Lincoln Pond Questions and Answers, 2015 CSLAP

Q1. What is the condition of our lake this year?
A1. Water quality conditions in Lincoln Pond continue to be favorable. Water clarity was slightly lower than usual, despite nutrient and algae levels that were close to normal. Plant coverage was also slightly lower than in recent years.

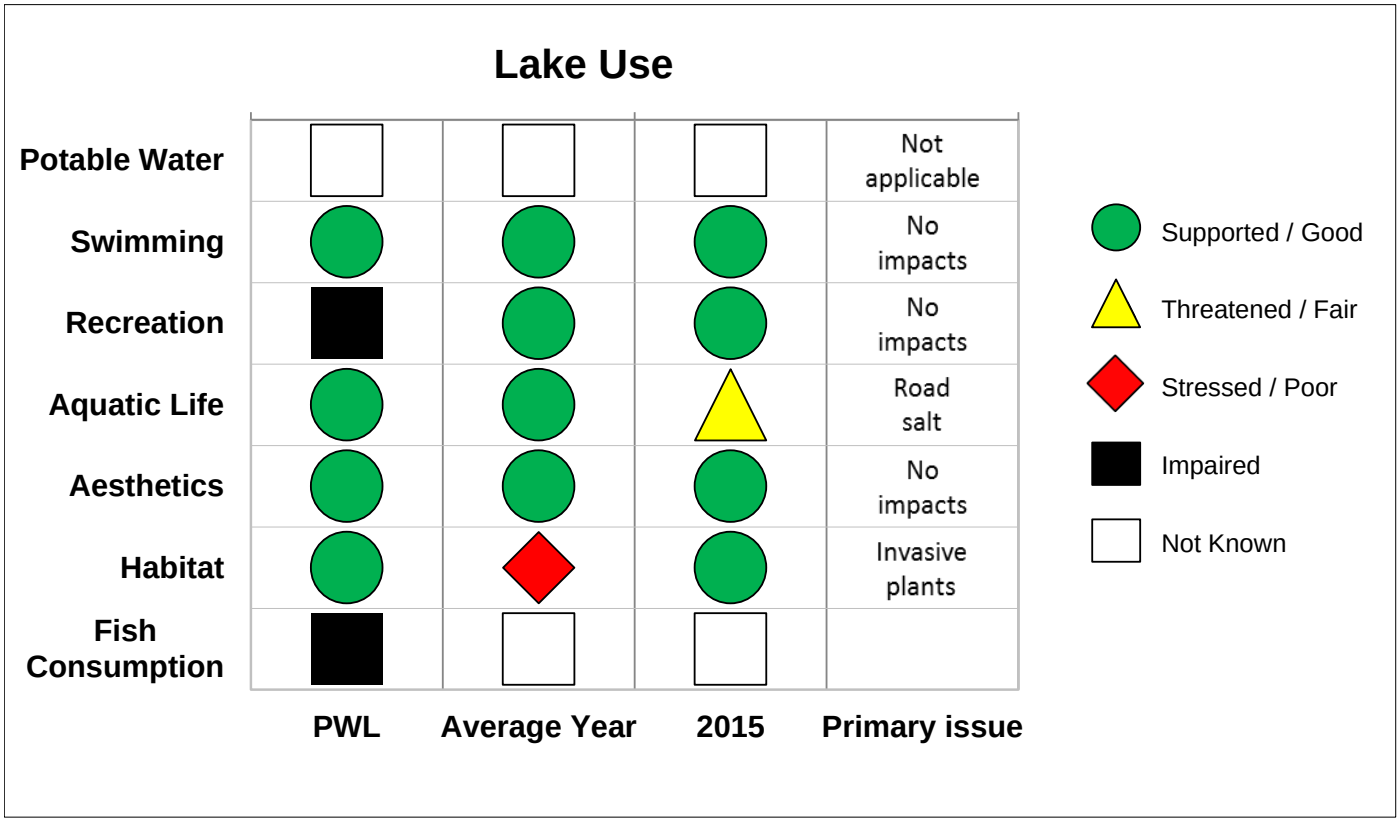
Q2. Is there anything new that showed up in the testing this year?
A2. Chloride sampling results are typical of lakes with low to moderate impacts from road salt runoff, although no biological impacts have been reported or measured.

Q3. How does the condition of our lake this year compare with other lakes in the area?
A3. Lincoln Pond had higher water clarity, and lower nutrient and algae levels, than the typical lake in the area. Aquatic plant coverage was lower than in these other lakes in 2014.

Q4. Are there any trends in our lake's condition?
A4. pH has increased since the late 1990s, although these readings are still well within acceptable ranges for most aquatic organisms. Conductivity and calcium levels and water temperatures have decreased, while total nitrogen readings have increased over the last decade. Recreational and water quality assessments have also improved, but this is due in part to a slight long-term decrease in aquatic plant coverage. Water clarity has decreased in the last few years, without any clear changes in nutrient and algae levels.

Q5. Should we be concerned about the condition of our lake? Are we close to a tipping point?
A5. Lincoln Pond does not appear to be susceptible to shoreline blue green algae blooms, due to mostly low open water nutrient and algae levels. No water quality problems are apparent or could be predicted for the near future.

Q6. Are any actions indicated, based on the trends and this year's results?
A6. Individual stewardship activities such as pumping your septic system, growing a buffer of native plants next to the water bodies, and reducing erosion from shoreline properties and runoff into the lake will help to maintain lake health by reducing nutrient and sediment loading to the lake. Visiting boats should be inspected to reduce the risk of new invasive species, since nearby lakes harbor several invasive plants not presently found in the lake.

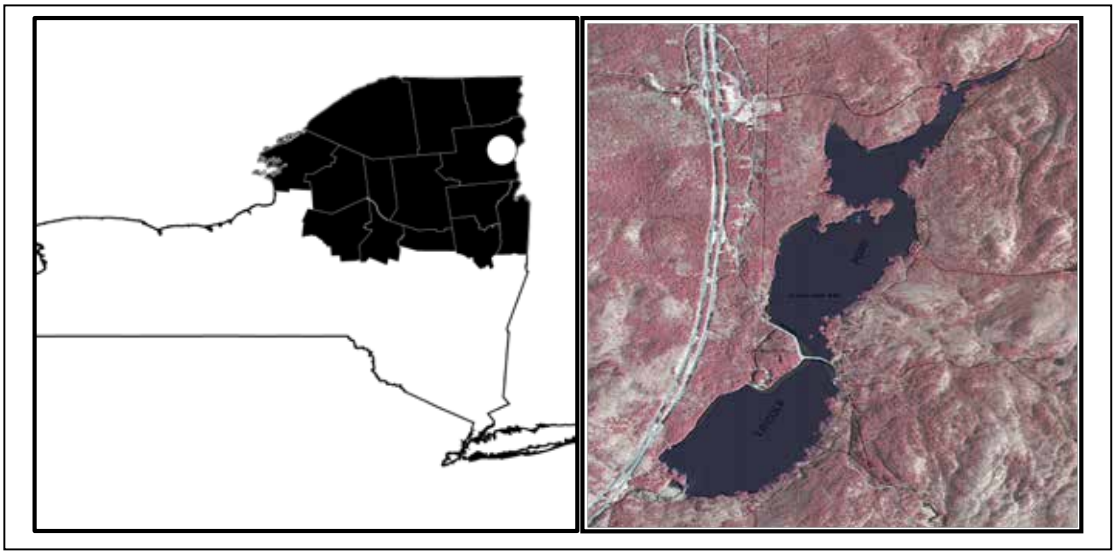


CSLAP 2015 Lake Water Quality Summary:
Lincoln Pond

General Lake Information

Location	Town of Elizabethtown
County	Essex
Basin	Lake Champlain
Size	291.7 hectares (720.5 acres)
Lake Origins	Natural
Watershed Area	3807 hectares (9408 acres)
Retention Time	0.7 years
Mean Depth	3 meters
Sounding Depth	7.7 meters
Public Access?	no
Major Tributaries	Cold Brook, Brandy Brook
Lake Tributary To…	Black River to Boquet River to Lake Champlain
WQ Classification	B(T) (contact recreation = swimming)
Lake Outlet Latitude	44.166
Lake Outlet Longitude	-73.567
Sampling Years	1997-2001, 2004, 2008-2011, 2013-2015
2015 Samplers	Wayne Johnson
Main Contact	Wayne Johnson

Lake Map



Background

Lincoln Pond is a 720 acre, class B(T) lake found in the Town of Elizabethtown in Essex County, in the northeastern Adirondack region of New York State. It was first sampled through CSLAP in 1997.

It is one of nine CSLAP lakes among the more than 500 lakes and ponds found in Essex County, and one of 17 CSLAP lakes among the nearly 650 lakes and ponds in the Lake Champlain drainage basin.

Lake Uses

Lincoln Pond is a Class B(T) lake; this means that the best intended use for the lake is contact recreation—swimming and bathing, non-contact recreation—boating and aesthetics—and support of aquatic life. The (T) designation indicates that the lake should support trout (survival, not necessarily spawning). The lake is used by lake residents and invited guests for swimming and boating—there is no public access to the lake.

Fish are not stocked in Lincoln Pond by the state of New York. It is not known by the report authors if private stocking occurs. Fish species in the lake include at least black crappie, largemouth bass, pumpkinseed sunfish, and yellow perch.

General statewide fishing regulations are applicable in Lincoln Pond. In addition, the open season for trout lasts from April 1st through October 15th, with no size limit and a daily take limit of five trout and five brook trout less than eight inches. There is also a fish advisory on Lincoln Pond, restricting the consumption of largemouth bass over 15 inches to one meal per month.

