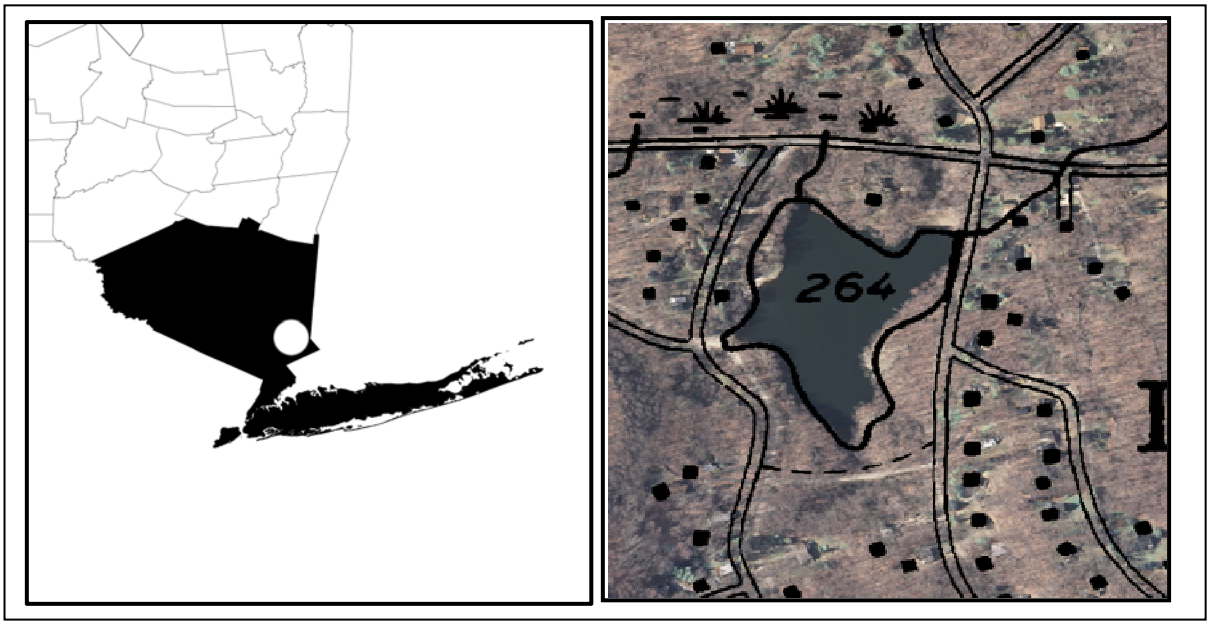
Appendix A:
CSLAP 2009 Lake Water Quality Summary: Timber Lake

General Lake Information

Location	town of Lewisboro
County	Westchester
Basin	Lower Hudson River
Size	2.9 hectares (7.2 acres)
Lake Origins	Augmented by Dam
Watershed Area	85 hectares (209.9 acres)
Retention Time	0.1 years
Mean Depth	1.5 meters
Sounding Depth	3.4 meters
Public Access?	no
Major Tributaries	no named tribs
Lake Tributary To…	unnamed outlet to Croton River to Hudson River
WQ Classification	B (contact recreation = swimming)
Lake Outlet Latitude	41.295
Lake Outlet Longitude	-73.662
Sampling Years	2006
2009 Samplers	Michael Brown, George Levites, Eric Stand
Main Contact	Eric Stand

Lake Map

(sampling location marked with a circle)



Background

Timber Lake is an 8 acre, class B lake found in the Town of Lewisboro in Westchester County, in the southern Hudson River region of New York State. It was first sampled as part of CSLAP Light in 1994 and the full CSLAP program in 2005.

It is one of 15 CSLAP lakes among the >100 lakes found in Westchester County, and one of 41 CSLAP lakes among the >360 lakes and ponds in the Lower Hudson River drainage basin.

Lake Uses

Timber Lake is a Class B lake; this means that the best intended use for the lake is for contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used for swimming and other recreational uses by lakefront residents, but there is no public access to the lake.

Timber Lake is not stocked by the state, and it is not known if private stocking occurs.

General statewide fishing regulations are applicable in Timber Lake.

There are no lake-specific fish consumption advisories on Timber Lake.

Historical Water Quality Data

CSLAP sampling was conducted on Timber Lake from 1994 to 1995, and 2006 to 2009. The CSLAP reports for Timber Lake are posted on the NYSFOLA website at www.nysfola.org, under NYS Lake Association Lake List.

