

## Lake Eaton

### Location

Pond Number: 060248

Watershed: St. Lawrence River

County: Hamilton

Topographic Quadrangle: Blue Mountain

### Sample Site

Latitude: 43° 58.662'

Longitude: 74° 27.837'

### Morphometry

Surface Area: 556 Ac.

Mean Depth: 26 Ft.

Maximum Depth: 56 Ft.

Volume: 14,456 Ac./Ft.

Watershed Area: 3,157 Ac.

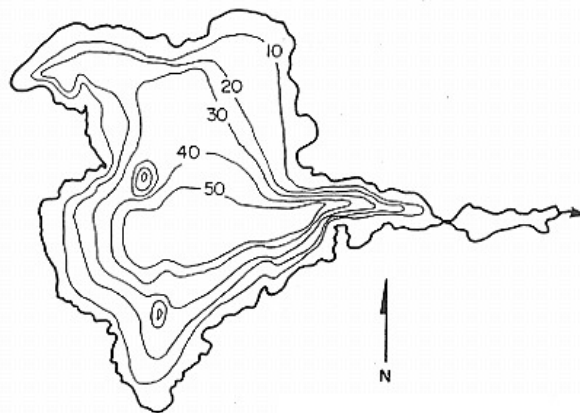
Hydraulic Retention Time: 2.0 Yr.

Shoreline Length: 4.8 Mi.

Elevation: 1,721 Ft.

Water Quality Classification: AA (T)

Trophic State: Oligotrophic



## Temperature and Dissolved Oxygen

Lake Eaton had a minimum DO of 0.2 mg/L (September 1998), with a minimum temperature of 6.0°C and a maximum temperature of 24.9°C. In general, the lowest DO values occurred during the months of August through September.

### pH

Figure 104 presents the seasonal mean pH trend in Lake Eaton, while Table 81 presents descriptive statistics for pH in Lake Eaton. The pH in Lake Eaton exhibited an increasing trend from 1996 to 2002. The pH in Lake Eaton was similar to the county average.

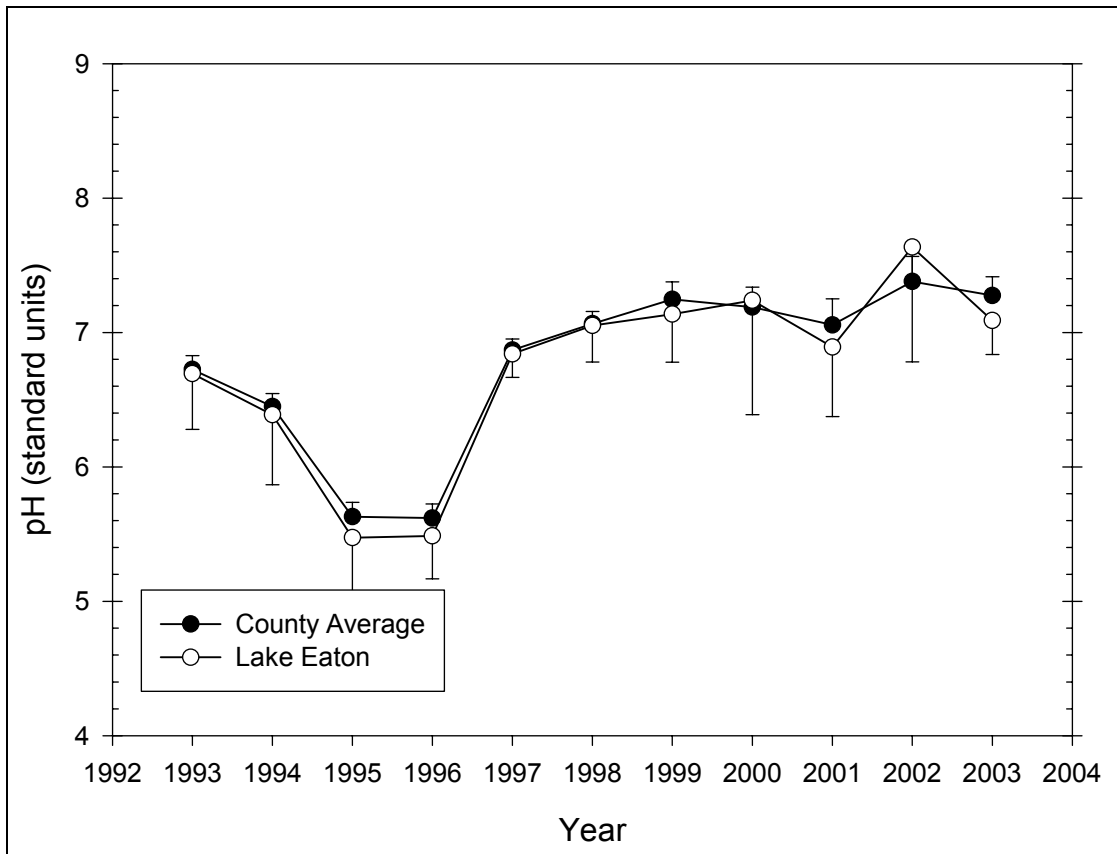


Figure 104 Seasonal mean pH trend in Lake Eaton

Table 81 – Descriptive Statistics for pH in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.694	0.334	0.149	0.415
1994	6	0	6.388	0.496	0.203	0.521
1995	6	0	5.473	0.399	0.163	0.419
1996	6	0	5.487	0.303	0.124	0.318
1997	6	0	6.840	0.166	0.0677	0.174
1998	6	0	7.052	0.258	0.105	0.271
1999	5	0	7.136	0.287	0.128	0.356
2000	5	0	7.240	0.685	0.306	0.850

2001	4	0	6.893	0.325	0.162	0.517
2002	4	0	7.635	0.536	0.268	0.853
2003	4	0	7.090	0.160	0.0799	0.254
<b>Year</b>	<b>Range</b>	<b>Max</b>	<b>Min</b>	<b>Median</b>	<b>25%</b>	<b>75%</b>
1993	0.830	7.170	6.340	6.760	6.393	6.885
1994	1.410	6.980	5.570	6.480	6.100	6.720
1995	1.080	5.970	4.890	5.490	5.180	5.820
1996	0.760	5.820	5.060	5.520	5.240	5.760
1997	0.440	7.100	6.660	6.830	6.680	6.940
1998	0.680	7.440	6.760	6.955	6.910	7.290
1999	0.680	7.480	6.800	7.070	6.913	7.405
2000	1.580	7.900	6.320	7.610	6.612	7.720
2001	0.760	7.350	6.590	6.815	6.680	7.105
2002	1.200	8.420	7.220	7.450	7.310	7.960
2003	0.390	7.290	6.900	7.085	6.985	7.195
<b>Year</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>K-S Dist.</b>	<b>K-S Prob.</b>	<b>Sum</b>	<b>Sum of Squares</b>
1993	0.467	-0.599	0.202	0.586	33.470	224.494
1994	-0.803	0.572	0.224	0.406	38.330	246.095
1995	-0.281	-0.761	0.153	0.743	32.840	180.540
1996	-0.347	-1.665	0.193	0.577	32.920	181.081
1997	0.565	-0.355	0.166	0.704	41.040	280.851
1998	0.739	-0.897	0.276	0.163	42.310	298.689
1999	0.186	-2.203	0.202	0.587	35.680	254.942
2000	-0.668	-2.120	0.305	0.133	36.200	263.964
2001	1.286	2.158	0.290	0.263	27.570	190.343
2002	1.718	3.170	0.349	0.092	30.540	234.035
2003	0.185	1.345	0.225	0.540	28.360	201.149

