

Stream Water Chemistry Report Summary

Stream Name: Old Woman's River

Water Chemistry Parameters	Observed Value		Standard
	2013	2014	
Total Suspended Solids	8.17 ± 2.44 mg/L	6.88 ± 2.64 mg/L	< 11.2 mg/L
Alkalinity	250.29 ± 16.35 mg/L	257.25 ± 17.66 mg/L	< 224.83 mg/L
Chloride	24.07 ± 2.50 mg/L	22.57 ± 2.70 mg/L	
Total Phosphorus	0.037 ± 0.01 mg/L	0.026 ± 0.01 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	1.24 ± 0.37 mg/L	0.277 ± 0.40 mg/L	
Temperature	14.96 ± 1.61 C	14.00 ± 1.61 C	< 25.15 C
pH	8.00 ± 0.15	7.90 ± 0.13	Between 6.5-8.5
Conductivity	0.475 ± 0.05 spc	0.534 ± 0.05 spc	
Dissolved Oxygen	7.10 ± 0.66 mg/L	7.56 ± 0.66 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.631 ± 0.04 mg/L	0.577 ± 0.04 mg/L	< 1.1mg/L

As of 2014 the Old Woman's River has only marginal signs of human disturbance. The common indicators of disturbance, including total phosphorus, total organic nitrogen, total suspended solids, and chlorophyll *a*, are within applicable recommendations and only marginally above the reference site conditions. Total suspended solids and total organic nitrogen levels have consistently been within guideline conditions, however total phosphorus has not. During the 2014 growing season the average reported total phosphorus value dropped to 0.026 mg/L, rendering it below the more widely used total phosphorus guideline of 0.03 mg/L. Chlorophyll *a* had the most notable decrease between the two years, dropping by approximately 130%. These differences in water chemistry between years may be due to the installation of cattle exclusion systems on this stream starting in July 2014. Comparing the water chemistry in the fall, when late season storms flush contaminants into streams, many of the differences between years are starker. Specifically, total suspended solids, total phosphorus, chlorophyll *a* and total organic nitrogen dropped by 102%, 133%, 27%, and 46% respectively from 2013 to 2014. Continued monitoring is needed to confirm that these changes are due to cattle exclusion and not natural variation within the system between years.

This site also has alkalinity values consistently above the recommended values. This is most likely due to a stronger ground water connection than the reference site, as indicated by higher conductivity values. As this area is rich in limestone, one would expect the ground water to be rich in CaCO₃, the compound measured to determine alkalinity. Thus these high alkalinity values are most likely a natural condition and not due to human disturbance.