

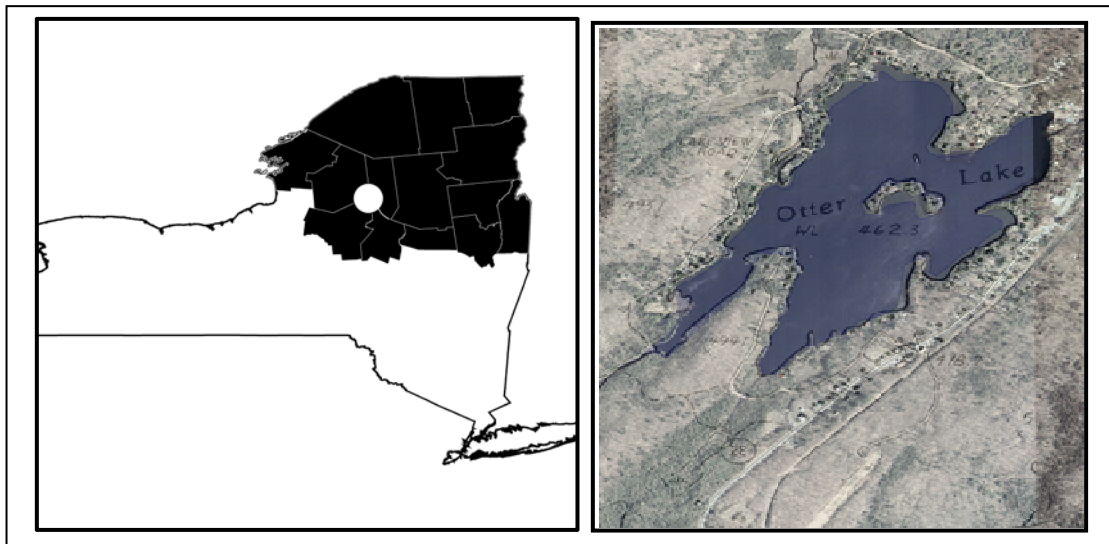
CSLAP 2011 Lake Water Quality Summary: Otter Lake

General Lake Information

Location	Town of Forestport
County	Oneida
Basin	Black River
Size	114 hectares (281.6 acres)
Lake Origins	Natural
Watershed Area	598 hectares (1477 acres)
Retention Time	0.35 years
Mean Depth	1.4 meters
Sounding Depth	3 meters
Public Access?	no
Major Tributaries	Otter Lake inlet
Lake Tributary To...	Otter Lake outlet to Long Lake outlet to Cummings Creek to Black River to Lake Ontario
WQ Classification	A (potable water)
Lake Outlet Latitude	43.556
Lake Outlet Longitude	-74.742
Sampling Years	1992-1996, 2002-2009, 2011
2011 Samplers	Scott Lincoln
Main Contact	Scott Lincoln

Lake Map

(sampling location marked with a circle)



Background

Otter Lake is a 282 acre, class A lake found in the Town of Forestport in Oneida County, in the southwestern Adirondack region of New York State. It was first sampled as part of CSLAP in 1992.

It is one of 3 CSLAP lakes among the >30 lakes found in Oneida County, and one of 16 CSLAP lakes among the >460 lakes and ponds in the Oswegatchie and Black Rivers drainage basin.

Lake Uses

Otter Lake is a Class A lake; this means that the best intended use for the lake is for potable water—drinking, contact recreation—swimming and bathing, non-contact recreation—boating, aquatic life and aesthetics.. The lake is used by lake residents and invited guests for a variety of recreational purposes—the lake has no public access.

Otter Lake is not stocked by the state of New York. It is not known by the report authors if private stocking occurs in Otter Lake.

General statewide fishing regulations are applicable in Otter Lake.

Historical Water Quality Data

CSLAP sampling was conducted on Otter Lake from 1992-1996, 2002-2009, and 2011. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The 2009 CSLAP report for Otter Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77821.html>.

Otter Lake was sampled on August 28th, 1931 by New York State Conservation Department (the predecessor of the NYSDEC) as part of the Biological Survey of the Black River basin. The majority of the water quality parameters measured through CSLAP were not measured in this biological survey, although pH readings were similar. The field notes from this survey included the following:

"Otter Lake is a small, shallow body of water with an irregular shoreline. Originally a speckled trout lake it is now the home of bass and perch, and an attempt has been made to establish the pike-perch. In spite of the haphazard stocking an abundance of fish is still present, due to the excellent weed beds and the high oxygen content of all parts of the water. The shallowness of the lake and the variety of habitats which it affords favor the production of large numbers of fish. It would seem wise to confine the efforts of all interested parties to the production of small mouth bass..."

The lake was also sampled in 1984 as part of the Eastern Lakes Survey (conducted by the US EPA), as part of the Adirondack Lake Survey Corporation (ALSC) study of 1500 Adirondack lakes in 1986, and as part of the NYSDEC Lake Classification and Inventory (LCI) survey in 1987. The results from these studies indicated water quality conditions that appeared to be comparable to those measured through CSLAP starting in 1992.

The Otter Lake inlet/outlet has not been monitored through the NYSDEC Rotating Intensive Basins (RIBS). The outlet was sampled 2 km downstream, near the confluence with Purgatory

Creek, as part of the DEC biological screening program. No biological impacts were reported. The lake has also not been sampled through any of the state fisheries monitoring programs

Lake Association and Management History

Otter Lake is represented by the Otter Lake Association. In addition to CSLAP, the lake association is involved in other watershed management projects, including:

- Black Fly Project
- Maintaining a web site
- Education about ongoing local and state projects

The lake association was also engaged in a proposal to stock grass carp in Otter Lake to control problems with excessive weeds, primarily bladderwort. More information about the Otter Lake Association can be found on their website <http://www.boxinghelp.com/otterlake/>

Summary of 2011 CSLAP Sampling Results

Evaluation of 2011 Annual and Monthly Results Relative to 2006-2010

The Lake Condition Summary Table below and Appendix B compare annual and monthly results from 2011 to those measured in previous CSLAP sampling seasons. The pertinent deviations from normal conditions are discussed below.