Timber Lake was not sampled as part of any of the other major NYS monitoring programs (except for CSLAP Light). It is not known if the lake was monitored to support any local management activities, including fish stocking or other actions conducted by the lake association or directives by local officials.

Neither the unnamed tributary inlets to nor the outlet of the lake has been monitored through the NYSDEC Rotating Intensive Basins (RIBS) or stream biomonitoring programs.

Lake Association and Management History

Timber Lake is served by the Goldens Bridge Community Association Inc., also known as the Colony, founded 1935. The Association is involved in a variety of lake management and social activities, including:

- summer swimming, boating (non-residential boats are not allowed) and fishing, with lifeguards on duty during the summer season.
- Lake water used for firefighting
- Potable water—the lake association owns a number of deep wells, a chlorination plant and water distribution lines (lake water not used for this purpose)

- Restrictions on dumping aquaria, and a recommended 2 week drying period for using fishing tackle after use outside of lake
- Beach cleanup work—the association purchases beach sand
- Invasive species education—Chinese Mystery Snail has been found in the lake.

Information about Timber Lake can be found at http://www.goldensbridge.org/GBsite/Home.htm.

Summary of 2009 CSLAP Sampling Results

Evaluation of Eutrophication Indicators

Water transparency, chlorophyll *a*, and Secchi disk transparency readings were close to normal in 2009, and none of these trophic indicators has exhibited any clear long-term trends. The lake can be characterized as *eutrophic*, or highly productive, based on chlorophyll *a*, water clarity and total phosphorus readings (typical of *eutrophic* lakes). The TSI evaluation suggests that each of these trophic indicators is "internally consistent"—each of these indicators is in the expected range given the readings of the other indicators. Overall trophic conditions are summarized on the Lake Scorecard.

Evaluation of Potable Water Indicators

Algae levels are high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although the lake is not classified for use for drinking water.

Evaluation of Limnological Indicators

Some of the limnological indicators measured in CSLAP in 2009 deviated from normal. True color and calcium readings were higher than normal in 2009, and ammonia and total nitrogen readings were lower than normal. Color readings have been higher in many CSLAP lakes in recent years, particularly 2009, probably in response to wetter weather. However, it is likely that the small changes in most of these indicators have been within the normal range of variability in the lake, since none of these limnological indicators has exhibited any clear long-term trends. Overall limnological conditions are summarized in the Lake Scorecard.

Evaluation of Biological Condition

Very limited macrophyte surveys have been conducted through CSLAP, indicating only native plants. There is insufficient information to calculate a modified FQI for the lake.

Phytoplankton, zooplankton and macroinvertebrate communities have not been evaluated through CSLAP in Timber Lake, and the composition of the fish community is not known.

Evaluation of Lake Perception

Water quality, aquatic plant and recreational assessments were close to normal in 2009, and none of these measures of lake perception has exhibited any clear long-term trends. Overall lake perception is summarized on the Lake Scorecard.

Evaluation of Local Climate Change

Air and water temperature readings in the summer index period were close to normal in 2009, and neither air nor water temperature readings has exhibited any long-term trends. It is not known if this is an indication of the lack of local climate change or if these changes cannot be well evaluated through CSLAP.

Lake Scorecard

Category	Indicator	Classification	2009 Change?	Long Term Change?
Eutrophication Indicators	Water Clarity	Eutrophic	No	No
	Chlorophyll *a*	Eutrophic	No	No
	Total Phosphorus	Eutrophic	No	No
Potable Water Indicators	Hypolimnetic Ammonia	Not applicable		
	Hypolimnetic Arsenic			
	Hypolimnetic Iron			
	Hypolimnetic Manganese			
Limnological Indicators	Hypolimnetic Phosphorus	Not applicable		
	Nitrate + Nitrite	Low NOx	No	No
	Ammonia	Low Ammonia	Lower than normal	No
	Total Nitrogen	Low Total Nitrogen	Lower than normal	No
	pH	Alkaline	No	No
	Specific Conductance	Hardwater	No	No
	True Color	Intermediate Color	Higher than normal	No
	Calcium	Highly Susceptible to Zebra Mussels	Higher than normal	No
Lake Perception	WQ Assessment	Definite Algal Greenness	No	No
	Aquatic Plant Coverage	Plants Not Visible	No	No
	Recreational Assessment	Could Not Be Nicer	No	No
Biological Condition	Phytoplankton	Not measured through CSLAP	Not known	Not known
	Macrophytes	Incomplete surveys	Not known	Not known
	Zooplankton	Not measured through CSLAP	Not known	Not known
	Macroinvertebrates	Not measured through CSLAP	Not known	Not known
	Fish	Not known	Not known	Not known
	Invasive Species	None observed through CSLAP	Not known	Not known
Local Climate Change	Air Temperature		No	No
	Water Temperature		No	No

Evaluation of Lake Condition Impacts to Lake Uses

Timber Lake is not among the lakes on the 2008 Lower Hudson River drainage basin PWL.

