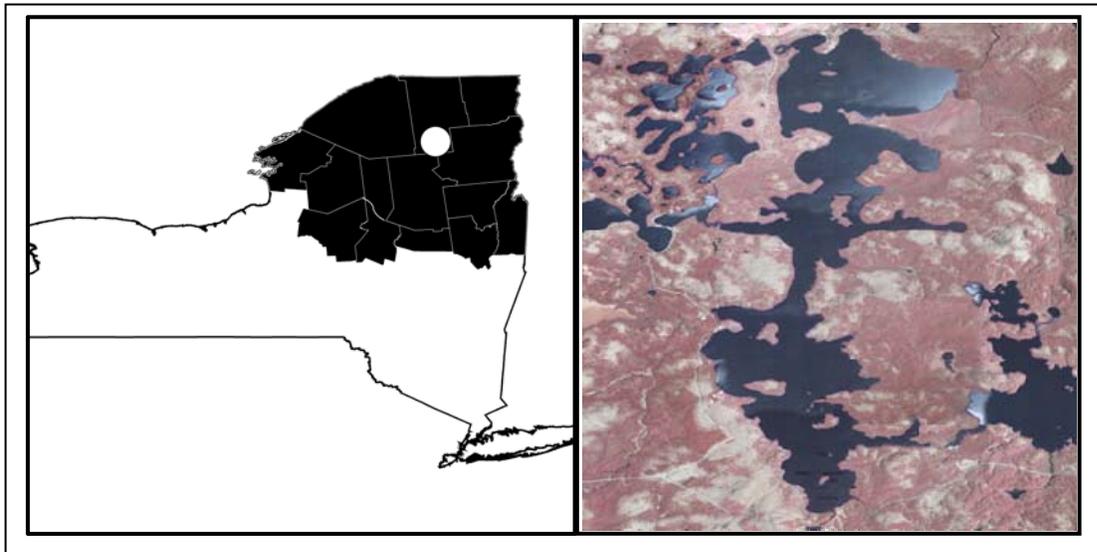


CSLAP 2011 Lake Water Quality Summary: Upper Saranac Lake

General Lake Information

Location	Town of Harrietstown
County	Franklin
Basin	Lake Champlain
Size	2,046.1 hectares (5,053.9 acres)
Lake Origins	Natural
Watershed Area	19,580 hectares (48,362 acres)
Retention Time	1.3 years
Mean Depth	7.9 meters
Sounding Depth	28 meters
Public Access?	DEC and cartop launch
Major Tributaries	Saranac River, Brandy Brook, many additional tributaries
Lake Tributary To...	Saranac River to....to Lake Champlain
WQ Classification	AA (potable water)
Lake Outlet Latitude	44.251
Lake Outlet Longitude	-74.297
Sampling Years	2006-2007, 2009-2011
2011 Samplers	Corey Laxson and Liz Yeager
Main Contact	Corey Laxson

Lake Map



Background

Upper Saranac Lake is a 5050 acre, class AA lake found in the Town of Harrietstown in Franklin County, in the northern Adirondack region of New York State. It was first sampled as part of CSLAP in 2006.

It is one of 16 CSLAP lakes among the more than 220 lakes found in Franklin County, and one of 15 CSLAP lakes among the more than 235 lakes and ponds in the Lake Champlain drainage basin.

Lake Uses

Upper Saranac Lake is a Class AA lake; this means that the best intended use for the lake is for potable water use—drinking, contact recreation—swimming and bathing, non-contact recreation—boating and angling, aquatic life, and aesthetics. The lake is used by lake residents and visitors for swimming, boating and other recreation via shoreline properties and several public boat launches.

Upper Saranac Lake has been regularly stocked through the state fisheries stocking programs. In a typical year, about 9,000 eight to nine inch brown trout, 12,000 eight to nine inch rainbow trout, and 13,000 seven inch lake trout are stocked by the state. It is not known by the report author if any private stocking has occurred. The DEC Bureau of Fisheries reports that the lake maintains a population of smallmouth bass, northern pike, brown bullhead, brown trout, yellow perch, rainbow trout, rainbow smelt, lake trout, and largemouth bass.

General statewide fishing regulations are applicable in Upper Saranac Lake. However, lake trout and trout fishing season is April 1st to October 15th; there are no (minimum) size limits for trout, lake trout must be more than 23 inches in length, and daily takes for each are limited to five fish. Ice fishing is permitted; tip-ups are prohibited. Yellow perch and sunfish can be caught all year, with no size or take limits.

Statewide fish consumption advisories apply to Upper Saranac Lake—no site-specific advisories have been issued for the lake.

Historical Water Quality Data

CSLAP sampling was conducted on Upper Saranac Lake in 2006, 2007, 2009 through 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 and 2010 CSLAP reports for Upper Saranac Lake can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77871.html>.

Upper Saranac Lake has been sampled as part of a number of previous monitoring programs. An incomplete list includes the 1929 Conservation Department survey of the lake as part of the Lake Champlain Basin Biological Survey, a NYSDOH study of the lake in 1971, DEC surveys of the lake in 1981, 1987, and 1991, studies conducted by Paul Smiths College during much of the 1990s, the Cedar Eden studies of the lake in recent years, including 2005, and the Clean Lakes study of the lake in 1995 and 1996.

Lake Association and Management History

Upper Saranac Lake is served by the Upper Saranac Lake Association and the Upper Saranac Lake Foundation. The lake association and foundation have been involved in a variety of lake management actions, including:

- Lake water quality monitoring and evaluation
- Septic education and management
- Milfoil management in cooperation with the Adirondack Watershed Institute

Much of this work is managed by the Upper Saranac Lake Waterkeeper. The Upper Saranac Lake Association maintains a website at <http://www.upper saranac.com/>; the Foundation maintains a website at <http://www.usfl.org>.

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

Water clarity readings were lower than normal in both the north and south basins in 2011, particularly in late summer, but total phosphorus and chlorophyll *a* readings in both basins were close to normal, despite a slight long-term decrease in phosphorus levels in the south basin since the mid 2000s. Lake productivity does not usually exhibit any clear long-term trends, although lake productivity in the south basin increased slightly (as manifested in increasing nutrient and algae levels, and decreasing water clarity) during the summer of 2011. The lake continues to be characterized as *mesotrophic*, based on water clarity, chlorophyll *a*, and total phosphorus readings (all typical of *mesotrophic* lakes). The trophic state indices (TSI) evaluation suggests that each of these trophic indicators are “internally consistent”—each of these indicators are in the expected range given the readings of the other indicators. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table. Lake productivity is slightly lower in the south basin than in the north basin, although trophic conditions in both basins are typical of *mesotrophic* lakes.

Evaluation of Potable Water Indicators

Algae levels may at times be 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 it is not known if this use is impacted by algae. Hypolimnetic phosphorus and ammonia readings in both basins of Upper Saranac Lake are close to those measured at the lake surface. However, deepwater iron and manganese levels are elevated in both basins. This suggests that deepwater intakes may be somewhat compromised for any deep potable water use. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Limnological Indicators

In both basins, pH readings were higher than normal, and total nitrogen readings were lower than normal in both sites, the latter part of a long-term trend. Conductivity readings were also higher than normal in 2011 in the south basin, part of a long-term increase in conductivity in this basin. Each of the other indicators was close to normal in 2011, and none of these other indicators has exhibited any clear long-term trends. Overall limnological conditions for both basins are summarized in the Lake Scorecard and Lake Condition Summary Table. Limnological conditions were mostly comparable in both basins of the lake.

Evaluation of Biological Condition

Macrophyte communities in the lake were evaluated through the federal Clean Lakes study of the lake. These plant surveys found a very high plant diversity, with at least forty plant species, including two protected plant species (*Myriophyllum farwellii*, Farwell's milfoil, and *Potamogeton alpinus*, northern pondweed) and one invasive exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil). The modified floristic quality index (FQI) indicates that the quality of the aquatic plant community is "excellent."

The fish community in the lake is comprised of a mix of coldwater (at least three species), coolwater (at least two species) and warmwater (at least three species) fish. This indicates that the lake supports a two story fishery.

Phytoplankton, zooplankton and macroinvertebrate surveys have not been conducted through CSLAP at Upper Saranac Lake.

Biological conditions in the lake are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Lake Perception

Water quality assessments in the north basin were more favorable than normal in 2011, despite lower than normal water transparency readings, and despite the lack of a similar change in the south basin. Recreational assessments in both basins were close to normal in both basins in 2011, consistent with the lack of significant change in aquatic plant coverage in the north and south basin. Lake perception does not normally exhibit any clear seasonal trends, and no seasonal differences were apparent in 2011 at either site. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table. Lake perception is comparable at both sampling sites, despite slightly lower lake productivity in the south basin.

Evaluation of Local Climate Change

Water and air temperature readings in the summer index period were higher than normal in 2011 at both sampling sites, although no long-term trends in these temperatures have been apparent. Additional data may help to determine if air and water temperature readings can be used to evaluate local climate change in the lake.

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 readings are usually below the levels indicating susceptibility for harmful algal blooms (HABs), and the limited open water toxins data indicate microcystin readings below the thresholds associated with safe swimming.