Evaluation of Eutrophication Indicators

An evaluation of 2011 eutrophication data in Otter Lake is incomplete due to limited data, including none before September. Water clarity and total phosphorus readings in Otter Lake were higher than normal in 2011, the former consistent with lower than normal algae levels. However, water clarity readings have decreased over the last twenty years, coincident with an increase in water color and phosphorus over the same period. Lake productivity does not usually exhibit any clear seasonal trends, but this can't be evaluated in 2011 (due to the lack of consistent seasonal data). The lake continues to be characterized as *mesotrophic*, based on water clarity, chlorophyll *a* and total phosphorus readings. The TSI evaluation suggests that the phosphorus, Secchi disk transparency and chlorophyll *a* readings are "internally" consistent; all are in the expected range given the readings for the other indicators. Overall trophic conditions are summarized on the Lake Scorecard.

Evaluation of Potable Water Indicators

Algae levels may at times be sufficiently high 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 it is not known if excessive treatment of the lake water is needed. Otter Lake is not thermally stratified, at least on a consistent basis, so deepwater samples have not been collected in the lake (and deepwater intakes to avoid surface algae-enriched waters are not possible).

Evaluation of Limnological Indicators

An evaluation of 2011 limnological data in Otter Lake is incomplete due to limited data, including none before September. Each of the nitrogen indicators and color were higher than normal, and pH, conductivity, and calcium were lower than normal. However, only color levels have exhibited a long-term change. Water color has increased over the last twenty years, perhaps contributing to a long-term decrease in water transparency. It is likely that the small changes in

these other indicators from year to year represent normal variability, although additional data would be needed to evaluate specific changes in 2011. Overall limnological conditions are summarized in the Lake Scorecard.

Evaluation of Biological Condition

A limited phytoplankton survey was conducted in 1992 and showed algae levels similar to those measured in a typical CSLAP sampling session. However, nearly the entire “algae” sample was comprised of bacteria, suggesting active decomposition of organic matter (decayed weeds or algae). The macrophyte data collected through CSLAP show high plant diversity, and no exotic plants were found in the lake (although some native plants may continue to grow to nuisance levels). The modified FQI indicates that the quality of the aquatic plant community is “excellent.”

The fish community in the lake is comprised of a mix of coolwater (at least three species) and warmwater (at least three species) fish. It is not known if the diversity of fish species in the lake is greater than apparent through the ALSC study. An analysis of the fish community evaluated through the ALSC, using the Minnesota fish biotic index, suggests that the quality of the fish community is “fair”.

Zooplankton and macroinvertebrates have not been monitored through CSLAP in Otter Lake. Zebra mussels are not found in the lake.

Evaluation of Lake Perception

Recreational and water quality assessments were more favorable than normal in 2011, consistent with higher than normal water clarity and lower than normal algae levels and aquatic plant coverage. However, water quality assessments have degraded slightly over the last twenty years, consistent with lower water clarity and higher color levels. Overall lake perception is summarized on the Lake Scorecard.

Evaluation of Local Climate Change

Air and water temperatures were lower than normal in 2011, but neither measure of local climate change has exhibited significant long-term change.

Evaluation of Algal Toxins

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Phycocyanin levels have been well below the levels indicating susceptibility for harmful algal blooms (HABs), so algal toxins have not been analyzed in these samples.

Lake Condition Summary

Category	Indicator	Min	91-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	1.05	2.04	3.30	2.07	Mesotrophic	Higher Than Normal	Decreasing Significantly
	Chlorophyll <i>a</i>	0.10	5.54	25.65	3.68	Mesotrophic	Lower Than Normal	No Change
	Total Phosphorus	0.004	0.013	0.031	0.015	Mesotrophic	Higher than Normal	Increasing Slightly
Potable Water Indicators	Hypolimnetic NH4					Lake not thermally stratified		
	Hypolimnetic As					Lake not thermally stratified		
	Hypolimnetic Iron					Lake not thermally stratified		
	Hypolimnetic Mn					Lake not thermally stratified		
Limnological Indicators	Hypolimnetic TP					Lake not thermally stratified		
	Nitrate + Nitrite	0.00	0.02	0.44	0.03	Low NOx	Higher than Normal	No Change
	Ammonia	0.01	0.04	0.14	0.06	Low Ammonia	Higher than Normal	No Change
	Total Nitrogen	0.10	0.50	0.99	0.53	Low Total Nitrogen	Higher than Normal	No Change
	pH	3.74	7.22	8.58	7.14	Circumneutral	Lower Than Normal	No Change
	Specific Conductance	45	108	228	90	Softwater	Lower Than Normal	No Change
	True Color	1	51	145	71	Colored	Higher than Normal	Increasing Significantly
	Calcium	3.2	6.5	8.8	5.7	Not Susceptible to Zebra Mussels	Lower Than Normal	No Change
Lake Perception	WQ Assessment	1	2.7	4	2.0	Definite Algal Greenness	More Favorable Than Normal	Slightly Degrading
	Plant Coverage	1	2.9	4	1.3	Surface Plant Growth	Less Coverage Than Normal	No Change
	Rec. Assessment	1	2.8	4	1.5	Slightly Impaired	More Favorable Than Normal	No Change
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Fair quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Not measured through CSLAP	Not known	Not known
	Fish					Warmwater fishery; "fair" fish IBI	Not known	Not known
	Invasive Species					None observed	Not known	Not known
Local Climate Change	Air Temperature	2	21.4	34	14.0		Lower Than Normal	No Change
	Water Temperature	10	20.9	27	14.3		Lower Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	7	10	14	10	All readings indicate low risk of BGA in open water	Not known	Not known
	Open Water Microcystis					No lakewide toxins data	Not known	Not known
	Shoreline Phycocyanin					No shoreline BGA blooms reported	Not known	Not known
	Shoreline Microcystis					No shoreline BGA blooms reported	Not known	Not known
	Other Toxins					No anatoxin-a or cylindrospermopsin data	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Otter Lake is presently among the lakes cited on the Upper Hudson River Basin PWL, with no known impacts to lake uses. The 2007 PWL listing for the lake is shown in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Otter Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water. The limited CSLAP data suggest that potable water use in the lake might be supported, although at times this use may be threatened by excessive algae.

Contact Recreation (Swimming)

The CSLAP dataset at Otter Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *threatened* by low water clarity, although bacterial data are needed to evaluate the safety of the lake for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Otter Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation may be *stressed* by excessive weeds, although these impacts were not reported in 2011.

Aquatic Life

The CSLAP dataset on Otter 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 Otter Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *stressed*, probably by excessive weeds, although this impact was not apparent in 2011.

Fish Consumption

There is no fish consumption advisories posted for Otter Lake.

