Beaver-2

Beaver-2 Overview

Volunteer monitoring began in the south basin of Beaver Lake (Beaver-2) in the 1980s and continued through 2004. The data collected show that this lake in the city of Sammamish is currently moderate in primary productivity (mesotrophic), with good water quality. The sensitivity of the lake basin to human impact was verified through the Beaver Lake Management Plan and its update (King County 2000).

Beaver-2 has a public access boat ramp, and residents should monitor plants growing nearshore to catch early infestations of Eurasian milfoil, Brazilian elodea or other noxious aquatic weeds.

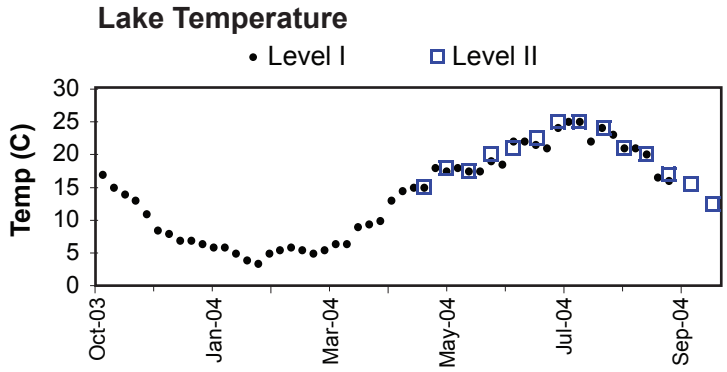
Lake Temp, Secchi Depth, Lake Level and Precip

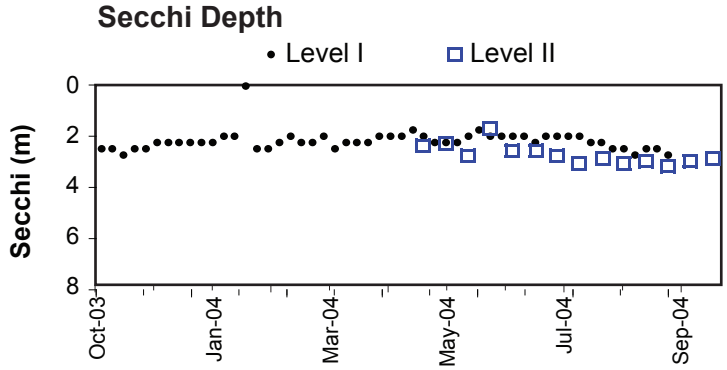
Secchi transparency remained relatively steady through the year, ranging from 1.5 to 3.2 m, significantly deeper than Beaver-1. The summer average of 2.7 m placed in the middle of the range for monitored lakes in 2004. Surface water temperatures ranged from 3.5 to 25.0 degrees Celsius, with the maximum in the mid range of the group for highest recorded temperature.

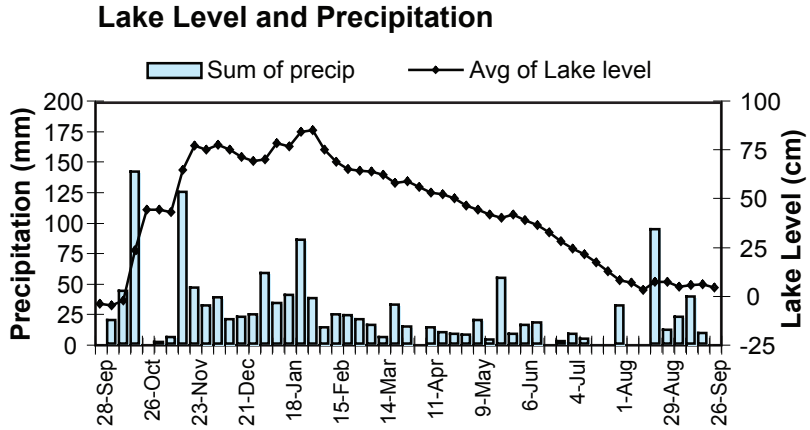
Water levels followed the typical regional pattern of increasing through fall to a winter high stand, then decreasing throughout the summer. There was only a small sensitivity to large rain events, with the exception of the large fall storms of 2003.