Lake Condition Summary-North Basin

Category	Indicator	Min	06-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.20	3.06	4.13	2.55	Mesotrophic	Lower Than Normal	No Change
	Chlorophyll <i>a</i>	0.78	4.56	10.52	4.49	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.007	0.014	0.029	0.015	Mesotrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic NH4	0.02	0.07	0.20	0.07	Close to Surface NH4 Readings	Within Normal Range	Not known
	Hypolimnetic As	0.50	0.85	1.10	0.75	Low Deepwater Arsenic Levels	Within Normal Range	Not known
	Hypolimnetic Iron	0.01	2.03	5.86	1.18	Highly Elevated Deepwater Fe	Lower Than Normal	Not known
	Hypolimnetic Mn	0.01	0.51	0.96	0.39	Highly Elevated Deepwater Mn	Within Normal Range	Not known
Limnological Indicators	Hypolimnetic TP	0.010	0.041	0.159	0.032	Close to Surface TP Readings	Within Normal Range	Not known
	Nitrate + Nitrite	0.00	0.02	0.13	0.02	Low NOx	Within Normal Range	No Change
	Ammonia	0.01	0.03	0.16	0.02	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.15	0.34	0.54	0.25	Low Total Nitrogen	Lower Than Normal	Decreasing Slightly
	pH	6.36	7.45	8.79	8.09	Circumneutral	Higher than Normal	No Change
	Specific Conductance	28	56	96	63	Softwater	Within Normal Range	No Change
	True Color	2	25	65	28	Intermediate Color	Within Normal Range	No Change
	Calcium	4.0	4.8	8.4	4.1	Not Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	2.2	3	1.6	Not Quite Crystal Clear	More Favorable Than Normal	No Change
	Plant Coverage	1	1.5	3	1.0	Subsurface Plant Growth	Within Normal Range	No Change
	Rec. Assessment	1	1.7	4	1.0	Excellent	Within Normal Range	No Change
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Excellent 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					Two story fishery	Not known	Not known
	Invasive Species					Eurasian watermilfoil	Not known	Not known
Local Climate Change	Air Temperature	10	18.6	29	22.0		Higher Than Normal	No Change
	Water Temperature	11	19.7	26	21.1		Higher Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	7	33	167	12	Most readings indicate low risk of BGA	Not known	Not known
	Open Water Microcystis	0.2	0.2	0.2	0.2	All readings indicate low lakewide toxins	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					Low anatoxin-a or cylindrospermopsin levels	Not known	Not known

Lake Condition Summary-South Basin

Category	Indicator	Min	06-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.23	3.37	4.90	2.76	Mesotrophic	Lower Than Normal	No Change
	Chlorophyll <i>a</i>	0.70	4.38	9.83	4.78	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.008	0.012	0.021	0.012	Mesotrophic	Within Normal Range	Decreasing Slightly
Potable Water Indicators	Hypolimnetic NH4	0.01	0.05	0.15	0.07	Close to Surface NH4 Readings	Higher than Normal	Not known
	Hypolimnetic As	0.50	0.63	0.80	0.50	Low Deepwater Arsenic Levels	Within Normal Range	Not known
	Hypolimnetic Iron	0.01	0.37	1.57	0.15	Elevated Deepwater Fe	Lower Than Normal	Not known
	Hypolimnetic Mn	0.04	0.82	1.97	0.45	Highly Elevated Deepwater Mn	Lower Than Normal	Not known
Limnological Indicators	Hypolimnetic TP	0.007	0.038	0.350	0.017	Close to Surface TP Readings	Lower Than Normal	Not known
	Nitrate + Nitrite	0.00	0.03	0.11	0.02	Low NOx	Within Normal Range	No Change
	Ammonia	0.01	0.03	0.20	0.02	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.11	0.34	0.83	0.25	Low Total Nitrogen	Lower Than Normal	Decreasing Slightly
	pH	6.12	7.38	9.13	7.88	Circumneutral	Higher than Normal	No Change
	Specific Conductance	28	54	94	63	Softwater	Higher than Normal	Increasing Slightly
	True Color	7	20	44	23	Intermediate Color	Within Normal Range	No Change
	Calcium	3.9	4.6	6.0	4.7	Not Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	2.2	3	1.9	Not Quite Crystal Clear	Within Normal Range	No Change
	Plant Coverage	1	1.5	3	1.0	Subsurface Plant Growth	Within Normal Range	No Change
	Rec. Assessment	1	1.7	4	1.3	Excellent	Within Normal Range	No Change
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Excellent 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					Two story fishery	Not known	Not known
	Invasive Species					Eurasian watermilfoil	Not known	Not known
Local Climate Change	Air Temperature	10	19.1	29	21.5		Higher Than Normal	No Change
	Water Temperature	11	19.6	25	20.8		Higher Than Normal	No Change
Harmful Algal Blooms	Open Water Phycocyanin	5	21	58	14	All readings indicate low risk of BGA	Not known	Not known
	Open Water Microcystis					No lakewide toxin 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

The 2009 NYSDEC Priority Waterbody Listings (PWL) for the Lake Champlain drainage basin indicated that *aquatic life* is *stressed* and recreation is *threatened* in Upper Saranac Lake due to low deepwater oxygen readings and the presence of Eurasian watermilfoil. The PWL listing for Upper Saranac Lake is shown in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Upper Saranac 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 data indicate that any deepwater intakes may be *stressed* in the south basin and *threatened* in the north basin for potable water due to elevated iron and manganese levels, and surface intakes may be *threatened* by occasionally excessive algae in both basins.

Contact Recreation (Swimming)

The CSLAP dataset at Upper Saranac Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *stressed* by excessive nutrients and reduced water clarity, particularly in the north basin, 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 Upper Saranac Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation should be fully supported, although these uses may be *threatened* by the presence of Eurasian watermilfoil (particularly if active management of the milfoil beds is curtailed).

Aquatic Life

The CSLAP dataset on Upper Saranac Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *threatened* by deepwater anoxia and the presence of exotic plants. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics

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

Fish Consumption

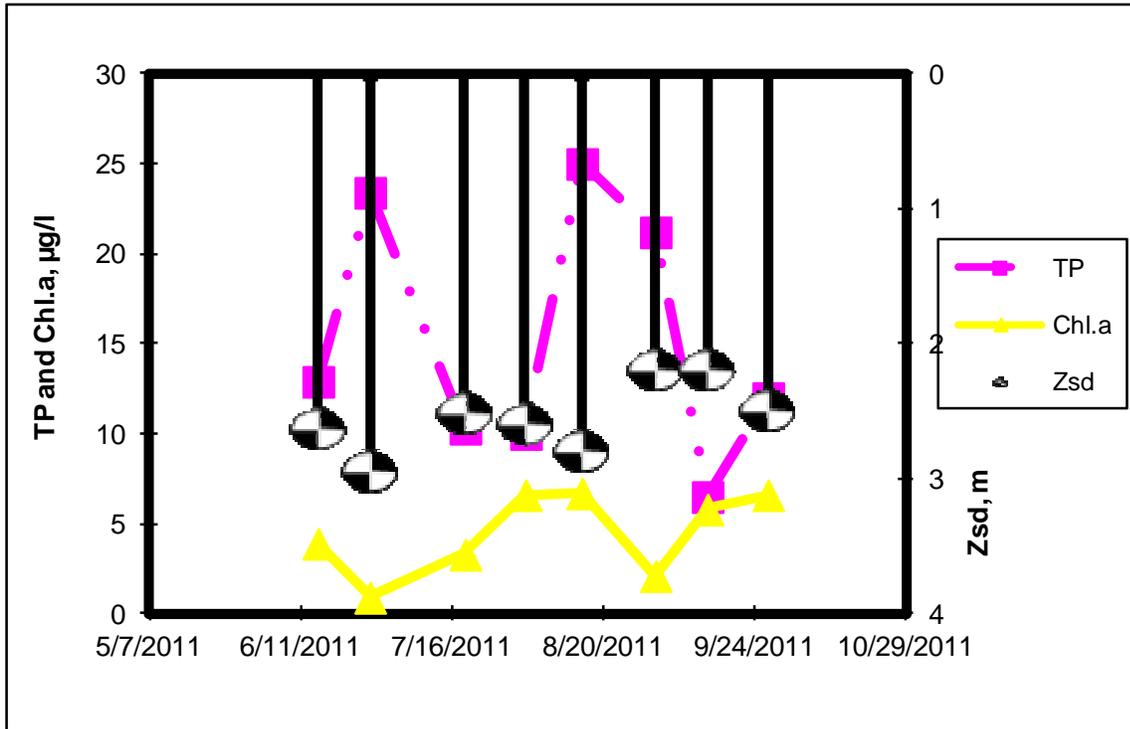
There are no fish consumption advisories posted for Upper Saranac Lake.

Additional Comments and Recommendations

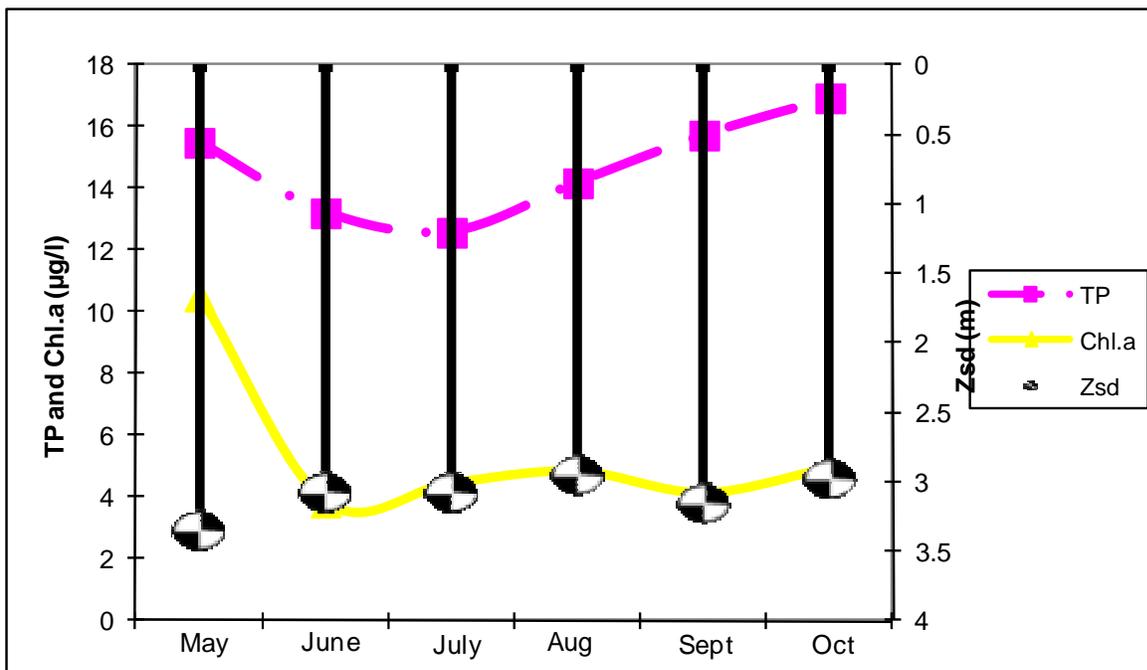
It is not known if occasionally elevated algae levels affect potable water use of the lake—this may become apparent with additional data or local reports.