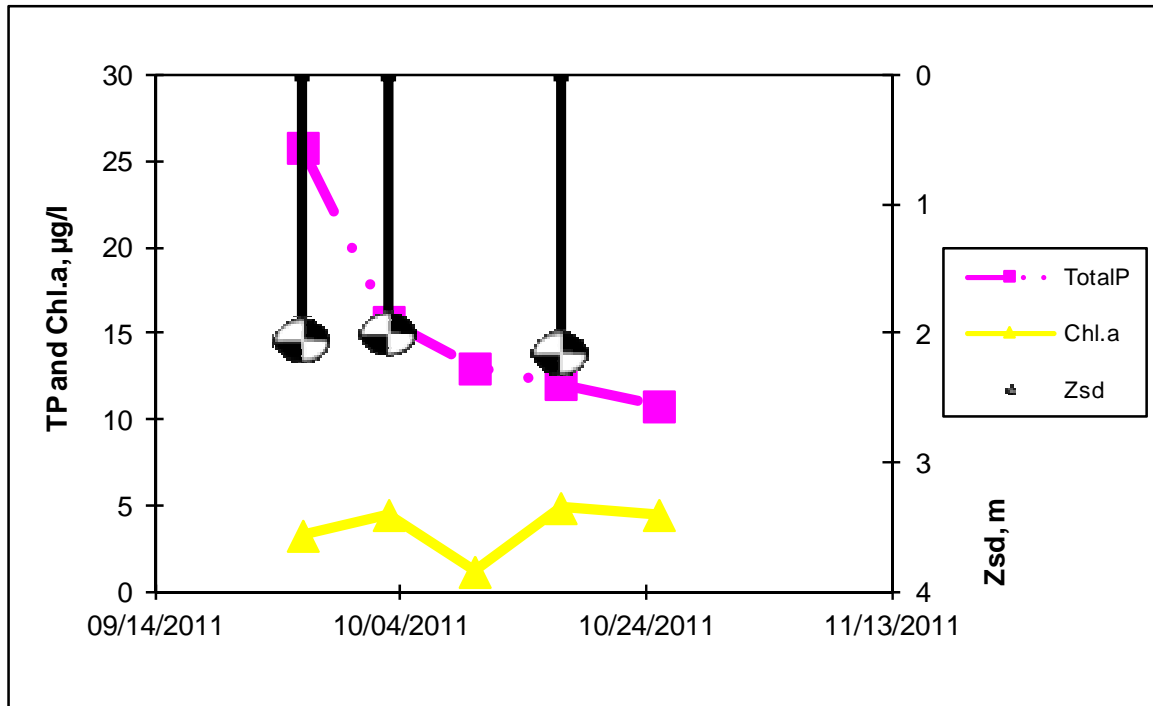
Additional Comments and Recommendations

It is not known if nuisance weeds (bladderwort or an exotic plant) is creating recreational use impacts and is undergoing active management.

