Lake Overview

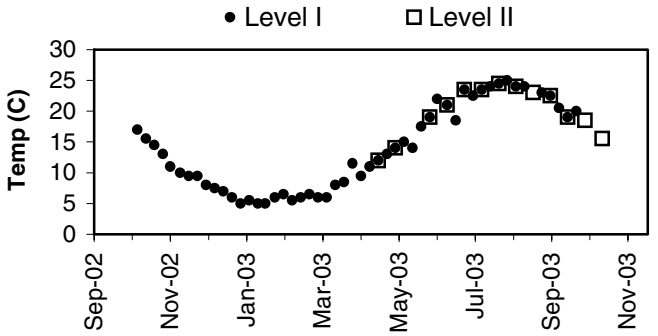
Volunteer monitoring began at Lake Wilderness in the early 1980s and has continued through 2003. The data indicate this city lake (Maple Valley) is moderate in primary productivity (mesotrophic) with good water quality. Since the lake surface makes up 20% of the drainage area, direct precipitation is very important, in addition to surface and ground water inputs. There is one Class 1 wetland, as classified by the King County Wetlands Inventory 1990, adjacent to the southwestern edge of the lake. Current land use is mixed residential and open space, with a large park along the western shoreline.

Lake Wilderness has a public access boat launch. There is a history of Eurasian milfoil infestation with control efforts by the lake community and the city of Maple Valley. Residents should watch for new patches of Eurasian milfoil, as well as other noxious weeds.

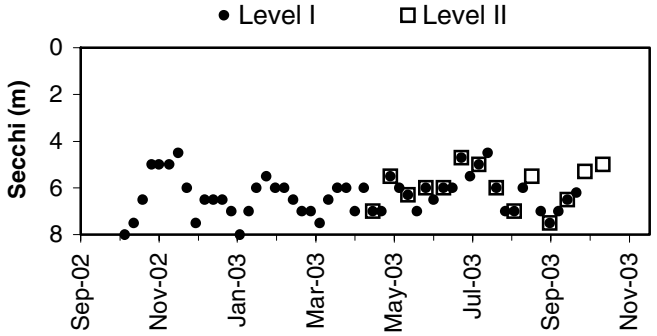
Physical Parameters

Secchi transparency was quite variable, ranging from 3.0 to 8.0m through the year. Annual water temperatures ranged from 4.5 to 24.0 degrees Celsius. Precipitation and water level records were fairly complete, indicating the winter-high stand to autumn-low stand pattern typical of area lakes.