Aquatic Plant IDs-2011
None submitted for identification

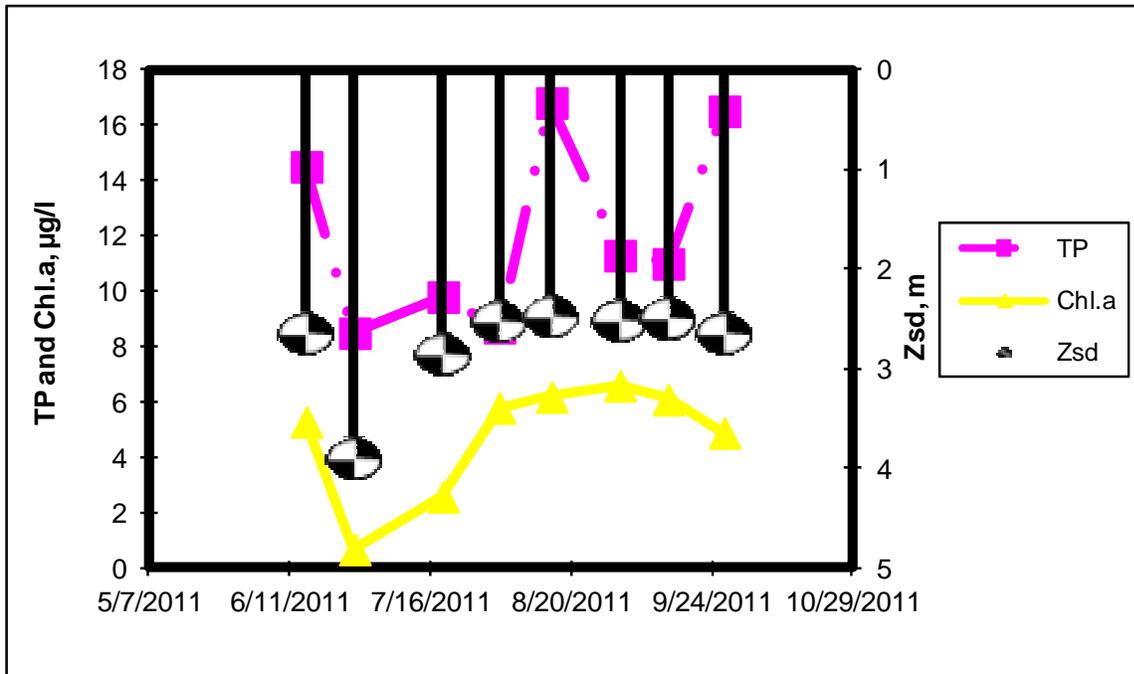
Time Series: Trophic Indicators, 2011- North Basin



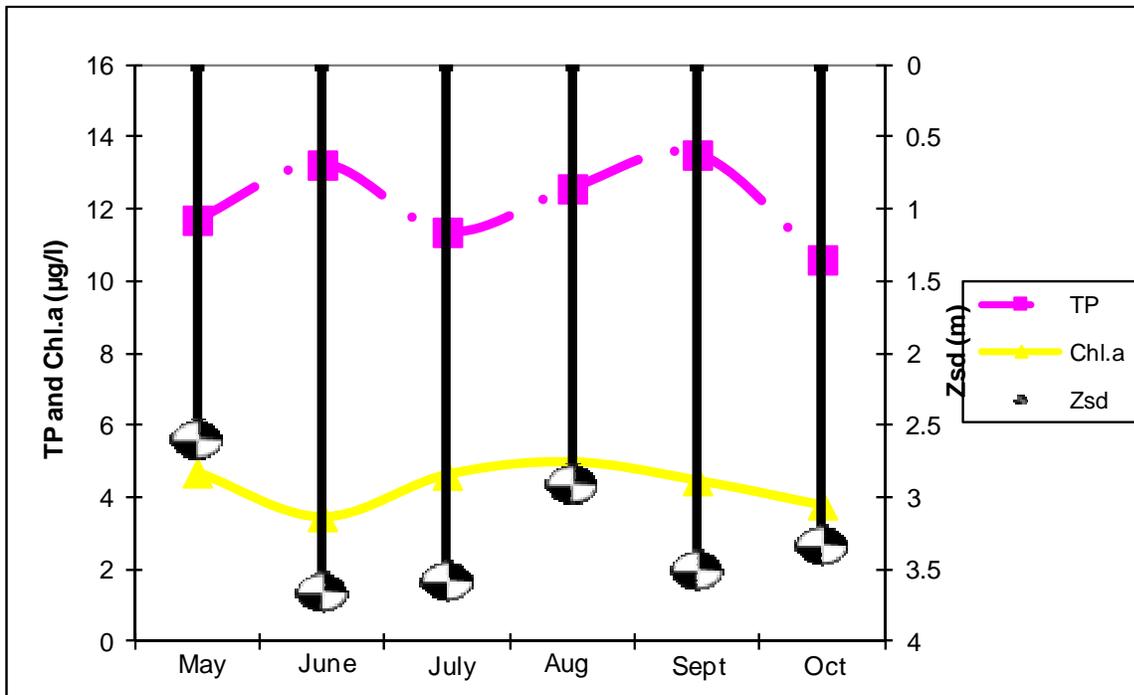
Time Series: Trophic Indicators, Typical Year (2006-2011)-North Basin



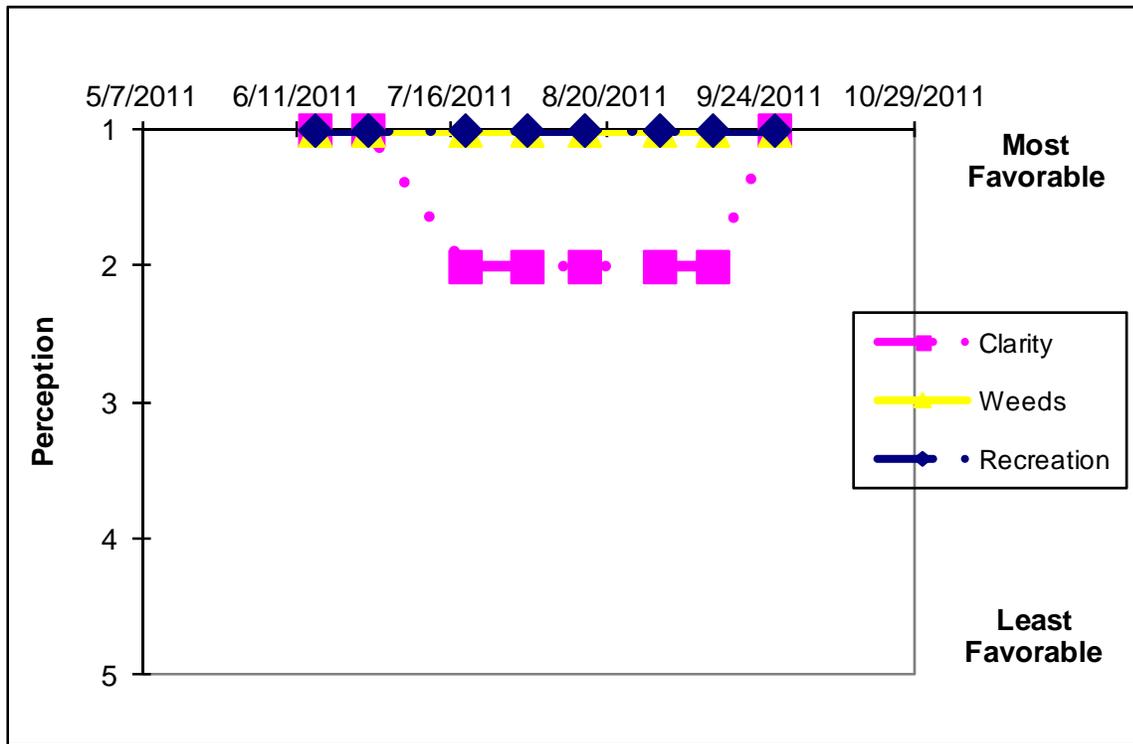
Time Series: Trophic Indicators, 2011- South Basin



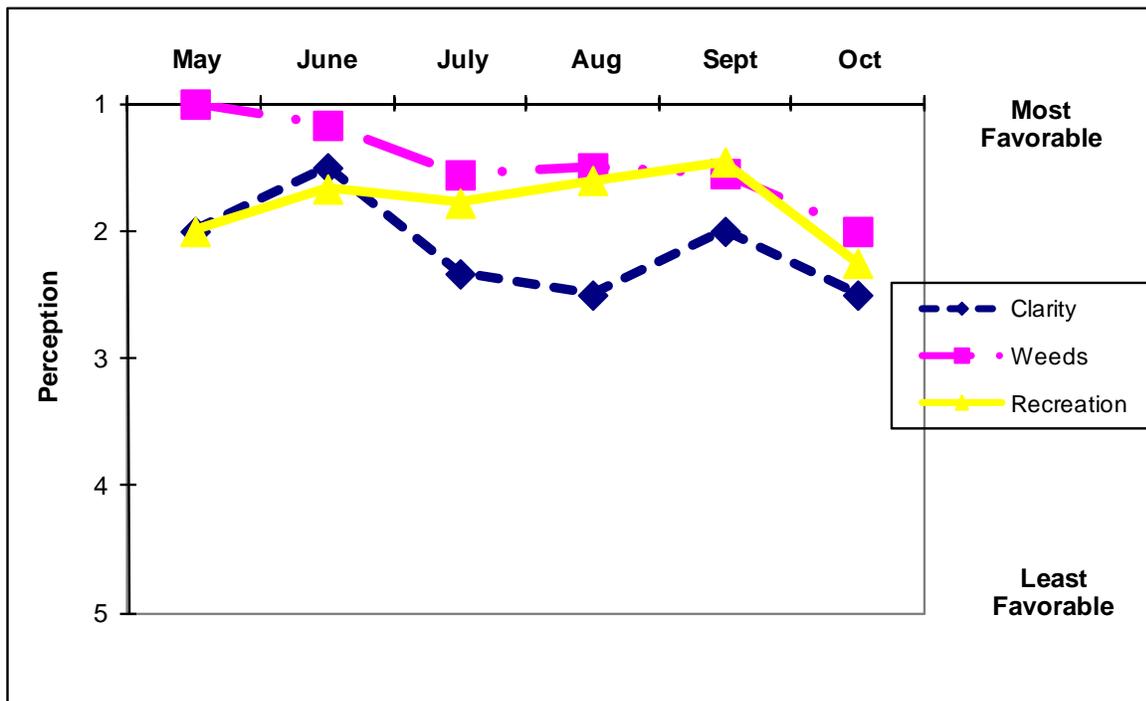
Time Series: Trophic Indicators, Typical Year (2006-2011)- South Basin