Potable Water (Drinking Water)

The CSLAP dataset at Timber Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. The algae levels in the lake suggest that the "unofficial" potable water use may be compromised.

Contact Recreation (Swimming)

The CSLAP dataset at Timber Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *impaired* by reduced water clarity and elevated nutrient and algae levels, although additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Timber Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation should be fully supported.

Aquatic Life

The CSLAP dataset on Timber Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life should be fully supported, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics

The CSLAP dataset on Timber Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics should be fully supported.

Fish Consumption

There are no fish consumption advisories posted for Timber Lake.

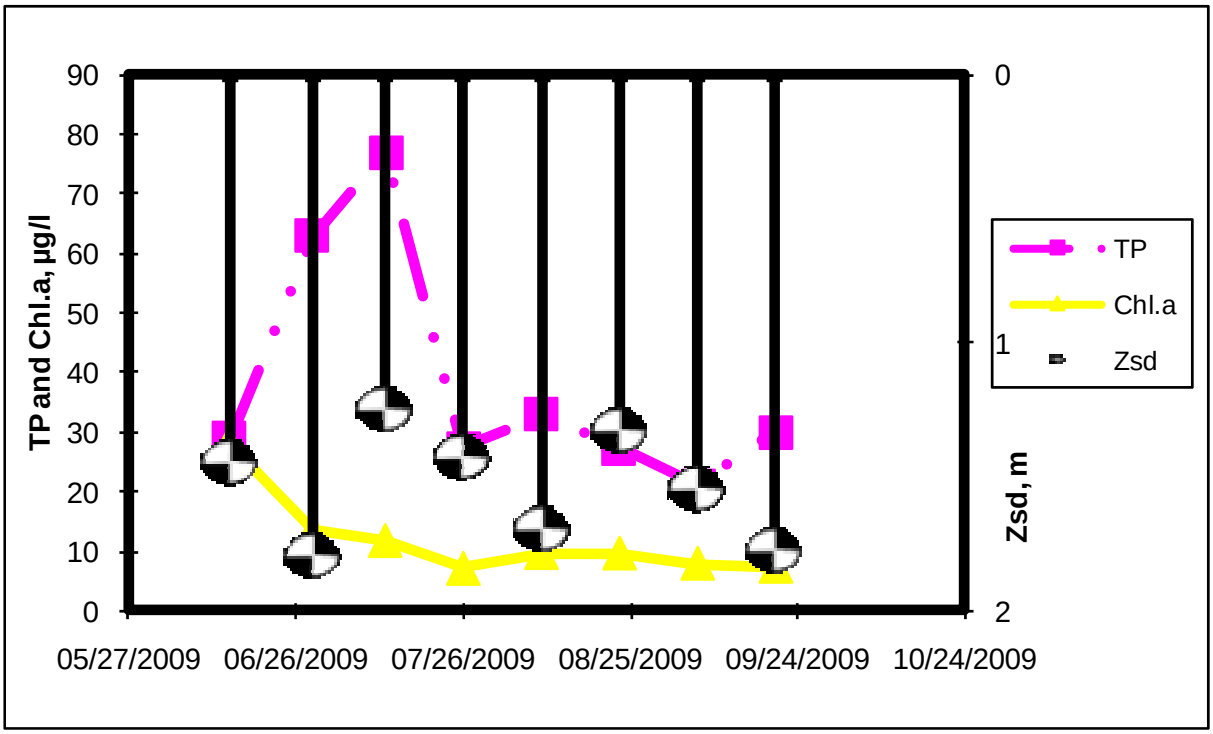
Additional Comments and Recommendations

More detailed aquatic plant monitoring in Timber Lake may be useful in determining if the plant community is more strongly affected by native or invasive plants.

