

Real-Time Water Quality Deployment Report NF02ZM0178 – Leary's Brook January 8th, 2010 to February 23rd, 2010

General

- Data from Leary's Brook monitoring station is monitored by the Water Resources Management Division staff consistently.
- This monthly deployment report interprets the data from the Leary Brook real-time water quality station from January 8, 2010 to February 23, 2010 a period of 45 days. Hydrolab Datasonde 5X s/n 44975 was in place for this time period.
- Leary Brook station operational status was good over the deployment period; a single dropout occurred on January 29th from 15:15 to 23:45.

Maintenance and Calibration of Instrument

- As part of QAQC measures, upon deployment a grab sample is taken for comparison with pH, conductivity and turbidity readings form the sonde. Dissolved oxygen and turbidity values from the field sonde are compared to a freshly calibrated QAQC sonde due to the impracticality of measuring these parameters with grab samples. A rank is applied to each comparison and reported in Table 1.
- During the removal process, a reading is taken from the field sonde and a QAQC sonde placed along side upon arrival at the site. Next, the field sonde is briefly removed from the river for removal of biofouling and returned to the river. Another reading is taken from the field sonde and the QAQC sonde. The difference between readings from the field sonde before and after cleaning, minus any changes in river chemistry monitored by the QAQC sonde results in biofouling error. In the lab, calibration drift and is summed with biofouling to derive total error. Total error is ranked for each parameter as shown in the removal section of Table 1.

Station	Date	Action	Instrument Comparison Ranking				
Leary's Brook at Prince Philip Drive			Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
	January 8 th	Deployment	Excellent	Poor	Good	Good	Excellent
	February 23rd	Removal	Excellent	Poor	Poor	Excellent	NA

Table 1: QAQC Summary of the deployment from January 8th, 2010 to February 23rd, 2010

• A QAQC reading could not be recorded for Turbidity upon removal as the probe was obscured and not producing useful data.

Data Interpretation

- The following graphs may contain raw and corrected data in cases where the total error for a parameter exceeded data correction criteria.
- Water temperature at Leary's Brook ranged from -0.37 to 2.87 during the period of January 8th, 2010 to February 23rd, 2010. Data corrections criteria for temperature were not met for this deployment; data presented is raw data.

Figure 1: Water temperature at Leary's Brook from January 8th, 2010 to February 23rd, 2010



Corrected and Uncorrected Temperature

No major fluctuations were seen in pH over the deployment period; pH ranged from 6.19 to 7.63. Most values are above the CCME Guideline of 6.5 mg/l for the protection of Aquatic life; however a slow incline at the beginning of the deployment period indicates values below 6.5. This may be due to probe conditioning following calibration of the Hydrolab.

Figure 2: pH at Leary's Brook from January 8th, 2010 to February 23rd, 2010



Corrected and Uncorrected pH

A slight correction is seen in the data presented in Figure 3. At the end of deployment. It was found that an amount of fouling had influenced the conductivity readings sufficiently to surpass the data correction criterion. Specific Conductivity ranged from 340.3 to 6914.6 µS/cm during this deployment period. Significant spikes seen in Figure 3 are the result of road salt application and melt water running into Leary's Brook.

Figure 3: Specific conductivity at Leary's Brook from January 8th, 2010 to February 23rd, 2010



Conductivity and Uncorrected Conductivity

 Dissolved Oxygen concentration at Leary's brook during this deployment was consistently above the CCME Guidelines for both the protection of Early Life Stage and Other Life Stage cold water biota. DO ranged from 12.63 to 14.07.

Figure 4: Dissolved oxygen at Leary's Brook from January 8th, 2010 to February 23rd, 2010



Dissolved Oxygen (mg/l and %Sat)

• The first half of deployment indicates that turbidity is generally low-grade with occasional short-term turbidity spikes. A spike in stage level caused by warm temperatures and precipitation on January 28th resulted in obstruction of the turbidity sensor leading to a prolonged period of impaired turbidity readings.





Corrected and Uncorrected Turbidity

Appendix



Figure 6: Total Precipitation and Mean Daily Temperature as measured by the Pippy Park Weather Station

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