Government of Newfoundland and Labrador
**Department of Environment and Conservation**
**Water Resources Management Division**

# Real Time Water Quality Monthly Report
# Leary's Brook- St. John's NL
# May 2009

## 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

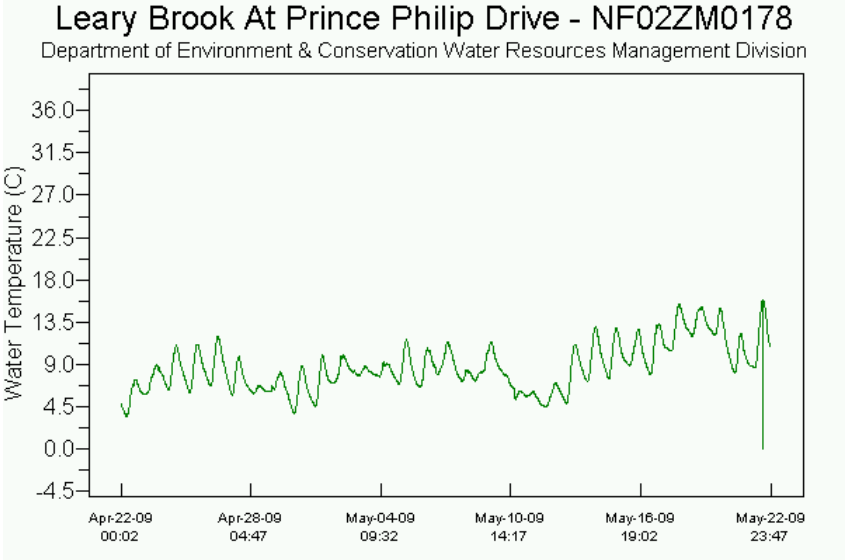
| Date Installed | Date Removed |
|---|---|
| April 22, 2009 | May 22, 2009 |

- 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

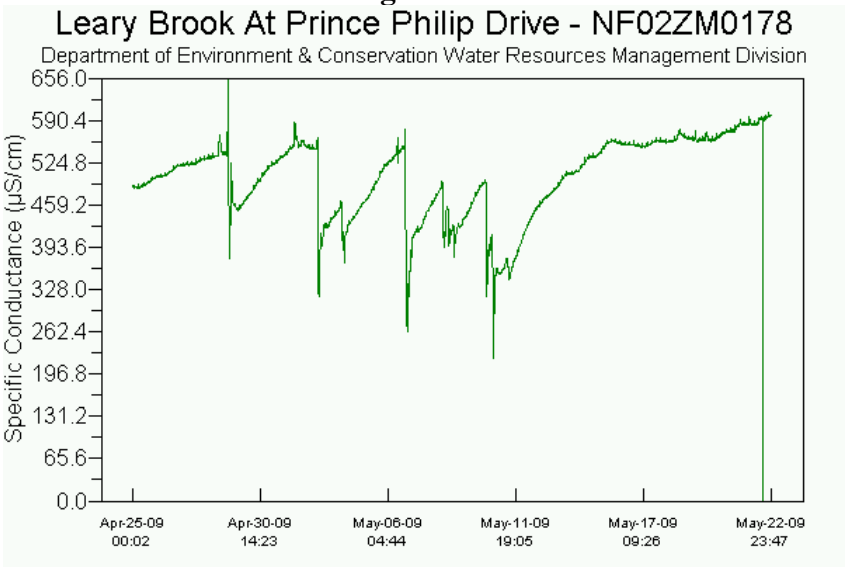
- Water quality parameter levels fluctuated within expected ranges during the deployment period with diurnal and seasonal variations.
- **Water temperatures** ranged between 3.79 and 15.8 $^{o}$**C** during this deployment as seen in **Figure 1** below. There was an overall increasing trend in water temperature in response to seasonally increasing air temperatures. Environment Canada Daily Climate Data for the months of April and May are found in Appendix 1 at the end of this report.

