels. Another conductivity spike is seen on November 27<sup>th</sup>, but this was very short in duration could have been the result of floating ice/debris coming in contact with the conductivity sensor while a data reading was being collected. A drop in conductivity can be observed on the graph on November 19<sup>th</sup>, which may be the result of significant rainfall that occurred on the 19<sup>th</sup> and 20<sup>th</sup>. Climate data for St. John's is recorded in **Appendix 1**, at the end of this report.

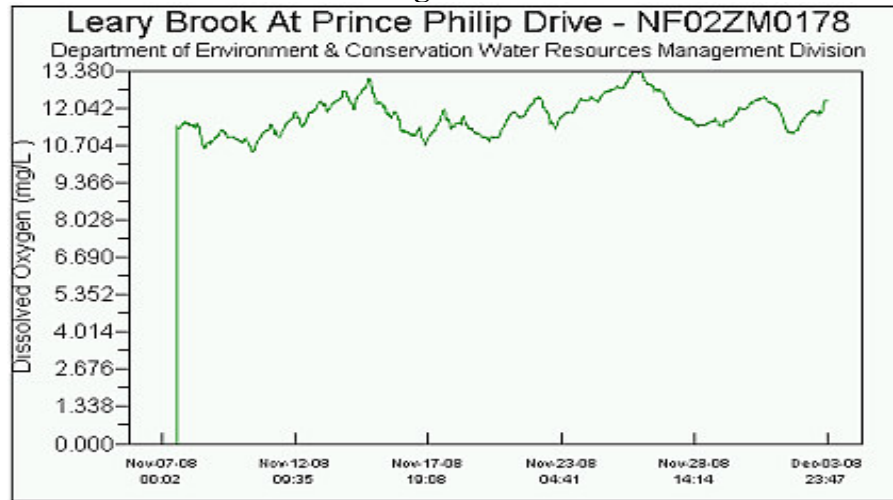


- pH** values ranged from 5.93 to 7.00 pH units during the deployment period, as shown in **Figure 3** below. Most values fell within the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 pH units. Sharp declines in pH levels can be seen on November 19<sup>th</sup> and 29<sup>th</sup>, which is likely to be a response to heavy rainfall that occurred on those days.

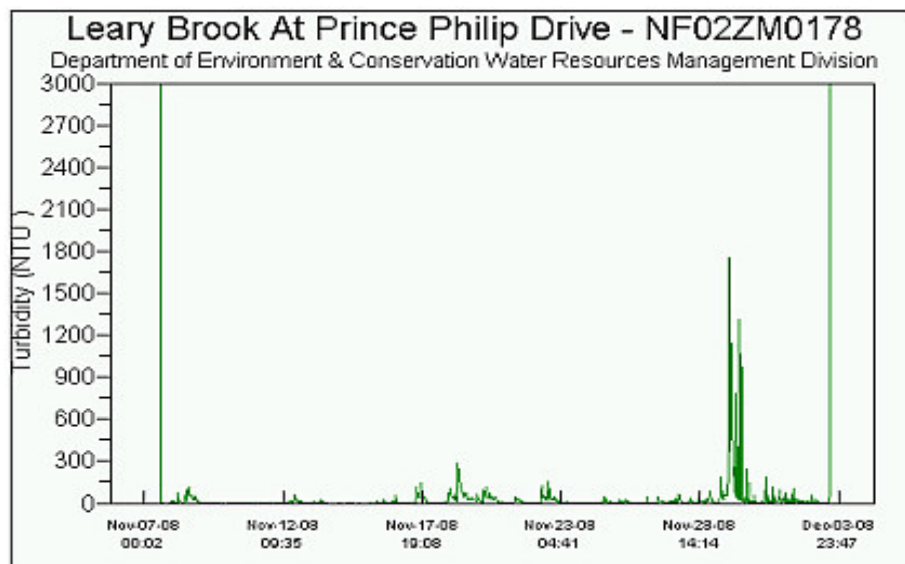


- Dissolved oxygen (DO)** levels ranged from 10.46 to 13.38 mg/L during this deployment period, as seen in **Figure 4** below. DO levels appear to increase steadily from November 10<sup>th</sup> to 15<sup>th</sup>, then decrease until the 17<sup>th</sup>, and then increase again until the 26<sup>th</sup>. These trends appear to share an inverse relationship with water temperatures, found in **Figure 1** above. Colder water typically holds more dissolved oxygen than warmer water.

