Water Chemistry Report Summary

Site Name: Little Lake

Water Chemistry Parameters	Observed Value 2015	Standard
Total Suspended Solids	2.86 ± 0.63 mg/L	
Alkalinity	159.40 ± 83.57 mg/L	
Chloride	6.85 ± 3.56 mg/L	
Total Phosphorus	0.016 ± 0.009 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll *a* Content	2.883 ± 2.502 mg/L	
Temperature	20.40 ± 0.14 C	< 25.15 C
pH	8.56 ± 0.33	Between 6.5-8.5
Conductivity	0.372 ± 0.084 spc	
Dissolved Oxygen	8.61 ± 0.36 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.320 ± 0.12 mg/L	< 1.1mg/L
Caffeine	0.007 ± 0.008 µg/L	

To better understand algal bloom events common to Little Lake additional water sampling efforts started at this location in July of 2015. As this location is a lake system the water chemistry is expectedly distinct from the stream systems routinely monitored. Fitting with the algal bloom events observed at this lake the chlorophyll a content is the highest at this lake system. Perhaps, surprisingly, the total phosphorus and total organic nitroen concentrations observed at this site were below the recommended standards to minimize the growth of nuisance vegetation. Such high chlorophyll a content may be contributing to the low nitrogen and phosphorus concentrations, as in stream vegetation will utilize such nutrients to support their biomass production.

The caffeine measurements were the main focus of this new sampling endeavour, in attempts to discern the effect of local septic systems in algal bloom events at Little Lake. Lake caffeine concentrations were determined twice throughout 2015, once in August and again in September. During the month of August caffeine levels were below detection limits (< 0.005 µg/L), suggesting a minimal influence of local septic systems during that month. In September caffeine levels increased to 0.015 µg/L, indicating there was a detectable impact of human septic systems on the lake during this month. These trends demonstrate that human septic systems have a variable effect on the water chemistry of Little Lake, that changes throughout the growing season.