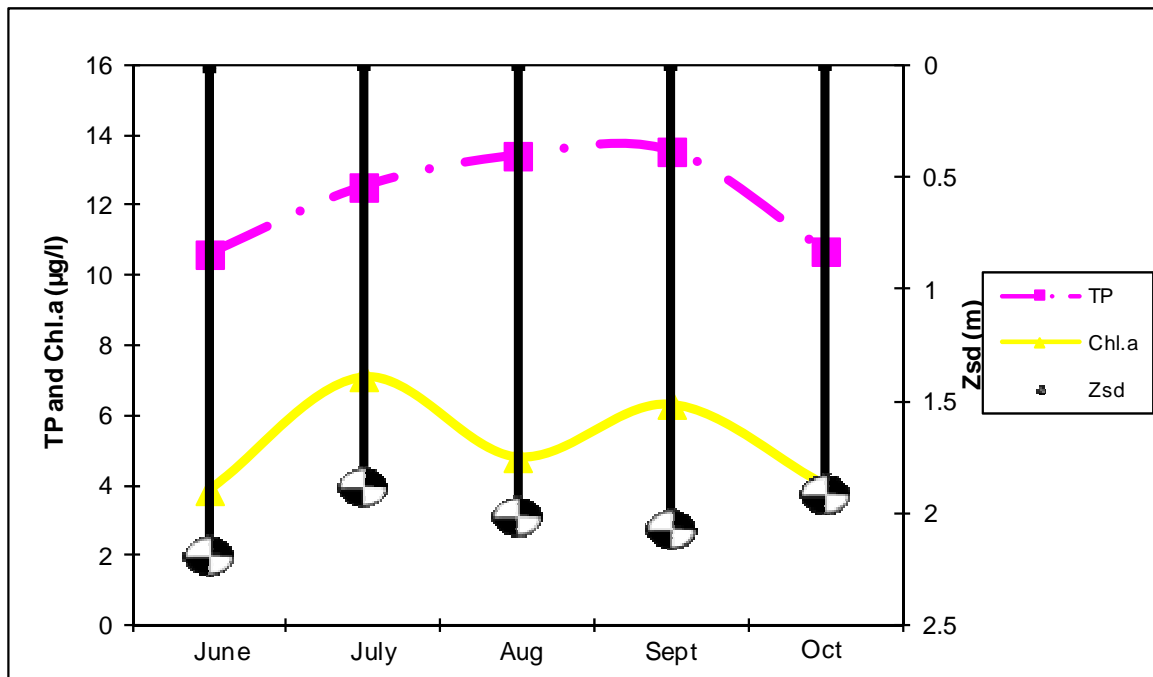
Aquatic Plant IDs-2011

None submitted for identification

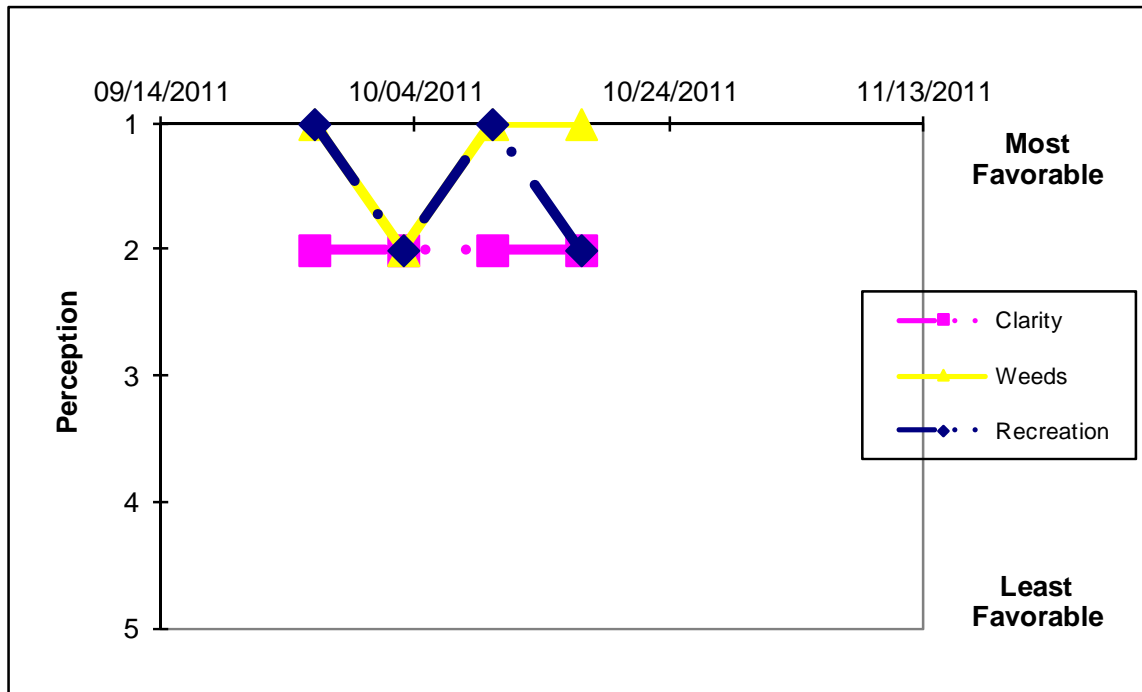
Time Series: Trophic Indicators, 2011



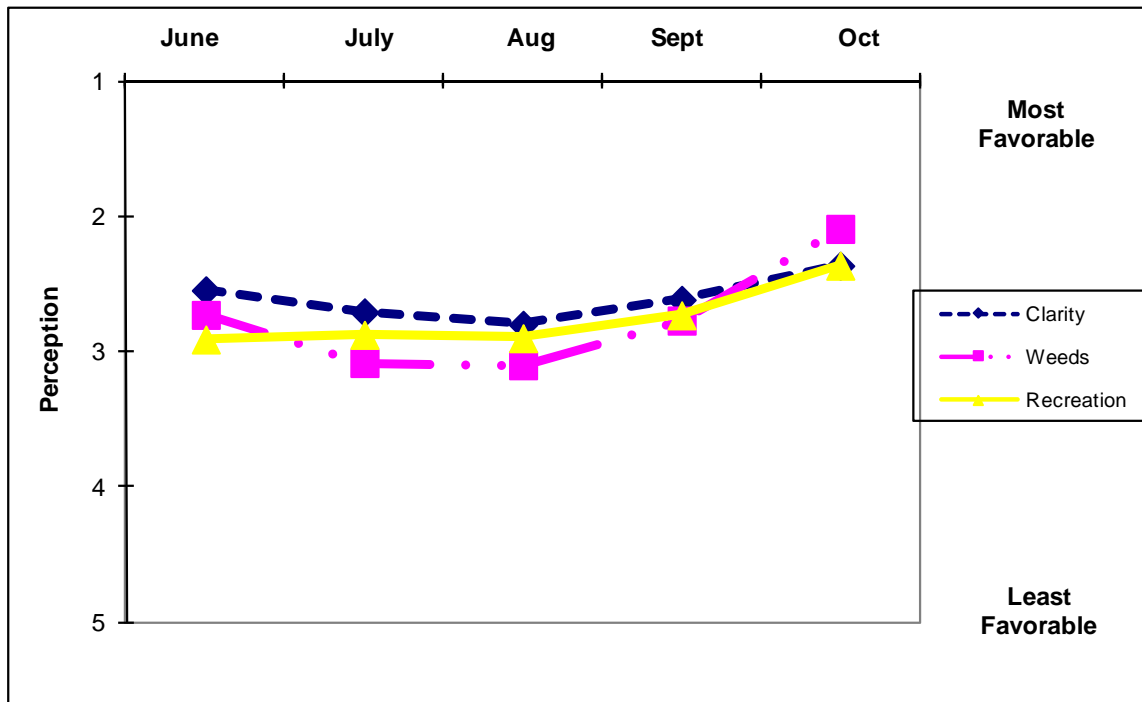
Time Series: Trophic Indicators, Typical Year (1992-2011)



Time Series: Lake Perception Indicators, 2011



Time Series: Lake Perception Indicators, Typical Year (1992-2011)



