

Lake Algonquin

Location

Pond Number: 050276A

Watershed: Upper Hudson River

County: Hamilton

Topographic Quadrangle: Lake Pleasant

Sample Site

Latitude: 43° 23.454'

Longitude: 74° 17.802'

Morphometry

Surface Area: 224 Ac.

Mean Depth: 5 Ft.

Maximum Depth: 11 Ft.

Volume: 10,473 Ac./Ft.

Watershed Area: 7,280 Ac.

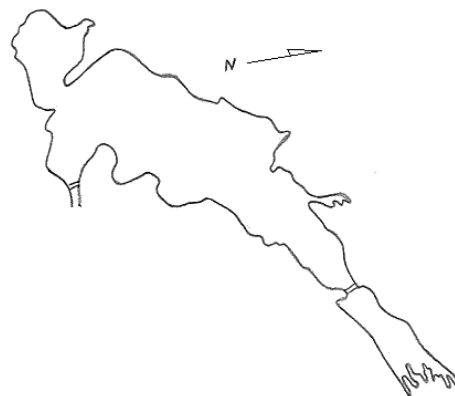
Hydraulic Retention Time: 0.04 Yr.

Shoreline Length: 6.1 Mi.

Elevation: 981 Ft.

Water Quality Classification: AA

Trophic State: Mesotrophic



Temperature and Dissolved Oxygen

Lake Algonquin had a minimum DO of 6.0 mg/L, with a minimum temperature of 4.0°C and a maximum temperature of 25.4°C.

pH

Figure 94 presents the seasonal mean pH trend in Lake Algonquin, while Table 73 presents descriptive statistics for pH in Lake Algonquin. The pH in Lake Algonquin exhibited an increasing trend from 1996 to 1999, followed by fluctuations in pH. The pH in Lake Algonquin was similar to the county average.

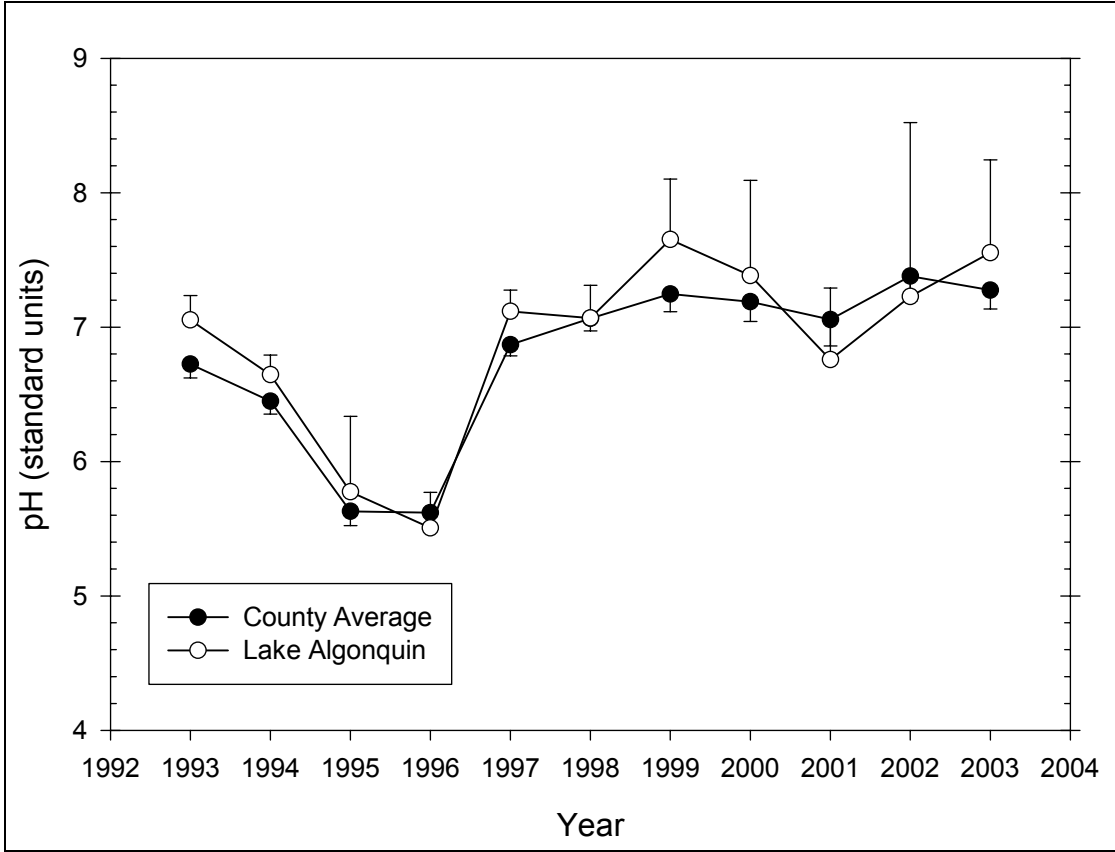


Figure 94 Seasonal mean pH trend in Lake Algonquin

Table 73 – Descriptive Statistics for pH in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	7.054	0.146	0.0653	0.181
1994	6	0	6.647	0.139	0.0568	0.146
1995	6	0	5.775	0.534	0.218	0.561
1996	6	1	5.506	0.214	0.0955	0.265
1997	6	0	7.118	0.149	0.0607	0.156
1998	6	0	7.068	0.231	0.0944	0.243
1999	5	0	7.652	0.362	0.162	0.450
2000	6	0	7.383	0.675	0.276	0.708
2001	4	0	6.758	0.335	0.168	0.534
2002	4	0	7.228	0.813	0.407	1.294
2003	5	0	7.554	0.556	0.249	0.691
Year	Range	Max	Min	Median	25%	75%
1993	0.360	7.290	6.930	7.030	6.938	7.133
1994	0.370	6.830	6.460	6.655	6.530	6.750
1995	1.640	6.580	4.940	5.750	5.630	6.000
1996	0.520	5.800	5.280	5.430	5.348	5.688
1997	0.350	7.250	6.900	7.195	6.960	7.210
1998	0.640	7.520	6.880	7.015	6.930	7.050
1999	0.910	8.020	7.110	7.740	7.395	7.930
2000	1.790	8.470	6.680	7.230	6.820	7.870
2001	0.820	7.170	6.350	6.755	6.540	6.975

2002	1.820	7.890	6.070	7.475	6.670	7.785
2003	1.260	8.110	6.850	7.870	7.015	7.930
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.305	1.638	0.229	0.453	35.270	248.880
1994	-0.0805	-1.309	0.149	0.752	39.880	265.166
1995	-0.104	1.553	0.226	0.393	34.650	201.532
1996	0.594	-1.465	0.239	0.404	27.530	151.763
1997	-0.940	-1.455	0.327	0.043	42.710	304.135
1998	1.995	4.373	0.365	0.012	42.410	300.035
1999	-0.857	-0.0688	0.196	0.615	38.260	293.290
2000	0.843	-0.187	0.245	0.295	44.300	329.359
2001	0.0444	1.390	0.223	0.548	27.030	182.993
2002	-1.446	1.949	0.271	0.341	28.910	210.932
2003	-0.550	-2.578	0.315	0.109	37.770	286.553

Alkalinity

Figure 95 presents the seasonal mean alkalinity trend in Lake Algonquin, while Table 74 presents descriptive statistics for alkalinity in Lake Algonquin. The alkalinity in Lake Algonquin did not exhibit any particular trend. The alkalinity in Lake Algonquin was slightly higher than the county average, though this difference was not statistically significant.