Historical Water Quality Data

CSLAP sampling was conducted on Lincoln Pond from 1997 to 2001, 2004, 2008 to 2011, and from 2013 to 2015. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at http://nysfola.mylaketown.com. The most recent CSLAP reports for Lincoln Pond will also be found on the NYSDEC web page at http://www.dec.ny.gov/lands/77872.html.

Lincoln Pond was sampled by New York State in 1977 as part of the statewide ambient lake monitoring program, and by the State University of New York (SUNY) in 1980. These results show water clarity readings higher than in most recent years, but nutrient levels within the contemporary range of variability. The lake may have been sampled as part of a local monitoring effort and/or in support of fisheries management activities on the lake.

There are no RIBS monitoring sites on or near Lincoln Pond, and none of the named tributaries (Cold Brook, Brandy Brook) nor the outlet (Black Brook) have been sampled through any statewide monitoring programs.

Lake Association and Management History

Lincoln Pond is represented by the Lincoln Pond Association. The association is involved in a variety of lake management actions, including:

- Broadband access initiative
- Kingdom Dam reconstruction project
- Meetings and social events
- Educational forums

The lake association maintains a website at http://www.lincolnpond.org/.

Summary of 2015 CSLAP Sampling Results

Evaluation of 2015 Annual Results Relative to 1997-2014

The summer (mid-June through mid-September) average readings are compared to historical averages for all CSLAP sampling seasons in the "Lake Condition Summary" table, and are compared to individual historical CSLAP sampling seasons in the "Long Term Data Plots – Lincoln Pond" section in Appendix C.

Evaluation of Eutrophication Indicators

Water clarity was slightly lower than usual in the last few years, including 2014 and 2015, but nutrient (phosphorus) and algae (chlorophyll *a*) were close to normal over this period, and neither phosphorus nor chlorophyll *a* readings have exhibited any long-term trends.

Water clarity usually increases slightly from late spring through mid-summer, and stabilizes during the rest of the summer, consistent with seasonally stable algae levels and nutrient readings that were stable after early summer. However, with the exception of a June spike in algae levels, none of these indicators changed significantly over the course of the 2015 sampling season.

The lake continues to be characterized as *mesoligotrophic*, based on water clarity, chlorophyll *a* (both typical of *mesotrophic* lakes) and total phosphorus readings (typical of *oligotrophic* lakes. The trophic state indices (TSI) evaluation suggests that phosphorus readings are slightly lower than expected given the algae and water clarity readings. This may indicate that small changes in phosphorus can cause larger changes in algae or water clarity. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are not high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although the lake is not used for this purpose. Deepwater phosphorus and ammonia readings are similar to those measured at the lake surface, suggesting that any deepwater intakes may also support 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

pH readings increased from the late 1990s through 2013, but these readings have been lower in the last two years. These readings are now indicative of slightly alkaline lakes, although impacts to aquatic life are not apparent. Calcium and conductivity readings have decreased over the last

decade, and both were lower than normal in 2014 and 2015. Ammonia and total nitrogen readings have increased slightly in the last decade, although these readings were close to normal in 2015. It is likely that the small changes in most of these indicators from year to year represent normal (or weather-induced) variability.

Chloride levels in the 2015 samples, collected for the first time through CSLAP and cited in Appendix A, ranged from 14 to 20 mg/l. These values fall within the range for "moderate" road salt runoff levels cited by the New Hampshire DES. These readings are well below the state potable water quality standard of 250 mg/l and below the typical range of values found in most NYS lakes. These readings suggest a low to moderate likelihood of biological impacts from road salt. Additional data will help to determine if these represent normal readings for the lake.

Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

Macrophyte surveys conducted through CSLAP, Cornell University and Adirondack Ecologists have identified at least 34 aquatic plant species, including at least two exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil, and *Potamogeton crispus*, curly-leafed pondweed) and at least one protected plant species (*Myriophyllum farwellii*, Farwells pondweed). The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is "excellent."

Incomplete information about the composition of the fish community identifies at least one warmwater fish species and two coolwater fish species, suggesting that Lincoln Pond supports a coolwater fishery.

Zooplankton and macroinvertebrate surveys have not been conducted through CSLAP at Lincoln Pond. The fluoroprobe data analyzed by SUNY ESF found very low total algae and blue green algae levels. The open water algae community appears to be comprised of a mix of algae species, particularly green algae and diatoms. No shoreline blooms were reported or sampled in the last few years.

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

Evaluation of Lake Perception

Recreational and water quality assessments have improved significantly over the last two decades, consistent with a long-term reduction in aquatic plant coverage and despite recent decreases in water clarity. The improved recreational conditions appear to more strongly correlate with reduced coverage of aquatic plants than with changes in water quality. Recreational assessments degrade slightly from last spring through mid-summer, consistent with an increase in plant coverage and despite improved water quality assessments over the same period. No clear seasonal trends were apparent in 2015. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Both air and water temperature readings were lower than normal in 2014 and 2015, and these readings have decreased during the June-September index period since the late 1990s. It is not known if this is an indication of local climate change or if these changes represent normal variability.

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. Fluoroprobe readings have been well below the thresholds for harmful algal blooms (HABs) in recent years. Algal toxins levels are low to undetectable, well below levels indicating unsafe conditions for swimming.

Lake Condition Summary

Category	Indicator	Min	Overall Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.80	4.38	6.60	3.71	Mesotrophic	Lower Than Normal	No Change
	Chlorophyll *a*	0.21	2.04	7.84	2.04	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.003	0.008	0.024	0.007	Oligotrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic Ammonia	0.01	0.03	0.10	0.03	Close to Surface NH4 Readings		Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus	0.000	0.009	0.026	0.006	Close to Surface TP Readings	Lower Than Normal	Not known
	Nitrate + Nitrite	0.00	0.01	0.10	0.03	Low NOx	Higher than Normal	No Change
	Ammonia	0.01	0.03	0.16	0.03	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.01	0.25	0.85	0.40	Low Total Nitrogen	Higher than Normal	Increasing Slightly
	pH	6.16	7.44	8.82	7.48	Circumneutral	Within Normal Range	Increasing Slightly
	Specific Conductance	35	127	182	106	Intermediate Hardness	Lower Than Normal	No Change
	True Color	5	13	39	15	Intermediate Color	Within Normal Range	No Change
	Calcium	4.0	6.6	10.8	4.1	Not Susceptible to Zebra Mussels	Lower Than Normal	Decreasing Slightly
Lake Perception	WQ Assessment	1	2.0	3	1.5	Not Quite Crystal Clear	Within Normal Range	Highly Improving
	Aquatic Plant Coverage	1	2.2	4	1.1	Subsurface Plant Growth	More Favorable Than Normal	Slightly Improving
	Recreational Assessment	1	2.2	4	1.3	Excellent	Within Normal Range	Highly Improving
Biological Condition	Phytoplankton					Open water-low blue green algae biomass	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					Coolwater fishery?	Not known	Not known
	Invasive Species					Eurasian watermilfoil, curly-leafed pondweed	Not known	Not known

Category	Indicator	Min	Overall Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Local Climate Change	Air Temperature	12	22.2	34	18.8		Lower Than Normal	Decreasing Significantly
	Water Temperature	16	22.2	28	20.0		Lower Than Normal	Decreasing Significantly
Harmful Algal Blooms	Open Water Phycocyanin	0	4	13	3	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	2	1	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	1	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	1.4	<DL	Low to undetectable open water microcystins	Not known	Not known
	Open Water Anatoxin a	<DL	<DL	0.0	<DL	Open water Anatoxin-a at times detectable	Not known	Not known
	Shoreline Phycocyanin					No shoreline blooms sampled for PC	Not known	Not known
	Screening FP Chl.a	0.3	0.8	1.6	0.8	No readings indicate high algae levels	Not known	Not known
	Screening FP BG Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline Microcystis					No shoreline bloom MC-LR data	Not known	Not known
	Shoreline Anatoxin a					No shoreline bloom anatoxin data	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Lincoln Pond is presently among the lakes listed on the Lake Champlain basin Priority Waterbody List (PWL), with recreation and fish consumption *impaired* by excessive weed growth and a largemouth bass consumption advisory due to mercury. The 2009 PWL listing for the lake is shown in Appendix B.

Potable Water (Drinking Water)

The CSLAP dataset at Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not classified for this use. These data do not show any impacts for "unofficial" use of the water for this purpose.

Public Bathing

The CSLAP dataset at Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that public bathing, if conducted at a public swimming beach, would be supported, although bacterial data are needed to evaluate the safety of the lake for swimming.

Recreation (Swimming and Non-Contact Uses)

The CSLAP dataset on Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that recreation has historically been *stressed* by the presence of excessive weed growth, particularly Eurasian watermilfoil and curly leafed pondweed, although these impairment may no longer exist (or is no longer apparent through CSLAP perception surveys).

Aquatic Life

The CSLAP dataset on Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life should be fully supported,

although this use may be *threatened* by road salt runoff and the presence of Eurasian watermilfoil. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics and Habitat

The CSLAP dataset on Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics should be *good*. While habitat at one time was *poor* due to excessive (invasive weeds), this condition may have improved substantially in recent years.

Fish Consumption

The New York State Department of Health has issued an advisory on the consumption of largemouth bass in Lincoln Pond; no more than one meal per month should be consumed due to mercury contamination.