Appendix B- CSLAP Water Quality Sampling Results for Otter Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
99	Otter L	6/14/1992	2.8	2.38	1.5	0.011	0.01				29	7.23	93		2.74
99	Otter L	7/1/1992		2.42	1.5	0.012	0.01				26	7.43	99		
99	Otter L	7/12/1992	3.0	2.60	1.5	0.012	0.01				25	7.70	98		4.94
99	Otter L	8/1/1992	3.0	2.13	1.5	0.012	0.06				32	7.61	95		5.70
99	Otter L	8/9/1992	2.9	2.13	1.5	0.012	0.01				30	7.04	93		4.07
99	Otter L	8/23/1992	2.5	1.83	1.5	0.008	0.01				30	6.83	96		4.73
99	Otter L	9/6/1992	2.8	2.38	1.5	0.009	0.01				30	7.42	94		8.24
99	Otter L	9/20/1992	2.0	2.25	1.5	0.009	0.01				35	7.41	96		3.55
99	Otter L	7/5/1993	3.1	2.28	1.5	0.013	0.01				27	7.64	92		3.10
99	Otter L	7/18/1993	2.7	2.35	1.5	0.011					27	6.79	94		5.82
99	Otter L	8/1/1993	3.1	2.73	1.5	0.012	0.01				18	7.16	96		2.23
99	Otter L	8/15/1993	3.3	3.00	1.5	0.008					22	7.62	95		1.88
99	Otter L	8/29/1993	3.3	3.05	1.5	0.010	0.01				22	7.59	98		2.05
99	Otter L	9/12/1993	3.2	2.40	1.5	0.014					31	7.22	94		4.01
99	Otter L	9/26/1993	2.8	2.60	1.5	0.008	0.01				24	7.74	95		1.92
99	Otter L	10/11/1993	3.2	3.20	1.5	0.008					29	7.31	96		1.31
99	Otter L	6/12/1994	3.3	2.65	1.5	0.013	0.01				32	7.20	90		3.62
99	Otter L	6/19/1994	3.3	2.20	1.5	0.008					27	7.17	92		6.77
99	Otter L	7/10/1994	3.3	1.40	1.5	0.015	0.01				53	7.35	82		11.60
99	Otter L	7/24/1994	3.0	1.40	1.5	0.013	0.01				53	7.03	86		16.60
99	Otter L	8/13/1994	3.0	1.60	1.5	0.012	0.01				55	7.35	90		6.35
99	Otter L	8/28/1994	3.0	2.25	1.5	0.010					55	7.25	88		5.47
99	Otter L	9/5/1994	3.0	2.50	1.5	0.009	0.01				45	7.25	89		4.85
99	Otter L	10/2/1994	3.3	2.20	1.5	0.010					55	7.36	85		2.52
99	Otter L	7/8/1995	3.3	2.30	1.5	0.014	0.01				30	7.20	96		8.27
99	Otter L	7/22/1995	3.4	2.40	1.5	0.008	0.01				25	7.01	96		3.73
99	Otter L	8/1/1995	3.2	2.40		0.010	0.01				30				4.25
99	Otter L	8/14/1995	3.1	3.10	1.5	0.010	0.01				35	7.51	98		3.89
99	Otter L	8/27/1995	3.1	2.10	1.5	0.006	0.01				30	7.28	102		7.19
99	Otter L	9/12/1995	3.3	3.00	1.5	0.008	0.01				30	7.29	98		2.55
99	Otter L	9/24/1995	3.3	3.30	1.5	0.007	0.01				25	7.19	99		2.13
99	Otter L	10/8/1995	3.3	3.30	1.5	0.004	0.01				25	7.22	99		1.97
99	Otter L	6/9/1996	3.0	3.00	1.5	0.009	0.01				30	7.06	99		2.90
99	Otter L	7/7/1996	3.0	1.50	1.5	0.010	0.02				50	7.07	92		8.50
99	Otter L	7/24/1996	3.0	2.00	1.5	0.009	0.01				60	7.27	94		24.00
99	Otter L	8/7/1996			1.5	0.011	0.01				60	7.31	97		9.30
99	Otter L	8/21/1996	3.0	2.00	1.5	0.009	0.01				55	7.44	98		11.20
99	Otter L	9/2/1996	3.0	3.00	1.5	0.008	0.01				45	7.25	99		3.70
99	Otter L	9/23/1996	3.0	3.00	1.5	0.015	0.01				30	7.28	106		3.72
99	Otter L	7/22/2002	2.3	2.25	1.5	0.006	0.00	0.10	0.63	225.21	42	7.04	136		
99	Otter L	8/6/2002	2.0	2.10	1.5	0.007	0.00	0.04	0.60	176.56	43	7.33	139		15.50
99	Otter L	8/20/2002	1.8	1.90	1.5	0.011	0.00	0.05	0.54	107.57	23	7.29	142		
99	Otter L	9/3/2002	2.1	2.10	1.5	0.012	0.00	0.03	0.49	91.20	37				14.00
99	Otter L	9/15/2002	2.1	2.00	1.5		0.06	0.04	0.57						
99	Otter L	10/1/2002	2.1	2.10	1.5	0.010	0.00	0.01	0.57	125.19	28	7.40	141		11.32
99	Otter L	10/29/2002	1.9	2.00			0.04	0.05	0.52						
99	Otter L	6/10/2003		2.00	1.5	0.007	0.01	0.03	0.37	117.73	42	6.87	139	6.4	
99	Otter L	6/24/2003		1.90	1.5	0.010	0.00	0.03	0.32	70.02	51	6.88	139		14.27
99	Otter L	7/8/2003		1.85	1.5	0.013	0.03	0.05	0.45	74.73	40	7.23	148		25.45
99	Otter L	7/23/2003		2.00	1.5	0.011	0.01	0.03	0.40	80.39	44	7.04	144		4.13
99	Otter L	8/5/2003		2.00	1.5	0.010	0.00	0.01	0.54	118.89	39	7.04	148	7.8	14.20
99	Otter L	8/19/2003		2.00	1.5	0.008	0.00	0.02	0.38	104.62	48	6.99	143		9.26
99	Otter L	9/2/2003		1.85	1.5	0.005	0.02	0.01	0.42	174.01	38	6.93	142		10.79
99	Otter L	9/15/2003		1.85	1.5	0.011	0.00	0.01	0.31	63.02	39	7.16	149		25.65
99	Otter L	6/23/2004		2.00	1.5	0.015	0.02	0.01	0.72	108.80	51	6.19	133		1.94
99	Otter L	9/7/2004		2.15	1.5	0.011	0.02	0.03	0.34	68.22	52	7.32	117		10.90
99	Otter L	9/15/2004		2.00	1.5		0.02	0.01	0.53		49	6.90	88		
99	Otter L	9/22/2004		1.95	1.5	0.009	0.01	0.01			53	7.46	117		6.10
99	Otter L	9/29/2004		1.90	1.5	0.009	0.44	0.07	0.99	255.79	75	6.67	118		
99	Otter L	10/6/2004		2.05	1.5	0.009	0.01	0.02	0.20	48.27	47	7.28	117		
99	Otter L	6/2/2005		1.90	1.5	0.009	0.01	0.01	0.22	55.38	80	3.74	228		1.26
99	Otter L	6/28/2005		1.95		0.013	0.04	0.01	0.19	32.46	43	6.37	131	5.5	2.19
99	Otter L	7/12/2005		1.80	1.5	0.015	0.05	0.03	0.20	27.98	43	7.60	130		
99	Otter L	7/19/2005		1.95	1.5	0.009	0.01	0.02	0.47	120.25	37	8.58	114		1.13