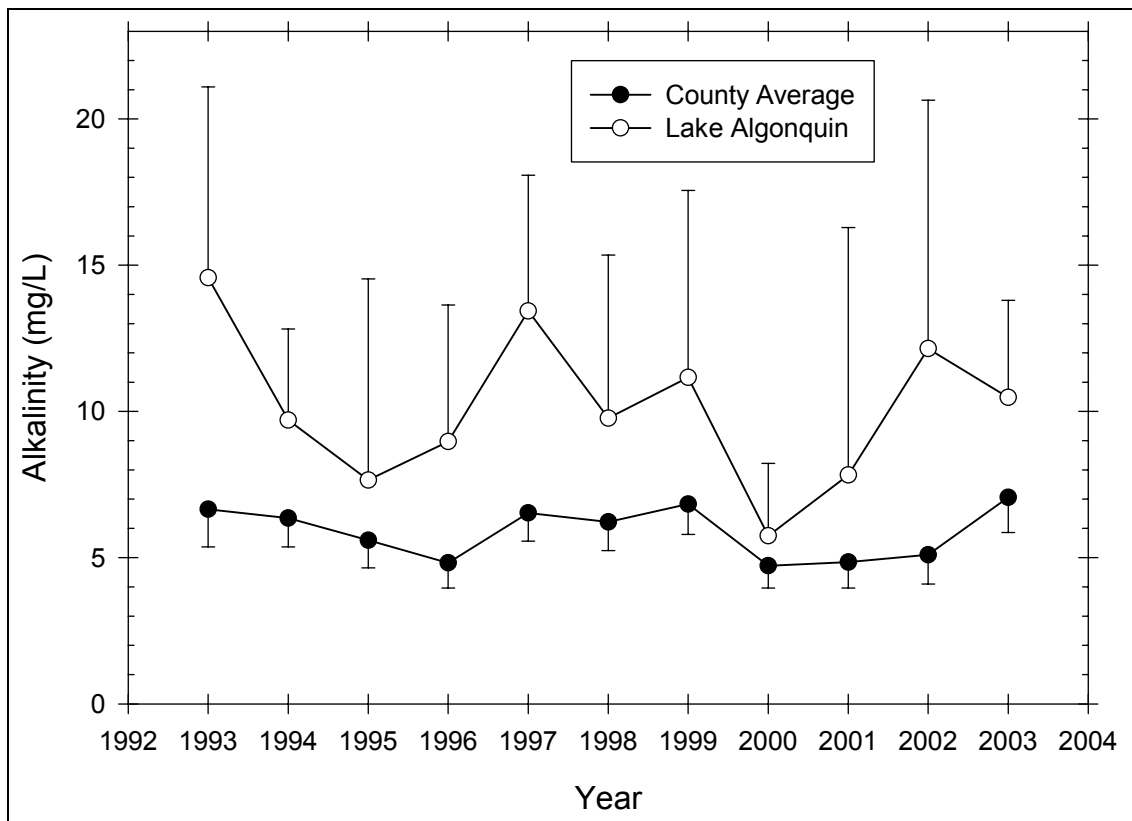


Figure 95 Seasonal mean alkalinity trend in Lake Algonquin

Table 74 – Descriptive Statistics for Alkalinity in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	5	1	14.575	4.099	2.050	6.523
1994	6	0	9.700	2.972	1.213	3.119
1995	6	0	7.650	6.560	2.678	6.885
1996	6	0	8.967	4.454	1.818	4.674
1997	6	0	13.433	4.423	1.806	4.642
1998	6	0	9.767	5.320	2.172	5.583
1999	6	1	11.160	5.149	2.303	6.393
2000	6	0	5.750	2.357	0.962	2.473
2001	6	2	7.825	5.318	2.659	8.462
2002	6	2	12.150	5.339	2.670	8.496
2003	6	1	10.480	2.672	1.195	3.317
Year	Range	Max	Min	Median	25%	75%
1993	8.700	17.300	8.600	16.200	11.900	17.250
1994	8.200	13.000	4.800	9.950	8.200	12.300
1995	16.600	15.800	-0.800	8.050	1.200	13.600
1996	13.000	15.300	2.300	9.000	7.000	11.200
1997	11.200	17.700	6.500	15.100	9.600	16.600
1998	13.700	15.800	2.100	10.800	5.100	14.000
1999	13.300	17.300	4.000	12.700	7.150	14.525
2000	6.300	9.800	3.500	5.350	3.600	6.900
2001	12.000	15.600	3.600	6.050	4.650	11.000
2002	11.300	16.100	4.800	13.850	8.200	16.100
2003	6.100	13.700	7.600	11.000	7.825	12.575
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-1.691	2.762	0.311	0.190	58.300	900.130
1994	-0.770	0.444	0.167	0.701	58.200	608.700
1995	-0.127	-1.528	0.182	0.636	45.900	566.330
1996	-0.130	0.225	0.163	0.715	53.800	581.600
1997	-0.917	-0.772	0.244	0.299	80.600	1180.560
1998	-0.479	-1.342	0.183	0.631	58.600	713.840
1999	-0.437	-0.590	0.218	0.513	55.800	728.780
2000	1.064	0.961	0.209	0.492	34.500	226.150
2001	1.694	3.158	0.356	0.086	31.300	329.770
2002	-1.200	0.465	0.270	0.343	48.600	676.020
2003	-0.0535	-2.370	0.233	0.435	52.400	577.700

Total Phosphorus

Figure 96 presents the seasonal mean total phosphorus trend in Lake Algonquin, while Table 75 presents descriptive statistics for total phosphorus in Lake Algonquin. The total phosphorus in Lake Algonquin exhibited a decreasing trend from 1993 to 2003. The total phosphorus in Lake Algonquin was similar to the county average.