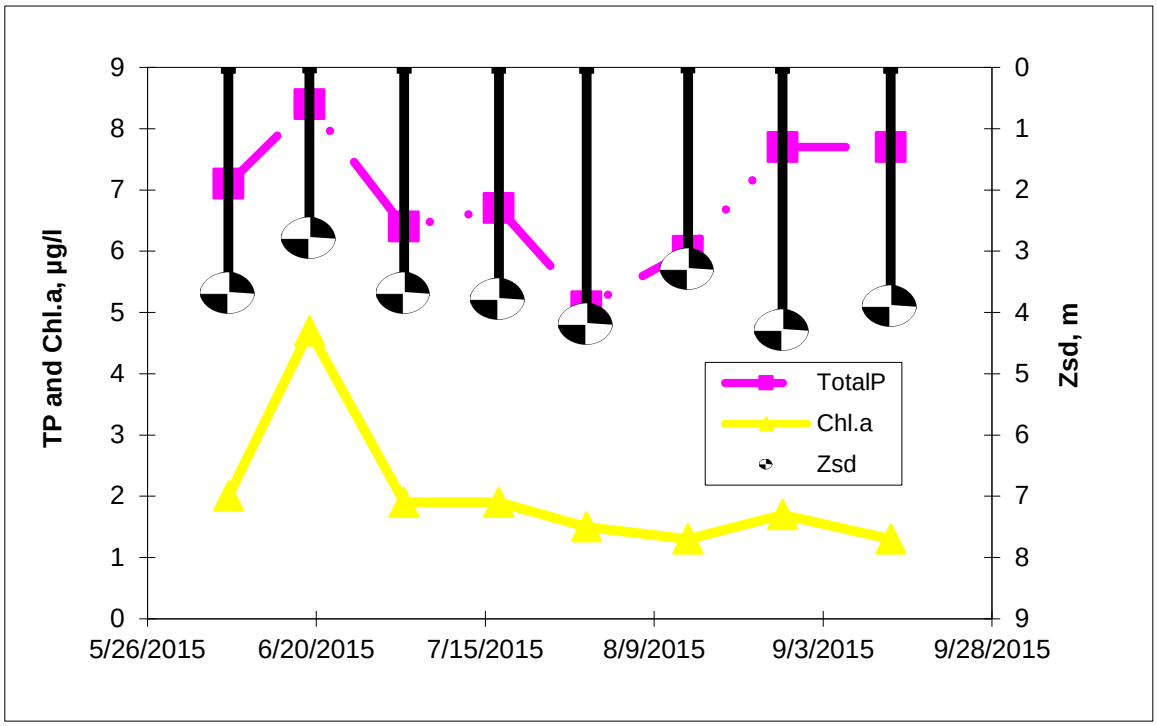
Additional Comments and Recommendations

A more detailed investigation of the change in aquatic plant communities in Lincoln Pond may help to determine if significant (natural) milfoil herbivory has occurred. Lake residents should report (and avoid exposure to) any shoreline algae blooms.

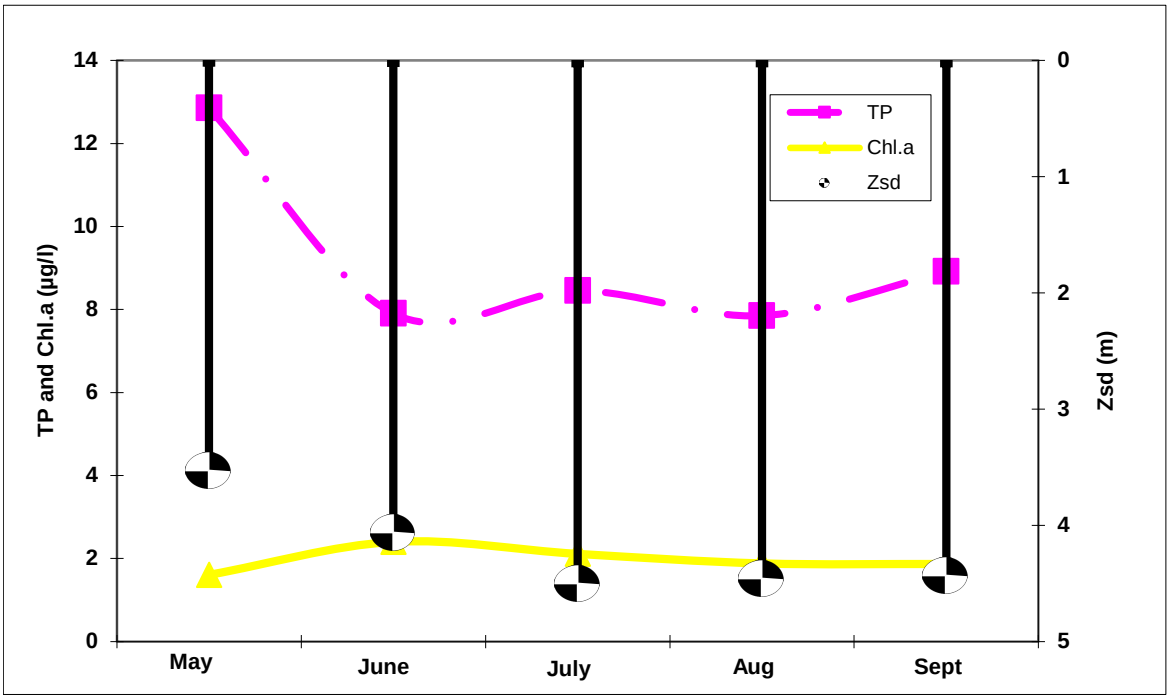
Aquatic Plant IDs-2015

None submitted for identification in 2015.

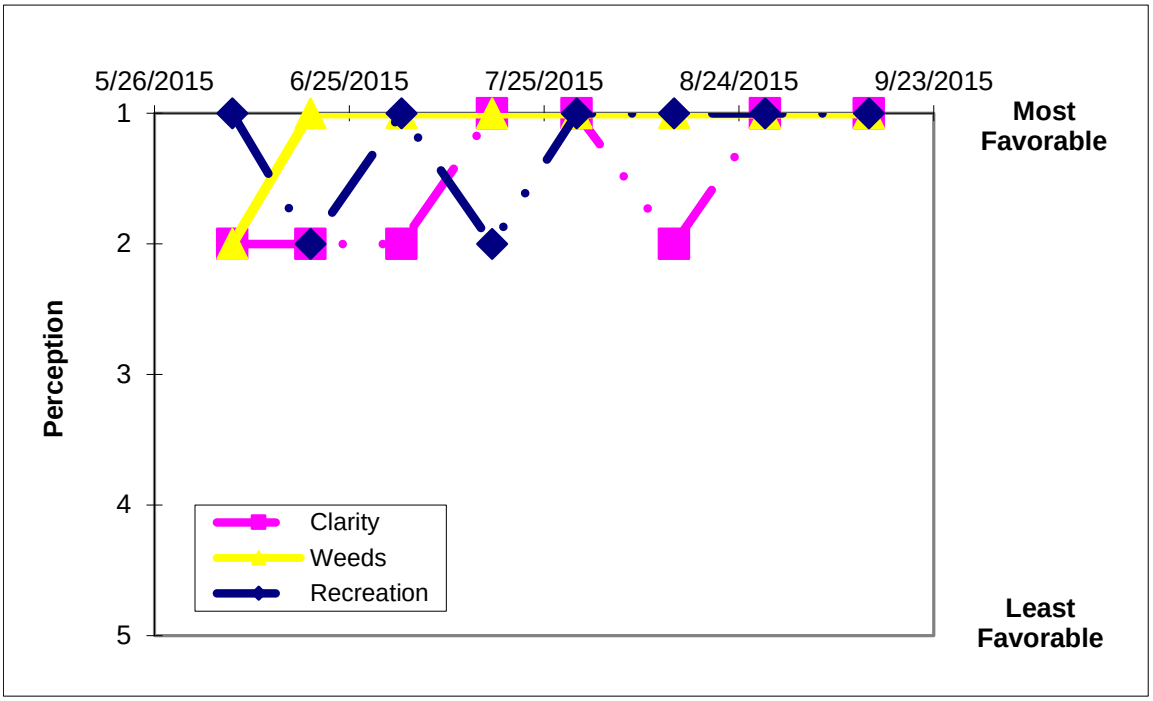
Time Series: Trophic Indicators, 2015



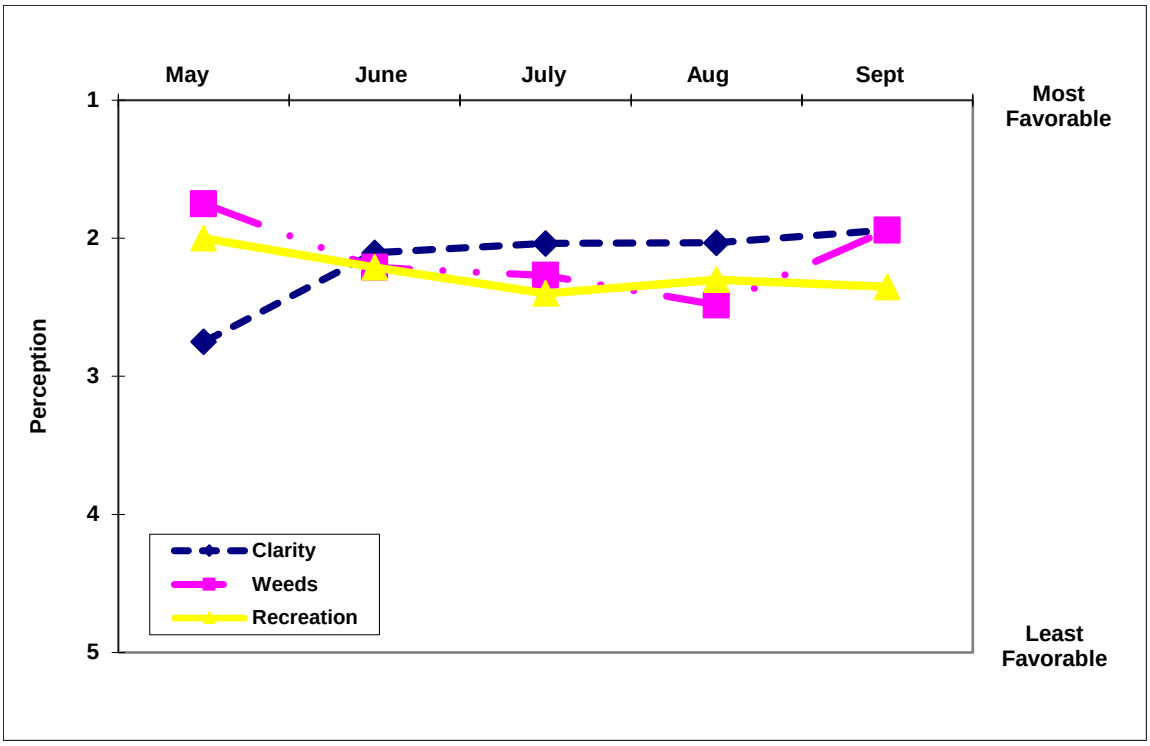
Time Series: Trophic Indicators, Typical Year (1997-2015)