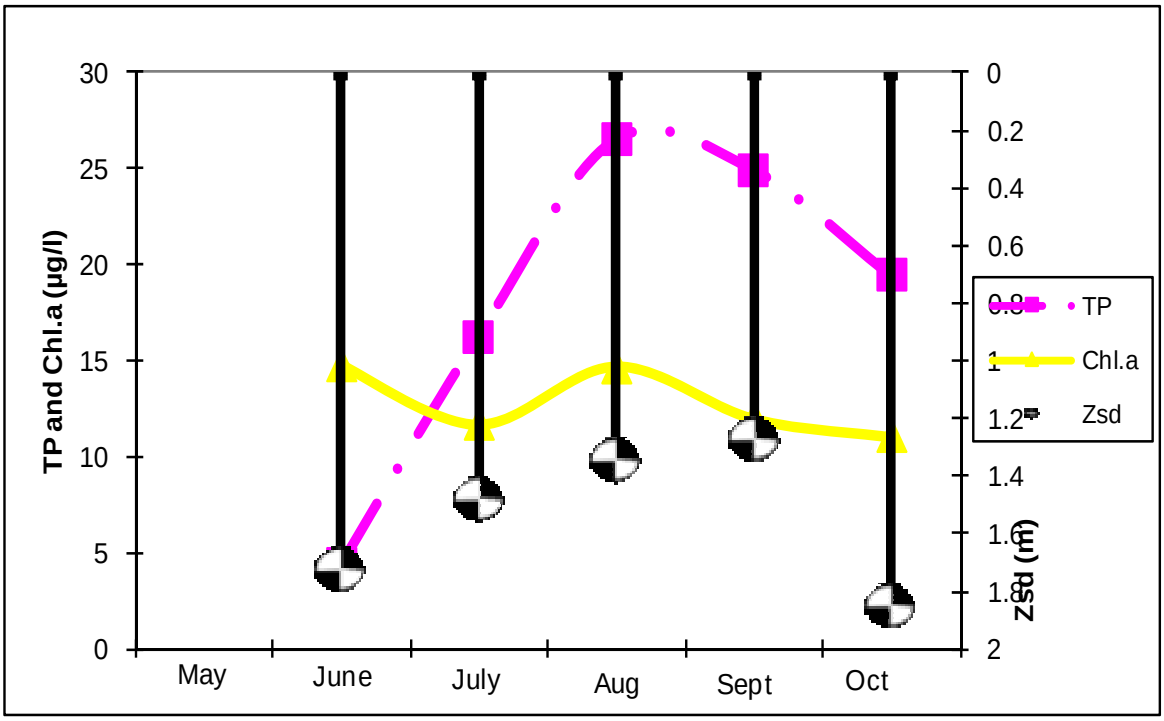
Aquatic Plant IDs-2009

None submitted in 2009.