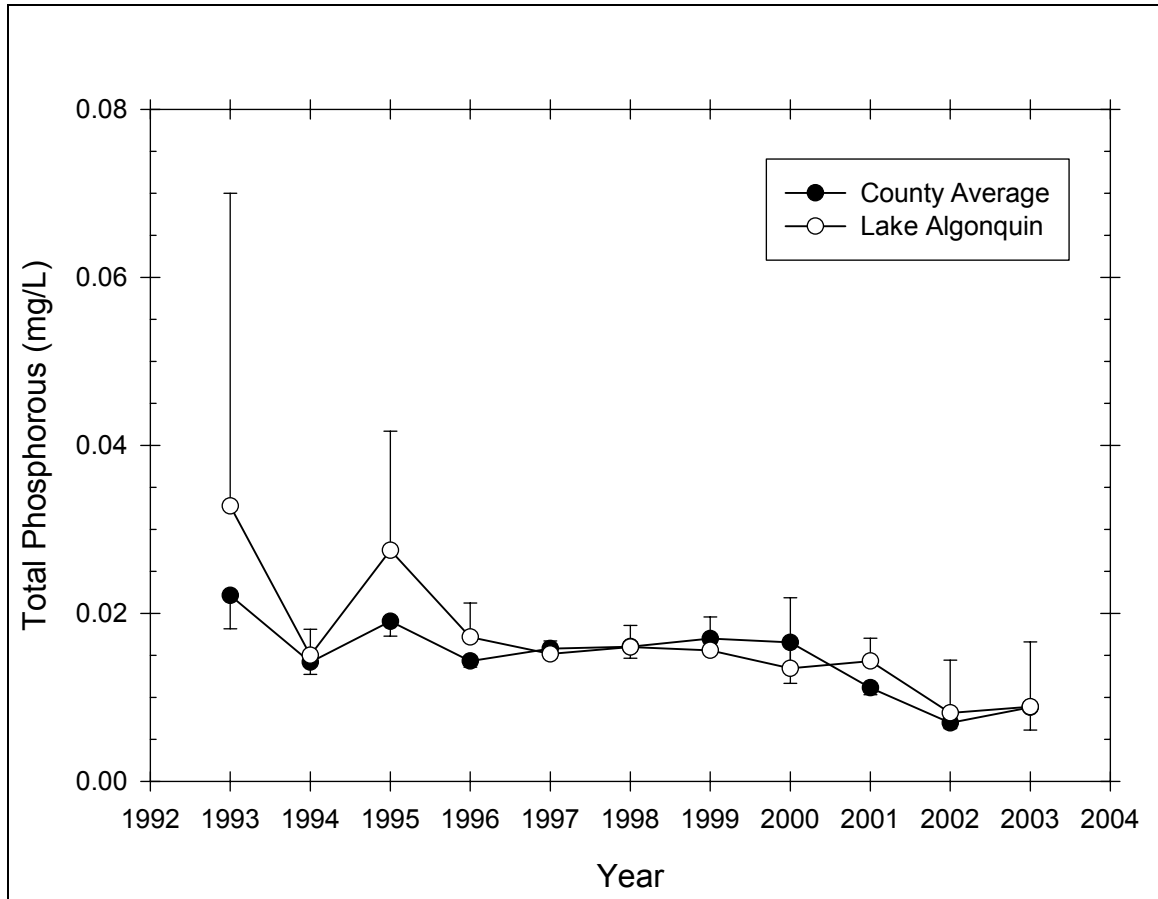


Figure 96 Seasonal mean total phosphorus trend in Lake Algonquin

Table 75 – Descriptive Statistics for Total Phosphorus in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0328	0.0300	0.0134	0.0372
1994	6	0	0.0150	0.00297	0.00121	0.00311
1995	6	0	0.0275	0.0135	0.00551	0.0142
1996	6	0	0.0172	0.00387	0.00158	0.00406
1997	6	0	0.0152	0.00147	0.000601	0.00154
1998	6	0	0.0160	0.00245	0.001000	0.00257
1999	6	1	0.0156	0.00321	0.00144	0.00398
2000	6	0	0.0134	0.00802	0.00327	0.00842
2001	6	2	0.0143	0.00170	0.000850	0.00270
2002	6	2	0.00815	0.00395	0.00198	0.00629
2003	6	1	0.00888	0.00621	0.00278	0.00772
Year	Range	Max	Min	Median	25%	75%
1993	0.0760	0.0800	0.00400	0.0340	0.00850	0.0470
1994	0.00900	0.0190	0.01000	0.0155	0.0140	0.0160
1995	0.0370	0.0510	0.0140	0.0260	0.0170	0.0310
1996	0.0110	0.0220	0.0110	0.0175	0.0150	0.0200
1997	0.00400	0.0170	0.0130	0.0155	0.0140	0.0160
1998	0.00700	0.0200	0.0130	0.0160	0.0140	0.0170
1999	0.00800	0.0210	0.0130	0.0140	0.0138	0.0173
2000	0.0210	0.0240	0.00300	0.0110	0.00970	0.0220

2001	0.00400	0.0160	0.0120	0.0147	0.0132	0.0155
2002	0.00830	0.0120	0.00370	0.00845	0.00485	0.0115
2003	0.0146	0.0156	0.001000	0.00860	0.00385	0.0147
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.077	1.195	0.257	0.314	0.164	0.00897
1994	-0.690	1.741	0.201	0.534	0.0900	0.00139
1995	1.118	1.173	0.231	0.368	0.165	0.00545
1996	-0.562	0.246	0.149	0.752	0.103	0.00184
1997	-0.418	-0.859	0.214	0.461	0.0910	0.00139
1998	0.612	0.633	0.175	0.668	0.0960	0.00157
1999	1.661	2.712	0.291	0.178	0.0780	0.00126
2000	0.326	-1.176	0.238	0.329	0.0807	0.00141
2001	-1.026	1.395	0.244	0.458	0.0573	0.000829
2002	-0.218	-4.047	0.257	0.402	0.0326	0.000313
2003	-0.149	-2.047	0.213	0.537	0.0444	0.000549

Nitrate

Figure 97 presents the seasonal mean nitrate trend in Lake Algonquin, while Table 76 presents descriptive statistics for nitrate in Lake Algonquin. The nitrate in Lake Algonquin exhibited a decreasing trend from 1996 to 2003. The nitrate in Lake Algonquin was slightly lower than the county average, though this difference was not statistically significant.