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
99	Otter L	8/8/2005		1.80	1.5	0.014	0.07	0.01	0.21	32.96	42	7.14	127	7.8	1.00
99	Otter L	8/16/2005		1.95	1.5	0.016	0.08	0.01	0.28	37.76	64	7.38	118		1.32
99	Otter L	8/23/2005		2.05	1.5	0.012	0.01	0.01	0.10	18.58	52	7.25	69		1.23
99	Otter L	8/29/2005		1.85	1.5	0.008	0.01	0.01	0.25	67.97	36	7.12	70		2.45
99	Otter L	6/5/2006		2.05	1.5	0.012	0.03	0.05	0.52	93.85			46	5.0	1.05
99	Otter L	6/18/2006	5.6	2.05	1.5	0.010	0.02	0.02	0.47	102.26	64	7.02	126		1.82
99	Otter L	7/11/2006	4.1	1.75	1.5	0.013	0.04	0.08	0.68	117.92	54	7.16	171		1.37
99	Otter L	7/18/2006	5.9	1.95	1.5	0.012			0.76	134.76	66	6.61	76		2.80
99	Otter L	7/25/2006	5.5	1.80	1.5	0.016	0.03	0.10	0.85	120.44	109	7.22	92	3.2	2.96
99	Otter L	7/31/2006	5.7	1.85	1.5	0.019	0.01	0.14	0.69	79.22	62	6.72	117		8.92
99	Otter L	8/7/2006	5.9	1.85	1.5	0.014	0.02	0.13	0.59	90.94	93	7.20	121		7.45
99	Otter L	8/14/2006	5.3	1.70	1.5	0.015	0.02	0.06	0.79	114.99	72	7.60	66		6.06
99	Otter L	8/13/2007		2.20	1.5	0.022	0.01	0.03	0.70	71.07	67	7.58	140	7.8	0.24
99	Otter L	8/21/2007		2.25	1.5	0.022	0.04	0.04	0.78	79.66	81	7.50	133		0.64
99	Otter L	8/27/2007		1.85	1.5	0.031		0.04			93	8.33	74		0.29
99	Otter L	9/3/2007		1.75	1.5	0.027	0.01	0.02	0.70	58.45	104	7.88	120		8.79
99	Otter L	9/10/2007		1.85	1.5	0.022	0.03	0.05	0.68	66.98	145	7.47	111	8.6	7.16
99	Otter L	9/16/2007		1.85	1.5	0.021	0.04	0.05	0.78	82.81	67	7.68	128		3.77
99	Otter L	9/24/2007		1.78	1.5	0.018	0.01	0.01	0.62	74.00	53	7.37	138		0.29
99	Otter L	10/1/2007		1.78	1.5	0.017	0.02	0.11	0.46	59.60	1	7.64	163		3.76
99	Otter L	7/21/2008		2.30	1.5	0.012	0.04	0.06	0.42	73.95	48	7.79	115	8.8	3.58
99	Otter L	7/28/2008		1.65	1.5	0.017	0.04	0.05	0.32	41.19	65	7.78	85		10.02
99	Otter L	8/19/2008		1.55	1.5	0.031	0.01	0.05	0.34	24.51	59	7.26	143		5.52
99	Otter L	8/25/2008		1.65	1.5	0.021	0.02	0.06	0.36	38.99	75	6.91	119		4.80
99	Otter L	9/2/2008	1.5	1.23	1.5	0.024	0.00	0.01	0.44	40.13	80	7.90	115	7.0	8.18
99	Otter L	9/8/2008		1.43	1.5	0.017	0.01	0.03	0.58	74.03	62	7.41	108		6.65
99	Otter L	9/15/2008		1.20	1.5	0.017	0.01	0.06	0.53	68.47	63	7.27	104		8.52
99	Otter L	9/22/2008		1.28	1.5	0.013	0.03	0.05	0.42	72.22	52	7.48	124		2.81
99	Otter L	07/06/2009		1.60	2	0.015	0.00	0.03			79	7.03	102	5.1	1.71
99	Otter L	07/13/2009		1.20	2	0.012	0.03	0.08			44	6.69	45		2.95
99	Otter L	07/18/2009		1.10	2	0.012	0.01	0.02			54	7.46	141		4.79
99	Otter L	07/29/2009		1.35		0.014	0.01	0.04			80	6.34	93		0.10
99	Otter L	08/04/2009		1.05	2	0.017	0.01	0.07			78	7.65	88	6.7	3.25
99	Otter L	08/10/2009		1.15	2	0.013	0.02	0.04			68	7.25	88		1.70
99	Otter L	08/18/2009		1.20	2	0.014	0.02	0.03			79	7.17	59		0.80
99	Otter L	09/01/2009		1.25	2	0.010	0.02	0.03			75	7.14	116		0.10
99	Otter L	09/26/2011	5.50	2.05	2	0.026	0.04	0.05	0.54	46.30	71	7.58	105	5.7	3.30
99	Otter L	10/03/2011	5.50	2.00	2	0.016	0.01	0.07	0.53	74.83	56	7.98	97		4.50
99	Otter L	10/10/2011	4.00		2	0.013	0.02	0.05	0.63	107.12	70	7.41	100		1.20
99	Otter L	10/17/2011	5.00	2.15	2	0.012	0.04	0.07	0.44	80.36	60	6.31	59		4.90
99	Otter L	10/25/2011				0.011	0.05	0.07	0.50	100.83	98	6.43	89	5.6	4.50