**Figure 4**



- Turbidity** values ranged from 0.0 to 1748 NTU during this deployment period, as seen in **Figure 5** below. The sharp turbidity spike on November 29<sup>th</sup> is in response to the 97mm of rain that fell on that day.



**Appendix 1:** Weather information for St. John's, NL provided by Environment Canada for November 2008:

**Daily Data Report for November 2008**

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01	9.3	2.1	5.7	12.3	0.0	1.2	0.0	1.2	0	26E	61E

<a href="#">02</a>	5.2	-0.1	2.6	15.4	0.0	0.6	2.0	2.6	0	34E	37E
<a href="#">03</a>	4.4	-2.1	1.2	16.8	0.0	0.0	0.0	0.0	1	M	M
<a href="#">04</a>	7.3	-0.5	3.4	14.6	0.0	0.0	0.0	0.0	0	26E	54E
<a href="#">05</a>	10.9	0.4	5.7	12.3	0.0	0.0	0.0	0.0	0	25E	59E
<a href="#">06</a>	15.7	8.6	12.2	5.8	0.0	0.0	0.0	0.0	0	26E	46E
<a href="#">07</a>	10.4	3.4	6.9	11.1	0.0	1.0	0.0	1.0	0		<31
<a href="#">08</a>	15.1	5.2	10.2	7.8	0.0	13.6	0.0	13.6	0	23E	37E
<a href="#">09</a>	13.5	6.1	9.8	8.2	0.0	1.2	0.0	1.2	0	19E	39E
<a href="#">10</a>	17.6	4.8	11.2	6.8	0.0	0.0	0.0	0.0	0	26E	48E
<a href="#">11</a>	9.6	4.1	6.9	11.1	0.0	1.0	0.0	1.0	0	26E	63E
<a href="#">12</a>	7.3	-0.6	3.4	14.6	0.0	3.4	T	3.4	0	25E	35E
<a href="#">13</a>	3.1	-2.2	0.5	17.5	0.0	0.0	T	T	T	33E	32E
<a href="#">14</a>	4.1	-4.4	-0.2	18.2	0.0	0.0	0.0	0.0	0		<31
<a href="#">15</a>	6.9	-2.4	2.3	15.7	0.0	0.4	0.0	0.4	0	18E	57E
<a href="#">16</a>	12.7	6.8	9.8	8.2	0.0	1.4	0.0	1.4	0	18E	63E
<a href="#">17</a>	11.6	2.2	6.9	11.1	0.0	3.2	0.0	3.2	0	18E	80E
<a href="#">18</a>	6.8	1.4	4.1	13.9	0.0	2.6	0.0	2.6	0		<31
<a href="#">19</a>	12.8	5.6	9.2	8.8	0.0	19.6	0.0	19.6	0	16E	69E
<a href="#">20</a>	12.1	2.5	7.3	10.7	0.0	27.2	0.0	27.2	0	16E	70E
<a href="#">21</a>	7.9	1.2	4.6	13.4	0.0	6.4	0.0	6.4	0	18E	48E
<a href="#">22</a>	12.1	1.3	6.7	11.3	0.0	26.0	0.0	26.0	0	17E	72E
<a href="#">23</a>	5.5	-0.6	2.5	15.5	0.0	1.2	0.0	1.2	0	26E	41E
<a href="#">24</a>	5.2	-0.8	2.2	15.8	0.0	0.6	T	0.6	0	19E	39E
<a href="#">25</a>	1.6	-3.6	-1.0	19.0	0.0	0.0	T	T	0		<31
<a href="#">26</a>	5.9	-1.2	2.4	15.6	0.0	20.4	0.0	20.4	0	11E	48E
<a href="#">27</a>	10.9	5.5	8.2	9.8	0.0	5.0	0.0	5.0	0	14E	57E
<a href="#">28</a>	10.9	9.0	10.0	8.0	0.0	6.2	0.0	6.2	0	16E	41E
<a href="#">29</a>	10.3	5.5	7.9	10.1	0.0	97.2	0.0	97.2	0	28E	59E
<a href="#">30</a>	6.3	2.6	4.5	13.5	0.0	0.0	0.0	0.0	0	28E	57E

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