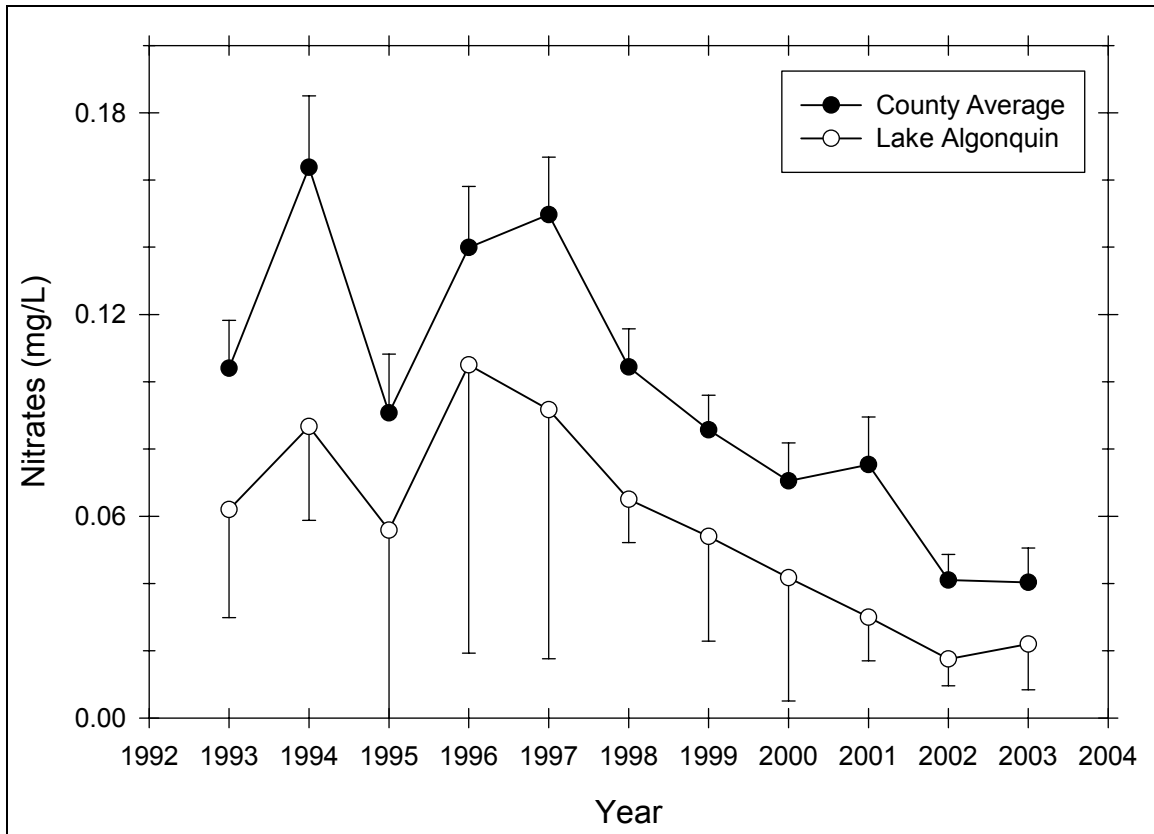


Figure 97 Seasonal mean nitrate trend in Lake Algonquin

Table 76 – Descriptive Statistics for Nitrate in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0620	0.0259	0.0116	0.0321
1994	6	0	0.0867	0.0266	0.0109	0.0279
1995	6	0	0.0558	0.0590	0.0241	0.0619
1996	6	0	0.105	0.0817	0.0333	0.0857
1997	6	0	0.0917	0.0705	0.0288	0.0740
1998	6	0	0.0650	0.0122	0.00500	0.0129
1999	6	1	0.0540	0.0251	0.0112	0.0312
2000	6	0	0.0417	0.0349	0.0142	0.0366
2001	6	2	0.0300	0.00816	0.00408	0.0130
2002	6	2	0.0175	0.00500	0.00250	0.00796
2003	6	1	0.0220	0.0110	0.00490	0.0136
Year	Range	Max	Min	Median	25%	75%
1993	0.0600	0.0900	0.0300	0.0700	0.0375	0.0825
1994	0.0600	0.130	0.0700	0.0700	0.0700	0.110
1995	0.155	0.160	0.00500	0.0400	0.01000	0.0800
1996	0.210	0.260	0.0500	0.0750	0.0500	0.120
1997	0.180	0.220	0.0400	0.0700	0.0400	0.110
1998	0.0300	0.0800	0.0500	0.0700	0.0500	0.0700
1999	0.0600	0.0900	0.0300	0.0600	0.0300	0.0675
2000	0.1000	0.110	0.01000	0.0300	0.0300	0.0400
2001	0.0200	0.0400	0.0200	0.0300	0.0250	0.0350
2002	0.01000	0.0200	0.01000	0.0200	0.0150	0.0200
2003	0.0300	0.0400	0.01000	0.0200	0.0175	0.0250
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-0.363	-2.413	0.221	0.494	0.310	0.0219
1994	1.207	-0.459	0.401	0.003	0.520	0.0486
1995	1.270	1.293	0.228	0.384	0.335	0.0361
1996	1.778	3.265	0.260	0.224	0.630	0.0995
1997	1.458	2.024	0.268	0.193	0.550	0.0753
1998	-0.490	-1.467	0.325	0.047	0.390	0.0261
1999	0.512	-0.612	0.231	0.448	0.270	0.0171
2000	1.997	4.562	0.352	0.019	0.250	0.0165
2001	-1.332E-015	1.500	0.250	0.432	0.120	0.00380
2002	-2.000	4.000	0.441	0.006	0.0700	0.00130
2003	1.293	2.917	0.372	0.022	0.110	0.00290

Chlorophyll a

Figure 98 presents the seasonal mean chlorophyll *a* trend in Lake Algonquin, while Table 77 presents descriptive statistics for chlorophyll *a* in Lake Algonquin. The chlorophyll *a* in Lake Algonquin exhibited an increasing trend from 1998 to 2001. The chlorophyll *a* in Lake Algonquin was generally slightly higher than the county average, though this difference was not statistically significant.