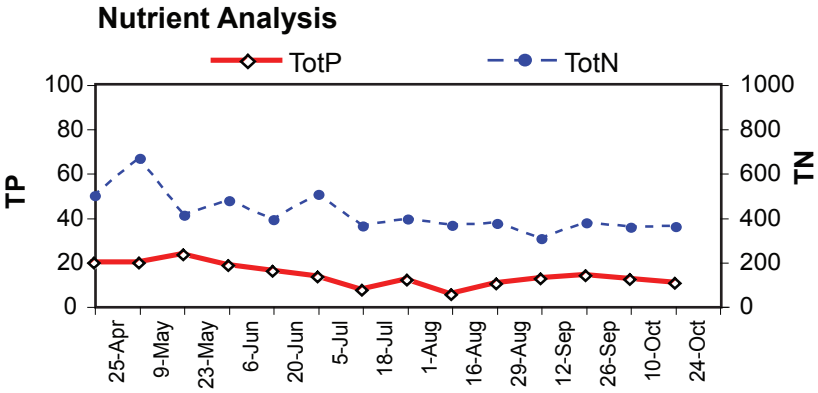
Nutrient Analysis and TSI Ratings

Total phosphorus and total nitrogen remained fairly constant over the period of measurement, with the ratio









ranging from 18 to 73, averaging 34 which suggested generally poor conditions for nuisance bluegreen growth.

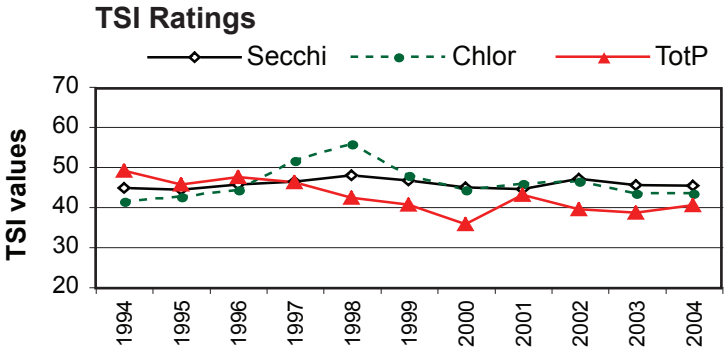
Profile data indicated that thermal stratification remained through the summer, but phosphorus build-up in the deep water was relatively minor. The chlorophyll data suggested that the most algae remained at shallow depths.

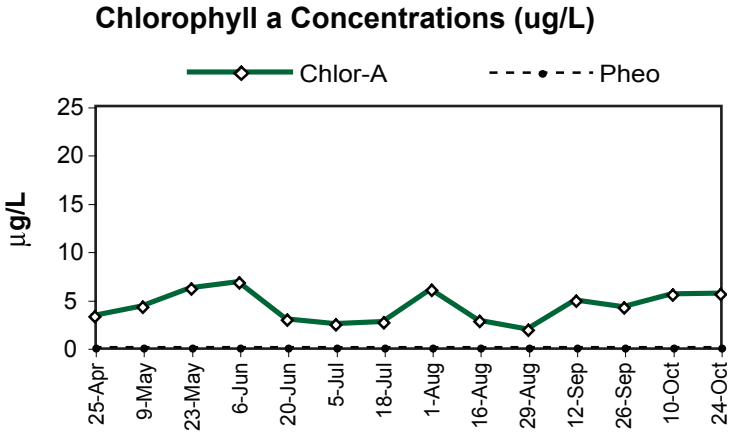
In 2004 the TSI-TP was lower than the other two indicators, similar to values since 1998. The values for TSI-chlor and TSI-Secchi have tracked each other closely since 1999. Beaver-2 continued to be in the mid-mesotrophic range.

Chlorophyll Concentrations and Algae

Chlorophyll content remained at moderately low values with a peak in early June and August, with a slight fall increase. The June peak was caused by an unidentified chrysophyte species accompanied by the colonial bluegreen *Woronichinia*, while the August peak was characterized by the unidentified chrysophyte accompanied by the bluegreen *Aphanizomenon flos-aquae*. Other common algae included the chrysophyte *Dinobryon* and several species of cryptophytes were important through the season.