## Alkalinity

Figure 105 presents the seasonal mean alkalinity trend in Lake Eaton, while Table 82 presents descriptive statistics for alkalinity in Lake Eaton. The alkalinity in Lake Eaton exhibited a slight general increasing trend. The alkalinity in Lake Eaton was slightly lower than the county average, though this difference may not be statistically significant for all years.

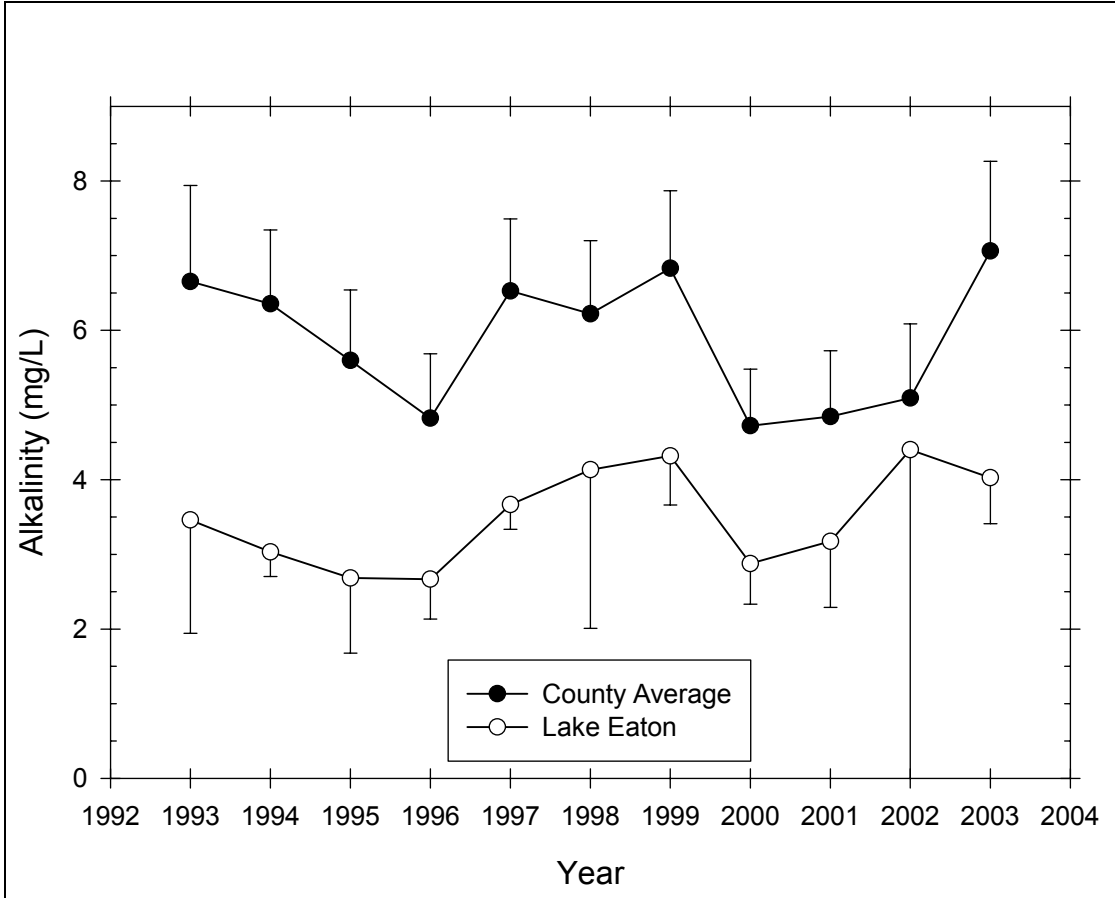


Figure 105 Seasonal mean alkalinity trend in Lake Eaton

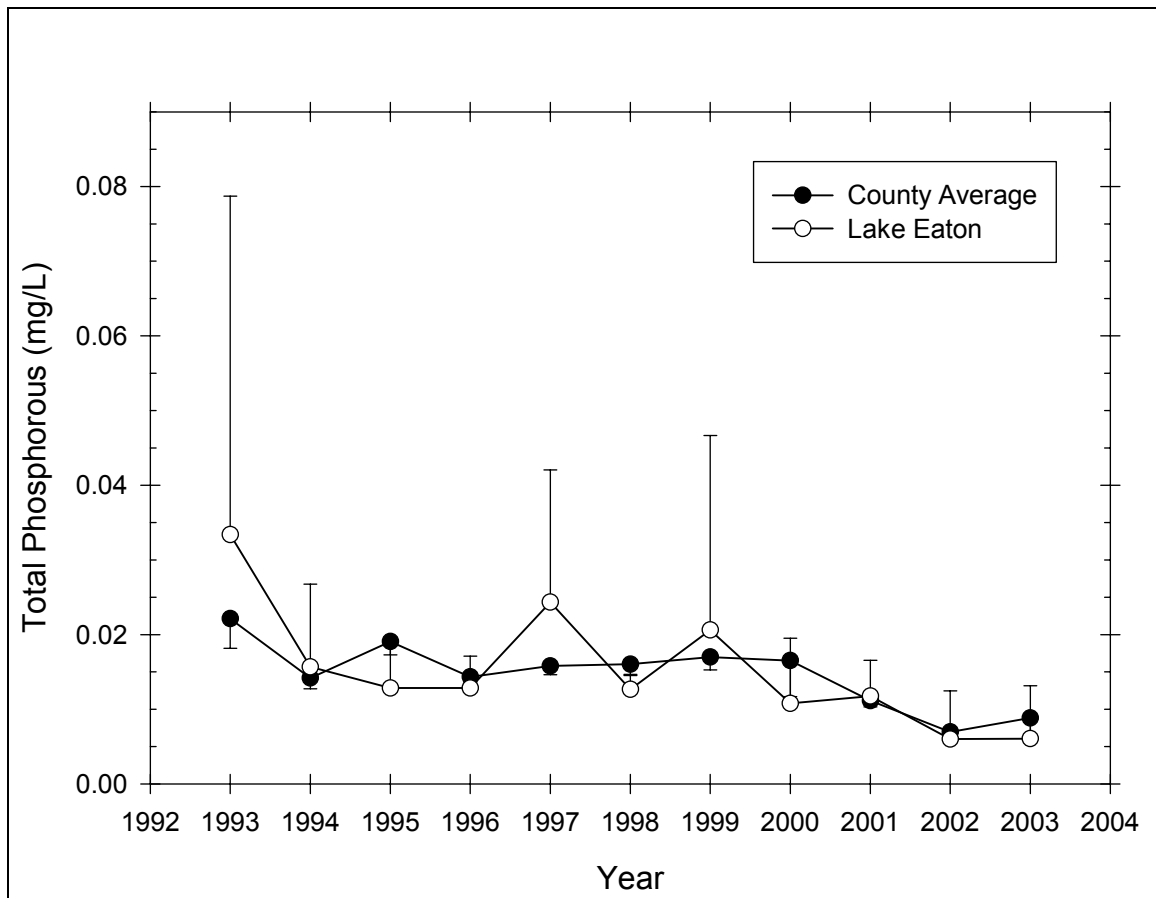
Table 82 – Descriptive Statistics for Alkalinity in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	3.460	1.222	0.546	1.517
1994	6	0	3.033	0.314	0.128	0.330
1995	6	0	2.683	0.958	0.391	1.005
1996	6	0	2.667	0.509	0.208	0.534
1997	6	0	3.667	0.314	0.128	0.330
1998	6	0	4.133	2.023	0.826	2.123
1999	6	1	4.320	0.531	0.237	0.659
2000	6	2	2.875	0.340	0.170	0.542
2001	6	2	3.175	0.556	0.278	0.885
2002	6	2	4.400	2.832	1.416	4.506
2003	6	2	4.025	0.386	0.193	0.615
Year	Range	Max	Min	Median	25%	75%
1993	2.900	4.200	1.300	4.000	3.100	4.125
1994	0.800	3.600	2.800	2.900	2.800	3.200
1995	2.800	3.700	0.900	2.850	2.600	3.200
1996	1.300	3.300	2.000	2.600	2.300	3.200
1997	0.700	4.000	3.300	3.700	3.300	4.000
1998	5.300	7.900	2.600	3.450	2.700	4.700
1999	1.400	5.100	3.700	4.300	3.925	4.650
2000	0.700	3.300	2.600	2.800	2.600	3.150