Time Series: Lake Perception Indicators, 2015



Time Series: Lake Perception Indicators, Typical Year (1997-2015)



Appendix A- CSLAP Water Quality Sampling Results for Lincoln Pond

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
135	Lincoln P	5/25/1997	9.0	3.10	1.5	0.008	0.01				25	7.28	110		2.48	
135	Lincoln P	6/8/1997	10.5	4.70	1.5	0.009	0.01				15	7.26	118		1.67	
135	Lincoln P	6/22/1997	10.5	3.70	1.5	0.006	0.01				25	7.76	121		2.43	
135	Lincoln P	7/6/1997	9.5	4.73	1.5	0.010	0.01				25	6.96	127		2.08	
135	Lincoln P	7/20/1997	8.5	5.00	1.5	0.007	0.01				10	7.28	126		2.54	
135	Lincoln P	8/3/1997	8.0	3.80		0.004	0.01				9	7.03	135		2.48	
135	Lincoln P	8/17/1997	7.0	4.50		0.006	0.01				6	6.54	129		2.69	
135	Lincoln P	8/31/1997	7.5	3.70	1.5	0.012	0.01				8	7.80	132		2.25	
135	Lincoln P	5/24/1998	5.2	3.65	1.0	0.008	0.01				14	7.20	124		1.72	
135	Lincoln P	6/7/1998	5.6	5.10	1.0	0.007	0.01				9	7.98	127		3.29	
135	Lincoln P	6/27/1998	6.3	4.40	1.0		0.01				18				4.41	
135	Lincoln P	7/12/1998	4.7	3.65			0.01				20	7.36	113		3.65	
135	Lincoln P	7/26/1998	5.1	3.95	1.5						19	7.44	126		2.64	
135	Lincoln P	8/9/1998	5.5	3.45	1.5						15	7.59	120		3.45	
135	Lincoln P	8/23/1998	5.4	3.20	1.5		0.01					7.48	119		2.83	
135	Lincoln P	9/7/1998	5.0	3.85	1.5	0.014					18	7.30	122		2.98	
135	Lincoln P	9/20/1998	5.3	3.85	1.5	0.007					17	7.43	126		2.10	
135	Lincoln P	6/13/1999	7.5	3.75	1.5	0.007	0.01				14	7.41	135		2.75	
135	Lincoln P	6/27/1999	5.5	4.00	1.5	0.006	0.01				7	7.64	141		1.39	
135	Lincoln P	7/11/1999	5.5	4.75	1.5	0.010	0.01				10	7.64	134		2.70	
135	Lincoln P	7/25/1999	7.5	5.70	1.5	0.008	0.01				6	6.90	139		1.44	
135	Lincoln P	8/8/1999	7.5	4.00	1.5	0.008	0.01				8	7.61	141		2.55	
135	Lincoln P	8/22/1999	4.5		1.5	0.003	0.01				8	6.63	136		2.76	
135	Lincoln P	9/5/1999	7.5	5.75	1.5	0.006	0.01				8	6.34	146		0.42	
135	Lincoln P	9/19/1999	7.5	4.50	1.5	0.009	0.01				7	6.48	145		4.88	
135	Lincoln P	6/4/2000	7.7	2.90	1.5	0.008	0.01				12	7.83	134		2.27	
135	Lincoln P	6/18/2000	7.7	4.20	1.5	0.013	0.01				14	6.57	136		2.95	
135	Lincoln P	7/2/2000	7.7	4.35	1.5	0.007	0.01				12	7.04	140		3.36	
135	Lincoln P	7/16/2000	7.7	5.25	1.5	0.008	0.01				8	6.35	142		2.70	
135	Lincoln P	7/30/2000	7.7	4.50	1.5	0.019	0.01				12	6.38	145		1.33	
135	Lincoln P	8/13/2000	7.8	4.50	1.5	0.006	0.01				5	7.46	145		2.29	
135	Lincoln P	8/27/2000	7.7	6.60	1.5	0.005	0.01				9	7.75	148		0.68	
135	Lincoln P	9/10/2000	7.8	5.75	1.5	0.009	0.01				8	6.92	150		1.84	
135	Lincoln P	6/17/2001	7.5	5.00	1.5	0.013	0.05				6	7.47	132			
135	Lincoln P	7/1/2001	7.8	5.45	1.5	0.011	0.01				9	6.64	141		2.51	
135	Lincoln P	7/15/2001	7.5	4.50	1.5	0.006	0.01				8	6.74	140		0.21	
135	Lincoln P	7/29/2001	7.5	6.00	1.5	0.014	0.01				7	7.72	145		7.84	
135	Lincoln P	8/12/2001	7.5	5.75	1.5	0.006	0.01				8	7.49	149		0.60	
135	Lincoln P	8/26/2001	7.3	6.00	1.5	0.007	0.01				6	6.55			0.81	
135	Lincoln P	9/9/2001	7.3	5.00	1.5	0.005	0.01				6	7.08	155		0.96	
135	Lincoln P	9/22/2001	7.3	5.55	1.5	0.006	0.01				8	7.57	158		1.31	
135	Lincoln P	5/30/2004	7.5	4.55		0.024	0.01	0.01			16	7.24	154.5		0.4	
135	Lincoln P	6/13/2004	7.5	4.50	1.0	0.010		0.01			16	6.16	165		0.5	
135	Lincoln P	6/27/2004	7.5	4.20	1.0	0.006	0.01	0.02			13	6.64	171		1.3	
135	Lincoln P	7/12/2004	7.6	4.30	1.0		0.01	0.01	0.01		10	6.94	172		0.4	
135	Lincoln P	7/25/2004	7.6	4.20	1.0	0.016	0.10	0.05			10	7.57	182	10.832	1.0	
135	Lincoln P	8/9/2004	7.7	4.30	1.0	0.007	0.01	0.01	0.24	35.29	11	7.37	180			
135	Lincoln P	8/22/2004	7.7	3.60	1.0	0.008	0.01	0.01	0.27	35.48	18	7.65	130		1.6	
135	Lincoln P	9/4/2004	7.7	4.65	1.0	0.010	0.01	0.01	0.21	22.16	13	7.49	132		1.6	
131	Lincoln P	6/15/2008	7.7	4.85	1.5	0.007	0.01	0.02	0.20	64.72	12	7.63	113	7.4	2.26	
131	Lincoln P	7/6/2008	7.6	4.90	1.5	0.005	0.00	0.01	0.21	91.96	9	8.32	156		1.49	
131	Lincoln P	7/21/2008	7.5	4.95	1.5	0.010	0.03	0.09	0.22	46.42	9	7.59	125		1.65	
131	Lincoln P	8/2/2008	7.5	4.30	1.5	0.006	0.01	0.16	0.38	136.05	9	6.98	129		1.72	
131	Lincoln P	8/17/2008	7.5	3.95	1.5	0.008	0.01	0.04	0.21	53.94	12	7.82	133	6.7	2.16	
131	Lincoln P	9/1/2008	7.4	4.70	1.5	0.018	0.02	0.04	0.21	24.98	18	8.26	137		1.62	
131	Lincoln P	9/13/2008	7.3	3.40	1.5	0.009	0.00	0.01	0.22	52.23	10	6.53	145		1.66	
131	Lincoln P	9/28/2008	6.9	4.60	1.5	0.008	0.02	0.04	0.26	77.25	13	7.44	137		2.00	
135	Lincoln P	07/25/2009	7.4	4.30	1.5	0.005	0.01	0.02			15	7.91	95	6.2	1.22	
135	Lincoln P	08/09/2009	7.4	3.85	1.5	0.006	0.01	0.01			13	8.04	71		1.30	
135	Lincoln P	08/23/2009	7.4	5.50	1.5	0.006	0.01	0.01			26	8.23	104		1.60	
135	Lincoln P	09/05/2009	7.4	4.25	1.5	0.006	0.01	0.01			18	6.93	109		1.00	
135	Lincoln P	09/20/2009	7.3	4.70	1.5	0.006	0.01	0.01			15	7.67	118	7.0	1.40	
135	Lincoln P	6/19/2010	7.4	4.65	1.5	0.006	0.01	0.03	0.19	74.00	10	7.37	130	4.1	0.60	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
135	Lincoln P	7/3/2010	7.4	4.75	1.5	0.005	0.02	0.02	0.13	55.44	7	7.60	136		1.50	
135	Lincoln P	7/16/2010	7.3	4.75	1.5	0.006					12	8.38	140		1.10	
135	Lincoln P	8/3/2010	7.4	4.55	1.5	0.005	0.01	0.02	0.28	130.60	10	7.71	147		1.70	
135	Lincoln P	8/15/2010	7.2	4.00	1.5	0.005	0.03	0.02	0.20	80.26	5	7.95	150	8.2	1.40	
135	Lincoln P	8/28/2010	7.4	5.40	1.5	0.007	0.01	0.02	0.24	75.11	6	7.08	110		1.90	
135	Lincoln P	9/12/2010	7.3	4.55	1.5	0.008	0.01	0.03	0.33	91.95	6		149		2.00	
135	Lincoln P	6/19/2010	7.4	4.65	1.5	0.006	0.01	0.03	0.19	74.00	10	7.37	130	4.1	0.60	
135	Lincoln P	5/30/2011	7.8	2.85	1.5	0.011	0.02	0.02	0.16	31.26	23	8.44	110	6.6	1.80	
135	Lincoln P	6/13/2011	7.4	3.25	1.5	0.004	0.02	0.04	0.09	45.53	21	7.19	104		3.30	
135	Lincoln P	6/27/2011	7.5	4.15	1.5	0.011	0.01	0.03	0.18	37.30	39	8.79	118		2.20	
135	Lincoln P	7/11/2011	7.4	4.00	1.5	0.008	0.03	0.02	0.28	72.81	19	8.82	146		2.90	
135	Lincoln P	7/25/2011	7.2	3.65	1.5	0.012	0.02	0.01	0.40	76.24	17	8.17	120	8.0	2.40	
135	Lincoln P	8/7/2011	7.3	4.70	1.5	0.007	0.01	0.03	0.31	93.05	13	8.60	116		2.10	
135	Lincoln P	8/20/2011	7.3	4.35	1.5	0.012	0.01	0.01	0.16	28.80	14	7.00	35		1.90	
135	Lincoln P	9/11/2011	7.5	3.25	1.5	0.011	0.01	0.03	0.28	57.57	27	7.78	89		2.30	
135	Lincoln P	6/9/2012	7.4	3.90												
135	Lincoln P	6/22/2012	7.5	4.50												
135	Lincoln P	7/9/2012	7.5	5.20												
135	Lincoln P	7/21/2012	7.4	5.40												
135	Lincoln P	8/2/2012	7.3	5.05												
135	Lincoln P	8/19/2012	7.4	5.00												
135	Lincoln P	8/31/2012	7.4	4.60												
135	Lincoln P	6/8/2013	7.4	3.75	1.5	0.007	0.01	0.01	0.26	80.56	7	7.55	78		3.70	
135	Lincoln P	6/22/2013	7.4	3.70	1.5	0.010			0.25	55.34	13	8.09	124		2.20	
135	Lincoln P	7/5/2013	7.5	4.15	1.5	0.006	0.01	0.02	0.12	44.37	11	7.48	111		1.80	
135	Lincoln P	7/19/2013	7.5	4.55	1.5	0.007			0.24	71.05	18	8.51	112		1.00	
135	Lincoln P	8/2/2013	7.4	5.40	1.5	0.020	0.01	0.02	0.18	20.33	15	8.52	125		1.60	
135	Lincoln P	8/17/2013	7.3	4.45	1.5	0.017			0.31	41.68	14	7.90	130		1.40	
135	Lincoln P	8/31/2013	7.3	5.50	1.5	0.005	0.01	0.01	0.30	139.04	12	7.51	118		1.40	
135	Lincoln P	6/7/2014	7.4	4.85	1.5	0.008	0.01	0.03	0.29	81.71	7	7.13	121	6.6	1.40	
135	Lincoln P	6/21/2014	7.3	3.25	1.5	0.008			0.26	72.21	13	6.42	70		2.70	
135	Lincoln P	7/6/2014	7.4	3.60	1.5	0.006	0.01	0.05	0.34	130.46	12	7.49	133		2.30	
135	Lincoln P	7/19/2014	7.5	4.95	1.5	0.007			0.26	86.98	8	8.18	109		2.20	
135	Lincoln P	8/1/2014	7.5	4.40	1.5	0.005	0.01	0.04	0.20	84.62	9	7.80	135	5.5	2.10	
135	Lincoln P	8/17/2014	7.6	3.40	1.5	0.007			0.24	76.68	12	6.98	62		2.10	
135	Lincoln P	8/29/2014	7.4	4.60	1.5	0.008	0.01	0.03	0.22	61.05	14	7.63	104		2.20	
135	Lincoln P	9/12/2014	7.4	3.20	1.5	0.006			0.32	111.05	12	7.37	110		2.40	
135	Lincoln P	6/7/2015	7.6	3.70	1.5	0.007	0.06	0.03	0.85	119.86	12	7.48	81	4.1	2.00	
135	Lincoln P	6/19/2015	7.5	2.80	1.5	0.008			0.32	38.21	10	7.14	112		4.70	
135	Lincoln P	7/3/2015	7.7	3.70	1.5	0.006	0.02	0.03	0.27	41.72	17	6.85	132		1.90	20.3
135	Lincoln P	7/17/2015	7.0	3.80	1.5	0.007			0.32	47.61	25	7.57	120		1.90	
135	Lincoln P	7/30/2015	7.3	4.20	1.5	0.005	0.01	0.03	0.26	51.37	13	7.56	114	4.0	1.50	
135	Lincoln P	8/14/2015	7.4	3.30	1.5	0.006			0.38	63.67	15	7.49	128		1.30	
135	Lincoln P	8/28/2015	7.3	4.30	1.5	0.008	0.01	0.03	0.41	53.51	21	7.92	52		1.70	13.6
135	Lincoln P	9/13/2015	7.3	3.90	1.5	0.008			0.40	51.69	10	7.83	110		1.30	
135	Lincoln P	9/7/1998				0.008										
135	Lincoln P	7/25/1999			6.5	0.026										
135	Lincoln P	8/22/1999	7.5	4.50	6.5	0.005										
131	Lincoln P	6/15/2008				0.009										
131	Lincoln P	7/6/2008				0.015										
131	Lincoln P	7/21/2008				0.010										
131	Lincoln P	8/2/2008				0.007										
131	Lincoln P	8/17/2008				0.008										
131	Lincoln P	9/1/2008				0.009										
131	Lincoln P	9/13/2008				0.006										
131	Lincoln P	9/28/2008				0.008										
135	Lincoln P	07/25/2009	7.4		6.5	0.009		0.01								
135	Lincoln P	08/09/2009	7.4		6.5	0.006										
135	Lincoln P	08/23/2009	7.4		6.5	0.008		0.02								
135	Lincoln P	09/05/2009	7.4		6.5	0.007										
135	Lincoln P	09/20/2009	7.3		6.5	0.005		0.01								
135	Lincoln P	6/19/2010	7.4		5.5	0.007		0.01								
135	Lincoln P	7/16/2010	7.3		6.0	0.006		0.10								
135	Lincoln P	8/15/2010	7.2		6.0	0.005		0.02								
135	Lincoln P	9/12/2010	7.3		6.0	0.008		0.03								
135	Lincoln P	5/30/2011	7.8	2.85	6.0	0.014		0.03								