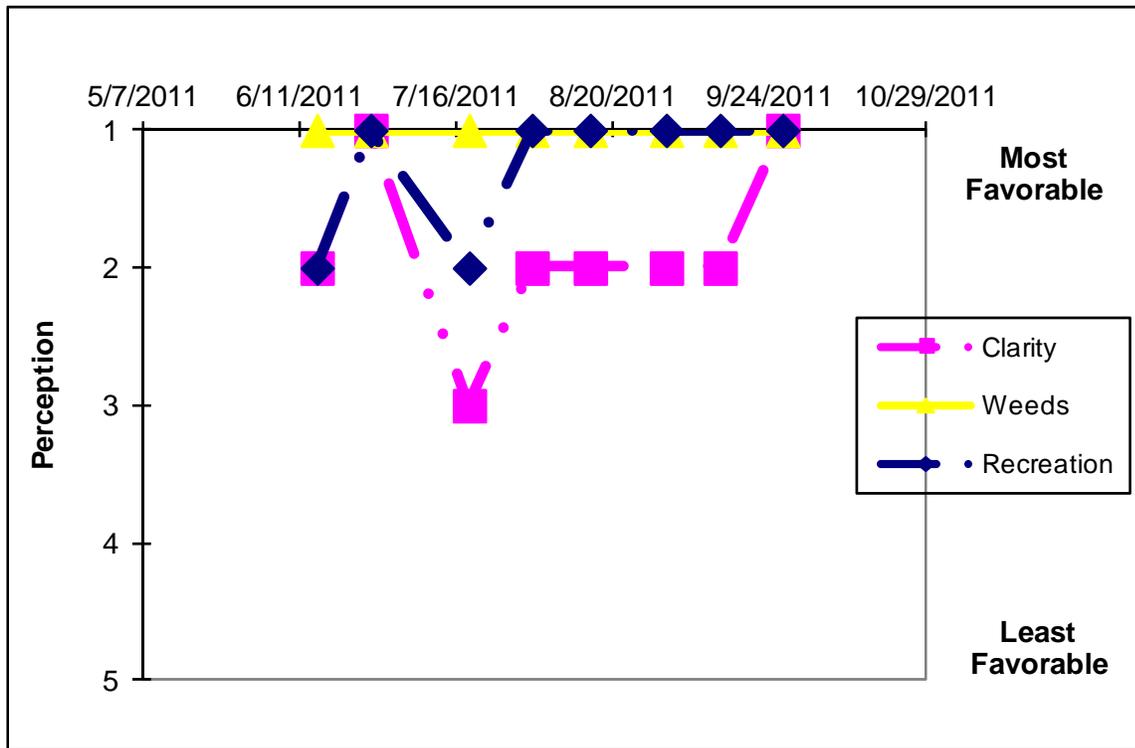
Time Series: Lake Perception Indicators, 2011-North Basin



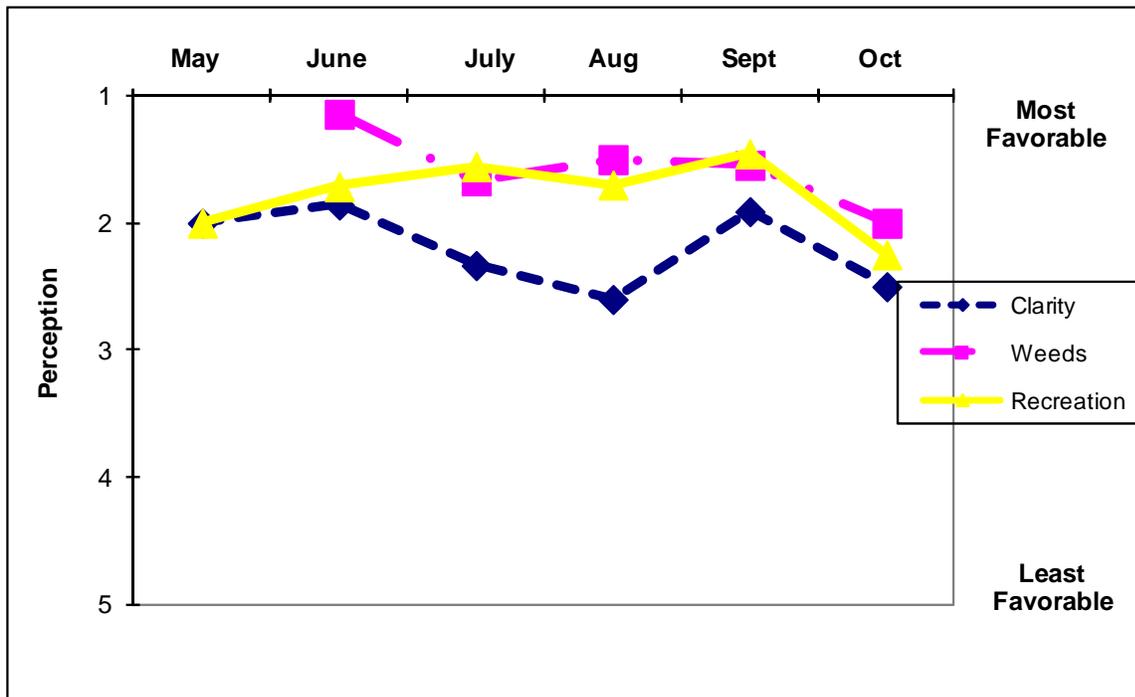
Time Series: Lake Perception Indicators, Typical Year (2006-2011)-North Basin



Time Series: Lake Perception Indicators, 2011-South Basin



Time Series: Lake Perception Indicators, Typical Year (2006-2011)-South Basin



Appendix A- CSLAP Water Quality Sampling Results for Upper Saranac Lake

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond	Ca	Chl.a	Alk
208.1	Upper Saranac L-N	5/30/2006	epi	3.35	1.5	0.016	0.03	0.03			47	7.85	52	4.5	10.52	
208.1	Upper Saranac L-N	6/12/2006	epi	3.75	2.0	0.012	0.05	0.05			18	7.05	48		4.22	
208.1	Upper Saranac L-N	6/26/2006	epi	2.80	2.0	0.014					17	7.10	49		9.17	12.1
208.1	Upper Saranac L-N	7/9/2006	epi	3.07	1.5	0.010	0.01	0.01			21	7.05	52		0.78	10.0
208.1	Upper Saranac L-N	7/25/2006	epi	2.25	1.5	0.015	0.02	0.03			29	6.95	52	4.2	6.45	14.4
208.1	Upper Saranac L-N	8/7/2006	epi	2.30	2.0	0.020	0.01	0.02			38	7.85			2.60	
208.1	Upper Saranac L-N	8/29/2006	epi	2.93	1.5	0.013	0.01	0.02			9	6.82	46		5.16	11.2
208.1	Upper Saranac L-N	9/5/2006	epi		2.0	0.013	0.02	0.03			27	6.66	53		6.25	12.5
208.1	Upper Saranac L-N	9/18/2006	epi	3.30	2.0	0.020	0.01	0.01			22	7.96	55		4.67	20.1
208.1	Upper Saranac L-N	10/2/2006	epi	2.30	2.0	0.014	0.01	0.07			23	6.78	54		3.33	5.6
208.1	Upper Saranac L-N	10/17/2006	epi	2.90	1.5	0.015	0.03	0.02			2	6.58	67		5.72	13.3
208.1	Upper Saranac L-N	6/25/2007	epi	3.20		0.012	0.01	0.02	0.46	84.45	22	8.16	48	4.3	2.60	
208.1	Upper Saranac L-N	7/8/2007	epi	3.75	1.0	0.016	0.01	0.02	0.37	51.90	20	8.16	49		2.40	
208.1	Upper Saranac L-N	7/23/2007	epi	3.73	1.0	0.016	0.01	0.01	0.31	43.17	13	7.96	51		3.15	
208.1	Upper Saranac L-N	8/7/2007	epi	3.55		0.019	0.00	0.01	0.40	47.37	21	7.49	47		3.32	
208.1	Upper Saranac L-N	8/19/2007	epi	3.25		0.020	0.00	0.01	0.26	29.80	20	7.30	49	4.7	3.78	
208.1	Upper Saranac L-N	9/4/2007	epi	3.65		0.016	0.00	0.01	0.45	62.61	21	7.37	41		2.75	
208.1	Upper Saranac L-N	9/18/2007	epi	4.13		0.011	0.00	0.01	0.43	87.49	15	7.51	58		2.44	
208.1	Upper Saranac L-N	10/2/2007	epi	3.50		0.029	0.03	0.02	0.50	38.67	6	7.19	58		3.70	
208.1	Upper Saranac L-N	06/26/2009	epi	3.00		0.009	0.01	0.01	0.31	74.56	33	7.82	54	4.0	3.72	
208.1	Upper Saranac L-N	07/14/2009	epi	2.66		0.010	0.00	0.01	0.21	45.10	27	8.10	46		7.09	
208.1	Upper Saranac L-N	07/24/2009	epi	2.35		0.016	0.01	0.03	0.23	31.95	27				7.34	
208.1	Upper Saranac L-N	08/03/2009	epi	2.30		0.009	0.01	0.01	0.17	41.10	35	7.43	46		7.65	
208.1	Upper Saranac L-N	08/19/2009	epi	2.75		0.008	0.06	0.02	0.15	44.00	65	6.77	28	4.2	4.20	
208.1	Upper Saranac L-N	09/01/2009	epi	2.80		0.008	0.02	0.03	0.22	56.99	14	7.06	53		6.30	
208.1	Upper Saranac L-N	09/16/2009	epi			0.026	0.01	0.10	0.32	27.03	55	7.11	38		2.40	
208.1	Upper Saranac L-N	10/06/2009	epi	2.70		0.014	0.01	0.02	0.23	35.48	28	6.36	65		6.30	
208.1	Upper Saranac L-N	6/15/2010	epi	3.20		0.009	0.02	0.03			27	7.11	61	5.3	2.40	
208.1	Upper Saranac L-N	7/16/2010	epi	3.50												
208.1	Upper Saranac L-N	7/20/2010	epi	3.90		0.009	0.02	0.06	0.22	52.56	17	7.27	62		5.10	
208.1	Upper Saranac L-N	8/4/2010	epi	3.29		0.008	0.03	0.02	0.49	136.79	14	8.25	61		3.70	
208.1	Upper Saranac L-N	8/24/2010	epi	3.77	0.0	0.011	0.13	0.14	0.39	75.35	14	7.15	65	8.4	4.60	
208.1	Upper Saranac L-N	9/4/2010	epi	4.05	0.5	0.028	0.05	0.16			24	6.61	61		2.60	
208.1	Upper Saranac L-N	9/20/2010	epi	3.59		0.012	0.01	0.03	0.27	50.77	18	6.99	67		3.50	
208.1	Upper Saranac L-N	10/4/2010	epi	3.50		0.013	0.06	0.04	0.35	61.11	17	7.08	96		5.60	
208.1	Upper Saranac L-N	6/15/2011	epi	2.64	1.5	0.013	0.01	0.02	0.16	26.95	36	7.46	62	4.1	3.90	
208.1	Upper Saranac L-N	6/27/2011	epi	2.95	1.5	0.023	0.04	0.02	0.22	20.50	34	8.53	90		0.90	
208.1	Upper Saranac L-N	7/19/2011	epi	2.52	1.5	0.010	0.01	0.01	0.33	70.27	25	7.53	59		3.30	
208.1	Upper Saranac L-N	8/2/2011	epi	2.60	1.5	0.010	0.01	0.02	0.23	51.04	29	7.74	48		6.60	
208.1	Upper Saranac L-N	8/15/2011	epi	2.80	1.5	0.025	0.03	0.02	0.21		23	7.84	64	4.1	6.70	
208.1	Upper Saranac L-N	9/1/2011	epi	2.20	1.5	0.021	0.04	0.04	0.30	30.72	19	8.74	65		2.10	
208.1	Upper Saranac L-N	9/13/2011	epi	2.20	1.5	0.007	0.02	0.02	0.26	88.68	23	8.07	47		5.80	
208.1	Upper Saranac L-N	9/27/2011	epi	2.50	1.5	0.012	0.01	0.03	0.32	58.67	34	8.79	66		6.60	
208.1	Upper Saranac L-N	5/30/2006	hypo		12.5	0.017	0.08	0.05				6.72	56			10.0
208.1	Upper Saranac L-N	6/12/2006	hypo		12.5	0.012						7.16	38			
208.1	Upper Saranac L-N	6/26/2006	hypo		14.0	0.015						6.69	30			12.1
208.1	Upper Saranac L-N	7/9/2006	hypo		12.5	0.016						6.60	50			12.1
208.1	Upper Saranac L-N	7/25/2006	hypo		14.0	0.036						6.51	57			17.7
208.1	Upper Saranac L-N	8/7/2006	hypo		10.0	0.013						7.08	53			13.3
208.1	Upper Saranac L-N	8/29/2006	hypo		12.5	0.036						7.40	53			15.3
208.1	Upper Saranac L-N	9/5/2006	hypo		17.0	0.013						6.73	38			
208.1	Upper Saranac L-N	9/18/2006	hypo		15.0	0.029						6.98	61		1.43	20.1
208.1	Upper Saranac L-N	10/2/2006	hypo		12.0	0.013	0.03	0.07			17	6.77			3.87	5.6
208.1	Upper Saranac L-N	10/17/2006	hypo		12.5	0.014	0.03	0.03			19	6.59	61		0.66	13.3
LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP			Fe	Mn	As	
208.1	Upper Saranac L-N	6/25/2007	hypo			0.011										
208.1	Upper Saranac L-N	7/8/2007	hypo			0.042										
208.1	Upper Saranac L-N	7/23/2007	hypo		14.0	0.029										
208.1	Upper Saranac L-N	8/7/2007	hypo			0.030										
208.1	Upper Saranac L-N	8/19/2007	hypo			0.011										
208.1	Upper Saranac L-N	9/4/2007	hypo			0.035										
208.1	Upper Saranac L-N	9/18/2007	hypo			0.093										