2001	1.200	4.000	2.800	2.950	2.850	3.500
2002	6.200	8.600	2.400	3.300	2.850	5.950
2003	0.900	4.400	3.500	4.100	3.750	4.300
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-2.110	4.519	0.378	0.019	17.300	65.830
1994	1.514	1.691	0.331	0.039	18.200	55.700
1995	-1.519	3.113	0.299	0.097	16.100	47.790
1996	0.127	-1.457	0.186	0.615	16.000	43.960
1997	-0.237	-1.875	0.212	0.476	22.000	81.160
1998	1.639	2.679	0.229	0.379	24.800	122.960
1999	0.582	0.322	0.167	0.714	21.600	94.440
2000	0.628	-2.492	0.290	0.261	11.500	33.410
2001	1.872	3.577	0.374	0.053	12.700	41.250
2002	1.862	3.607	0.401	0.024	17.600	101.500
2003	-1.002	0.984	0.224	0.544	16.100	65.250

### Total Phosphorus

Figure 106 presents the seasonal mean total phosphorus trend in Lake Eaton, while Table 83 presents descriptive statistics for total phosphorus in Lake Eaton. The total phosphorus in Lake Eaton exhibited a general decreasing trend. The total phosphorus in Lake Eaton was similar to the county average.



**Figure 106** Seasonal mean total phosphorus trend in Lake Eaton

**Table 83 – Descriptive Statistics for Total Phosphorus in Lake Eaton**

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0334	0.0365	0.0163	0.0453
1994	6	0	0.0157	0.0106	0.00432	0.0111
1995	6	0	0.0128	0.00542	0.00221	0.00569
1996	6	0	0.0128	0.00407	0.00166	0.00427
1997	6	0	0.0243	0.0169	0.00689	0.0177
1998	6	0	0.0127	0.00175	0.000715	0.00184
1999	6	1	0.0206	0.0210	0.00939	0.0261
2000	6	1	0.0108	0.00701	0.00314	0.00871
2001	6	2	0.0118	0.00301	0.00150	0.00478
2002	6	2	0.00600	0.00406	0.00203	0.00646
2003	6	2	0.00605	0.00446	0.00223	0.00710
Year	Range	Max	Min	Median	25%	75%
1993	0.0890	0.0940	0.00500	0.0140	0.0110	0.0543
1994	0.0280	0.0370	0.00900	0.0115	0.0110	0.0140
1995	0.0140	0.0210	0.00700	0.0125	0.00800	0.0160
1996	0.0110	0.0210	0.01000	0.0115	0.0110	0.0120
1997	0.0450	0.0550	0.01000	0.0185	0.0120	0.0320
1998	0.00500	0.0160	0.0110	0.0120	0.0120	0.0130
1999	0.0500	0.0580	0.00800	0.0120	0.0110	0.0243
2000	0.0180	0.0190	0.001000	0.0120	0.00550	0.0160
2001	0.00670	0.0160	0.00930	0.0109	0.00965	0.0139
2002	0.00940	0.0117	0.00230	0.00500	0.00325	0.00875
2003	0.00950	0.01000	0.000500	0.00685	0.00245	0.00965
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.579	2.179	0.302	0.142	0.167	0.0109
1994	2.321	5.510	0.396	0.004	0.0940	0.00203
1995	0.476	-1.105	0.199	0.545	0.0770	0.00113
1996	2.262	5.320	0.414	0.002	0.0770	0.00107
1997	1.500	1.982	0.291	0.118	0.146	0.00498
1998	1.763	3.559	0.315	0.064	0.0760	0.000978
1999	2.188	4.841	0.441	0.002	0.103	0.00389
2000	-0.445	-0.633	0.168	0.712	0.0540	0.000780
2001	1.340	1.424	0.247	0.447	0.0471	0.000582
2002	1.282	1.872	0.270	0.346	0.0240	0.000193
2003	-0.597	-2.459	0.267	0.358	0.0242	0.000206

## Nitrate

Figure 107 presents the seasonal mean nitrate trend in Lake Eaton, while Table 84 presents descriptive statistics for nitrate in Lake Eaton. The nitrate in Lake Eaton exhibited a decreasing trend from 1997 to 2002. The nitrate in Lake Eaton was slightly lower than the county average, though this difference was not statistically significant.