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
135	Lincoln P	6/27/2011	7.5	4.15	6.0	0.018		0.03								
135	Lincoln P	7/25/2011	7.2	3.65	5.5	0.010		0.02								
135	Lincoln P	8/20/2011	7.3	4.35	6.0	0.008		0.01								
135	Lincoln P	6/8/2013			6.0	0.007		0.10								
135	Lincoln P	6/22/2013			6.0											
135	Lincoln P	7/5/2013			6.0	0.019		0.02								
135	Lincoln P	7/19/2013			6.0											
135	Lincoln P	8/2/2013			6.0	0.006		0.02								
135	Lincoln P	8/17/2013			6.0											
135	Lincoln P	8/31/2013			6.0	0.006		0.01								
135	Lincoln P	6/7/2014			6.0	0.010		0.03								
135	Lincoln P	6/21/2014			6.7	0.015										
135	Lincoln P	7/6/2014			6.0	0.013		0.05								
135	Lincoln P	7/19/2014			6.0	0.007										
135	Lincoln P	8/1/2014			6.0	0.005		0.04								
135	Lincoln P	8/17/2014			6.0	0.005										
135	Lincoln P	8/29/2014			6.0	0.009		0.01								
135	Lincoln P	9/12/2014			6.0	0.006										
135	Lincoln P	6/7/2015			6.0	0.007		0.02								
135	Lincoln P	6/19/2015			6.0	0.009										
135	Lincoln P	7/3/2015			6.0	0.007		0.04								
135	Lincoln P	7/17/2015			5.5	0.009										
135	Lincoln P	7/31/2015			6.0	0.000		0.03								
135	Lincoln P	8/14/2015			6.0	0.000										
135	Lincoln P	8/28/2015			6.0	0.007		0.04								
135	Lincoln P	9/13/2015			6.0	0.007										