Date	Secchi	depth-m	degC	Chlor-A	TP µg/L	TN µg/L
5/23/04	2.8	1	17.5	6.09	23.1	412
		7	7.5	<detect	18.1	537
		14	6.5		26.9	562
8/29/04	3.1	1	21.0	1.80	10.1	377
		7	9.0	1.80	16.7	394
		14	7.0		56.2	695





Common Algae

	Group
chrysophyte (unicell)	Chrysophyta
Aphanizomenon flos-aquae	Cyanobacteria
Dinobryon sertularia	Chrysophyta

Beaver-2

2004 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
28-Sep-03	0	5	-5.0	5
5-Oct-03	29	7	-5.2	7
12-Oct-03	37	7	-2.6	7
19-Oct-03	137	7	29.2	7
26-Oct-03	1	7	43.7	7
2-Nov-03	0.05	7	43.3	7
9-Nov-03	14	7	42.1	7
16-Nov-03	115	7	69.4	7
23-Nov-03	47	7	75.4	7
30-Nov-03	33.05	7	74.6	7
7-Dec-03	38	7	76.6	7
14-Dec-03	22	7	73.6	7
21-Dec-03	23	7	70.2	7
28-Dec-03	20.05	7	68.3	7
4-Jan-04	56.05	7	70.7	7
11-Jan-04	41.05	7	77.6	7
18-Jan-04	35	7	75.7	7
25-Jan-04	90.05	7	86.1	7
1-Feb-04	33	7	81.6	7
8-Feb-04	12	7	72.8	7
15-Feb-04	21	7	67.6	7
22-Feb-04	23.05	7	63.9	7
29-Feb-04	27	7	63.2	7
7-Mar-04	8	7	62.8	7
14-Mar-04	5	7	61.1	7
21-Mar-04	35	7	57.6	7
28-Mar-04	11	7	57.6	7
4-Apr-04	0	7	54.5	7
11-Apr-04	13	6	52.4	7
18-Apr-04	9.05	6	51.0	7
25-Apr-04	8	7	48.9	7
2-May-04	10.05	7	45.1	7
9-May-04	18	7	43.3	7
16-May-04	3	7	40.4	7
23-May-04	59	7	40.0	7
30-May-04	2	7	40.5	7
6-Jun-04	21	7	37.9	7
13-Jun-04	10	7	35.2	7
20-Jun-04	0	7	31.4	7
27-Jun-04	2	7	26.9	7
4-Jul-04	12	7	23.4	7
11-Jul-04	0	7	20.0	7
18-Jul-04	0.05	7	15.9	7
25-Jul-04	0	7	11.1	7
1-Aug-04	31	7	7.3	7
8-Aug-04	0	7	5.7	7
15-Aug-04	56	7	2.6	7
22-Aug-04	37.5	7	6.7	7
29-Aug-04	11.05	7	6.1	7
5-Sep-04	26	7	4.0	7
12-Sep-04	38	7	5.3	7
19-Sep-04	5	7	5.1	7
26-Sep-04	1	4	3.5	4
Min	0.0		-5.2	
Max	137.0		86.1	
Total	1286.1			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
5-Oct-03	7:45	2.5	17	NA	NA	20
12-Oct-03	7:45	2.5	15	NA	NA	56
19-Oct-03	8:00	2.8	14.0	NA	NA	14
26-Oct-03	7:45	2.5	13.0	NA	NA	0
2-Nov-03	8:00	2.5	11.0	NA	NA	3
9-Nov-03	7:45	2.3	8.5	NA	NA	6
16-Nov-03	8:00	2.3	8.0	NA	NA	6
23-Nov-03	7:45	2.3	7.0	NA	NA	22
30-Nov-03	8:00	2.3	7.0	NA	NA	0
7-Dec-03	8:30	2.3	6.5	NA	NA	20
14-Dec-03	8:30	2.3	6.0	NA	NA	0
21-Dec-03	8:15	2.0	6.0	NA	NA	26
28-Dec-03	8:30	2.0	5.0	NA	NA	0
4-Jan-04	8:30		4.0			0
11-Jan-04	8:00	2.5	3.5	NA	NA	12
18-Jan-04	8:15	2.5	5.0	NA	NA	16
25-Jan-04	8:15	2.3	5.5	NA	NA	12
1-Feb-04	8:00	2.0	6.0	NA	NA	0
8-Feb-04	7:45	2.3	5.5	NA	NA	6
15-Feb-04	8:00	2.3	5.0	NA	NA	4
22-Feb-04	7:45	2.0	5.5	NA	NA	4
29-Feb-04	7:30	2.5	6.5	NA	NA	2
7-Mar-04	7:45	2.3	6.5	NA	NA	0
14-Mar-04	7:50	2.3	9.0	NA	NA	4
21-Mar-04	7:15	2.3	9.5	NA	NA	4
28-Mar-04	7:30	2.0	10.0	NA	NA	6
4-Apr-04	7:30	2.0	13.0	NA	NA	2
11-Apr-04	7:45	2.0	14.5	NA	NA	6
18-Apr-04	7:45	1.8	15.0	NA	NA	4
25-Apr-04	7:45	2.0	15.0	NA	P1	2
2-May-04	7:30	2.3	18.0	NA	P1	2
9-May-04	8:00	2.3	17.5	NA	P1	4
16-May-04	8:00	2.3	18.0	NA	NA	0
23-May-04	7:30	2.0	17.5	P1	P1	6
30-May-04	8:00	1.8	17.5	NA	P1	6
6-Jun-04	7:30	2.0	19.0	P1	P1	30
13-Jun-04	8:00	2.0	18.5	NA	P1	0
20-Jun-04	7:30	2.0	22.0	NA	NA	0
27-Jun-04	7:00	2.0	22.0	NA	P1	0
4-Jul-04	7:30	2.3	21.5	NA	NA	0
11-Jul-04	7:30	2.0	21.0	NA	NA	8
18-Jul-04	7:45	2.0	24.0	NA	P1	8
25-Jul-04	7:30	2.0	25.0	NA	NA	0
1-Aug-04	8:00	2.0	25.0	NA	NA	0
8-Aug-04	7:30	2.3	22.0	NA	NA	0
15-Aug-04	7:30	2.3	24.0	NA	NA	0
22-Aug-04	8:00	2.5	23.0	P1	P1	0
29-Aug-04	7:00	2.5	21.0	NA	NA	0
5-Sep-04	7:30	2.8	21.0	NA	NA	0
12-Sep-04	8:00	2.5	20.0	NA	NA	0
19-Sep-04	8:00	2.5	16.5	NA	NA	0
26-Sep-04	7:00	2.8	16.0	NA	NA	2
	Min	1.8	3.5			0
	Max	2.8	25.0			56