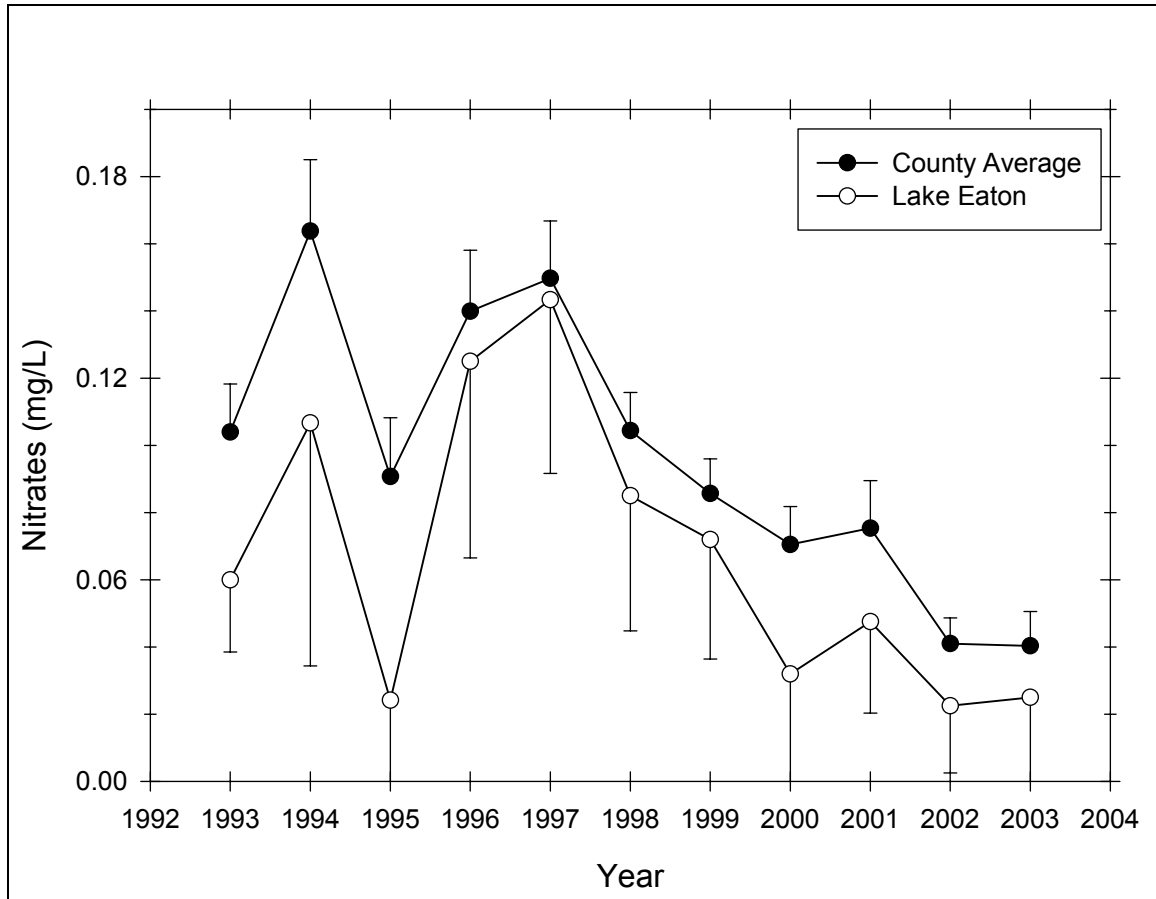


Figure 107 Seasonal mean nitrate trend in Lake Eaton

Table 84 – Descriptive Statistics for Nitrate in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0600	0.0173	0.00775	0.0215
1994	6	0	0.107	0.0689	0.0281	0.0723
1995	6	0	0.0242	0.0287	0.0117	0.0301
1996	6	0	0.125	0.0558	0.0228	0.0585
1997	6	0	0.143	0.0493	0.0201	0.0517
1998	6	0	0.0850	0.0383	0.0157	0.0402
1999	6	1	0.0720	0.0286	0.0128	0.0356
2000	6	1	0.0320	0.0277	0.0124	0.0345
2001	6	2	0.0475	0.0171	0.00854	0.0272
2002	6	2	0.0225	0.0126	0.00629	0.0200
2003	6	2	0.0250	0.0238	0.0119	0.0379
Year	Range	Max	Min	Median	25%	75%
1993	0.0400	0.0900	0.0500	0.0500	0.0500	0.0675
1994	0.170	0.200	0.0300	0.0900	0.0500	0.180
1995	0.0700	0.0700	0.000	0.01000	0.00500	0.0500
1996	0.140	0.210	0.0700	0.110	0.0800	0.170
1997	0.120	0.200	0.0800	0.155	0.0900	0.180
1998	0.0900	0.140	0.0500	0.0750	0.0500	0.120
1999	0.0700	0.110	0.0400	0.0700	0.0475	0.0950
2000	0.0700	0.0800	0.01000	0.0200	0.0175	0.0425

2001	0.0400	0.0700	0.0300	0.0450	0.0350	0.0600
2002	0.0300	0.0400	0.01000	0.0200	0.0150	0.0300
2003	0.0500	0.0500	0.000	0.0250	0.00500	0.0450
<b>Year</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>K-S Dist.</b>	<b>K-S Prob.</b>	<b>Sum</b>	<b>Sum of Squares</b>
1993	1.925	3.667	0.318	0.101	0.300	0.0192
1994	0.519	-1.595	0.262	0.216	0.640	0.0920
1995	1.099	-0.670	0.356	0.017	0.145	0.00763
1996	0.701	-1.108	0.235	0.347	0.750	0.109
1997	-0.390	-1.875	0.206	0.509	0.860	0.135
1998	0.575	-1.701	0.243	0.306	0.510	0.0507
1999	0.307	-1.544	0.179	0.681	0.360	0.0292
2000	1.881	3.773	0.329	0.082	0.160	0.00820
2001	0.753	0.343	0.192	0.657	0.190	0.00990
2002	1.129	2.227	0.329	0.138	0.0900	0.00250
2003	5.921E-016	-4.339	0.236	0.495	0.1000	0.00420

## Chlorophyll *a*

Figure 108 presents the seasonal mean chlorophyll *a* trend in Lake Eaton, while Table 85 presents descriptive statistics for chlorophyll *a* in Lake Eaton. The chlorophyll *a* in Lake Eaton exhibited an increasing trend from 1997 to 2001, followed by a decreasing trend from 2001 to 2003. The chlorophyll *a* in Lake Eaton was slightly lower than the county average, though this difference was not statistically significant.