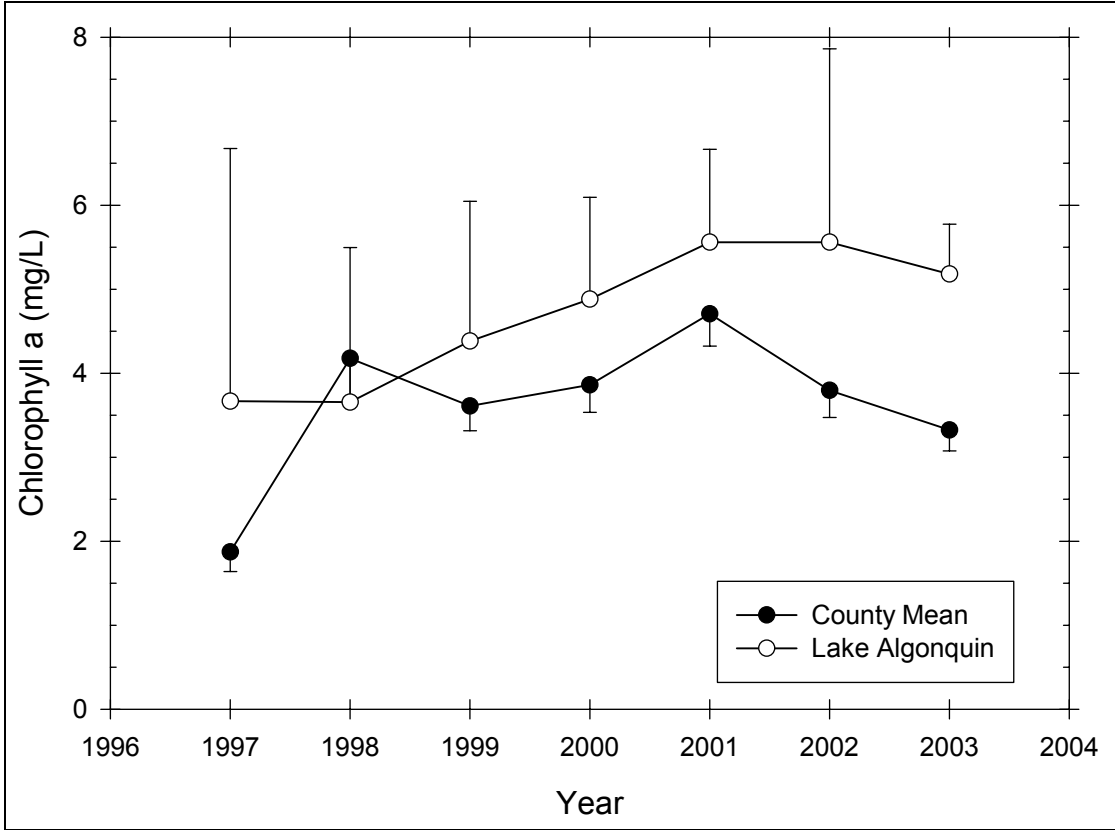


Figure 98 Seasonal mean chlorophyll a trend in Lake Algonquin

Table 77 – Descriptive Statistics for Chlorophyll a in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	3.668	2.866	1.170	3.008
1998	6	0	3.655	1.755	0.717	1.842
1999	6	2	4.383	1.046	0.523	1.665
2000	6	0	4.882	1.155	0.472	1.212
2001	6	2	5.560	0.695	0.347	1.106
2002	6	2	5.560	1.447	0.724	2.303
2003	6	2	5.180	0.374	0.187	0.595
Year	Range	Max	Min	Median	25%	75%
1997	8.450	9.130	0.680	2.895	2.620	3.790
1998	4.280	6.200	1.920	2.930	2.480	5.470
1999	2.420	5.880	3.460	4.095	3.720	5.045
2000	2.620	6.140	3.520	5.100	3.530	5.900
2001	1.520	6.390	4.870	5.490	4.995	6.125
2002	3.440	7.050	3.610	5.790	4.560	6.560
2003	0.750	5.510	4.760	5.225	4.865	5.495
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	1.709	3.827	0.316	0.061	22.010	121.814
1998	0.801	-1.461	0.260	0.225	21.930	95.560
1999	1.456	2.566	0.315	0.175	17.530	80.111
2000	-0.340	-2.129	0.212	0.472	29.290	149.655
2001	0.368	-2.823	0.237	0.491	22.240	125.103

2002	-0.874	1.275	0.236	0.493	22.240	129.940
2003	-0.260	-4.457	0.289	0.267	20.720	107.749

Transparency

Figure 99 presents the seasonal mean transparency trend in Lake Algonquin, while Table 78 presents descriptive statistics for transparency in Lake Algonquin. The transparency in Lake Algonquin did not exhibit any discernible trend. The transparency in Lake Algonquin was significantly lower than the county average.