* See introduction for discussion of algae assessment and goose count methods.

2004 Level II Data

Date (2004)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI Secc	Calculated TSI chl-a	Calculated TSI TP
25-Apr	15.0	2.4	3.20	19.3	501	2	26	47.4	42.0	46.9
9-May	18.0	2.3	4.17	19.4	669	2	34	48.0	44.6	46.9
23-May	17.5	2.8	6.09	23.1	412	2	18	45.1	48.3	49.4
6-Jun	20.0	1.7	6.73	18.2	478	3	26	52.3	49.3	46.0
20-Jun	21.0	2.6	2.88	15.7	394	1	25	46.2	40.9	43.9
5-Jul	22.5	2.6	2.40	13.1	508	2	39	46.2	39.2	41.3
18-Jul	25.0	2.8	2.56	7.1	364	1	51	45.1	39.8	32.4
1-Aug	25.0	3.1	5.93	11.6	396	1	34	43.7	48.0	39.5
16-Aug	24.0	2.9	2.72	<detect	367	1	73	44.6	40.4	27.4
29-Aug	21.0	3.1	1.80	10.1	377	1	37	43.7	36.3	37.5
12-Sep	20.0	3.0	4.81	12.2	307	2	25	44.1	46.0	40.2
26-Sep	17.0	3.2	4.12	13.8	378	1	27	43.2	44.5	42.0
10-Oct	15.5	3.0	5.45	11.9	359	1	30	44.1	47.2	39.9
24-Oct	12.5	2.9	5.51	10.2	363	1	36	44.6	47.3	37.7

	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae	N:P	Calculated TSI Secc	Calculated TSI chl-a	Calculated TSI TP
Mean	19.6	2.7	4.2	14.3	419.5	1.5	34	45.6	43.8	40.8
Median	20.0	2.9	4.1	13.1	386.0	1	32	44.9	44.5	40.7
Min	12.5	1.7	1.8	7.1	307.0	1	18	43.2	36.3	27.4
Max	25.0	3.2	6.7	23.1	669.0	3	73	52.3	49.3	49.4
Count	14	14	14	13	14	14	14	14	14	14

TSI Average = 43.4