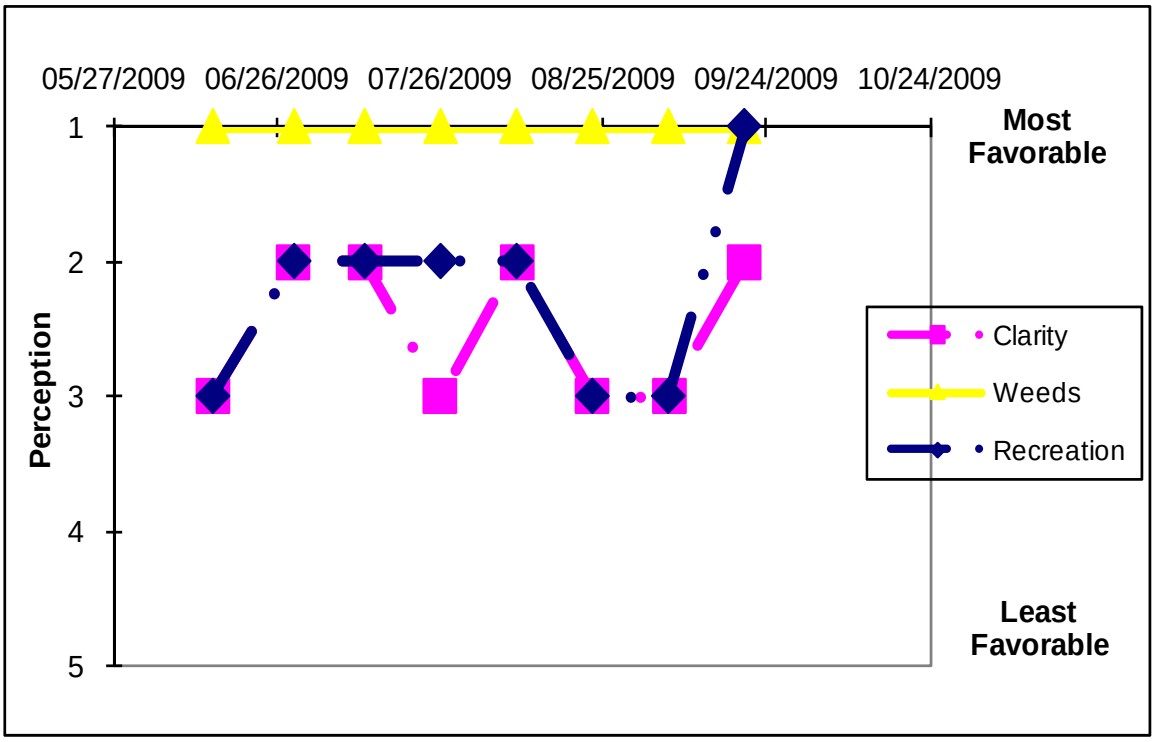
Time Series: Trophic Indicators, 2009



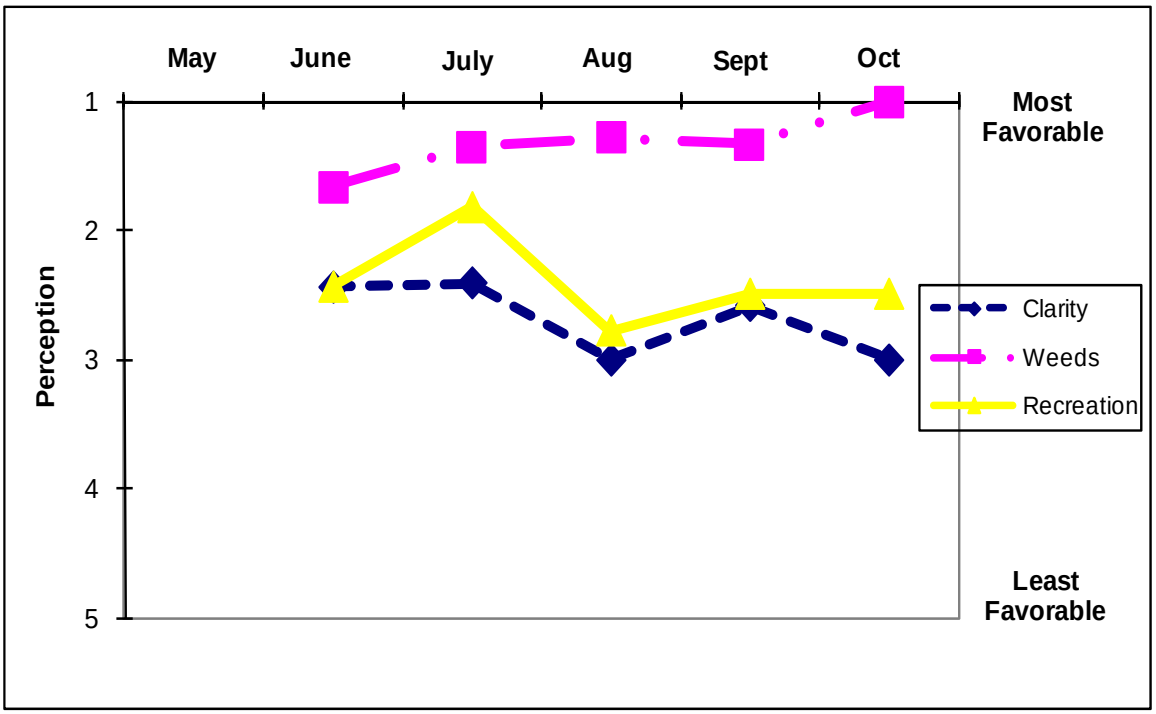
Time Series: Trophic Indicators, Typical Year (1994-2009)



Time Series: Lake Perception Indicators, 2009



Time Series: Lake Perception Indicators, Typical Year (1994-2009)