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP		Fe	Mn	As
208.1	Upper Saranac L-N	10/2/2007	hypo			0.050								
208.1	Upper Saranac L-N	06/26/2009	hypo		16.0	0.049		0.05						
208.1	Upper Saranac L-N	07/14/2009	hypo		16.0	0.049								
208.1	Upper Saranac L-N	07/24/2009	hypo		16.0	0.065		0.12						
208.1	Upper Saranac L-N	08/03/2009	hypo		16.0	0.128								
208.1	Upper Saranac L-N	08/19/2009	hypo		16.0	0.159		0.02				1.67	0.78	
208.1	Upper Saranac L-N	09/01/2009	hypo		16.0	0.128								
208.1	Upper Saranac L-N	09/16/2009	hypo		16.0	0.012		0.02				1.82	0.10	
208.1	Upper Saranac L-N	10/06/2009	hypo		15.0	0.014								
208.1	Upper Saranac L-N	6/15/2010	hypo			0.036		0.11						
208.1	Upper Saranac L-N	7/20/2010	hypo			0.049		0.02						
208.1	Upper Saranac L-N	8/24/2010	hypo		15.0	0.031		0.11				2.21	0.71	1.10
208.1	Upper Saranac L-N	9/20/2010	hypo		16.0	0.056		0.20				5.86	0.96	0.80
208.1	Upper Saranac L-N	6/15/2011	hypo		15.0	0.010		0.06				0.01	0.01	
208.1	Upper Saranac L-N	7/19/2011	hypo		15.0	0.047		0.14				1.57	0.39	
208.1	Upper Saranac L-N	8/15/2011	hypo		15.0	0.046		0.06				1.41	0.57	0.50
208.1	Upper Saranac L-N	9/13/2011	hypo		15.0	0.026		0.03				1.73	0.58	1.00

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
208.1	Upper Saranac L-N	5/30/2006	epi	23	17	2	1	2	5							
208.1	Upper Saranac L-N	6/12/2006	epi	15	14	2	2	2	5							
208.1	Upper Saranac L-N	6/26/2006	epi	20	22	1	1	4	5							
208.1	Upper Saranac L-N	7/9/2006	epi	25	23	2	3	2	0							
208.1	Upper Saranac L-N	7/25/2006	epi	18	23	2	1	4	5							
208.1	Upper Saranac L-N	8/7/2006	epi	23	23	3	2	2	0							
208.1	Upper Saranac L-N	8/29/2006	epi	22	20	2	1	2	5							
208.1	Upper Saranac L-N	9/5/2006	epi	17	18	2	1	2	5							
208.1	Upper Saranac L-N	9/18/2006	epi	22	18	1	2	2	8							
208.1	Upper Saranac L-N	10/2/2006	epi	13	14	3	2	2	5							
208.1	Upper Saranac L-N	10/17/2006	epi	13	11	2	2	2	5							
208.1	Upper Saranac L-N	7/8/2007	epi	25	22	3	2	2	5							
208.1	Upper Saranac L-N	7/23/2007	epi	21	20	3	3	1	0							
208.1	Upper Saranac L-N	8/7/2007	epi	27	25	3	3	2	0							
208.1	Upper Saranac L-N	8/19/2007	epi	12	17	3	3	1	0							
208.1	Upper Saranac L-N	9/4/2007	epi	18	17	3	3	1	0							
208.1	Upper Saranac L-N	9/18/2007	epi	14	17	3	3	1	0							
208.1	Upper Saranac L-N	10/2/2007	epi	15	16	3	3	4	5							
208.1	Upper Saranac L-N	06/26/2009	epi	13	21	2	1	1	0							
208.1	Upper Saranac L-N	07/14/2009	epi	13	19	2	1	1	0							
208.1	Upper Saranac L-N	07/24/2009	epi	21	22	3	1	3	1							
208.1	Upper Saranac L-N	08/03/2009	epi	22		3	1	2	1							
208.1	Upper Saranac L-N	08/19/2009	epi	21		2	1	2	0							
208.1	Upper Saranac L-N	09/01/2009	epi	13	20	2	1	2	0							
208.1	Upper Saranac L-N	09/16/2009	epi	14		2	1	2	0							
208.1	Upper Saranac L-N	10/06/2009	epi	10												
208.1	Upper Saranac L-N	6/15/2010	epi	18	18	2	1	1	0	0	0					
208.1	Upper Saranac L-N	7/16/2010	epi		22	2	1	1	0	0	0					
208.1	Upper Saranac L-N	7/20/2010	epi	20	24	2	1	1	0	0	0					
208.1	Upper Saranac L-N	8/4/2010	epi	29		3	1	2	0	0	0	62.05				
208.1	Upper Saranac L-N	8/24/2010	epi	16	21	2	1	1	0	0	0	167.00				
208.1	Upper Saranac L-N	9/4/2010	epi	16	22	2	1	1	0	0	0	38.38				
208.1	Upper Saranac L-N	9/20/2010	epi	10		2	2	2	0	0	0					
208.1	Upper Saranac L-N	10/4/2010	epi	10	14	2	1	1	0	0	0					
208.1	Upper Saranac L-N	6/15/2011	epi	25	17	1	1	1	0	0	0	8.40	3.10			
208.1	Upper Saranac L-N	6/27/2011	epi	24	21	1	1	1	0	0	0	7.20	3.90			
208.1	Upper Saranac L-N	7/19/2011	epi	29	26	2	1	1	0	0	0	7.50	3.70			
208.1	Upper Saranac L-N	8/2/2011	epi	24	24	2	1	1	0	0	0	25.60	4.30			
208.1	Upper Saranac L-N	8/15/2011	epi	24	23	2	1	1	0	0	0	20.40	8.40			
208.1	Upper Saranac L-N	9/1/2011	epi	17	20	2	1	1	0	0	0	6.80	3.30	0.15	<0.4	<0.1
208.1	Upper Saranac L-N	9/13/2011	epi	18	20	2	1	1	0	0	0	11.70	3.10			
208.1	Upper Saranac L-N	9/27/2011	epi	15	19	1	1	1	0	0	0	12.20	3.30			
208.1	Upper Saranac L-N	5/30/2006	hypo		10											

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QE	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
208.1	Upper Saranac L-N	6/12/2006	hypo		12												
208.1	Upper Saranac L-N	6/26/2006	hypo		10												
208.1	Upper Saranac L-N	7/9/2006	hypo		13												
208.1	Upper Saranac L-N	7/25/2006	hypo		11												
208.1	Upper Saranac L-N	8/7/2006	hypo		15												
208.1	Upper Saranac L-N	8/29/2006	hypo		11												
208.1	Upper Saranac L-N	9/5/2006	hypo		11												
208.1	Upper Saranac L-N	9/18/2006	hypo		12												
208.1	Upper Saranac L-N	10/2/2006	hypo		14												
208.1	Upper Saranac L-N	10/17/2006	hypo		11												
208.1	Upper Saranac L-N	06/26/2009	hypo		21												
208.1	Upper Saranac L-N	07/14/2009	hypo		19												
208.1	Upper Saranac L-N	07/24/2009	hypo		22												
208.1	Upper Saranac L-N	09/01/2009	hypo		20												
208.1	Upper Saranac L-N	6/15/2010	hypo		8												
208.1	Upper Saranac L-N	7/16/2010	hypo		9												
208.1	Upper Saranac L-N	7/20/2010	hypo		9												
208.1	Upper Saranac L-N	8/24/2010	hypo		9												
208.1	Upper Saranac L-N	9/20/2010	hypo		9												
208.1	Upper Saranac L-N	6/15/2011	hypo		8												
208.1	Upper Saranac L-N	7/19/2011	hypo		8												
208.1	Upper Saranac L-N	8/15/2011	hypo		9												
208.1	Upper Saranac L-N	9/13/2011	hypo		9												