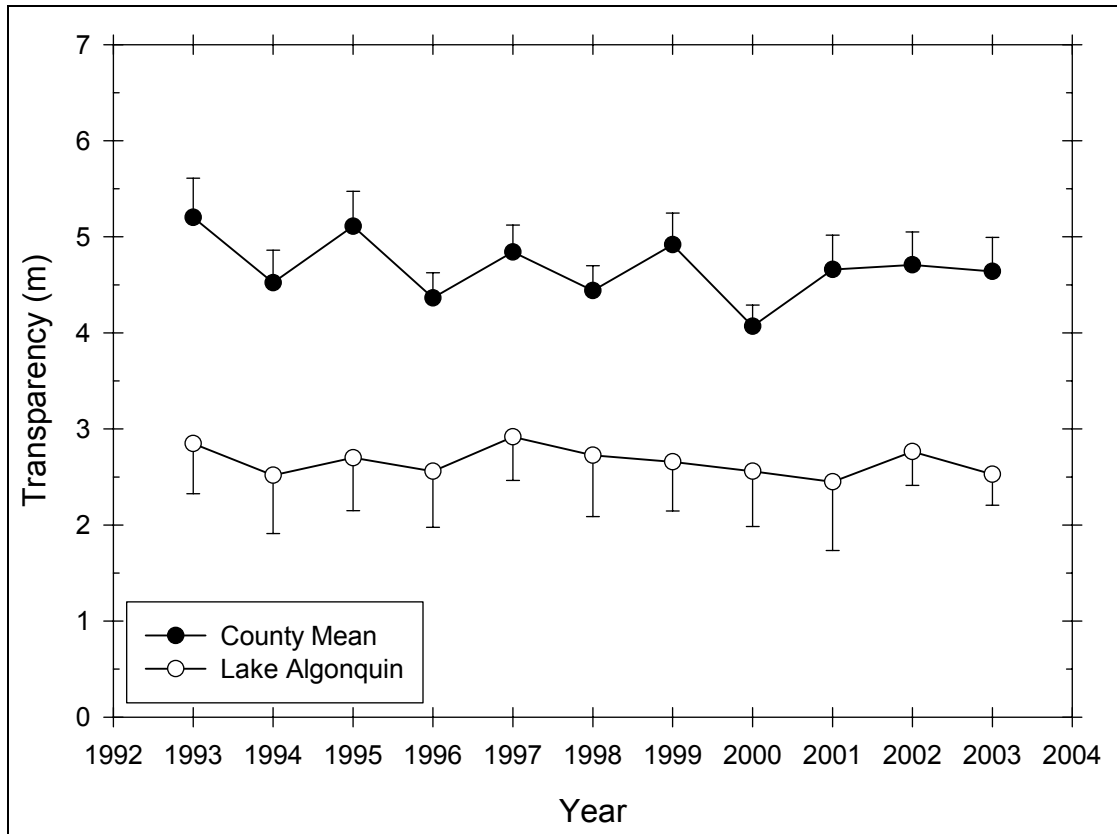


Figure 99 Seasonal mean transparency trend in Lake Algonquin

Table 78 – Descriptive Statistics for Transparency in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	2.848	0.421	0.188	0.522
1994	6	0	2.517	0.578	0.236	0.606
1995	6	0	2.700	0.524	0.214	0.550
1996	6	0	2.558	0.556	0.227	0.584
1997	6	0	2.917	0.432	0.176	0.453
1998	6	0	2.725	0.608	0.248	0.638
1999	5	0	2.658	0.413	0.185	0.513
2000	6	0	2.558	0.548	0.224	0.575
2001	4	0	2.450	0.451	0.225	0.718
2002	4	0	2.763	0.221	0.111	0.352
2003	5	0	2.528	0.261	0.117	0.324

Year	Range	Max	Min	Median	25%	75%
1993	1.060	3.180	2.120	3.030	2.690	3.067
1994	1.400	3.200	1.800	2.400	2.100	3.200
1995	1.400	3.300	1.900	2.825	2.300	3.050
1996	1.380	3.400	2.020	2.500	2.030	2.900
1997	1.200	3.450	2.250	2.910	2.680	3.300
1998	1.500	3.500	2.000	2.775	2.100	3.200
1999	1.060	3.260	2.200	2.580	2.350	2.953
2000	1.200	3.100	1.900	2.600	2.100	3.050
2001	1.100	3.000	1.900	2.450	2.150	2.750
2002	0.450	3.000	2.550	2.750	2.575	2.950
2003	0.600	2.900	2.300	2.400	2.330	2.750
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-1.889	3.797	0.330	0.079	14.240	41.263
1994	0.292	-1.646	0.215	0.458	15.100	39.670
1995	-0.604	-0.808	0.216	0.450	16.200	45.115
1996	0.535	-1.195	0.223	0.415	15.350	40.817
1997	-0.378	-0.144	0.164	0.712	17.500	51.974
1998	-0.0495	-1.912	0.181	0.639	16.350	46.403
1999	0.661	-0.203	0.175	0.693	13.290	36.007
2000	-0.116	-2.907	0.290	0.120	15.350	40.772
2001	-2.665E-015	1.256	0.206	0.614	9.800	24.620
2002	0.130	-4.773	0.269	0.350	11.050	30.672
2003	0.847	-1.430	0.288	0.187	12.640	32.226

TSI

Figure 100 presents the Carlson trophic state index trend in Lake Algonquin. Transparency TSI was in the mesotrophic range throughout the period, while chlorophyll *a* TSI was in the eutrophic range. Total phosphorus TSI exhibited a trend of decreasing values, beginning in the eutrophic range in 1993 and ending in the oligotrophic range by 2002.

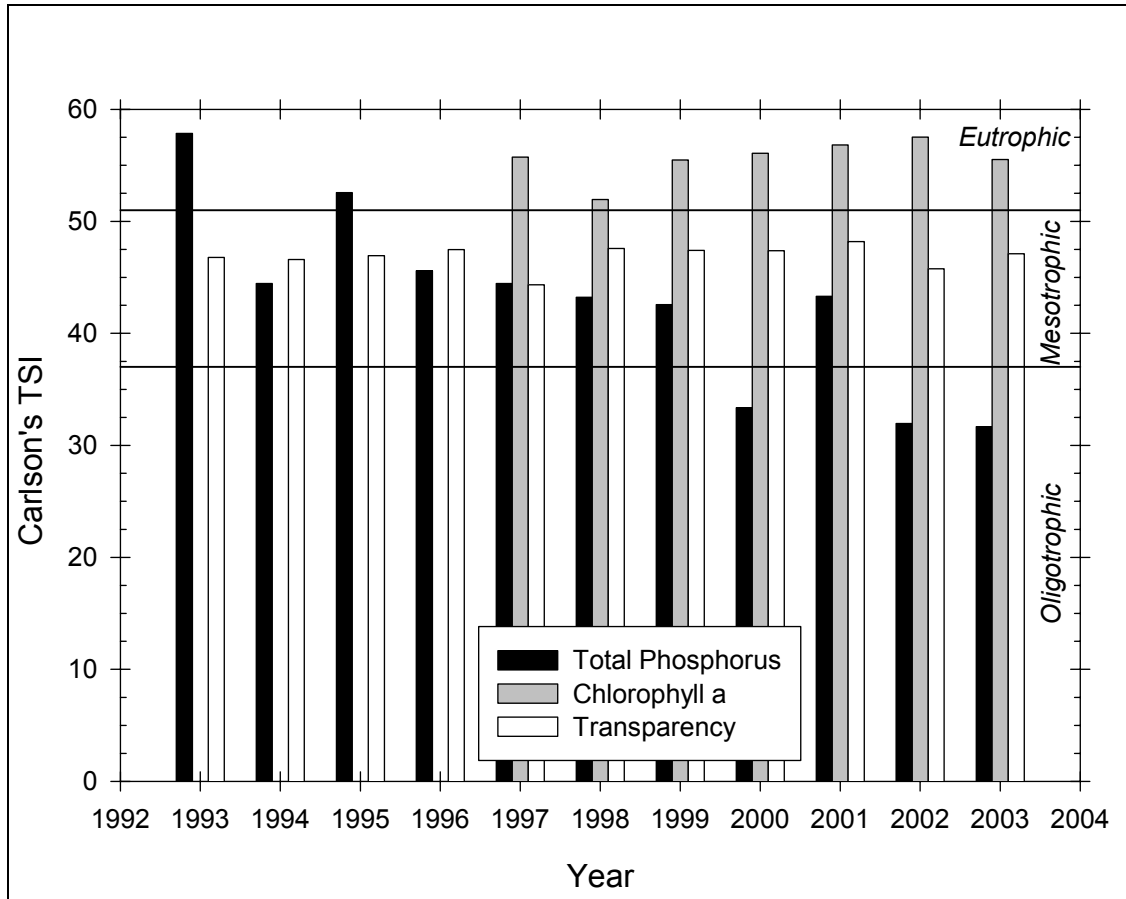


Figure 100 Carlson TSI trend in Lake Algonquin

Aluminum

Figure 101 presents the seasonal mean aluminum trend in Lake Algonquin, while Table 79 presents descriptive statistics for aluminum in Lake Algonquin. The aluminum in Lake Algonquin exhibited a general decreasing trend from 1997 to 2003. The aluminum in Lake Algonquin was similar to the county average.