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
135	Lincoln P	5/25/1997	epi	12	16	3	2	2	5											
135	Lincoln P	6/8/1997	epi	23	23	2	3	3	2											
135	Lincoln P	6/22/1997	epi	27	28	3	2	3	256											
135	Lincoln P	7/6/1997	epi	29		2	2	3	2											
135	Lincoln P	7/20/1997	epi	27	25	3	3	3	2											
135	Lincoln P	8/3/1997	epi	23	25	3	4	4	25											
135	Lincoln P	8/17/1997	epi	26	25	3	4	4	2											
135	Lincoln P	8/31/1997	epi	24	25	3	4	4	25											
135	Lincoln P	5/24/1998	epi	24	21	3	2	3	2											
135	Lincoln P	6/7/1998	epi	21	22	3	3	4	25											
135	Lincoln P	6/27/1998	epi	25	26	3														
135	Lincoln P	7/12/1998	epi	25	25	3	3	4	2											
135	Lincoln P	7/26/1998	epi	26	26	3	4	4	2											
135	Lincoln P	8/9/1998	epi	31	25	3	4	4	2											
135	Lincoln P	8/23/1998	epi	24	23	3	4	4	2											
135	Lincoln P	9/7/1998	epi	29	23	3	4	4	25											
135	Lincoln P	9/20/1998	epi	24	22	2	3	4	2											
135	Lincoln P	6/13/1999	epi	33	25	3	3	3	2											
135	Lincoln P	6/27/1999	epi	34	25	3	3	3	2											
135	Lincoln P	7/11/1999	epi	21	25	3	3	4	25											
135	Lincoln P	7/25/1999	epi	24	27	3														
135	Lincoln P	8/8/1999	epi	22	24	3	3	4	25											
135	Lincoln P	8/22/1999	epi	19	23	3	3	4	25											
135	Lincoln P	9/5/1999	epi	30	24	3	3	4	25											
135	Lincoln P	9/19/1999	epi	19	18	3	3	4	2											
135	Lincoln P	6/4/2000	epi	16	20	3	3	4	5											
135	Lincoln P	6/18/2000	epi	20	21															
135	Lincoln P	7/2/2000	epi	30	24	3	3	3	2											
135	Lincoln P	7/16/2000	epi	23	23	3	3	3	25											
135	Lincoln P	7/30/2000	epi	27	25	3	3	4	2											
135	Lincoln P	8/13/2000	epi	26	24	3	3	3	2											
135	Lincoln P	8/27/2000	epi	24	23	3	3	4	2											
135	Lincoln P	9/10/2000	epi	24	22	3	2	4	2											
135	Lincoln P	6/17/2001	epi	26	25	3	3	3	25											

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HABform	ShoreHAB
135	Lincoln P	7/1/2001	epi	23	24	2	3		25											
135	Lincoln P	7/15/2001	epi	22	23	2	2	4	25											
135	Lincoln P	7/29/2001	epi	25	23	3	3	3	25											
135	Lincoln P	8/12/2001	epi	28	26	3	3	4	2											
135	Lincoln P	8/26/2001	epi	27	23	3	3	3	2											
135	Lincoln P	9/9/2001	epi	28		2	3	3	2											
135	Lincoln P	9/22/2001	epi	20	18	3	3	3	25											
135	Lincoln P	5/30/2004	epi	18	19	3	2	2	5											
135	Lincoln P	6/13/2004	epi	24	20	2	3	2	2											
135	Lincoln P	6/27/2004	epi	20	21	2	3	4	5											
135	Lincoln P	7/12/2004	epi	25	24	3	3	2	2											
135	Lincoln P	7/25/2004	epi	20	24	3	3	4	468											
135	Lincoln P	8/9/2004	epi	21	22	3	4	3	2											
135	Lincoln P	8/22/2004	epi	18	22	3	3	3	2											
135	Lincoln P	9/4/2004	epi	20	22	3	3	3	25											
131	Lincoln P	6/15/2008	epi	26	24	2	2	1	8											
131	Lincoln P	7/6/2008	epi	26	23	1	2	1	8											
131	Lincoln P	7/21/2008	epi	22	24	1	2	1	8											
131	Lincoln P	8/2/2008	epi	22	23	1	2	1	58											
131	Lincoln P	8/17/2008	epi	24	22	1	1	1	8											
131	Lincoln P	9/1/2008	epi	22	22	1	1	1	8											
131	Lincoln P	9/13/2008	epi	20	20	1	1	2	8											
131	Lincoln P	9/28/2008	epi	20	18	1	1	1	8											
135	Lincoln P	07/25/2009	epi	24	23	1	3	2	58											
135	Lincoln P	08/09/2009	epi	21	22	2	2	2	8											
135	Lincoln P	08/23/2009	epi	25	25	1	2	2	0											
135	Lincoln P	09/05/2009	epi	20	22	1	1	1	0			13.4								
135	Lincoln P	09/20/2009	epi	18	20	1	1	1	0			10.09								
135	Lincoln P	6/19/2010	epi	26	22	1	2	2	0	0	0									
135	Lincoln P	7/3/2010	epi	24	22	1	1	1	0	0	0									
135	Lincoln P	7/16/2010	epi	25	26	1	1	2	0	0	0									
135	Lincoln P	8/3/2010	epi	25	25	1	1	1	0	0	0									
135	Lincoln P	8/15/2010	epi	21	24	2		1	0	0	0									
135	Lincoln P	8/28/2010	epi	18	22	1	1	1	8	0	0									
135	Lincoln P	9/12/2010	epi	16	20	1	1	1	5	0	0									
135	Lincoln P	5/30/2011	epi	27	21	2	1	1	8	0	0									
135	Lincoln P	6/13/2011	epi	20	20	2	1	2	5	0	0	8.80	4.00							
135	Lincoln P	6/27/2011	epi	25	22	1	1	1	0	0	0	7.30	4.50							
135	Lincoln P	7/11/2011	epi	25	25	2	3	2	0	0		5.50	2.20							
135	Lincoln P	7/25/2011	epi	20	25	2	1	2	0	0	0	8.50	2.32	<0.30	<0.185				i	
135	Lincoln P	8/7/2011	epi	23	25	1	1	1	0	5	0	11.00	2.60	<0.30	<0.178				i	
135	Lincoln P	8/20/2011	epi	26	24	1	1	1	0	0	0	7.70	2.20	<0.30	<0.178				i	
135	Lincoln P	9/11/2011	epi	20	20	2	1	2	0	0	7	7.00	4.30	<0.30	<0.178	<0.014				
135	Lincoln P	6/9/2012	epi	22	19	2	2	2	0	0	0									
135	Lincoln P	6/22/2012	epi	25	24	2	2	1	0	0	0									
135	Lincoln P	7/9/2012	epi	18	23	1	2	1	0	0	0									
135	Lincoln P	7/21/2012	epi	22	24	1	1	1	0	0	0									
135	Lincoln P	8/2/2012	epi	20	24	1	1	1	0	0	0									
135	Lincoln P	8/19/2012	epi	15	22	1	1	1	0	0	0									
135	Lincoln P	8/31/2012	epi	21	22	1	1	1	0	0	0									
135	Lincoln P	6/8/2013	epi	13	17	1	2	1	8	0	0			<0.30	<0.440		1.00	0.00	I	
135	Lincoln P	6/22/2013	epi	27	20	2	1	1	0	0	0	1.70	1.20	<0.30	<0.410		0.80	0.00	I	I
135	Lincoln P	7/5/2013	epi	19	24	1	1	1	0	0	0	0.70	1.20	<0.30	<0.510		1.60	0.50	I	I
135	Lincoln P	7/19/2013	epi	24	25	1	3	1	2	0	0	1.30	0.80	<0.30	<0.370		0.80	0.00	I	I
135	Lincoln P	8/2/2013	epi	23	21	2	3	2	0	0	0	3.20	0.70	1.44	<0.400		0.50	0.00	I	I
135	Lincoln P	8/17/2013	epi	19	20	2	3	2	0	0	0	3.10	1.20	<0.30	<0.390		0.50	0.00	I	I
135	Lincoln P	8/31/2013	epi	19	22	1	3	1	0	0	0			<0.30	<0.440		1.00	0.00	I	I
135	Lincoln P	6/7/2014	epi	19	20	1	2	1	0	0	0	0.30	0.90	<1.83	<0.17	<0.001	0.32	0.00	i	
135	Lincoln P	6/21/2014	epi	21	20	2	2	1	0	0	0	0.05	0.30	<0.58	<0.44	<0.002	0.58	0.00	i	
135	Lincoln P	7/6/2014	epi	18	21	2	1	2	0	0	0	0.80	0.40	<0.62	<0.03	<0.002	0.82	0.00	i	i
135	Lincoln P	7/19/2014	epi	20	23	1	3	1	0	0	0	1.10	0.30	<0.39	<0.21	<0.003	1.49	0.00	i	i