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TCColor	pH	Cond	Ca	Chl.a	Alk	
208.2	Upper Saranac L-S	5/24/2006	28.7	2.60	1.5	0.012	0.05	0.02				31	6.81	55	4	4.69	23.1
208.2	Upper Saranac L-S	6/12/2006	27.4	3.75	2.0	0.020	0.11	0.06				15	7.36	48.6		5.14	
208.2	Upper Saranac L-S	6/26/2006	26.5	3.80	2.0	0.017						13	7.08	48.16		5.12	12.1
208.2	Upper Saranac L-S	7/9/2006	26.8	3.56	1.5	0.013	0.01	0.01				18	7.04	54.01		2.01	11.1
208.2	Upper Saranac L-S	7/25/2006	27.1	2.45	1.5	0.013	0.02	0.02				31	6.96	47.57	6	5.37	12.2
208.2	Upper Saranac L-S	8/7/2006	26.7	2.50	2.0	0.011	0.01	0.03				38	6.87	52.64		4.00	13.3
208.2	Upper Saranac L-S	8/29/2006	27.4	2.88	2.0	0.018	0.01	0.02				17	7.83	46.34		5.13	
208.2	Upper Saranac L-S	9/5/2006	27.4	3.78	2.0	0.021	0.02	0.01				7	6.97	36.13		1.92	11.4
208.2	Upper Saranac L-S	9/18/2006	27.7	3.90	2.0	0.018	0.02	0.03				36	6.75	37.14		4.03	12.1
208.2	Upper Saranac L-S	10/2/2006	27.0	3.30	2.0	0.010	0.02	0.05				13	6.77	51.24		2.40	5.1
208.2	Upper Saranac L-S	10/18/2006	27.4	3.03	1.5	0.012	0.02	0.06				19	6.62	45.73		1.05	12.3
208.2	Upper Saranac L-S	6/25/2007	27.4	3.28		0.013	0.01	0.02	0.36	61.68	18	7.92	41	4.0	2.04		
208.2	Upper Saranac L-S	7/10/2007	27.5	4.45	1.0	0.013	0.01	0.01	0.34	58.31	17	7.82	47		2.02		
208.2	Upper Saranac L-S	7/23/2007	29.2	4.90	1.0	0.012	0.01	0.01	0.32	59.39	16	7.56	51		2.09		
208.2	Upper Saranac L-S	8/7/2007	28.8	3.20	1.0	0.015	0.01	0.01	0.39	57.59	15	8.02	46		3.18		
208.2	Upper Saranac L-S	8/19/2007	28.0	2.95	1.0	0.020	0.00	0.01	0.29	32.70	12	7.48	49	4.6	3.61		
208.2	Upper Saranac L-S	9/4/2007	27.2	4.38		0.011	0.00	0.01	0.43	83.03	16	6.99	45		2.74		
208.2	Upper Saranac L-S	9/18/2007	27.3	4.35		0.013	0.00	0.01	0.40	68.48	15	7.21	58		2.45		
208.2	Upper Saranac L-S	10/2/2007	27.3	3.75		0.014	0.02	0.04	0.52	81.93		7.37	56		3.77		
208.2	Upper Saranac L-S	07/14/2009	26.5	3.15		0.010	0.01	0.01	0.16	34.82	31	8.63	58		8.18		
208.2	Upper Saranac L-S	07/24/2009	27.0	2.23		0.011	0.01	0.05	0.25	49.26	26	8.25	28		9.06		
208.2	Upper Saranac L-S	08/03/2009	26.0	2.90		0.010	0.01	0.01	0.18	38.99	23	7.68	42		9.83		
208.2	Upper Saranac L-S	08/19/2009	27.0	2.90		0.008	0.09	0.03	0.19	54.29	30	8.40	61	4.5	4.50		
208.2	Upper Saranac L-S	09/01/2009	27.0	2.95		0.008	0.01	0.04	0.22	62.57	24	6.38	54		6.80		
208.2	Upper Saranac L-S	09/17/2009	27.0	3.50		0.010	0.01	0.01	0.11	22.65	27	6.56	39		5.60		
208.2	Upper Saranac L-S	10/06/2009	26.0	2.95		0.009	0.01	0.01	0.19	47.54	16	6.12			8.30		
208.2	Upper Saranac L-S	07/14/2009	26.5	3.15		0.010	0.01	0.01	0.16	34.82	31	8.63	58		8.18		
208.2	Upper Saranac L-S	6/15/2010	26.0	4.40	0.0	0.008	0.10	0.06	0.46	126.23	23	7.22	62	4.5	3.20		
208.2	Upper Saranac L-S	7/6/2010	27.0	4.60													
208.2	Upper Saranac L-S	7/20/2010	27.0	4.05		0.009	0.09	0.08	0.31	75.78	17	7.03	64		5.70		
208.2	Upper Saranac L-S	8/4/2010	26.0	3.03		0.010	0.08	0.05	0.17	38.67	14	7.76	69		3.40		
208.2	Upper Saranac L-S	8/24/2010	26.0	3.74	0.0	0.010	0.01	0.03	0.21	47.47	10	7.13	62	4.9	4.10		
208.2	Upper Saranac L-S	9/4/2010	26.0	3.95	0.5	0.020	0.02	0.20	0.83	93.61	15	6.71	60		3.40		
208.2	Upper Saranac L-S	9/20/2010	26.0	4.10		0.009	0.07	0.04	0.28	68.44	11	6.96	62		4.70		
208.2	Upper Saranac L-S	10/4/2010	26.0	3.65		0.009	0.02	0.04	0.12	30.07	12	7.17	70		3.50		
208.2	Upper Saranac L-S	6/15/2011	27.0	2.65	1.5	0.015	0.01	0.04	0.15	22.46	44	7.65	58	4.1	5.30		
208.2	Upper Saranac L-S	6/27/2011	27.0	3.91	1.5	0.009	0.02	0.02	0.23	60.56	27	9.13	94		0.70		
208.2	Upper Saranac L-S	7/19/2011	26.0	2.86	1.5	0.010	0.05	0.03	0.24	54.33	21	7.83	58		2.60		
208.2	Upper Saranac L-S	8/2/2011		2.53	1.5	0.009	0.01	0.03	0.27	67.52	21	7.04	56		5.80		

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond	Ca	Chl.a	Alk
208.2	Upper Saranac L-S	8/15/2011	26.0	2.48	1.5	0.017	0.01	0.01	0.19	24.49	22	7.64	63	5.3	6.20	
208.2	Upper Saranac L-S	9/1/2011	26.0	2.52	1.5	0.011	0.01	0.01	0.21	41.47	17	7.54	56		6.60	
208.2	Upper Saranac L-S	9/13/2011	25.0	2.50	1.5	0.011	0.02	0.02	0.31	61.20	11	7.76	59		6.10	
208.2	Upper Saranac L-S	9/27/2011	26.0	2.65	1.5	0.017	0.04	0.03	0.38	51.20	21	8.48	59		4.90	
208.2	Upper Saranac L-S	5/24/2006	28.7		25.0	0.020	0.04	0.02				6.77	49.4			10.0
208.2	Upper Saranac L-S	6/12/2006	27.4		28.0	0.019						7.30	51.1			
208.2	Upper Saranac L-S	6/26/2006	26.5		30.0	0.009						6.60	28.12			12.1
208.2	Upper Saranac L-S	7/9/2006	26.8		27.0	0.011						6.62	57.06			31.2
208.2	Upper Saranac L-S	7/25/2006	27.1		26.0	0.075						6.51	49.72			16.6
208.2	Upper Saranac L-S	8/7/2006	26.7		26.0	0.024						6.75	44.99			13.3
208.2	Upper Saranac L-S	8/29/2006	27.4		25.0	0.018						6.98	43.63			10.2
208.2	Upper Saranac L-S	9/5/2006	27.4		28.0	0.037						6.73	52.87			12.5
208.2	Upper Saranac L-S	9/18/2006	27.7		28.0	0.020						6.33	48.06		0.56	11.1
208.2	Upper Saranac L-S	10/2/2006	27.0		26.0	0.007	0.25	0.03			19	6.34			0.22	7.7
208.2	Upper Saranac L-S	10/18/2006	27.4		27.0	0.008	0.15	0.03			13	6.24	38.52		0.10	14.3
LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP			Fe	Mn	As	
208.2	Upper Saranac L-S	7/10/2007	27.5			0.015										
208.2	Upper Saranac L-S	7/23/2007	29.2			0.092										
208.2	Upper Saranac L-S	8/7/2007	28.8			0.019										
208.2	Upper Saranac L-S	8/19/2007	28.0			0.350										
208.2	Upper Saranac L-S	9/4/2007	27.2			0.068										
208.2	Upper Saranac L-S	10/2/2007	27.3			0.027										
208.2	Upper Saranac L-S	06/26/2009			27.0	0.044		0.02								
208.2	Upper Saranac L-S	07/14/2009	26.5		26.0	0.019										
208.2	Upper Saranac L-S	07/24/2009	27.0		26.0	0.086		0.10								
208.2	Upper Saranac L-S	08/03/2009	26.0		26.0	0.033										
208.2	Upper Saranac L-S	08/19/2009	27.0		26.0	0.042		0.15					1.57	0.44		
208.2	Upper Saranac L-S	09/01/2009	27.0		27.0	0.201										
208.2	Upper Saranac L-S	09/17/2009	27.0		27.0	0.021		0.09					0.29	1.97		
208.2	Upper Saranac L-S	10/06/2009	26.0		26.0	0.015										
208.2	Upper Saranac L-S	6/15/2010				0.012		0.07								
208.2	Upper Saranac L-S	7/20/2010	27.0			0.027		0.01								
208.2	Upper Saranac L-S	8/24/2010	26.0			0.031		0.03					0.26	0.44	0.70	
208.2	Upper Saranac L-S	9/20/2010	26.0			0.015		0.02					0.26	1.93	0.80	
208.2	Upper Saranac L-S	6/15/2011	27.0		27.0	0.019		0.12					0.34	0.04		
208.2	Upper Saranac L-S	7/19/2011	26.0		26.0	0.013		0.05					0.01	0.10		
208.2	Upper Saranac L-S	8/15/2011	26.0		26.0	0.018		0.03					0.24	1.35	0.50	
208.2	Upper Saranac L-S	9/13/2011	25.0		25.0	0.019		0.11					0.01	0.31	0.50	