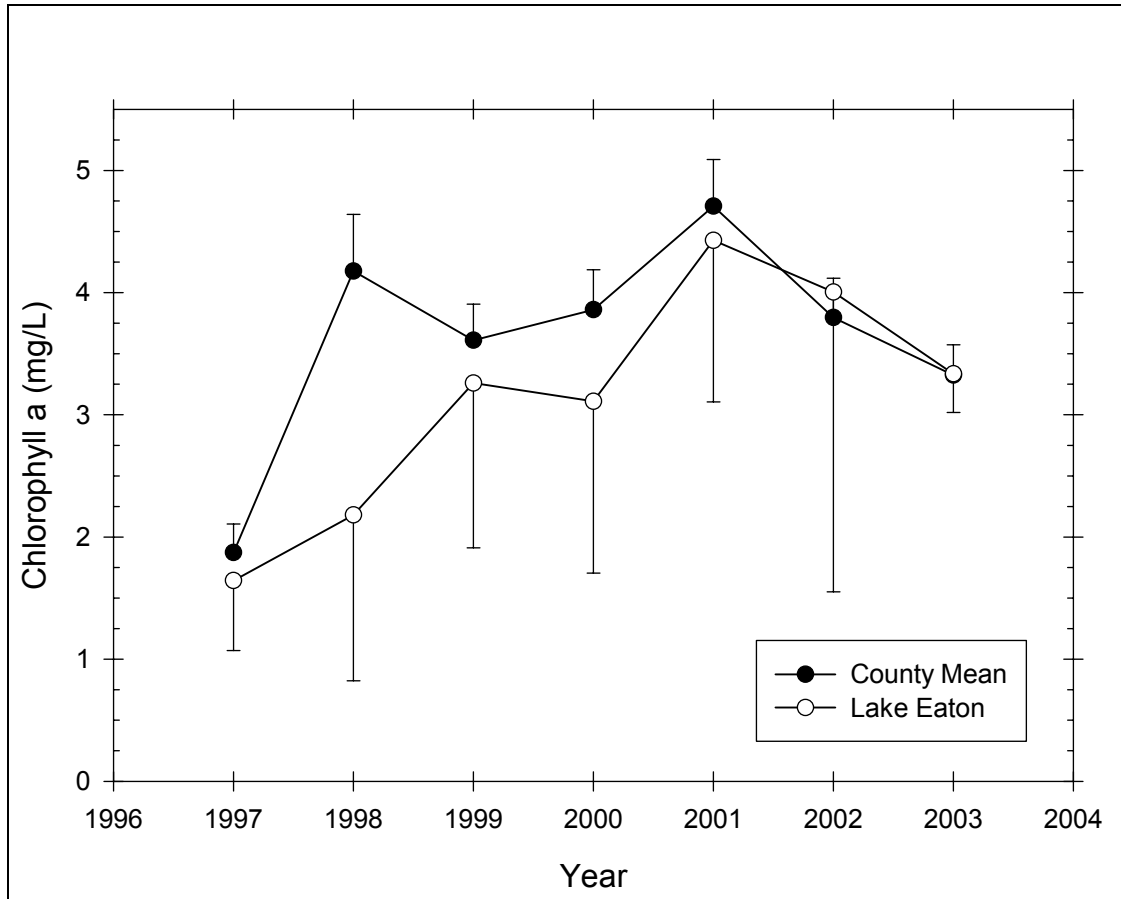


Figure 108 Seasonal mean chlorophyll a trend in Lake Eaton

Table 85 – Descriptive Statistics for Chlorophyll a in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	1.643	0.546	0.223	0.573
1998	6	0	2.180	1.294	0.528	1.358
1999	6	1	3.260	1.086	0.486	1.349
2000	6	1	3.110	1.133	0.507	1.406
2001	6	2	4.427	0.830	0.415	1.321
2002	6	2	4.005	1.542	0.771	2.454
2003	6	2	3.335	0.198	0.0991	0.315
Year	Range	Max	Min	Median	25%	75%
1997	1.210	2.250	1.040	1.570	1.220	2.210
1998	3.580	4.630	1.050	1.790	1.380	2.440
1999	2.670	4.560	1.890	3.660	2.280	3.975
2000	2.570	4.410	1.840	2.800	2.208	4.230
2001	1.660	5.220	3.560	4.465	3.720	5.135
2002	3.330	6.180	2.850	3.495	2.910	5.100
2003	0.420	3.470	3.050	3.410	3.200	3.470
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	0.102	-2.764	0.281	0.146	9.860	17.691
1998	1.739	3.289	0.254	0.254	13.080	36.886
1999	-0.255	-1.716	0.244	0.381	16.300	57.858

2000	0.240	-2.607	0.225	0.474	15.550	53.491
2001	-0.0909	-5.075	0.273	0.330	17.710	80.479
2002	1.388	1.408	0.249	0.437	16.020	71.296
2003	-1.560	2.173	0.280	0.302	13.340	44.607

## Transparency

Figure 109 presents the seasonal mean transparency trend in Lake Eaton, while Table 86 presents descriptive statistics for transparency in Lake Eaton. The transparency in Lake Eaton exhibited no distinct trend. The transparency in Lake Eaton was slightly higher than the county average, though this difference was not statistically significant.