**Figure 1**



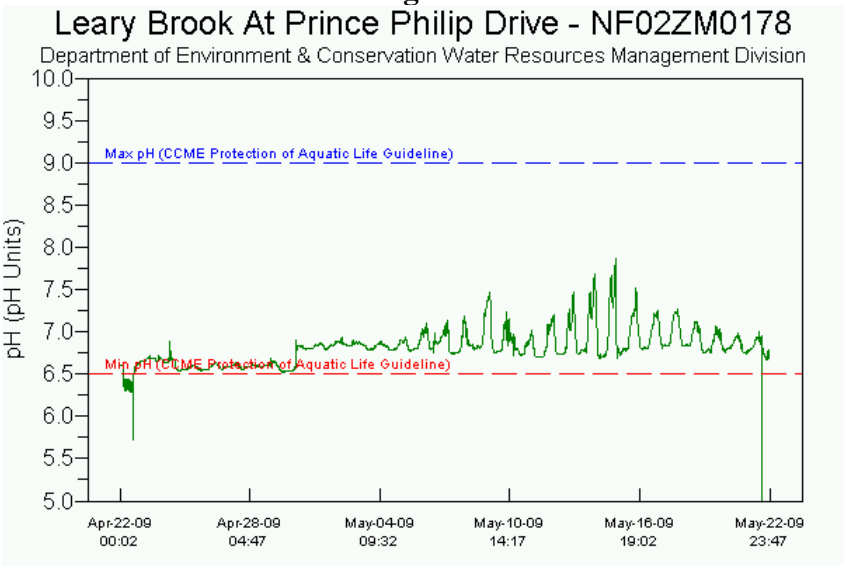
- Conductivity levels were unstable during this deployment period as seen in **Figure 2** below. According to Environment Canada's Daily Climate Data in **Appendix 1**, there were no significant precipitation events corresponding with changes in conductivity. It is uncertain if the fluctuating conductivity values reflect changes in water quality or sensor malfunction. No other water quality parameters displayed similar magnitudes of variation.

**Figure 2**



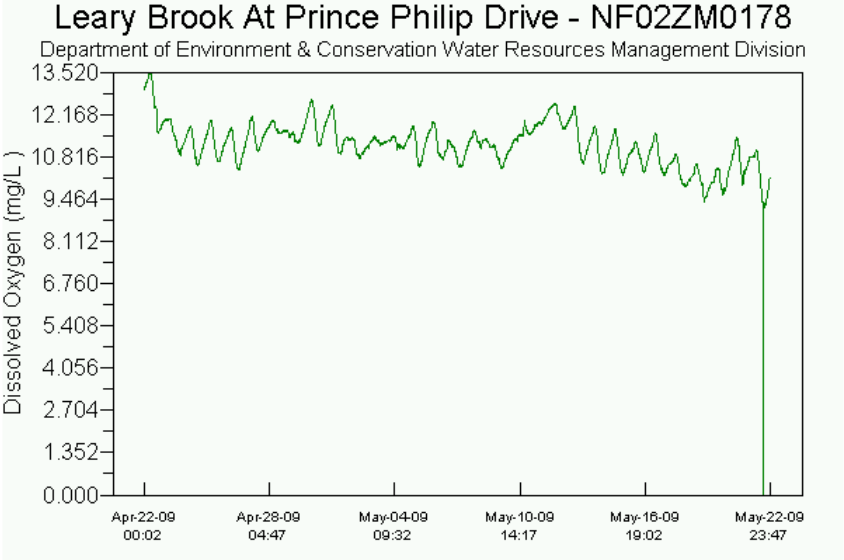

- **pH** values ranged from 5.72 to7.86 pH units during the deployment period, as shown in **Figure 3** below. Most values were within the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 pH units.

**Figure 3**




- **Dissolved oxygen** measurements were stable during the deployment period, ranging from 9.32 to 12.64mg/L, as shown in **Figure 4** below. Dissolved oxygen levels displayed an overall decreasing trend in response to seasonally increasing water temperatures. Colder water tends to hold more dissolved oxygen than warmer water.

**Figure 4**




- **Turbidity** sensor was not functioning during this deployment.