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QE	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
208.2	Upper Saranac L-S	5/24/2006	epi	17	12	2		2	5							
208.2	Upper Saranac L-S	6/12/2006	epi	15	16	2	2	2	5							
208.2	Upper Saranac L-S	6/26/2006	epi	20	21	1	1	4	5							
208.2	Upper Saranac L-S	7/9/2006	epi	25	22	2	3	2	0							
208.2	Upper Saranac L-S	7/25/2006	epi	21	22	1	1	2	5							
208.2	Upper Saranac L-S	8/7/2006	epi	27	24	3	2	2	0							
208.2	Upper Saranac L-S	8/29/2006	epi	24	20	3	1	2	5							
208.2	Upper Saranac L-S	9/5/2006	epi	17	19	2	1	2	5							
208.2	Upper Saranac L-S	9/18/2006	epi	25	18	1	2	2	0							
208.2	Upper Saranac L-S	10/2/2006	epi	13	14	3	2	2	5							
208.2	Upper Saranac L-S	10/18/2006	epi	11	11	2	2	2	5							
208.2	Upper Saranac L-S	6/25/2007	epi	21	25	3	1	1	0							
208.2	Upper Saranac L-S	7/10/2007	epi	27	23	3	3	1	0							
208.2	Upper Saranac L-S	7/23/2007	epi	22	22	3	3	1	0							
208.2	Upper Saranac L-S	8/7/2007	epi	25	25	3	3	2	0							
208.2	Upper Saranac L-S	8/19/2007	epi	16	19	3	3	2	5							
208.2	Upper Saranac L-S	9/4/2007	epi	15	19	3	3	1	0							
208.2	Upper Saranac L-S	9/18/2007	epi	18	17	3	3	1	0							
208.2	Upper Saranac L-S	10/2/2007	epi	18	17	3	3	4	5							
208.2	Upper Saranac L-S	06/26/2009	epi	13	21	2	1	1								
208.2	Upper Saranac L-S	07/14/2009	epi	13	19	2	1	1								
208.2	Upper Saranac L-S	07/24/2009	epi	21	21	3	1	3								
208.2	Upper Saranac L-S	08/03/2009	epi	22		3	1	2								

LNum	PName	Date	Type	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
208.2	Upper Saranac L-S	08/19/2009	epi	21		2	1	2								
208.2	Upper Saranac L-S	09/01/2009	epi	12	20	1	2	1								
208.2	Upper Saranac L-S	09/17/2009	epi	13	19	2	1	2								
208.2	Upper Saranac L-S	10/06/2009	epi	10	14											
208.2	Upper Saranac L-S	6/15/2010	epi	18	18	2	1	1	0	0	0					
208.2	Upper Saranac L-S	7/6/2010	epi	27	21	2	1	1	0	0	0					
208.2	Upper Saranac L-S	7/20/2010	epi	20	23	2	1	1	0	0	0					
208.2	Upper Saranac L-S	8/4/2010	epi	29		3	1	2	0	0	0					
208.2	Upper Saranac L-S	8/24/2010	epi	18	21	2	1	1	0	0	0	33.76				
208.2	Upper Saranac L-S	9/4/2010	epi	16	22	2	1	2	0	0	0	58.03				
208.2	Upper Saranac L-S	9/20/2010	epi	10		2	1	2	0	0	0					
208.2	Upper Saranac L-S	10/4/2010	epi	10	14	2	1	1	0	0	0					
208.2	Upper Saranac L-S	6/15/2011	epi	20	17	2	1	2	0	0		8.70	4.20			
208.2	Upper Saranac L-S	6/27/2011	epi	25	21	1	1	1	0	0	0	4.70	3.70			
208.2	Upper Saranac L-S	7/19/2011	epi	29	24	3	1	2	0	0	0	9.80	2.60			
208.2	Upper Saranac L-S	8/2/2011	epi	25	24	2	1	1	0	0	0	27.10	4.70			
208.2	Upper Saranac L-S	8/15/2011	epi	23	22	2	1	1	0	0	0	21.30	7.90			
208.2	Upper Saranac L-S	9/1/2011	epi	17	20	2	1	1	0	0	0	8.40	2.30			
208.2	Upper Saranac L-S	9/13/2011	epi	18	20	2	1	1	0	0	0	12.40	3.30			
208.2	Upper Saranac L-S	9/27/2011	epi	15	18	1	1	1	0	0	0	21.90	2.90			
208.2	Upper Saranac L-S	5/24/2006	hypo		10											
208.2	Upper Saranac L-S	6/12/2006	hypo		7											
208.2	Upper Saranac L-S	6/26/2006	hypo		7											
208.2	Upper Saranac L-S	7/9/2006	hypo		8											
208.2	Upper Saranac L-S	7/25/2006	hypo		8											
208.2	Upper Saranac L-S	8/7/2006	hypo		8											
208.2	Upper Saranac L-S	8/29/2006	hypo		7											
208.2	Upper Saranac L-S	9/5/2006	hypo		7											
208.2	Upper Saranac L-S	9/18/2006	hypo		7											
208.2	Upper Saranac L-S	10/2/2006	hypo		8											
208.2	Upper Saranac L-S	10/18/2006	hypo		7											
208.2	Upper Saranac L-S	07/14/2009	hypo		7											
208.2	Upper Saranac L-S	07/24/2009	hypo		8											
208.2	Upper Saranac L-S	08/03/2009	hypo		8											
208.2	Upper Saranac L-S	08/19/2009	hypo		7											
208.2	Upper Saranac L-S	09/17/2009	hypo		8											
208.2	Upper Saranac L-S	10/06/2009	hypo		10											
208.2	Upper Saranac L-S	6/15/2010	hypo		8											
208.2	Upper Saranac L-S	7/20/2010	hypo		8											
208.2	Upper Saranac L-S	8/24/2010	hypo		8											
208.2	Upper Saranac L-S	9/20/2010	hypo		8											
208.2	Upper Saranac L-S	10/4/2010	hypo		8											
208.2	Upper Saranac L-S	6/15/2011	hypo		7											
208.2	Upper Saranac L-S	7/19/2011	hypo		8											
208.2	Upper Saranac L-S	8/15/2011	hypo		9											
208.2	Upper Saranac L-S	9/13/2011	hypo		7											

LNum	PName	Date	Zbot	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Alk
208.11	USL Tribs - Fish Creek	5/30/2006	Top	0.209	0.01	0.02				7.02	32	10
208.11	USL Tribs - Fish Creek	6/12/2006	Top	0.033	0.03	0.03				7.13	25	
208.11	USL Tribs - Fish Creek	6/26/2006	Top	0.018						6.82	25	10
208.11	USL Tribs - Fish Creek	7/9/2006	Top	0.020	0.00	0.01				6.9	28	10
208.11	USL Tribs - Fish Creek	7/25/2006	Top	0.015	0.02	0.07				6.8	28	11.1
208.11	USL Tribs - Fish Creek	8/7/2006	Top	0.009	0.01	0.02				6.98	30	10.2
208.11	USL Tribs - Fish Creek	8/22/2006	Top	0.016	0.00	0.01				7.78	26	11.2
208.11	USL Tribs - Fish Creek	9/5/2006	Top	0.052	0.01	0.01				7.67	27	11.4
208.11	USL Tribs - Fish Creek	9/18/2006	Top	0.009	0.00	0.01				6.85	32	12.1
208.11	USL Tribs - Fish Creek	10/2/2006	Top	0.012	0.02	0.08				7.25	30	46
208.11	USL Tribs - Fish Creek	10/17/2006	Top	0.011	0.02	0.04				6.57	34	14.3
208.12	USL Tribs - Little Clear Outlet	5/30/2006	Bottom	0.015	0.10	0.09				7.3	70	15.1
208.12	USL Tribs - Little Clear Outlet	6/12/2006	Top	0.015	0.11	0.07				7.09	67	
208.12	USL Tribs - Little Clear Outlet	6/26/2006	Top	0.019						7.08	57	12.1