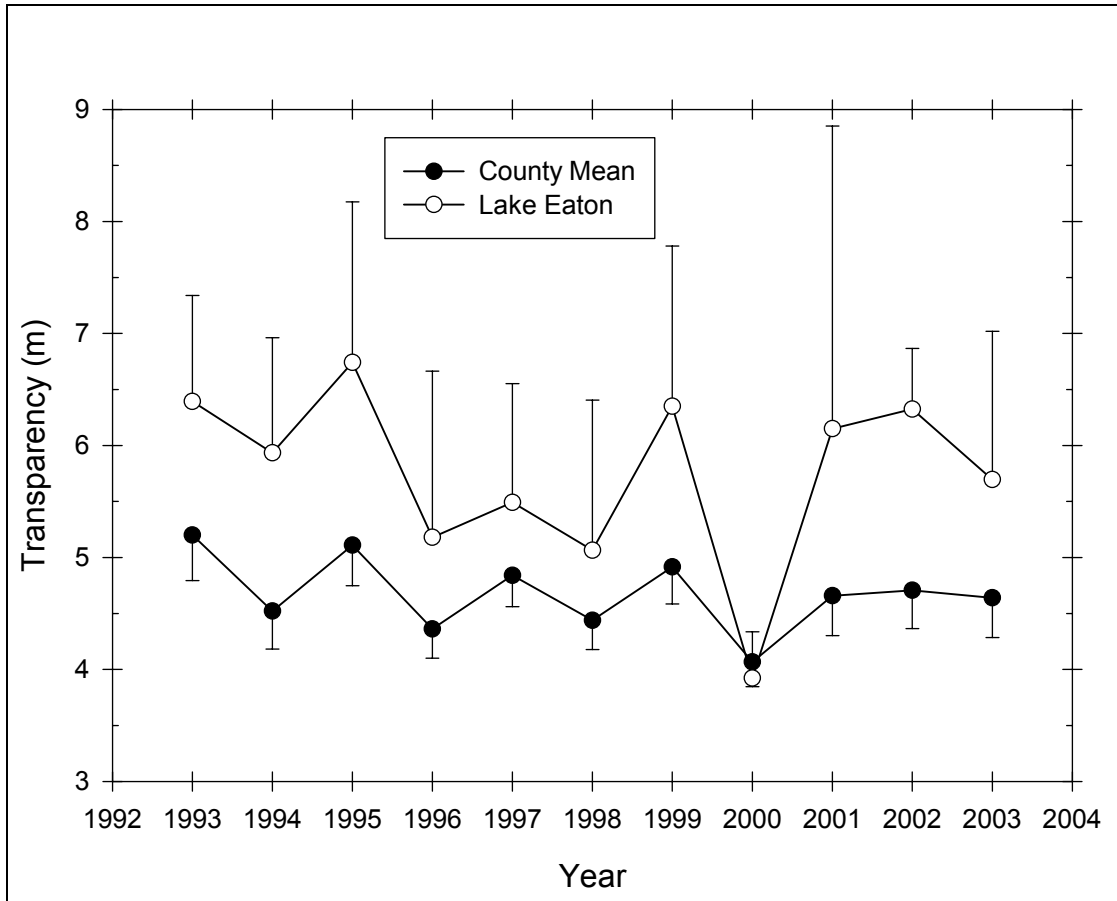


Figure 109 Seasonal mean transparency trend in Lake Eaton

Table 86 – Descriptive Statistics for Transparency in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.394	0.761	0.340	0.945
1994	6	0	5.933	0.981	0.401	1.030
1995	6	0	6.742	1.365	0.557	1.433
1996	6	0	5.180	1.415	0.577	1.484
1997	6	0	5.492	1.011	0.413	1.061
1998	6	0	5.065	1.278	0.522	1.341

1999	5	0	6.350	1.151	0.515	1.430
2000	5	0	3.924	0.332	0.149	0.412
2001	4	0	6.150	1.698	0.849	2.702
2002	4	0	6.325	0.340	0.170	0.542
2003	4	0	5.695	0.833	0.416	1.325
<b>Year</b>	<b>Range</b>	<b>Max</b>	<b>Min</b>	<b>Median</b>	<b>25%</b>	<b>75%</b>
1993	1.820	7.270	5.450	6.670	5.683	6.933
1994	2.300	7.200	4.900	5.850	4.900	6.900
1995	4.050	8.650	4.600	6.700	6.300	7.500
1996	3.470	7.150	3.680	5.115	3.730	6.290
1997	2.680	6.250	3.570	5.925	5.180	6.100
1998	3.580	6.350	2.770	5.225	4.800	6.020
1999	3.230	8.050	4.820	6.330	5.780	6.850
2000	0.890	4.300	3.410	3.900	3.777	4.158
2001	3.700	8.000	4.300	6.150	4.750	7.550
2002	0.800	6.800	6.000	6.250	6.100	6.550
2003	1.700	6.500	4.800	5.740	4.990	6.400
<b>Year</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>K-S Dist.</b>	<b>K-S Prob.</b>	<b>Sum</b>	<b>Sum of Squares</b>
1993	-0.307	-2.107	0.242	0.392	31.970	206.734
1994	0.221	-1.914	0.187	0.610	35.600	216.040
1995	-0.302	0.743	0.207	0.506	40.450	282.023
1996	0.263	-1.666	0.181	0.642	31.080	170.999
1997	-1.826	3.242	0.316	0.061	32.950	186.065
1998	-1.295	1.986	0.251	0.265	30.390	162.088
1999	0.359	1.837	0.265	0.278	31.750	206.916
2000	-0.867	1.343	0.271	0.254	19.620	77.430
2001	1.295E-015	-3.454	0.212	0.591	24.600	159.940
2002	1.199	1.979	0.279	0.305	25.300	160.370
2003	-0.127	-4.725	0.266	0.360	22.780	131.812

## TSI

Figure 110 presents the Carlson TSI trend in Lake Eaton. Transparency TSI was generally in the oligotrophic range, while chlorophyll *a* TSI was in the mesotrophic to eutrophic range. Total phosphorus TSI was generally in the low mesotrophic or oligotrophic range, with two excursions into the eutrophic range, in 1993 and 1997.

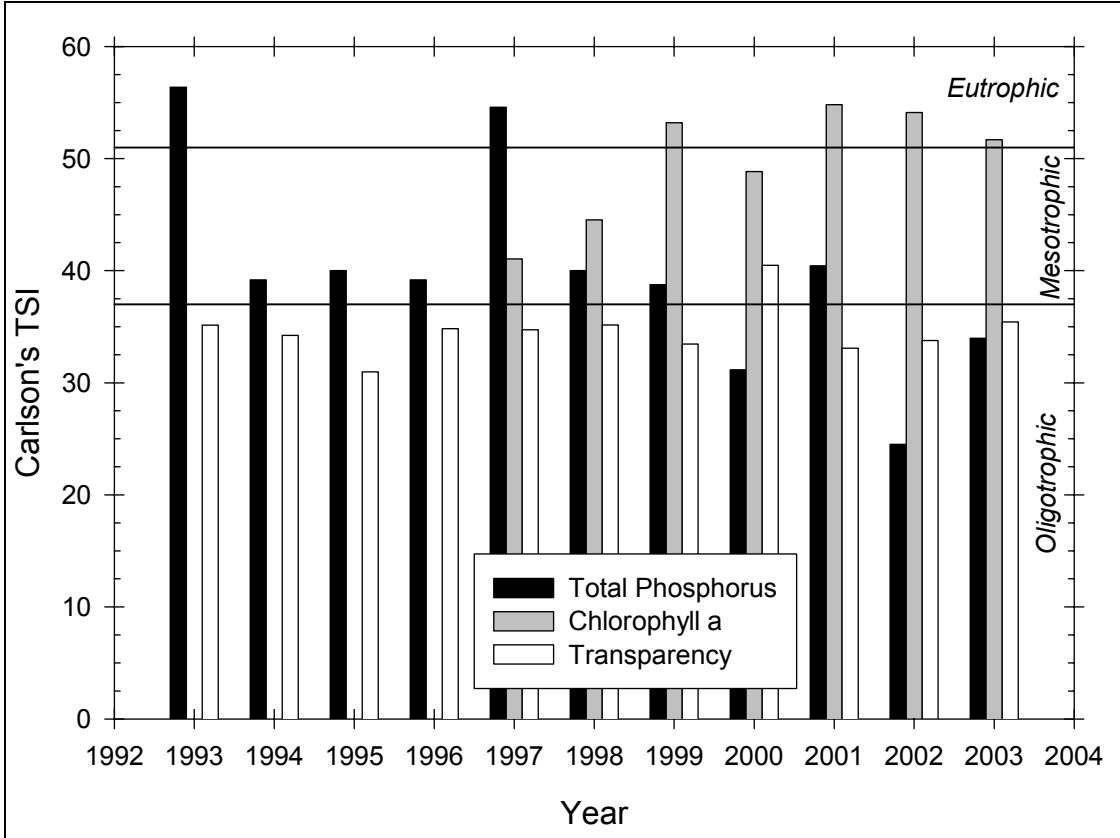


Figure 110 Carlson TSI trend in Lake Eaton

### Aluminum

Figure 111 presents the seasonal mean aluminum trend in Lake Eaton, while Table 87 presents descriptive statistics for aluminum in Lake Eaton. The aluminum in Lake Eaton was generally low and somewhat variable. The aluminum in Lake Eaton was slightly lower than the county average, though this difference was not statistically significant.