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
135	Lincoln P	8/1/2014	epi	20	21	1	3	1	0	0	0	2.20	0.30	<0.33	<0.01	<0.002	1.16	0.00	i	i
135	Lincoln P	8/17/2014	epi	12	20	1	1	1	5	0	0	1.90	0.30	<0.39	<0.03	<0.001	0.50	0.00	i	i
135	Lincoln P	8/29/2014	epi	17	20	1	1	1	2	0	0	2.30	0.20	<0.25	<0.14	<0.002	0.44	0.00	i	i
135	Lincoln P	9/12/2014	epi	12	19	2	1	1	0	0	0	1.80	0.20	<0.24	<0.03	<0.001	0.69	0.00	i	i
135	Lincoln P	6/7/2015	epi	15	16	2	2	1	68	0	0	2.70	0.80	<0.77	<0.126	<1.739	0.70	0.00	I	I
135	Lincoln P	6/19/2015	epi	15	18	2	1	2	18	0	0	3.40	0.50	<0.55	<0.004	<0.024	1.00	0.00	I	I
135	Lincoln P	7/3/2015	epi	20	20	2	1	1	0	0	0	1.80	0.30	<0.63	<0.010	<32.565	0.70	0.00	I	I
135	Lincoln P	7/17/2015	epi	22	21	1	1	2	0	0	0	3.50	0.30	<0.30	<0.009	<0.049	0.70	0.00	I	I
135	Lincoln P	7/30/2015	epi	22	22	1	1	1	8	0	0	2.32	0.24	<0.49	<0.031	<0.028	0.30	0.00	I	I
135	Lincoln P	8/14/2015	epi	20	20	2	1	1	8	0	4	6.00	0.30	<0.19	<0.004	<0.015	1.00	0.10	I	I
135	Lincoln P	8/28/2015	epi	20	22	1	1	1	8	0	0			<0.44	<0.002	<0.014	0.40	0.00	I	I
135	Lincoln P	9/13/2015	epi	16	21	1	1	1	8	0	0	0.05	0.20	<0.27	0.00	<0.022	0.80	0.00	I	I
135	Lincoln P	7/25/1999	hypo		23															
135	Lincoln P	8/22/1999	hypo	19	22															
135	Lincoln P	07/25/2009	hypo		20															
135	Lincoln P	08/09/2009	hypo		22															
135	Lincoln P	08/23/2009	hypo		22															
135	Lincoln P	09/05/2009	hypo		21															
135	Lincoln P	09/20/2009	hypo		19															
135	Lincoln P	6/19/2010	hypo		20															
135	Lincoln P	7/16/2010	hypo		21															
135	Lincoln P	8/15/2010	hypo		24															
135	Lincoln P	9/12/2010	hypo		20															
135	Lincoln P	5/30/2011	hypo		16															
135	Lincoln P	6/27/2011	hypo		19															
135	Lincoln P	7/25/2011	hypo		21															
135	Lincoln P	8/20/2011	hypo		21															
135	Lincoln P	6/8/2013	hypo		14															
135	Lincoln P	6/22/2013	hypo		16															
135	Lincoln P	7/5/2013	hypo		18															
135	Lincoln P	7/19/2013	hypo		17															
135	Lincoln P	8/2/2013	hypo		19															
135	Lincoln P	8/17/2013	hypo		19															
135	Lincoln P	8/31/2013	hypo		20															
135	Lincoln P	6/7/2014	hypo		15															
135	Lincoln P	6/21/2014	hypo		15															
135	Lincoln P	7/6/2014	hypo		22															
135	Lincoln P	7/19/2014	hypo		20															
135	Lincoln P	8/1/2014	hypo		21															
135	Lincoln P	8/17/2014	hypo		20															
135	Lincoln P	8/29/2014	hypo		19															
135	Lincoln P	9/12/2014	hypo		19															
135	Lincoln P	6/7/2015	hypo		16															
135	Lincoln P	6/19/2015	hypo		16															
135	Lincoln P	7/3/2015	hypo		17															
135	Lincoln P	7/17/2015	hypo		19															
135	Lincoln P	7/30/2015	hypo		15															
135	Lincoln P	8/14/2015	hypo		17															
135	Lincoln P	8/28/2015	hypo		21															
135	Lincoln P	9/13/2015	hypo		21															

Legend Information

Indicator	*Description*	*Detection Limit*	*Standard (S) / Criteria (C)*
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m) (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, Cl	calcium, chloride (mg/l)	1 mg/l	none
Chl.a	chlorophyll a (ug/l)	0.01 ug/l	none
Fe	iron (mg/l)	0.1 mg/1	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 (aquaflor) (unitless)	1 unit	none
AQ-Chl	Chlorophyll *a* (aquaflor) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l to 0.6 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	variable	none
Cyl	Cylindrospermposin (ug/l)	0.1 ug/l	none
FP-Chl, FP-BG	Fluoroprobe total chlorophyll, fluoroprobe blue-green chlorophyll (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		
HAB form, Shore HAB	HAB evaluation; A = spilled paint, B = pea soup, C = streaks, D = green dots, E = bubbling scum, F = green/brown tint, G = duckweed, H = other, I = no bloom		

Appendix B- Priority Waterbody Listing for Lincoln Pond

Lincoln Pond (1004-0090) — Impaired Seg

Waterbody Location Information — Revised: 03/09/2009

Water Index No:	C- 48-26-P315	**Drain Basin:**	Lake Champlain
Hydro Unit Code:	02010004/030 **Str Class:** B(T)		AuSable/Boquet
Waterbody Type:	Lake (Mesotrophic)	**Reg/County:**	5/Essex Co. (16)
Waterbody Size:	656.1 Acres	**Quad Map:**	ELIZABETHTOWN (E-26-A)
Seg Description:	entire lake		

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

Use(s) Impacted	Severity	Problem Documentation
FISH CONSUMPTION	Impaired	Known
RECREATION	Impaired	Known

Type of Pollutant(s)
Known: METALS (mercury), PROBLEM SPECIES (Eurasian milfoil)
Suspected: - - -
Possible: - - -

Source(s) of Pollutant(s)
Known: HABITAT MODIFICATION
Suspected: ATMOSPH. DEPOSITION
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: 2b,4c (Multiple Segment/Categorical Water, Fish Consumption, more)

Further Details

Overview
Fish consumption and recreational uses in Lincoln Pond are known to be impaired. The fish consumption impairment is the result of elevated mercury levels attributed to atmospheric deposition. Recreational impairments are attributed to excessive aquatic invasive weed growth.

Fish Consumption
Fish consumption in Lincoln Pond is impaired due to a NYS DOH health advisory that recommends eating no more than one meal per month of larger (over 15 inches) largemouth bass because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the lake watershed. The advisory for this lake was first issued in 2006-07. (2008-09 NYS DOH Health Advisories and DEC/DFWMR, Habitat, January 2009).

Water Quality Sampling
Lincoln Pond has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1997 and continuing through 2004. An Interpretive Summary report of the findings of this sampling was published in 2005. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive. Phosphorus

levels in the lake only rarely exceed the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements greatly 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, reflecting the natural conditions in the watershed. But color does not appear to limit water transparency. (DEC/DOW, BWAM/CSLAP, October 2005)

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 unfavorable, largely reflecting aquatic weed growth. The recreational suitability of the lake is described most frequently as "slightly" or "substantially" impacted, assessment that are inconsistent with measured water quality characteristics. The lake itself is most often described as having a "definite algal greenness," also inconsistent with measured conditions. Assessments have noted that aquatic plants typically grow to the lake surface and have been cited as causing impacts to recreational uses. There appears to be a mix of non-native (Eurasian watermilfoil, curly-leafed pondweed) and native plants in Lincoln Pond, although it is likely that the plant communities are dominated by the Eurasian watermilfoil. This species was the focus of a herbivorous insect project conducted by Cornell Cooperative Extension and the lake association. Cornell University has also conducted extensive aquatic plant surveys of the lake. (DEC/DOW, BWAM/CSLAP, October 2005)

The Lincoln Pond Association, in cooperation with Cornell University and funding from the Lake Champlain Basin Program, conducted a Eurasian watermilfoil control program that used aquatic moth caterpillars {Acentria ephemerella} in the pond. The Lincoln Pond project was conducted between 1999 and 2002. The introduction of the moths did not appear to have significantly increased moth populations in Lincoln Pond or to have produced a significant impact on pond milfoil. Fish predation is thought to hinder the expansion of moths in Lincoln Pond. (Lincoln Pond Association and Cornell Cooperative Extension, January 2003)

Lake Uses

This lake waterbody is designated class B(T), suitable for use as a public bathing beach, general recreation and aquatic life support, but not as a public water supply. 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.

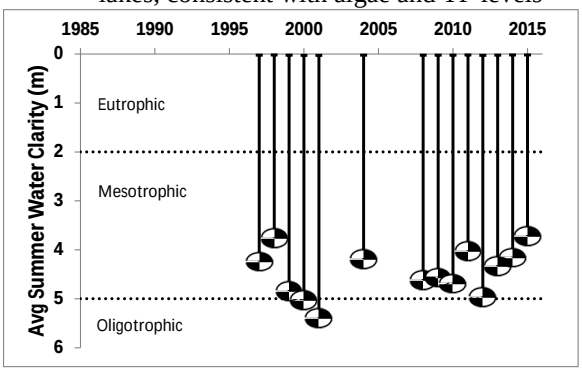
Section 303(d) Listing

Lincoln Pond is included on the NYS 2008 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water due to the health advisory related to mercury levels. However the Northeast Regional Mercury TMDL which was approved in 2007 provides coverage for waters that are subsequently identified as being impaired by mercury from atmospheric deposition. As a result, NYSDEC anticipates delisting this waterbody when the 2010 Section 303(d) List is issued because of coverage under this TMDL. (DEC/DOW, BWAM, December 2008)

Appendix C- Long Term Trends: Lincoln Pond

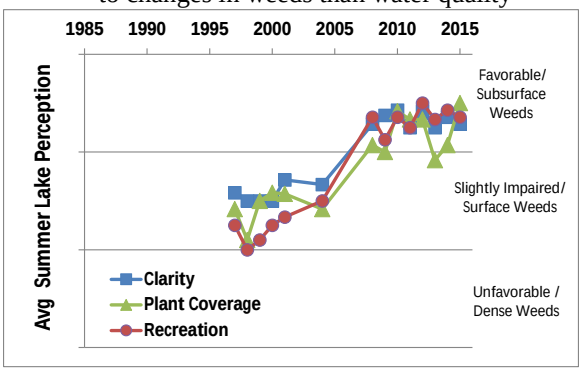
Long Term Trends: Water Clarity

- ↓ clarity 12-15, but no long-term trend
- Most readings typical of *mesoligotrophic* lakes, consistent with algae and TP levels