LNum	PName	Date	Zbot	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Alk
208.12	USL Tribs - Little Clear Outlet	7/9/2006	Top	0.015	0.12	0.08				6.84	63	16.1
208.12	USL Tribs - Little Clear Outlet	7/25/2006	Top	0.027	0.19	0.02				6.59	70	14.4
208.12	USL Tribs - Little Clear Outlet	8/7/2006	Top	0.018	0.14	0.07				6.93	57	16.3
208.12	USL Tribs - Little Clear Outlet	8/22/2006	Top	0.022	0.23	0.09				7.71	71	15.3
208.12	USL Tribs - Little Clear Outlet	9/5/2006	Top	0.021	0.24	0.14				6.68	60	17.7
208.12	USL Tribs - Little Clear Outlet	9/18/2006	Top	0.009	0.03	0.02				7.01	60	21.1
208.12	USL Tribs - Little Clear Outlet	10/17/2006	Top	0.009	0.01	0.03				6.56	72	16.4
208.12	USL Tribs - Little Clear Outlet	10/2/2006	Top	0.009	0.01	0.03				6.7	75	8.7
208.13	USL Tribs - Lake Clear Outlet	5/30/2006	Top	0.011	0.02	0.03				7.06	73	12.1
208.13	USL Tribs - Lake Clear Outlet	6/12/2006	Top	0.013	0.03	0.18				7.31	52	
208.13	USL Tribs - Lake Clear Outlet	6/29/2006	Top	0.018						6.92	64	12.1
208.13	USL Tribs - Lake Clear Outlet	7/9/2006	Top	0.015	0.00	0.02				6.82	66	12.1
208.13	USL Tribs - Lake Clear Outlet	7/25/2006	Top	0.013	0.03	0.06				6.95	215	13.3
208.13	USL Tribs - Lake Clear Outlet	8/7/2006	Top	0.013	0.01	0.03				6.91	64	12.3
208.13	USL Tribs - Lake Clear Outlet	8/22/2006	Top	0.011	0.01	0.01				7.27	62	13.2
208.13	USL Tribs - Lake Clear Outlet	9/5/2006	Top	0.012	0.02	0.02				7	37	14.5
208.13	USL Tribs - Lake Clear Outlet	9/18/2006	Top	0.023	0.26	0.28				7.44	89	15.1
208.13	USL Tribs - Lake Clear Outlet	10/2/2006	Top	0.019	0.18	0.17				6.72	82	7.2
208.13	USL Tribs - Lake Clear Outlet	10/17/2006	Top	0.014	0.11	0.18				6.64	92	13.3
208.14	USL Tribs - Spider Creek	5/30/2006	Top	0.011	0.02	0.03				7.22	83	12.1
208.14	USL Tribs - Spider Creek	6/12/2006	Top	0.012	0.03	0.06				7.12	78	
208.14	USL Tribs - Spider Creek	6/26/2006	Top	0.007						7.1	73	13.1
208.14	USL Tribs - Spider Creek	7/9/2006	Top	0.007	0.00	0.01				7.04	60	16.1
208.14	USL Tribs - Spider Creek	7/25/2006	Top	0.006	0.03	0.04				7.13	56	11.1
208.14	USL Tribs - Spider Creek	8/7/2006	Top	0.005	0.01	0.02				7.02	66	15.3
208.14	USL Tribs - Spider Creek	8/22/2006	Top	0.006	0.00	0.01				6.91	52	14.2
208.14	USL Tribs - Spider Creek	9/5/2006	Top	0.005	0.01	0.01				6.97	61	15.6
208.14	USL Tribs - Spider Creek	9/18/2006	Top	0.007	0.04	0.03				7.66	72	16.1
208.14	USL Tribs - Spider Creek	10/2/2006	Top	0.008	0.01	0.01				6.78	64	7.7
208.14	USL Tribs - Spider Creek	10/17/2006	Top	0.008	0.01	0.02				6.91	71	15.4
208.15	USL Tribs - USL Outlet	5/30/2006	Top	0.011	0.01	0.02				6.99	56	10
208.15	USL Tribs - USL Outlet	6/12/2006	Top	0.013	0.02	0.02				7.41	55	
208.15	USL Tribs - USL Outlet	6/26/2006	Top	0.014						7	57	12.1
208.15	USL Tribs - USL Outlet	7/9/2006	Top	0.009	0.01	0.02				7.15	55	11.1
208.15	USL Tribs - USL Outlet	7/25/2006	Top	0.011	0.03	0.03				6.95	52	13.3
208.15	USL Tribs - USL Outlet	8/7/2006	Top	0.010	0.02	0.01			44	6.93	52	
208.15	USL Tribs - USL Outlet	8/22/2006	Top	0.011	0.02	0.01				7.5	42	7.1
208.15	USL Tribs - USL Outlet	9/5/2006	Top	0.011	0.03	0.02				6.81	33	12.5
208.15	USL Tribs - USL Outlet	9/18/2006	Top	0.010	0.04	0.02				6.92	52	12.1
208.15	USL Tribs - USL Outlet	10/2/2006	Top	0.009	0.03	0.06				6.85	47	20.9
208.15	USL Tribs - USL Outlet	10/17/2006	Top	0.009	0.01	0.04				6.55	45	12.3

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 = epilimnion or surface; bot = 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 Upper Saranac Lake (North) Data, 2006-2011

June Data

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

July Data

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

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	NORMAL	NORMAL
TP	NORMAL	NORMAL		LOW	NORMAL	HIGH
Chl.a	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
NOx	NORMAL	LOW		NORMAL	HIGH	NORMAL
NH4	NORMAL	NORMAL		NORMAL	HIGH	NORMAL
TN	NORMAL	NORMAL		LOW	NORMAL	NORMAL
pH	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
SpCond	HIGH	NORMAL		LOW	NORMAL	NORMAL
Color	NORMAL	NORMAL		HIGH	NORMAL	NORMAL
Ca		NORMAL		NORMAL	HIGH	LOW
QA	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
QB	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
QC	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
TH20	NORMAL	NORMAL			NORMAL	HIGH

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	HIGH		NORMAL	HIGH	LOW
TP	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
Chl.a	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
NOx	NORMAL	LOW		NORMAL	NORMAL	NORMAL
NH4	NORMAL	NORMAL		NORMAL	HIGH	NORMAL
TN	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
pH	NORMAL	NORMAL		NORMAL	NORMAL	HIGH
SpCond	NORMAL	NORMAL		LOW	NORMAL	NORMAL
Color	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
Ca						
QA	LOW	NORMAL		NORMAL	NORMAL	LOW
QB	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
QC	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
TH20	NORMAL	NORMAL		NORMAL	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

Monthly Evaluation of Upper Saranac Lake (South) Data, 2006-2011

June Data

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

July Data

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

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
<i>Zsd</i>	LOW	NORMAL		NORMAL	NORMAL	LOW
<i>TP</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>Chl.a</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>NOx</i>	NORMAL	LOW		NORMAL	NORMAL	NORMAL
<i>NH4</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>TN</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>pH</i>	NORMAL	NORMAL		HIGH	NORMAL	NORMAL
<i>SpCond</i>	NORMAL	NORMAL		NORMAL	HIGH	NORMAL
<i>Color</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>Ca</i>		NORMAL		NORMAL	NORMAL	HIGH
<i>QA</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>QB</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>QC</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>TH20</i>	NORMAL	NORMAL			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
<i>Zsd</i>	NORMAL	NORMAL		NORMAL	NORMAL	LOW
<i>TP</i>	HIGH	NORMAL		NORMAL	NORMAL	NORMAL
<i>Chl.a</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>NOx</i>	NORMAL	LOW		NORMAL	NORMAL	NORMAL
<i>NH4</i>	NORMAL	NORMAL		NORMAL	HIGH	NORMAL
<i>TN</i>	NORMAL	NORMAL		LOW	NORMAL	NORMAL
<i>pH</i>	NORMAL	NORMAL		LOW	NORMAL	NORMAL
<i>SpCond</i>	LOW	NORMAL		NORMAL	NORMAL	NORMAL
<i>Color</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>Ca</i>						
<i>QA</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>QB</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>QC</i>	NORMAL	NORMAL		NORMAL	NORMAL	NORMAL
<i>TH20</i>	NORMAL	NORMAL		NORMAL	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

Upper Saranac Lake (1003-0048)

MinorImpacts

Waterbody Location Information

Revised: 03/09/2009

Water Index No: C- 15-P114
Hydro Unit Code: 02010006/010 **Str Class:** AA
Waterbody Type: Lake (Mesotrophic)
Waterbody Size: 4844.1 Acres
Seg Description: entire lake

Drain Basin: Lake Champlain
Great Chazy/Saranac
Reg/County: 5/Franklin Co. (17)
Quad Map: UPPER SARANAC LAKE (D-23-B)

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Suspected
Recreation	Threatened	Suspected

Type of Pollutant(s)

Known: D.O./OXYGEN DEMAND, Problem Species (Eurasian milfoil)
Suspected: Nutrients
Possible: - - -

Source(s) of Pollutant(s)

Known: OTHER SOURCE (natural morphology), Habitat Modification
Suspected: On-Site/Septic Syst
Possible: - - -

Resolution/Management Information

Issue Resolvability: 2 (Strategy Exists, Needs Funding/Resources)
Verification Status: 5 (Management Strategy has been Developed)
Lead Agency/Office: DEC/FWMR
TMDL/303d Status: n/a

Resolution Potential: Medium

Further Details

Overview

Aquatic life support and recreation are thought to experience minor impacts/threats due to low dissolved oxygen and invasive aquatic plant growth. Low dissolved oxygen occurs at the lake bottom during summer months impacting coldwater fish species that reside in the lake, although the lake is not classified as a coldwater fishery. A significant Eurasian watermilfoil control program is conducted annually on the lake.

Water Quality Sampling

Upper Saranac Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) in 2006. An Interpretive Summary report of the findings of this sampling was published in 2007. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive. Phosphorus levels in the lake rarely exceed the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements consistently exceed the recommended minimum for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5. The lake water is weakly to moderately colored, but color does not appear limit water transparency. (DEC/DOW, BWAM/CSLAP, March 2007)

The coldwater/trout fishery, in Upper Saranac Lake is stressed by low summer hypolimnetic dissolved oxygen levels. During warmer months, low D.O. forces lake trout to leave preferred cold water habitat for less desirable warmer water. This narrower range of habitat places stress on the fishery. (DEC/DOW, Region 5, March 2007).

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This assessment indicates recreational suitability of the lake to be favorable. The recreational suitability of the lake is described most frequently as "excellent" or most uses. The lake itself is most often described as "not quite crystal clear" or as having "definite algal greenness," an assessment that is consistent measured water quality characteristics. Assessments have noted that aquatic plants only rarely grows to the lake surface, thought this may be a result of the active milfoil management program. Aquatic plant surveys have not been conducted through CSLAP at Upper Saranac Lake. However, the presence of Eurasian watermilfoil was verified by a number of researchers, and this plant has been the subject of extensive management activities on the lake. (DEC/DOW, BWAM/CSLAP, March 2007)

Lake Uses

This lake waterbody is designated class AA, 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.

Source Assessment

Contributing factors to the oxygen depletion in the hypolimnion include organic decomposition, recycling of nutrients (phosphorus) in lake sediments, commercial properties, individual on-site septic systems serving lakeshore residences and natural drainage from nutrient-rich bog areas around the lake. A NYSDEC fish hatchery (the Adirondack Hatchery) and campground (Fish Creek) have been previously listed as contributing to the nutrient (phosphorus) load in the lake. However after considerable upgrades to the hatchery, more recent nutrient budgets for the lake indicate the hatchery contributes only about 1% of the phosphorus load to the lake. Similarly, renovations to address pollution impacts from the campground were completed in 2000 and its contributions have also been minimized. DEC/DFWMR and DOW, Region 5, March 2009)

Water Quality Management

Beginning in May of 2004, the residents of Upper Saranac Lake committed to a major effort to control Eurasian watermilfoil using manual removal. The milfoil is hand harvested by divers who begin working their way around the lake in May/June of each year. In addition to harvesting milfoil, the divers also collect data to produce a milfoil distribution map. Results show significant reduction in plant densities since 2005. (Upper Saranac Lake Foundation and Adirondack Watershed Institute, January 2009)

Section 303(d) Listing

Upper Saranac Lake is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included among the waters listed in Appendix B - Waters Not Meeting Dissolved Oxygen Standards. This part of the List recognizes waterbodies where low dissolved oxygen in lake bottom waters may be the result of morphology and other natural conditions in thermally stratified lakes. This updated assessment suggests that the impacts to the fishery do not reach the level of an impairment to aquatic life support and the impacts in this non-trout water are largely to coldwater species. Based on the level of impacts, the lake will continue to be assessed as having minor impacts. However because NYS water quality standards for dissolved oxygen do not include an explicit exception for natural conditions or averaging of dissolved oxygen over lake depth, USEPA requires that the Section 303(d) List recognize such waters.

Segment Description

This segment includes the total area of Upper Saranac Lake.