LNum	PName	Date	Zsamp	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
99	Otter L	6/14/1992	1.5	24	21	2	3	3	23							
99	Otter L	7/1/1992	1.5	18	21											
99	Otter L	7/12/1992	1.5	25	21	2	4	3	25							
99	Otter L	8/1/1992	1.5	16	19	2	3	2	1							
99	Otter L	8/9/1992	1.5	26	21	2	4	3	2							
99	Otter L	8/23/1992	1.5	24	21	3	4	1	23							
99	Otter L	9/6/1992	1.5	19	19	3	3	4	2							
99	Otter L	9/20/1992	1.5	17	18	2	4	2	2							
99	Otter L	7/5/1993	1.5	30	23	2	3	2	21							
99	Otter L	7/18/1993	1.5	24	23	2	3	2	12							
99	Otter L	8/1/1993	1.5	27	25	3	3	3	23							
99	Otter L	8/15/1993	1.5	33	24	2	4	3	126							
99	Otter L	8/29/1993	1.5	34	23	3	3	3	12							
99	Otter L	9/12/1993	1.5	24	20	2	1	1								
99	Otter L	9/26/1993	1.5	18	16	3	3	2	25							
99	Otter L	10/11/1993	1.5	14	11	3	3	3	2							
99	Otter L	6/12/1994	1.5	26	19	3	4	3	123							
99	Otter L	6/19/1994	1.5	30	26	3	3	2	12							
99	Otter L	7/10/1994	1.5	22	23	3	3	2	1							
99	Otter L	7/24/1994	1.5	24	24	3	3	2								
99	Otter L	8/13/1994	1.5	23	22	2	3	2								
99	Otter L	8/28/1994	1.5	21	20	2	3	2	5							
99	Otter L	9/5/1994	1.5	25	17	1	3	2								
99	Otter L	10/2/1994	1.5	10	14											
99	Otter L	7/8/1995	1.5	18	23	2	3	2								
99	Otter L	7/22/1995	1.5	24	27	2	3	2								
99	Otter L	8/1/1995				2	3	2								
99	Otter L	8/14/1995	1.5	23	26	2	3	2								
99	Otter L	8/27/1995	1.5	16	22	2	3	2								
99	Otter L	9/12/1995	1.5	21	19	1	3	1								
99	Otter L	9/24/1995	1.5			1	3	1								
99	Otter L	10/8/1995	1.5	10	10	1	3	1								
99	Otter L	6/9/1996	1.5	23	21	1	2	1								
99	Otter L	7/7/1996	1.5	24	24	3	4	3	23							
99	Otter L	7/24/1996	1.5	22	24	3	3	3	123							
99	Otter L	8/7/1996	1.5			2	3	3								
99	Otter L	8/21/1996	1.5	20	25	3	3	2								
99	Otter L	9/2/1996	1.5	22	25	2	3	2								
99	Otter L	9/23/1996	1.5	17	18	1	3	2								
99	Otter L	7/22/2002	1.5	23		3	3	3	23							
99	Otter L	8/6/2002	1.5	20		3	3	3	237							
99	Otter L	8/20/2002	1.5	22												
99	Otter L	9/3/2002	1.5	24		3	3	3	235							
99	Otter L	9/15/2002	1.5	20												
99	Otter L	10/1/2002	1.5	20		3	3	3	23							
99	Otter L	10/29/2002		2		3	3	3	123							
99	Otter L	6/10/2003	1.5	20		2	2	3	12							
99	Otter L	6/24/2003	1.5	28		2	2	3	23							
99	Otter L	7/8/2003	1.5	23		2	3	3	1234							
99	Otter L	7/23/2003	1.5	23		3	3	3	1237							
99	Otter L	8/5/2003	1.5	23		4	3	3	235							
99	Otter L	8/19/2003	1.5	23		3	3	4	237							
99	Otter L	9/2/2003	1.5	19		4	4	4	12347							
99	Otter L	9/15/2003	1.5	18		4	3	4	12345							
99	Otter L	6/23/2004	1.5	21		3	3	4	1234							
99	Otter L	9/7/2004	1.5	23		4	3	4	1234							
99	Otter L	9/15/2004	1.5	22		3	3	4	1234							
99	Otter L	9/22/2004	1.5	21		3	3	4	12346							
99	Otter L	9/29/2004	1.5	20		3	3	4	234							
99	Otter L	10/6/2004	1.5	14		4	3	4	1234							
99	Otter L	10/12/2004	1.5	12		3	3	4	1234							
99	Otter L	6/2/2005	1.5	24		3	3	4	1234							

LNum	PName	Date	Zsamp	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
99	Otter L	6/28/2005		27		3	3	3	1234							
99	Otter L	7/12/2005	1.5	29		3	3	4	1234							
99	Otter L	7/19/2005	1.5	28		3	3	4	1234							
99	Otter L	8/8/2005	1.5	27		4	3	4	1234							
99	Otter L	8/16/2005	1.5	21		3	3	4	1234							
99	Otter L	8/23/2005	1.5	21		4	3	4	1234							
99	Otter L	8/29/2005	1.5	23		3	3	4	1234							
99	Otter L	6/5/2006	1.5	22	22	3	2	3	1234							
99	Otter L	6/18/2006	1.5	30		3	3	3	1234							
99	Otter L	7/11/2006	1.5	22		3	3	4	12346							
99	Otter L	7/18/2006	1.5	23		3	3	4	12346							
99	Otter L	7/25/2006	1.5	26		4	4	4	12346							
99	Otter L	7/31/2006	1.5	26		4	3	4	123467							
99	Otter L	8/7/2006	1.5	25		4	4	4	12346							
99	Otter L	8/14/2006	1.5	20		4	4	4	123467							
99	Otter L	8/13/2007	1.5	21		3	3	4	12346							
99	Otter L	8/21/2007	1.5	19		3	2	3	1234							
99	Otter L	8/27/2007	1.5	21		3	2	3	148							
99	Otter L	9/3/2007	1.5	23		3	2	3	1347							
99	Otter L	9/10/2007	1.5	18		3	2	3	134							
99	Otter L	9/16/2007	1.5	18		3	2	3	123							
99	Otter L	9/24/2007	1.5	22		3	2	3	134							
99	Otter L	10/1/2007	1.5	18		3	1	3	14							
99	Otter L	7/21/2008	1.5	25	21	2	3	3	136							
99	Otter L	7/28/2008	1.5	20	24	3	3	3	136							
99	Otter L	8/19/2008	1.5	16	22	3	3	3	135							
99	Otter L	8/25/2008	1.5	17	23	3	3	3	13456							
99	Otter L	9/2/2008	1.5	25	23	3	3	3	1							
99	Otter L	9/8/2008	1.5	19	22	3	3	3	4							
99	Otter L	9/15/2008	1.5	13	19	3	3	3	135							
99	Otter L	9/22/2008	1.5	16	19	3	3	3	13							
99	Otter L	07/06/2009	2	17	21	3	2	2	15							
99	Otter L	07/13/2009	2	21	23	3	3	3	1							
99	Otter L	07/18/2009	2	23	23	2	3	2	1							
99	Otter L	07/29/2009		25	24	2	3	2	123							
99	Otter L	08/04/2009	2	26	23	2	3	3	125							
99	Otter L	08/10/2009	2	23	23	3	3	2	135							
99	Otter L	08/18/2009	2	27	25	2	3	2	1							
99	Otter L	09/01/2009	2	18	22	2	3	2	1							
99	Otter L	09/26/2011	2			2	1	1	1	4		12.60	6.30			
99	Otter L	10/03/2011	2	12	15	2	2	2	1	0	0	14.20	6.60			
99	Otter L	10/10/2011	2	21	17	2	1	1	19	0	0	7.20	5.20			
99	Otter L	10/17/2011	2	9	11	2	1	2	0	0	0	7.90	4.10			
99	Otter L	10/25/2011										8.90	6.70			

Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
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) (epi = surface, hypo = bottom)	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/l	1.0 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1 ug/l	10 ug/l (S)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	0.3 ug/l	none
Cyl	Cylindrospermopsin (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 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; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 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		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		

Appendix B- Monthly Evaluation of Otter Lake Data, 2006-2011

June Data

	2006	2007	2008	2009	2010	2011
<i>Zsd</i>	NORMAL					
<i>TP</i>	NORMAL					
<i>Chl.a</i>	NORMAL					
<i>NOx</i>	NORMAL					
<i>NH4</i>	NORMAL					
<i>TN</i>	NORMAL					
<i>pH</i>	NORMAL					
<i>SpCond</i>	NORMAL					
<i>Color</i>	NORMAL					
<i>Ca</i>	NORMAL					
<i>QA</i>	NORMAL					
<i>QB</i>	NORMAL					
<i>QC</i>	NORMAL					
<i>TH20</i>	NORMAL					

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

July Data

	2006	2007	2008	2009	2010	2011
<i>Zsd</i>	NORMAL		NORMAL	NORMAL		
<i>TP</i>	NORMAL		NORMAL	NORMAL		
<i>Chl.a</i>	NORMAL		NORMAL	NORMAL		
<i>NOx</i>	NORMAL		NORMAL	NORMAL		
<i>NH4</i>	HIGH		NORMAL	NORMAL		
<i>TN</i>	HIGH		NORMAL	NORMAL		
<i>pH</i>	NORMAL		HIGH	NORMAL		
<i>SpCond</i>	NORMAL		NORMAL	NORMAL		
<i>Color</i>	NORMAL		NORMAL	NORMAL		
<i>Ca</i>	LOW		HIGH	NORMAL		
<i>QA</i>	NORMAL		NORMAL	NORMAL		
<i>QB</i>	HIGH		NORMAL	NORMAL		
<i>QC</i>	NORMAL		NORMAL	LOW		
<i>TH20</i>			NORMAL	NORMAL		

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

August Data

	2006	2007	2008	2009	2010	2011
Zsd	NORMAL	NORMAL	NORMAL	LOW		
TP	NORMAL	HIGH	HIGH	NORMAL		
Chl.a	NORMAL	LOW	NORMAL	NORMAL		
NOx	NORMAL	NORMAL	NORMAL	NORMAL		
NH4	HIGH	NORMAL	NORMAL	NORMAL		
TN	NORMAL	HIGH	NORMAL	NORMAL		
pH	NORMAL	HIGH	NORMAL	NORMAL		
SpCond	NORMAL	NORMAL	NORMAL	NORMAL		
Color	HIGH	HIGH	NORMAL	NORMAL		
Ca		NORMAL		NORMAL		
QA	NORMAL	NORMAL	NORMAL	NORMAL		
QB	HIGH	NORMAL	NORMAL	NORMAL		
QC	NORMAL	NORMAL	NORMAL	LOW		
TH20			NORMAL	NORMAL		

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

September Data

	2006	2007	2008	2009	2010	2011
Zsd		NORMAL	NORMAL	NORMAL		NORMAL
TP		HIGH	NORMAL	NORMAL		HIGH
Chl.a		NORMAL	NORMAL	LOW		NORMAL
NOx		NORMAL	NORMAL	NORMAL		HIGH
NH4		NORMAL	NORMAL	NORMAL		NORMAL
TN		NORMAL	NORMAL	NORMAL		NORMAL
pH		NORMAL	NORMAL	NORMAL		NORMAL
SpCond		NORMAL	NORMAL	NORMAL		NORMAL
Color		HIGH	NORMAL	NORMAL		NORMAL
Ca		HIGH	NORMAL			NORMAL
QA		NORMAL	NORMAL	NORMAL		NORMAL
QB		NORMAL	NORMAL	NORMAL		LOW
QC		NORMAL	NORMAL	LOW		LOW
TH20			NORMAL	NORMAL		

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

Appendix C- PWL Listing for Otter Lake

Otter Lake (0801-0205)

MinorImpacts

Waterbody Location Information

Revised: 03/12/2007

Water Index No:	Ont 19- 94- 1-P922- 4-P926	Drain Basin:	Black River
Hydro Unit Code:	04150101/030	Str Class:	A
Waterbody Type:	Lake (Mesotrophic)	Reg/County:	6/Oneida Co. (33)
Waterbody Size:	134.4 Acres	Quad Map:	MCKEEVER (G-20-0)
Seg Description:	entire lake		

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Recreation	Stressed	Known

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (aquatic weeds)
Suspected: ---
Possible: ---

Source(s) of Pollutant(s)

Known: HYDRO MODIFICATION
Suspected: ---
Possible: ---

Resolution/Management Information

Issue Resolvability:	1 (Needs Verification/Study (see STATUS))	
Verification Status:	4 (Source Identified, Strategy Needed)	
Lead Agency/Office:	ext/WQCC	Resolution Potential: Medium
TMDL/303d Status:	n/a	

Further Details

Recreational uses in Otter Lake are known to experience minor impacts due to excessive weed growth. High weed densities and associated impacts have been reported through the CSLAP program and verified by DEC staff.

Otter Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1992 thru 1996 and in 2002 and continuing through the present. An Interpretive Summary report of the findings of this sampling was published in 2006. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive. Phosphorus levels in the lake fall well below the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements also meet what is recommended for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5. The lake water is moderately to highly colored, which is also typical of northwestern Adirondack Lakes, and likely reflects natural conditions. Oxygen levels do not appear to be significantly reduced at lower lake depths and internal nutrient cycling is not significant. (DEC/DOW, BWAM/CSLAP, June 2006)

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. These assessment indicate recreational suitability of the lake to be unfavorable. The recreational suitability of the lake is described most frequently

as "slightly" to "substantially" impacted. The lake itself is most often described as having "definite algal greenness." Assessments have noted that aquatic plants regularly grow to the lake surface. Recreational impacts stem from excessive weed growth, and poor water clarity, as a result of occasionally elevated algae levels and naturally high water color, and despite nutrient levels that remain low. It is likely that these impacts are associated with excessive growth of bladderwort (a weakly rooted plant) in the lake. (DEC/DOW, BWAM/CSLAP, June 2006)

This lake waterbody is designated class A, suitable for use as a water supply, public bathing beach, general recreation and aquatic life support. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess potable water supply and public bathing use is generally the responsibility of state and/or local health departments.