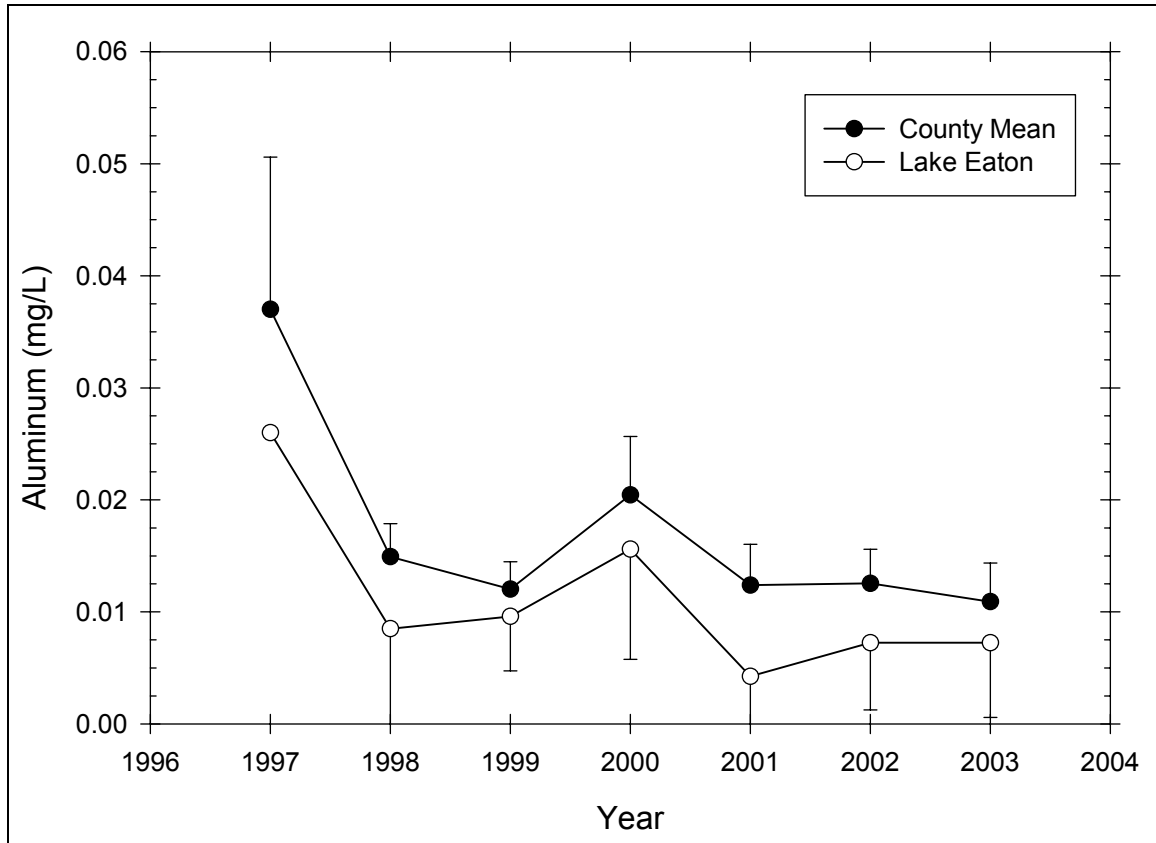


Figure 111 Seasonal mean aluminum trend in Lake Eaton

Table 87 – Descriptive Statistics for Aluminum in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0260	--	--	--
1998	6	0	0.00850	0.00853	0.00348	0.00895
1999	6	1	0.00960	0.00391	0.00175	0.00486
2000	6	1	0.0156	0.00792	0.00354	0.00984
2001	6	2	0.00425	0.00457	0.00229	0.00728
2002	6	2	0.00725	0.00377	0.00189	0.00601
2003	6	2	0.00725	0.00419	0.00210	0.00667
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0260	0.0260	0.0260	0.0260	0.0260
1998	0.0210	0.0220	0.001000	0.00500	0.00200	0.0160
1999	0.01000	0.0130	0.00300	0.01000	0.00825	0.0123
2000	0.0180	0.0250	0.00700	0.0170	0.00775	0.0220
2001	0.01000	0.0110	0.001000	0.00250	0.00150	0.00700
2002	0.00900	0.0110	0.00200	0.00800	0.00500	0.00950
2003	0.01000	0.0130	0.00300	0.00650	0.00450	0.01000
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	0.0260	0.000676
1998	1.006	-0.717	0.282	0.143	0.0510	0.000797
1999	-1.631	3.023	0.341	0.059	0.0480	0.000522
2000	-0.0705	-2.464	0.231	0.444	0.0780	0.00147
2001	1.811	3.380	0.358	0.081	0.0170	0.000135

2002	-1.129	2.227	0.329	0.138	0.0290	0.000253
2003	1.007	1.829	0.274	0.328	0.0290	0.000263

## Calcium

Figure 112 presents the seasonal mean calcium trend in Lake Eaton, while Table 88 presents descriptive statistics for calcium in Lake Eaton. The calcium in Lake Eaton was stable throughout the period of record. The calcium in Lake Eaton was significantly lower than the county average.