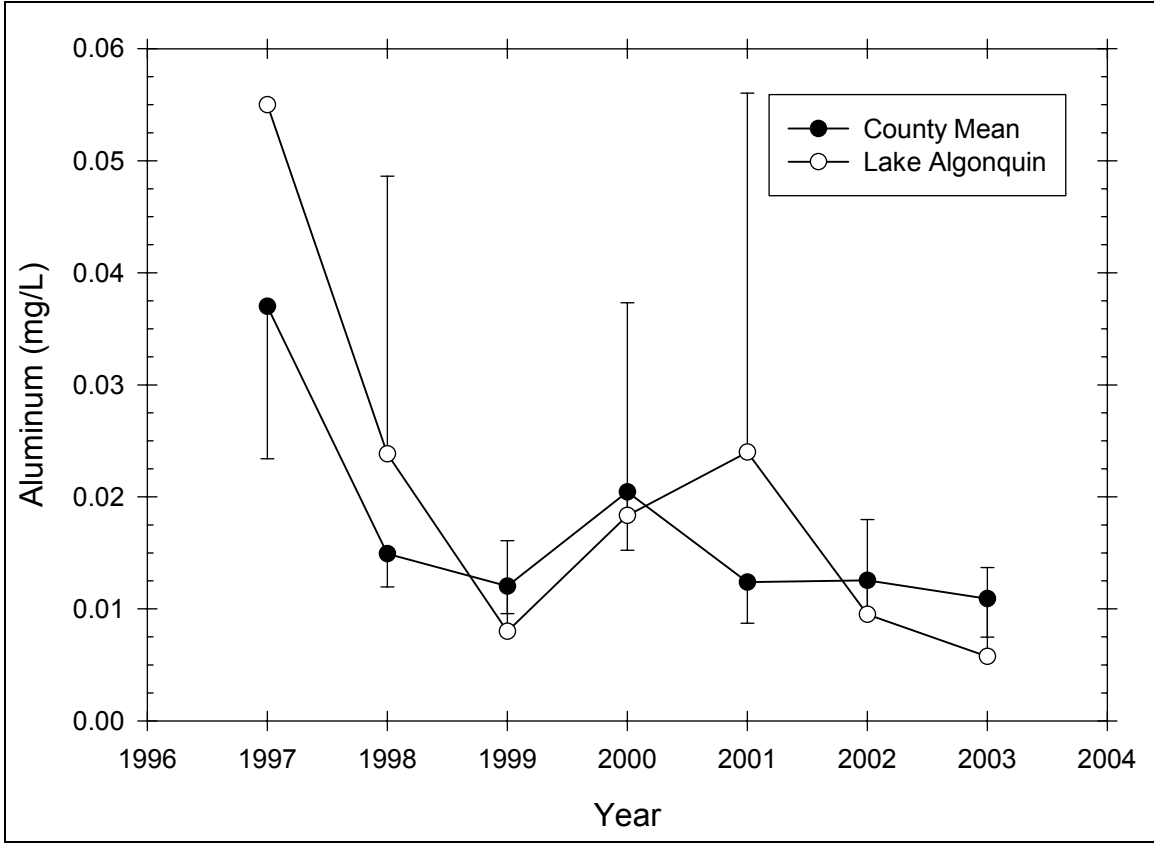


Figure 101 Seasonal mean aluminum trend in Lake Algonquin

Table 79 – Descriptive Statistics for Aluminum in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0550	--	--	--
1998	6	0	0.0238	0.0236	0.00965	0.0248
1999	6	1	0.00800	0.00652	0.00292	0.00809
2000	6	0	0.0183	0.0181	0.00739	0.0190
2001	6	2	0.0240	0.0201	0.0101	0.0320
2002	6	2	0.00950	0.00532	0.00266	0.00847
2003	6	2	0.00575	0.00499	0.00250	0.00794
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0550	0.0550	0.0550	0.0550	0.0550
1998	0.0620	0.0710	0.00900	0.0160	0.00900	0.0220
1999	0.0170	0.0190	0.00200	0.00600	0.00425	0.0107
2000	0.0450	0.0490	0.00400	0.0110	0.00500	0.0300
2001	0.0480	0.0520	0.00400	0.0200	0.0120	0.0360
2002	0.0110	0.0150	0.00400	0.00950	0.00500	0.0140
2003	0.0110	0.0130	0.00200	0.00400	0.00250	0.00900
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	0.0550	0.00302
1998	2.217	5.105	0.364	0.013	0.143	0.00620
1999	1.624	3.096	0.300	0.149	0.0400	0.000490
2000	1.149	0.316	0.269	0.188	0.110	0.00366
2001	1.129	2.227	0.329	0.138	0.0960	0.00352

2002	0.000	-4.655	0.245	0.456	0.0380	0.000446
2003	1.646	2.704	0.310	0.193	0.0230	0.000207

Calcium

Figure 102 presents the seasonal mean calcium trend in Lake Algonquin, while Table 80 presents descriptive statistics for calcium in Lake Algonquin. The calcium in Lake Algonquin exhibited an increasing trend throughout the period of record. The calcium in Lake Algonquin was slightly higher than the county average, though this difference was not statistically significant.