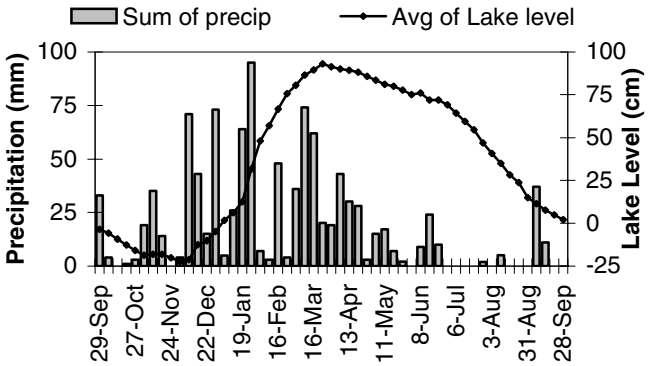
Lake Temperature



Secchi Depth

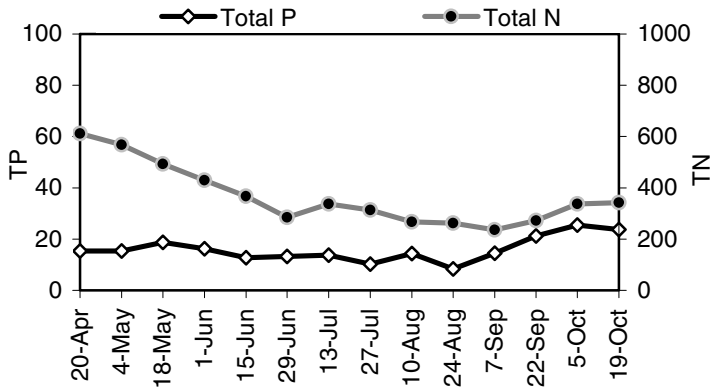


Lake Level and Precipitation

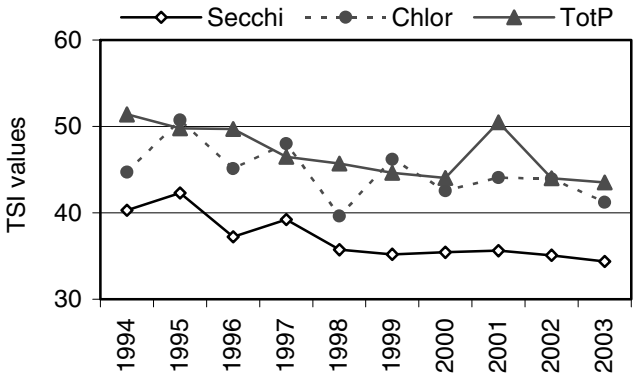


Wilderness

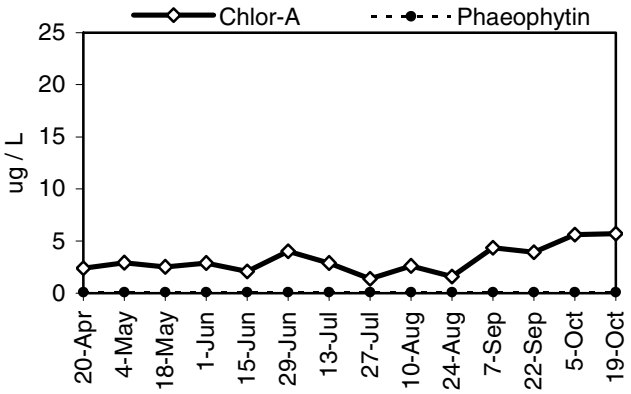
Nutrient Analysis



TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common algae	Group
Aphanizomenon flos-aquae	bluegreen
Cryptomonas spp.	cryptophyte
unidentified species	chrysophyte

Nutrient Analysis and TSI Ratings

Total nitrogen decreased from April through the end of June, after which it remained in stable proportion to phosphorus through the remainder of the sampling period. The N:P ratio ranged from 13 to 56, with the lower values in the latter part of the season.

In 2002 the average TSI-Secchi indicated oligotrophy, unlike the other two indicators which were in the mid mesotrophic range. TSI-Secchi has consistently produced lower trophic estimates through the years of sampling at Lake Wilderness.

Chlorophyll and Algae

The phytoplankton community made two distinct peaks during the sample season and was increasing at the end of October. The first peak was made by the bluegreen *Gloeotrichia*, accompanied by a variety of chlorophytes including the chlorophyte *Botryococcus*. The second peak was dominated by an unidentified chrysophyte species, while the bluegreen *Aphanizomenon* increased in October. Chlorophyll content reflected the summer peaks, but did not track the magnitude of the June peak very closely. Phaeophytin (degraded chlorophyll) remained low through the sampling season.