Appendix B- CSLAP Water Quality Sampling Results for Timber Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
203	Timber L-W	5/7/1994	3.4	2.75											
203	Timber L-W	5/21/1994	3.4	2.06											
203	Timber L-W	6/4/1994	3.4	2.11											
203	Timber L-W	6/17/1994	3.4	2.52											
203	Timber L-W	7/3/1994	3.4	2.41											
203	Timber L-W	7/16/1994	3.4	2.11											
203	Timber L-W	7/30/1994	3.4	1.98											
203	Timber L-W	8/25/1994	3.4	1.76											
203	Timber L-W	9/24/1994	3.4	1.68											
203	Timber L-W	5/7/1995	3.4	0.80											
203	Timber L-W	5/21/1995	3.4	0.60											
203	Timber L-W	6/4/1995	3.4	0.62											
203	Timber L-W	6/17/1995	3.4	0.73											
203	Timber L-W	7/11/1995	3.4	0.71											
203	Timber L-W	7/16/1995	3.4	0.62											
203	Timber L-W	7/30/1995	3.4	0.58											
203	Timber L-W	8/25/1995	3.4	0.51											
203	Timber L-W	9/24/1995	3.4	0.49											
203	Timber L-W	7/24/2005	3.1	2.30	1.5	0.022	0.03	0.01	0.35	35.40		7.50	526	24.3	
203	Timber L-W	7/31/2005	3.0	1.10	1.5	0.048	0.15	0.04	0.36	16.68	9	8.01	565		21.87
203	Timber L-W	8/7/2005	3.0	1.35	1.5	0.024	0.04	0.01	0.21	19.04	10	7.67	558		10.71
203	Timber L-W	8/14/2005	3.0	1.30	1.5	0.045	0.07	0.02	0.36	17.73	3	7.84	544		17.76
203	Timber L-W	8/21/2005	3.1	1.10	1.5	0.035	0.07	0.17	0.32	20.18	48	7.64	420	21.2	19.87
203	Timber L-W	8/28/2005	3.1	0.95	1.5	0.053	0.01	0.01	0.16	6.57	8	8.16	535		25.58
203	Timber L-W	9/4/2005	3.1	0.70	1.5	0.059	0.01	0.01	0.21	7.93	6	7.94	507		15.19
203	Timber L-W	9/11/2005	3.1	0.70	1.5	0.054	0.05	0.01	0.41	16.49	6	7.59	541		12.99
203	Timber L-W	6/18/2006	3.3	3.00	1.0	0.017	0.04	0.03	0.61	77.74	15	8.13	376	18.4	7.61
203	Timber L-W	6/30/2006	3.4	1.73			0.01	0.01	0.63		29	7.66	385		11.67
203	Timber L-W	7/2/2006	3.4	1.40	1.5	0.031			0.40	29.01	14	7.72	410		14.38
203	Timber L-W	7/16/2006	3.3	1.73	1.5	0.022	0.01	0.12	0.62	62.13	17	7.99	392		9.67
203	Timber L-W	8/13/2006	3.1	0.99	1.5	0.035	0.01	0.07	0.54	34.13	19	7.49	395	22.3	27.98
203	Timber L-W	8/27/2006	3.1	1.90	1.5	0.057	0.02	0.14	0.93	36.11	6	7.45	517		22.23
203	Timber L-W	9/10/2006	3.2	1.64	1.5	0.027	0.03	0.06	0.45	36.28	13	8.16	324		9.81