**Appendix 1**: Weather information for St. John's, NL provided by Environment Canada for April 2009:

Daily Data Report for April 2009

| 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 | 2.0 | -2.8 | -0.4 | 18.4 | 0.0 | 0.0 | 0.0 | 0.0 | 8 | 35E | 37E |
| 02 | 5.8 | -3.2 | 1.3 | 16.7 | 0.0 | 0.0 | T | T | 7 | 25E | 44E |
| 03 | 9.4 | 1.1 | 5.3 | 12.7 | 0.0 | 0.0 | 0.0 | 0.0 | 1 | 27E | 44E |
| 04 | 10.9 | 1.2 | 6.1 | 11.9 | 0.0 | 14.4 | 0.0 | 14.4 | 1 | 18E | 48E |
| 05 | 12.8 | 6.2 | 9.5 | 8.5 | 0.0 | 2.6 | 0.0 | 2.6 | T | 18E | 48E |
| 06 | 8.9 | 0.2 | 4.6 | 13.4 | 0.0 | 2.8 | 0.0 | 2.8 | T | 29E | 44E |
| 07 | 6.0 | -0.3 | 2.9 | 15.1 | 0.0 | 0.4 | 0.0 | 0.4 | T | 29E | 37E |
| 08 | 15.0 | 1.3 | 8.2 | 9.8 | 0.0 | 8.2 | T | 8.2 | 0 | 21E | 67E |
| 09 | 12.5 | -0.1 | 6.2 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 26E | 50E |
| 10 | 6.7 | 0.2 | 3.5 | 14.5 | 0.0 | 11.2 | 0.0 | 11.2 | 0 |  | <31 |
| 11 | 9.2 | 0.4 | 4.8 | 13.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 26E | 46E |
| 12 | 8.1 | 0.6 | 4.4 | 13.6 | 0.0 | 7.0 | 0.0 | 7.0 | 0 | 18E | 63E |
| 13 | 9.3 | 2.2 | 5.8 | 12.2 | 0.0 | 4.2 | 0.0 | 4.2 | 0 | 19E | 63E |
| 14 | 7.3 | -0.5 | 3.4 | 14.6 | 0.0 | 0.4 | 3.4 | 3.0 | 1 | 26E | 46E |
| 15 | 2.7 | -3.3 | -0.3 | 18.3 | 0.0 | 0.0 | 1.2 | 0.6 | T | 33E | 44E |
| 16 | -2.0 | -5.8 | -3.9 | 21.9 | 0.0 | 0.0 | T | T | T | 31E | 48E |
| 17 | 0.4 | -6.5 | -3.1 | 21.1 | 0.0 | 0.0 | 0.2 | T | 0 | 29E | 44E |
| 18 | 2.9 | -7.1 | -2.1 | 20.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |  | <31 |
| 19 | 3.8 | -4.0 | -0.1 | 18.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 26E | 33E |
| 20 | 3.6 | -4.9 | -0.7 | 18.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |  | <31 |
| 21 | 9.8 | -1.8 | 4.0 | 14.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 28E | 33E |
| 22 | 12.3 | -0.6 | 5.9 | 12.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 21E | 41E |
| 23 | 13.1 | 6.4 | 9.8 | 8.2 | 0.0 | 2.8 | 0.0 | 2.8 | 0 | 19E | 65E |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 16.3 | 2.5 | 9.4 | 8.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 22E | 50E |
| 25 | 12.9 | 0.8 | 6.9 | 11.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 14E | 39E |
| 26 | 17.9 | -0.2 | 8.9 | 9.1 | 0.0 | T | T | T | 0 | 25E | 48E |
| 27 | 6.6 | -2.0 | 2.3 | 15.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 1E | 33E |
| 28 | 7.2 | 1.1 | 4.2 | 13.8 | 0.0 | 1.8 | T | 1.8 | 0 | 25E | 59E |
| 29 | 7.5 | -2.2 | 2.7 | 15.3 | 0.0 | 6.0 | 0.6 | 6.0 | 0 | 33E | 67E |
| 30 | 8.1 | -2.6 | 2.8 | 15.2 | 0.0 | 0.0 | 0.0 | 0.0 | T | 29E | 48E |
| Sum | | | | **427.7** | **0.0** | **61.8** | **5.4** | **65.0** | | | |
| Avg | **8.2** | **-0.8** | **3.7** | | | | | | | | |
| Xtrm | **17.9** | **-7.1** | | | | | | | | **21B** | **67B** |