Wilderness

2003 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
29-Sep-02	33.0	5	-3.6	5
6-Oct-02	4.0	7	-5.9	7
13-Oct-02	0.1	7	-9.3	7
20-Oct-02	1.0	7	-12.7	7
27-Oct-02	3.1	7	-15.9	7
3-Nov-02	19.0	7	-18.6	7
10-Nov-02	35.1	7	-18.1	7
17-Nov-02	14.0	7	-18.0	7
24-Nov-02	0.0	7	-20.1	7
1-Dec-02	4.0	7	-22.3	7
8-Dec-02	71.0	7	-21.3	7
15-Dec-02	43.1	7	-12.4	7
22-Dec-02	15.1	7	-10.3	7
29-Dec-02	73.0	7	-5.0	7
5-Jan-03	5.0	7	1.6	7
12-Jan-03	26.0	7	6.1	7
19-Jan-03	64.0	7	12.6	7
26-Jan-03	95.0	7	31.6	7
2-Feb-03	7.0	7	48.1	7
9-Feb-03	3.0	7	57.0	7
16-Feb-03	48.0	7	66.7	7
23-Feb-03	4.0	7	75.7	7
2-Mar-03	36.0	7	80.6	7
9-Mar-03	74.0	7	86.6	7
16-Mar-03	62.0	7	89.4	7
23-Mar-03	20.1	7	93.0	7
30-Mar-03	19.1	7	91.3	7
6-Apr-03	43.0	7	90.0	7
13-Apr-03	30.1	7	89.3	7
20-Apr-03	28.0	7	88.3	7
27-Apr-03	3.0	7	85.7	7
4-May-03	15.0	7	83.4	7
11-May-03	17.1	7	81.0	7
18-May-03	7.1	7	79.9	7
25-May-03	2.1	7	77.7	7
1-Jun-03	0.0	7	75.0	7
8-Jun-03	9.1	7	76.0	7
15-Jun-03	24.1	7	71.9	7
22-Jun-03	10.0	7	71.9	7
29-Jun-03	0.1	7	69.0	7
6-Jul-03	0.0	7	64.4	7
13-Jul-03	0.1	7	59.4	7
20-Jul-03	0.0	7	54.6	7
27-Jul-03	2.0	7	47.0	7
3-Aug-03	0.0	7	40.9	7
10-Aug-03	5.1	7	35.0	7
17-Aug-03	0.0	7	28.1	7
24-Aug-03	0.0	7	23.7	7
31-Aug-03	0.0	7	15.0	7
7-Sep-03	37.0	7	11.4	7
14-Sep-03	11.1	7	7.6	7
21-Sep-03	0.0	7	4.7	7
28-Sep-03	0.0	3	2.0	3
Min	0.0		-22.3	
Max	95.0		93.0	
Total	1022.0			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
6-Oct-02	14:30	8.0	17.0	NA	NA	0
13-Oct-02	13:30	7.5	15.5	NA	NA	0
20-Oct-02	11:00	6.5	14.5	P2	P2	0
27-Oct-02	12:45	5.0	13.0	P2	P2	0
2-Nov-02	16:48	5.0	11.0	P1	P2	0
10-Nov-02	10:45	5.0	10.0	NA	P3	0
17-Nov-02	10:02	4.5	9.5	NA	P3	1
24-Nov-02	13:30	6.0	9.5	P3	P2	1
1-Dec-02	13:45	7.5	8.0	P2	P2	1
8-Dec-02	12:30	6.5	7.5	P3	P2	1
15-Dec-02	14:35	6.5	7.0	P2	P2	1
22-Dec-02	11:00	6.5	6.0	P2	P2	0
29-Dec-02	10:30	7.0	5.0	P2	P2	0
5-Jan-03	11:20	8.0	5.5	P1	P1	1
12-Jan-03	13:30	7.0	5.0	P1	P1	1
18-Jan-03	16:00	6.0	5.0	P1	P1	0
26-Jan-03	9:40	5.5	6.0	P1	P1	0
2-Feb-03	15:00	6.0	6.5	P2	P2	0
9-Feb-03	10:30	6.0	5.5	P2	P2	0
16-Feb-03	13:00	6.5	6.0	P2	P2	1
23-Feb-03	13:40	7.0	6.5	P2	P2	12
2-Mar-03	10:45	7.0	6.0	P2	P2	0
9-Mar-03	13:15	7.5	6.0	P1	P1	12
16-Mar-03	11:30	6.5	8.0	P1	P1	12
23-Mar-03	11:30	6.0	8.5	P2	P2	33
30-Mar-03	13:45	6.0	11.5	P1	P1	7
6-Apr-03	10:15	7.0	9.5	P1	P1	1
13-Apr-03	11:45	6.0	11.0	P2	P2	8
20-Apr-03	9:40	7.0	12.0	P2	P2	11
27-Apr-03	12:20	7.0	13.0	P2	P2	5
4-May-03	15:45	5.5	14.0	P2	P2	0
11-May-03	13:40	6.0	15.0	P3	P2	2
18-May-03	13:05	6.3	14.0	P3	P2	0
25-May-03	15:45	7.0	17.5	P2	P2	7
1-Jun-03	15:00	6.0	19.0	P3	P2	
7-Jun-03	10:35	6.5	22.0	P3	P2	37
15-Jun-03	10:00	6.0	21.0	P2	P2	10
22-Jun-03	14:30	6.0	18.5	P2	P2	0
29-Jun-03	17:40	4.7	23.5	P2	P2	0
6-Jul-03	13:30	5.5	22.5	P3	P3	36
13-Jul-03	13:30	5.0	23.5	P2	P2	6
20-Jul-03	13:00	4.5	24.0	P2	P2	12
27-Jul-03	11:05	6.0	24.5	P2	P2	25
3-Aug-03	11:00	7.0	25.0	P1	P1	
10-Aug-03	15:30	7.0	24.0	P1	P1	65
17-Aug-03	19:00	6.0	24.0	P1	P1	1
						30
31-Aug-03	13:32	7.0	23.0	P1	P1	1
7-Sep-03	16:30	7.5	22.5	P1	P1	37
14-Sep-03	13:15	7.0	20.5	P1	P1	20
21-Sep-03	14:03	6.5	19.0	P1	P1	34
28-Sep-03	15:04	6.2	20.0	P2	P3	10
Min		4.5	5.0			0
Max		8.0	25.0			65