203	Timber L-W	9/24/2006	3.1	1.33	1.5	0.040	0.04	0.21	0.38	21.12	12	7.29	393		12.29
203	Timber L-W	7/7/2007	3.0	1.35	1.5	0.022	0.00	0.01	0.44	45.00	14	7.58	441	23.1	18.87
203	Timber L-W	7/15/2007	3.0	1.48		0.016	0.01	0.02	0.12	17.69	22	7.67	474		1.10
203	Timber L-W	7/29/2007	2.9	1.63	1.5	0.019	0.01	0.02	0.55	63.69	38	7.72	453		9.89
203	Timber L-W	8/12/2007	3.0	1.59	1.5	0.024	0.01	0.04	0.59	54.54	17	7.53	433		6.27
203	Timber L-W	8/26/2007	3.1	1.81	1.5	0.046	0.13	0.03	0.85	40.99	16	7.77	463	25.3	8.41
203	Timber L-W	9/9/2007	3.0	1.55	1.5	0.018	0.00	0.01	0.68	83.38	17	8.16	431		11.50
203	Timber L-W	9/23/2007	3.0	1.81	1.5	0.051	0.00	0.01	0.66	28.34	19	8.38	373		13.60
203	Timber L-W	10/7/2007	2.9	2.20	1.5	0.039	0.02	0.07	0.83	47.11	28	7.71	554		7.43
203	Timber L-W	6/29/2008	3.0	1.63	1.5	0.022	0.00	0.03	0.61	59.91	12	7.51	565	25.2	13.06
203	Timber L-W	7/13/2008	3.3	1.70	1.5	0.022	0.02	0.01	0.32	31.96	18	7.61	494		9.34
203	Timber L-W	7/27/2008	3.2	1.43	1.5	0.032	0.02	0.04	0.32	21.80	13	7.74	421		12.66
203	Timber L-W	8/10/2008	3.0	1.05	1.5	0.031	0.08	0.05	0.32	22.46	11	7.38	514		7.77
203	Timber L-W	8/24/2008	3.0	1.50	1.5	0.031	0.00	0.02	0.27	19.63	14	7.62	517	25.2	9.56
203	Timber L-W	9/7/2008	3.1	0.83	1.5	0.033	0.00	0.00	0.29	19.01	50	7.60	541		14.00
203	Timber L-W	9/21/2008				0.033	0.01	0.02	0.27	18.26	24	7.55	423		14.85
203	Timber L-W	10/5/2008	3.1	1.50	1.5	0.026	0.02	0.02	0.25	21.23	17	7.45	530		14.63
203	Timber L-W	06/14/2009	3.2	1.45	1.0	0.029	0.03	0.02	0.34	25.53	26	7.24	621	27.2	28.00
203	Timber L-W	06/29/2009	3.2	1.80	1.0	0.063	0.02	0.04	0.33	11.67	21	7.60	577		13.41
203	Timber L-W	07/12/2009	3.1	1.25		0.077	0.01	0.01	0.29	8.26	22	7.14	515		11.80
203	Timber L-W	07/26/2009	3.1	1.43	1.5	0.027	0.02	0.01	0.29	23.53	25	7.30	455		7.15
203	Timber L-W	08/09/2009	3.1	1.70	1.5	0.033	0.08	0.03	0.52	34.67	20	7.07	395	28.0	9.80
203	Timber L-W	08/23/2009	3.1	1.33	1.5	0.027	0.02	0.04	0.32	25.77	30	7.06	413		9.70
203	Timber L-W	09/06/2009	3.1	1.55	1.5	0.021	0.01	0.04	0.33	34.35	45	7.70	564		8.00
203	Timber L-W	09/20/2009	3.1	1.78	1.5	0.030	0.01	0.01	0.27	19.43	21	8.03	319		7.50

