

Stream Water Chemistry Report Summary

Stream: **Unnamed Creek flowing into Little Pike Bay**

Water Chemistry Parameters	Observed Value	Standard
Total Suspended Solids	14.93 mg/L	< 11.24 mg/L
Alkalinity	242.00 mg/L	< 224.83 mg/L
Chloride	8.43 mg/L	
Total Phosphorus	0.028 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	1.22 mg/L	
Temperature	14.08 C	< 25.15 C
pH	7.80	Between 6.5-8.5
Conductivity	0.393 spc	
Dissolved Oxygen	6.69	> 6.0 mg/L
Total Organic Nitrogen	0.678 mg/L	< 1.1mg/L

The water chemistry observed at the Unnamed Creek flowing into Little Pike Bay may indicate some signs of disturbance in the watershed. Interestingly, the total phosphorus values recorded are above the more stringent 0.01 mg/L recommendations, however, they do not exceed the higher recommendation of 0.03 mg/L. Considering that the control stream for the region had total phosphorus readings of 0.011 mg/L the Unnamed Creek site is potentially experiencing increased nutrient loading from human sources. The organic nitrogen at this site is also elevated above the values observed that the control site (0.557 mg/L) but still below the provincial recommendation of 1.1 mg/L. It is important to note that the increased nitrogen and phosphorus content at this site is marginal and could also be attributed to natural variance between stream systems. The dissolved oxygen and pH at this site are also both within recommended ranges for the province of Ontario.

The strongest indicator of disturbance for this stream is the relatively high total suspended solids measure. While a reading of 14.93 mg/L is only marginally above the federal recommendations, it is over twice the value observed at the reference site (6.2 mg/L). Thus, it is likely that some activity in the region is causing more material to occur within the stream, resulting in elevated suspended material in the stream's water. Normally increased erosion rates cause increased total suspended solids. The Unnamed Creek, however, has the one of the highest chlorophyll *a* content of any of the streams monitored. This chlorophyll content is often a good indicator of suspended algae, which could also increase the total suspended solid measure. The reason for higher chlorophyll content could be the slightly elevated nutrient content at this site, however, it is also possibly due to stream features such as the amount of incoming light. The higher than recommended alkalinity value is of interest as well, but most likely can be explained by the conductivity value. The bedrock in this region is limestone which is composed of calcium carbonate (CaCO₃), the same chemical measured used to assess alkalinity. A greater connection to ground water sources would increase the presence of CaCO₃ when compared to more surface water fed reference site. A conductivity value almost double that of the reference site (Reference site- 0.268 spc, Fern Drain- 0.393 spc) is suggestive of this.

December 2013