Wilderness **2003 Level II Data**

Date (2003)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI			Notes
								Secc	chl-a	TP	
20-Apr	12.0	7.0	2.4	15.4	611	2	40	31.9	39.2	43.6	Employee MFM read P1 in 2L bottle left out with
4-May	14.0	5.5	2.9	15.4	568	2	37	35.4	41.1	43.6	
18-May	NR	6.3	2.5	18.8	493	2	26	33.4	39.6	46.5	
1-Jun	19.0	6.0	2.9	16.3	430	2	26	34.1	41.0	44.4	
15-Jun	21.0	6.0	2.1	12.8	368	2	29	34.1	37.8	40.9	
29-Jun	23.5	4.7	4.0	13.3	285	2	21	37.7	44.2	41.5	
13-Jul	23.5	5.0	2.9	13.8	337	2	24	36.8	41.0	42.0	
27-Jul	24.5	6.0	1.4	10.3	314	2	30	34.1	33.9	37.8	
10-Aug	24.0	7.0	2.6	14.4	268	1	19	31.9	40.0	42.6	
24-Aug	23.0	5.5	1.6	8.4	263	2	31	35.4	35.2	34.8	
7-Sep	22.5	7.5	4.3	14.5	236	1	16	30.9	44.9	42.7	Lots of little (shrimp?) swimming in water column.
21-Sep	19.0	6.5	3.9	21.2	273	1	13	33.0	43.9	48.2	
5-Oct	18.5	5.3	5.6	25.5	337	3	13	35.9	47.5	50.9	
19-Oct	15.5	5.0	5.7	23.8	343	3	14	36.8	47.7	49.9	
	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI			
								Secc	chl-a	TP	
Mean	20.0	6.0	3.2	16.0	366.1	1.9	24	34.4	41.2	43.5	**TSI Average = 39.7**
Median	21.0	6.0	2.9	15.0	337.0	2	25	34.1	41.0	43.2	
Min	12.0	4.7	1.4	8.4	236.0	1	13	30.9	33.9	34.8	
Max	24.5	7.5	5.7	25.5	611.0	3	40	37.7	47.7	50.9	
Count	13	14	14	14	14	14	14	14	14	14	