LNum	PName	Date	Zbot	Zsd	Zsamp	QaQc	TAir	TH20	QA	QB	QC	QD
203	Timber L-W	5/7/1994	3.4	2.75					2	4	3	2
203	Timber L-W	5/21/1994	3.4	2.06					2	4	4	3
203	Timber L-W	6/4/1994	3.4	2.11					2	3	3	3
203	Timber L-W	6/17/1994	3.4	2.52					2	2	2	1
203	Timber L-W	7/3/1994	3.4	2.41					2	1	2	3
203	Timber L-W	7/16/1994	3.4	2.11					3	3	2	2
203	Timber L-W	7/30/1994	3.4	1.98					2	2	1	0
203	Timber L-W	8/25/1994	3.4	1.76					2	3	2	3
203	Timber L-W	9/24/1994	3.4	1.68					2	3	2	2
203	Timber L-W	5/7/1995	3.4	0.80					2	4	3	2
203	Timber L-W	5/21/1995	3.4	0.60					2	4	4	23
203	Timber L-W	6/4/1995	3.4	0.62					2	3	3	23
203	Timber L-W	6/17/1995	3.4	0.73					2	2	2	1
203	Timber L-W	7/11/1995	3.4	0.71					2	1	2	3
203	Timber L-W	7/16/1995	3.4	0.62					3	3	2	12
203	Timber L-W	7/30/1995	3.4	0.58					2	2	1	
203	Timber L-W	8/25/1995	3.4	0.51					2	3	2	23
203	Timber L-W	9/24/1995	3.4	0.49					2	3	2	2
203	Timber L-W	7/24/2005	3.1	2.30	1.5	1	28	28	3	1	2	8
203	Timber L-W	7/31/2005	3.0	1.10	1.5	1	28	27	3	1	2	8
203	Timber L-W	8/7/2005	3.0	1.35	1.5	1	25	28	3	1	3	3
203	Timber L-W	8/14/2005	3.0	1.30	1.5	1	30	29	3	1	3	138
203	Timber L-W	8/21/2005	3.1	1.10	1.5	1	28	26	4	1	4	13
203	Timber L-W	8/28/2005	3.1	0.95	1.5	1	27	26	4	1	3	35
203	Timber L-W	9/4/2005	3.1	0.70	1.5	1	20	25	3	1	4	13
203	Timber L-W	9/11/2005	3.1	0.70	1.5	1	26	23	3	1	4	13
203	Timber L-W	6/18/2006	3.3	3.00	1.0	1	25	24	3	1	3	3
203	Timber L-W	6/30/2006	3.4	1.73		1	29	28	3	1	2	0
203	Timber L-W	7/2/2006	3.4	1.40	1.5	1	28	27	2	1	2	0
203	Timber L-W	7/16/2006	3.3	1.73	1.5	1	33	28	3	1	3	3
203	Timber L-W	8/13/2006	3.1	0.99	1.5	1	18	25	4	1	3	13
203	Timber L-W	8/27/2006	3.1	1.90	1.5	1	19	24	3	1	3	15
203	Timber L-W	9/10/2006	3.2	1.64	1.5	1	21	24	2	1	2	0
203	Timber L-W	9/24/2006	3.1	1.33	1.5	1	24	22	2	1	2	0
203	Timber L-W	7/7/2007	3.0	1.35	1.5	1	18	25	2	1	1	0
203	Timber L-W	7/15/2007	3.0	1.48		1	27	28	2	1	2	0
203	Timber L-W	7/29/2007	2.9	1.63	1.5	1	27	28	2	1	2	0
203	Timber L-W	8/12/2007	3.0	1.59	1.5	1	28	28	3	1	3	16
203	Timber L-W	8/26/2007	3.1	1.81	1.5	1	25	27	3	1	3	0
203	Timber L-W	9/9/2007	3.0	1.55	1.5	1	28	27	3	1	3	0
203	Timber L-W	9/23/2007	3.0	1.81	1.5	1	25	23	3	1	3	13
203	Timber L-W	10/7/2007	2.9	2.20	1.5	1	25	24	3	1	3	0
203	Timber L-W	6/29/2008	3.0	1.63	1.5	1	27	27	3	1	2	0
203	Timber L-W	7/13/2008	3.3	1.70	1.5	1	26	25	2	1	1	0
203	Timber L-W	7/27/2008	3.2	1.43	1.5	1	21	24	3	1	2	0
203	Timber L-W	8/10/2008	3.0	1.05	1.5	1	18	22	3	1	3	13
203	Timber L-W	8/24/2008	3.0	1.50	1.5	1	22	24	3	1	2	1
203	Timber L-W	9/7/2008	3.1	0.83	1.5	1	24	25	3	1	3	0
203	Timber L-W	9/21/2008				1			3	1	1	1
203	Timber L-W	10/5/2008	3.1	1.50	1.5	1	14	17	3	1	2	5
203	Timber L-W	06/14/2009	3.2	1.45	1.0	1	29	23	3	1	3	
203	Timber L-W	06/29/2009	3.2	1.80	1.0	1	21	23	2	1	2	
203	Timber L-W	07/12/2009	3.1	1.25		1	23	24	2	1	2	
203	Timber L-W	07/26/2009	3.1	1.43	1.5	1	25	25	3	1	2	
203	Timber L-W	08/09/2009	3.1	1.70	1.5	1	22	25	2	1	2	
203	Timber L-W	08/23/2009	3.1	1.33	1.5	1	25	27	3	1	3	
203	Timber L-W	09/06/2009	3.1	1.55	1.5	1	17	25	3	1	3	
203	Timber L-W	09/20/2009	3.1	1.78	1.5	1	19	19	2	1	1	

Legend Information

Indicator	*Description*	*Detection Limit*	*Standard (S) / Criteria (C)*
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m)	0.1m	none
Tair	air temperature (C)	-10C	none
TH20	water temperature (C)	-10C	none
Laboratory Parameters			
Tot.P	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
NOx	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
TN	total nitrogen (mg/l)	0.01 mg/l	none
TN/TP	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
TCOLOR	true (filtered) color (ptu, platinum color units)	1 ptu	none
pH	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
Cond25	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
Ca	calcium (mg/l)	1 mg/l	none
Chl.a	chlorophyll a (ug/l)	0.01 ug/l	none
Fe	iron (mg/l)	0.1 mg/1	0.3 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (mg/l)	1 ug/l	10 ug/l (S)
Lake Assessment			
QA	water quality assessment, 5 point scale; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment, 5 point scale; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment, 5 point scale; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment, 8 choices; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		