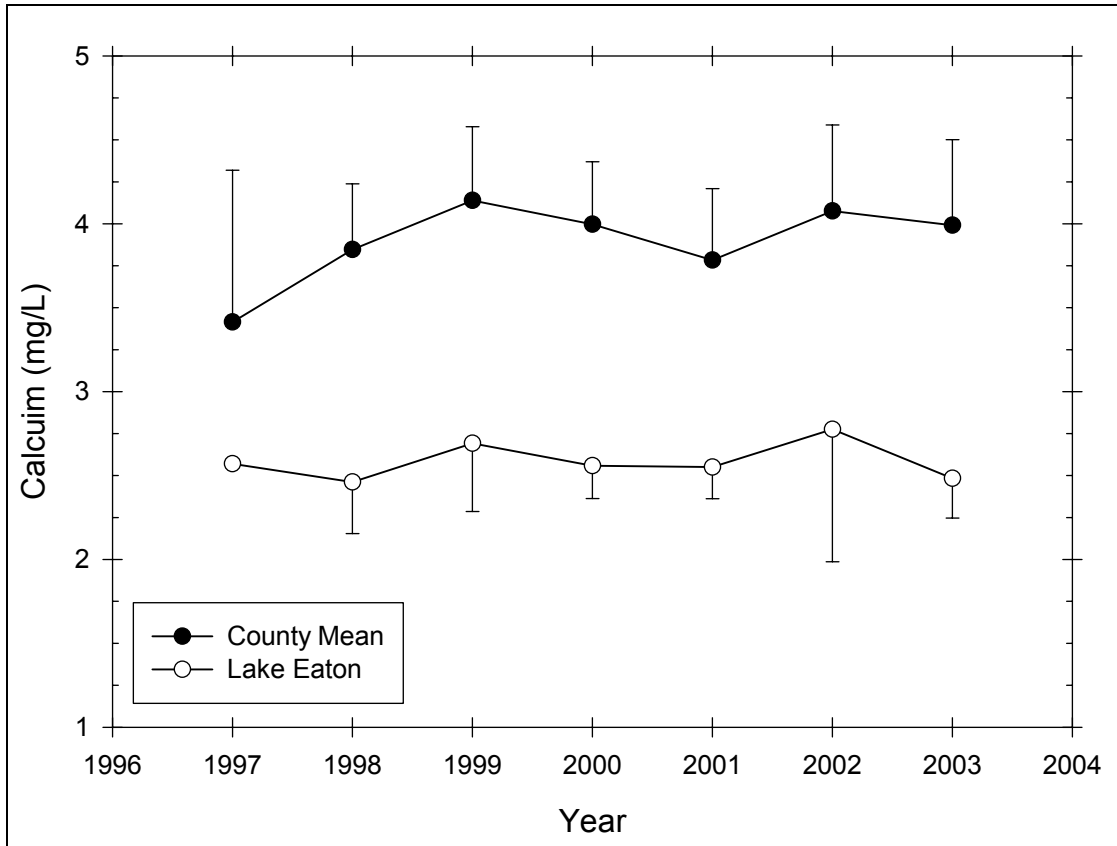


Figure 112 Seasonal mean calcium trend in Lake Eaton

Table 88 – Descriptive Statistics for Calcium in Lake Eaton

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	2.570	--	--	--
1998	6	0	2.462	0.293	0.120	0.308
1999	6	1	2.692	0.328	0.147	0.407
2000	6	1	2.558	0.157	0.0702	0.195
2001	6	2	2.550	0.118	0.0590	0.188
2002	6	2	2.775	0.496	0.248	0.789
2003	6	2	2.483	0.148	0.0742	0.236
Year	Range	Max	Min	Median	25%	75%
1997	0.000	2.570	2.570	2.570	2.570	2.570
1998	0.820	2.710	1.890	2.570	2.440	2.590
1999	0.710	3.050	2.340	2.740	2.362	2.982

2000	0.350	2.720	2.370	2.550	2.423	2.712
2001	0.250	2.720	2.470	2.505	2.470	2.630
2002	1.160	3.470	2.310	2.660	2.445	3.105
2003	0.340	2.620	2.280	2.515	2.375	2.590
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	2.570	6.605
1998	-1.984	4.291	0.304	0.088	14.770	36.788
1999	-0.139	-2.838	0.237	0.415	13.460	36.664
2000	-0.0564	-2.525	0.233	0.433	12.790	32.816
2001	1.576	2.247	0.284	0.287	10.200	26.052
2002	1.243	1.985	0.278	0.310	11.100	31.541
2003	-1.069	0.759	0.216	0.575	9.930	24.717

### Calcite Saturation Index

Figure 113 presents the calcite saturation index trend in Lake Eaton. The CSI in Lake Eaton exhibited a general decreasing trend from 1997 to 2003. The CSI in Lake Eaton was slightly higher than the county average, though this difference was not statistically significant.

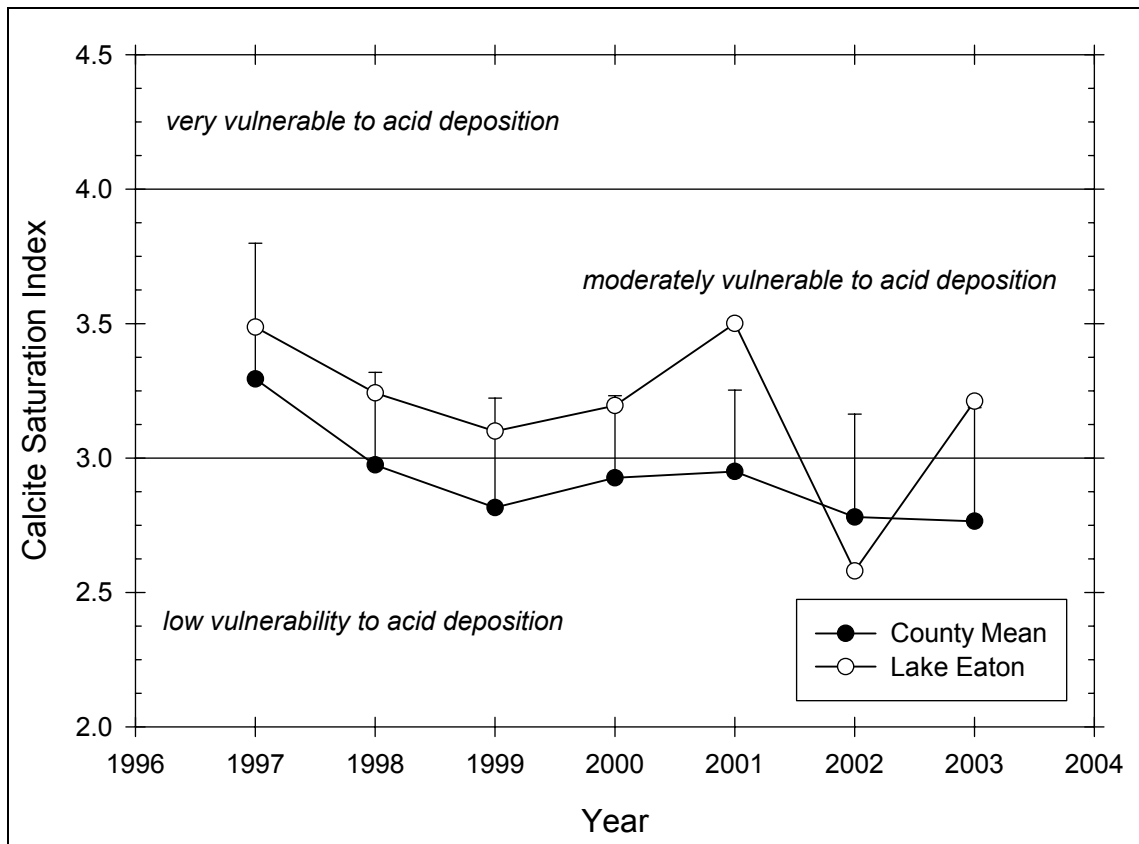


Figure 113 Seasonal mean CSI trend in Lake Eaton