

Stream Water Chemistry Report Summary

Stream Name: Swan Lake Drain

Water Chemistry Parameters	Observed Value		Standard
	2013	2014	
Total Suspended Solids	7.33 ± 1.80 mg/L	6.17 ± 1.67 mg/L	< 11.2 mg/L
Alkalinity	252.67 ± 18.49 mg/L	224.14 ± 17.12 mg/L	< 224.83 mg/L
Chloride	7.97 ± 1.45 mg/L	10.57 ± 1.37 mg/L	
Total Phosphorus	0.028 ± 0.004 mg/L	0.021 ± 0.004 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	0.535 ± 0.12 mg/L	0.366 ± 0.12 mg/L	
Temperature	16.38 ± 2.75 C	11.28 ± 2.51 C	< 25.15 C
pH	8.23 ± 0.39	7.88 ± 0.12	Between 6.5-8.5
Conductivity	0.400 ± 0.10 spc	0.491 ± 0.09 spc	
Dissolved Oxygen	6.90 ± 1.06 mg/L	8.81 ± 0.97 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.762 ± 0.09 mg/L	0.586 ± 0.08 mg/L	< 1.1mg/L

The Swan Lake Drain has the highest water quality of the sites monitored, excluding the reference location. All measured water quality parameters are below the maximum recommended values as of the 2014 season. The total phosphorus values still remain above the more stringent guideline of 0.01 mg/L; however, reference conditions were also above this guideline. As this site has yet to have the cattle exclusion system implemented it is not surprising that there are minimal differences between the two years. The most notable changes are the decreases in chlorophyll *a* content and the total organic nitrogen. Considering that chlorophyll *a* content indicates algal presence is it not surprising that it dropped concurrently with total organic nitrogen. It is likely that the lower nitrogen levels suppressed algal growth, resulting in lower chlorophyll *a* levels. The cause of the decrease in nitrogen is not as clear. It is most likely due to changes in land use within the watershed, such as a decrease in fertilizer use or human recreational activities. This variation could also be natural, representing a summer with more intense storm events than the previous one.

The alkalinity at this site is consistently at or above the recommended guideline of 224.83mg/L. This is likely due to a stronger ground water connection as indicated by a high conductivity value. This stronger ground water connection would increase the concentration of CaCO₃ in solution increasing the measured alkalinity. This suggests that the alkalinity at this site is naturally high as a product of the limestone bedrock that the ground water flows through.