Daily Data Report for May 2009

| 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† | 11.0 | -1.4 | 4.8 | 13.2 | 0.0 | 1.2 | 0.0 | 1.2 | | 20 | 80 |
| 02† | 12.8 | 7.7 | 10.3 | 7.7 | 0.0 | 3.6 | 0.0 | 3.6 | | 23 | 76 |
| 03† | 10.4 | 5.8 | 8.1 | 9.9 | 0.0 | 6.8 | 0.0 | 6.8 | | | <31 |
| 04† | 11.9 | 6.8 | 9.4 | 8.6 | 0.0 | 4.8 | 0.0 | 4.8 | | 27 | 32 |
| 05† | 11.1 | 1.3 | 6.2 | 11.8 | 0.0 | 0.0 | 0.0 | 0.0 | | 4 | 35 |
| 06† | 15.5 | 2.7 | 9.1 | 8.9 | 0.0 | 9.2 | 0.0 | 9.2 | | 16 | 52 |
| 07† | 12.5 | 2.0 | 7.3 | 10.7 | 0.0 | 3.0 | 0.0 | 3.0 | | 26 | 61 |
| 08† | 12.7 | 1.6 | 7.2 | 10.8 | 0.0 | 15.8 | 0.0 | 15.8 | | 23 | 35 |
| 09† | 12.8 | 4.4 | 8.6 | 9.4 | 0.0 | T | 0.0 | T | | 27 | 57 |
| 10† | 7.6 | 0.5 | 4.1 | 13.9 | 0.0 | 17.8 | 0.0 | 17.8 | | 25 | 46 |
| 11† | 4.8 | -1.6 | 1.6 | 16.4 | 0.0 | 1.0 | 3.2 | 4.2 | | 33 | 67 |
| 12† | 8.8 | -0.9 | 4.0 | 14.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | <31 |
| 13† | 15.5 | -0.1 | 7.7 | 10.3 | 0.0 | 0.0 | 0.0 | 0.0 | | 26 | 35 |
| 14† | 21.3 | 5.4 | 13.4 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | | 26 | 48 |
| 15† | 16.7 | 6.9 | 11.8 | 6.2 | 0.0 | 0.0 | 0.0 | 0.0 | | 25 | 74 |
| 16† | 16.4 | 4.5 | 10.5 | 7.5 | 0.0 | 0.0 | 0.0 | 0.0 | | 26 | 46 |
| 17† | 18.9 | 2.6 | 10.8 | 7.2 | 0.0 | 0.0 | 0.0 | 0.0 | | 26 | 33 |
| 18† | 21.1 | 11.4 | 16.3 | 1.7 | 0.0 | T | 0.0 | T | | 18 | 39 |
| 19† | 20.1 | 13.8 | 17.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | | 22 | 44 |
| 20† | 16.3 | 2.7 | 9.5 | 8.5 | 0.0 | T | 0.0 | T | | 26 | 52 |
| 21† | 10.6 | 2.1 | 6.4 | 11.6 | 0.0 | 0.4 | 0.0 | 0.4 | | 30 | 48 |
| 22† | 23.1 | 3.0 | 13.1 | 4.9 | 0.0 | 0.0 | 0.0 | 0.0 | | 26 | 65 |
| 23† | 13.7 | 0.3 | 7.0 | 11.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 28 | 48 |
| 24† | 15.9 | 0.6 | 8.3 | 9.7 | 0.0 | 1.0 | 0.0 | 1.0 | | 26 | 37 |
| 25† | 12.3 | 0.3 | 6.3 | 11.7 | 0.0 | 2.8 | 0.0 | 2.8 | | 26 | 39 |
| 26† | 4.8 | -0.5 | 2.2 | 15.8 | 0.0 | 0.0 | 5.0 | 4.6 | 3 | 36 | 41 |
| 27† | 7.8 | 0.7 | 4.3 | 13.7 | 0.0 | 0.0 | 0.0 | 0.0 | | 31 | 50 |
| 28† | 13.9 | 1.8 | 7.9 | 10.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | <31 |
| 29† | 17.4 | 3.1 | 10.3 | 7.7 | 0.0 | 0.0 | 0.0 | 0.0 | | | <31 |
| 30† | 10.2 | 5.8 | 8.0 | 10.0 | 0.0 | 16.4 | 0.0 | 16.4 | | 15 | 69 |
| 31† | 21.9 | 6.5 | 14.2 | 3.8 | 0.0 | 2.6 | 0.0 | 2.6 | | 16 | 61 |
| Sum | | | | **292.3** | **0.0** | **87.4** | **8.2** | **95.2** | | | |
| Avg | **13.9** | **3.2** | **8.54** | | | | | | | | |
| Xtrm | **23.1** | **-1.6** | | | | | | | | **20** | **80** |

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