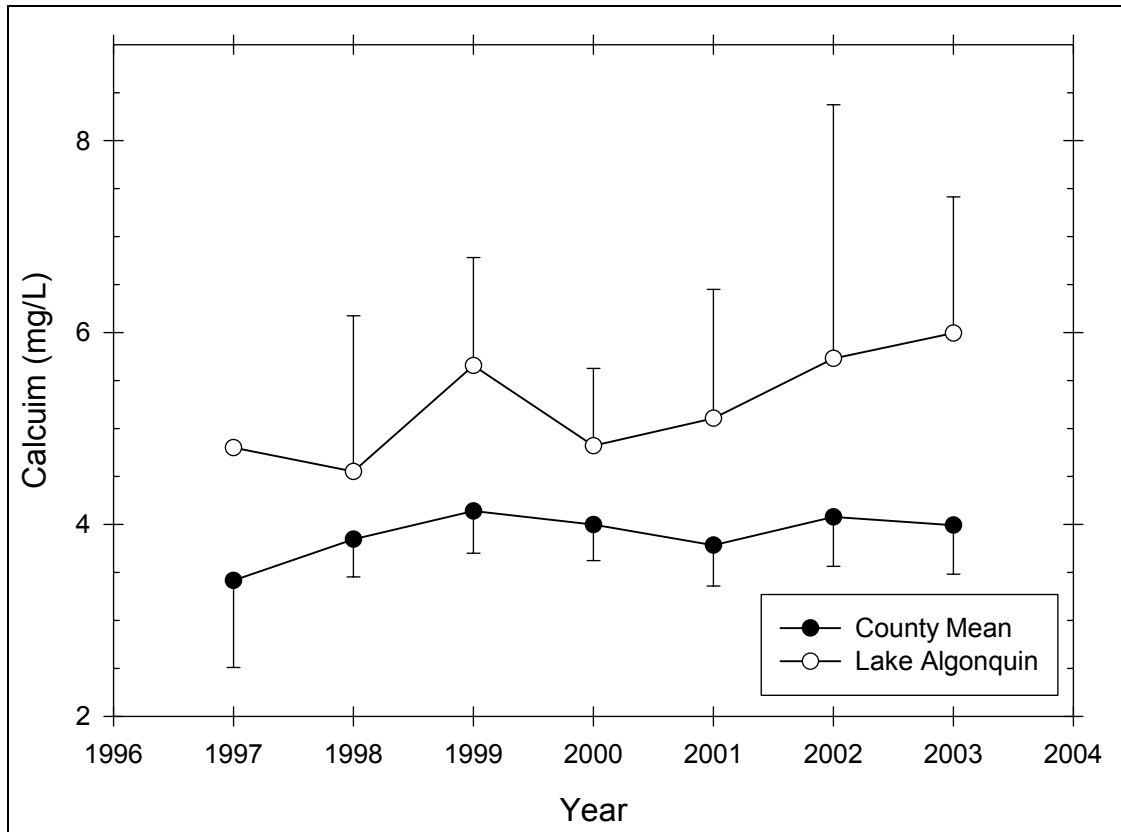


Figure 102 Seasonal mean calcium trend in Lake Algonquin

Table 80 – Descriptive Statistics for Calcium in Lake Algonquin

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	4.800	--	--	--
1998	6	0	4.552	1.545	0.631	1.622
1999	6	1	5.656	0.906	0.405	1.125
2000	6	0	4.818	0.769	0.314	0.807
2001	6	2	5.105	0.845	0.422	1.344
2002	6	2	5.730	1.661	0.831	2.644
2003	6	2	5.992	0.892	0.446	1.420
Year	Range	Max	Min	Median	25%	75%
1997	0.000	4.800	4.800	4.800	4.800	4.800
1998	4.260	6.210	1.950	4.535	4.090	5.990

1999	2.120	6.160	4.040	6.040	5.495	6.085
2000	2.240	6.210	3.970	4.680	4.410	4.960
2001	1.960	5.880	3.920	5.310	4.535	5.675
2002	3.080	7.260	4.180	5.740	4.295	7.165
2003	2.040	6.880	4.840	6.125	5.310	6.675
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	4.800	23.040
1998	-0.827	0.832	0.216	0.452	27.310	136.248
1999	-2.207	4.899	0.440	0.002	28.280	163.233
2000	1.311	2.393	0.260	0.225	28.910	142.252
2001	-1.272	1.895	0.271	0.339	20.420	106.384
2002	-0.00526	-5.840	0.290	0.263	22.920	139.613
2003	-0.687	-0.682	0.204	0.621	23.970	146.029

Calcite Saturation Index

Figure 103 presents the calcite saturation index trend in Lake Algonquin. The CSI in Lake Algonquin was variable throughout the period of record, but remained within the low vulnerability to acid deposition range. The CSI in Lake Algonquin was generally slightly lower than the county average, though this difference was not statistically significant.

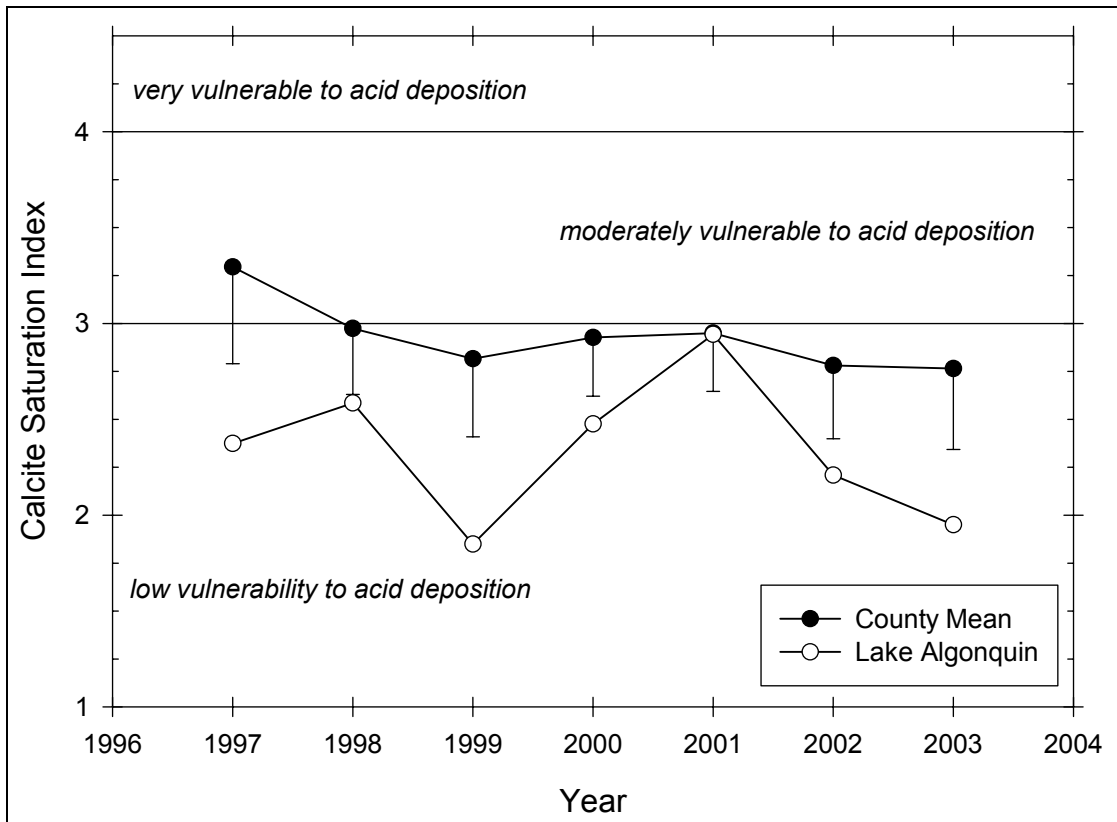


Figure 103 Seasonal mean CSI trend in Lake Algonquin