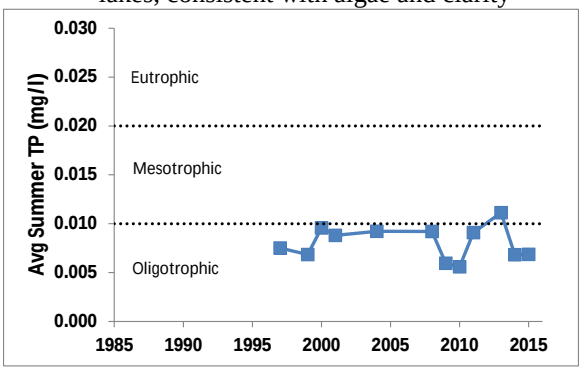
Long Term Trends: Lake Perception

- Improved recreation, WQ, plant assessments
- Recreational perception more closely linked to changes in weeds than water quality



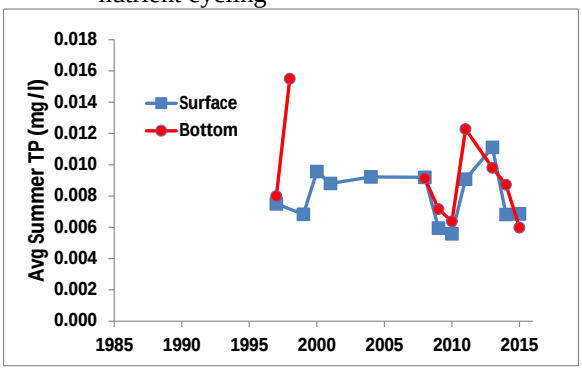
Long Term Trends: Phosphorus

- No trends apparent; nearly all readings low
- Most readings typical of *mesoligotrophic* lakes, consistent with algae and clarity



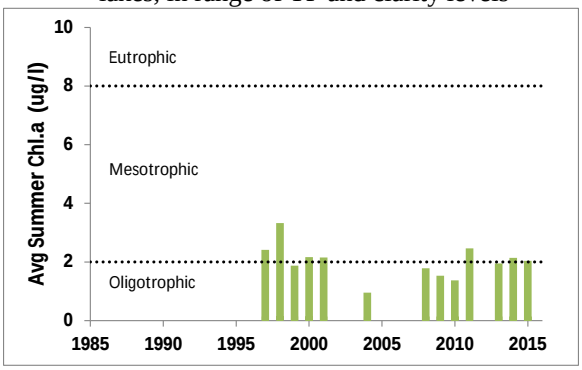
Long Term Trends: Bottom Phosphorus

- Similar surface and bottom TP levels
- Similar bottom TP indicates low internal nutrient cycling



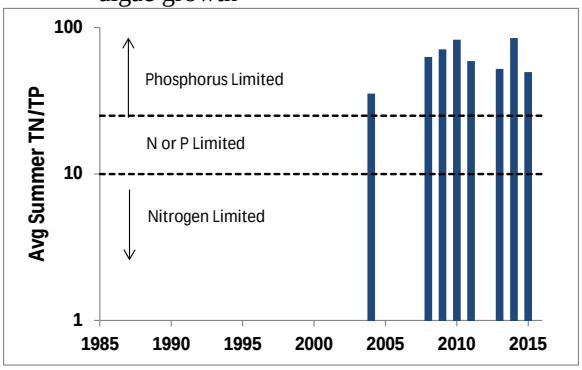
Long Term Trends: Chlorophyll a

- Small variability; no trends apparent
- Most readings typical of *mesoligotrophic* lakes, in range of TP and clarity levels



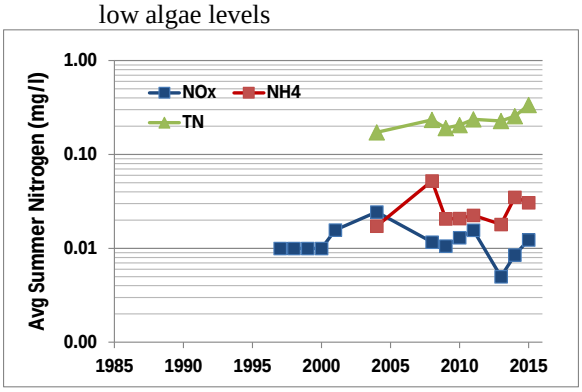
Long Term Trends: N:P Ratio

- No clear trend
- Most readings indicate phosphorus limits algae growth



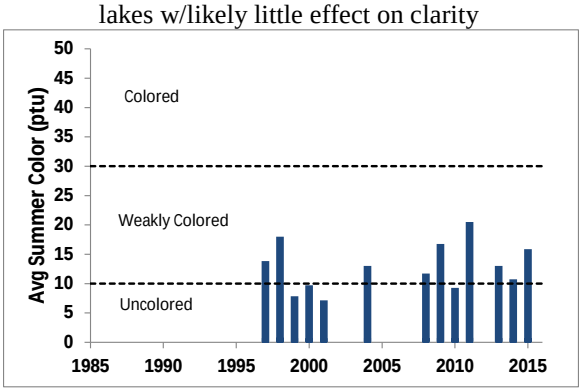
Long Term Trends: Nitrogen

- TN and NH4 ↑ last decade; NOx variable
- All nitrogen indicators low, consistent with low algae levels



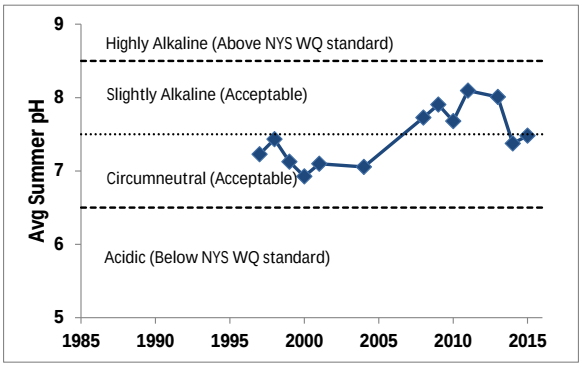
Long Term Trends: Color

- No trends apparent
- Most readings typical of *weakly colored* lakes w/likely little effect on clarity



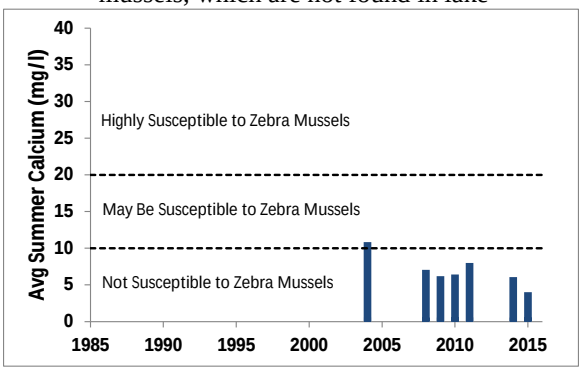
Long Term Trends: pH

- Steadily ↑ pH 1997-13; recently lower
- Most readings now typical of *slightly alkaline* lakes



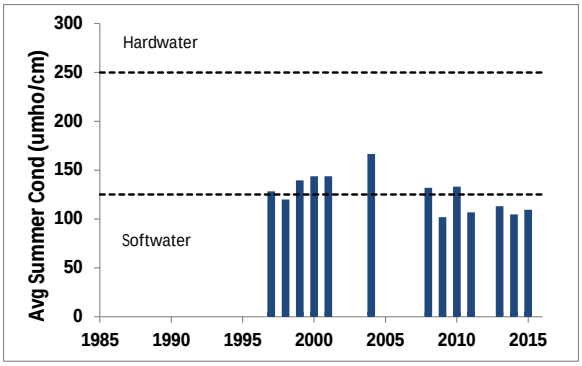
Long Term Trends: Calcium

- Decreasing calcium 2004-15
- Readings indicate low susceptibility to zebra mussels, which are not found in lake



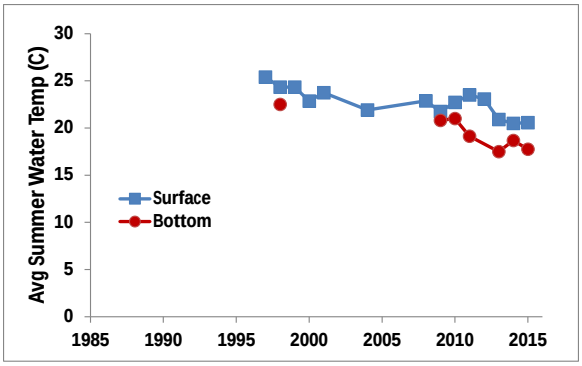
Long Term Trends: Conductivity

- ↓ conductivity 2004-15, after ↑ 1997-2014
- Most readings typical of lakes with *soft water*



Long Term Trends: Water Temperature

- Decreasing air and water temperatures
- Similar surface and bottom temperatures indicate weak thermal stratification



Appendix D:
Algae Testing Results from SUNY ESF Study

Most algae are harmless, naturally present, and an important part of the food web. However excessive algae growth can cause health, recreational, and aesthetic problems. Some algae can produce toxins that can be harmful to people and animals. High quantities of these algae are called harmful algal blooms (HABs). CSLAP lakes have been sampled for a variety of HAB indicators since 2008. This was completed on selected lakes as part of a NYS DOH study from 2008-2010. In 2011, enhanced sampling on all CSLAP lakes was initiated through an EPA-funded project that has continued through the current sampling season. This study has evaluated a number of HAB indicators as follows:

- Algae types - blue green, green, diatoms, and "other"
- Algae densities
- Microscopic analysis of bloom samples
- Algal toxin analysis

Some of these results are reported in other portions of these reports. This appendix the seasonal change in blue green algae, other algae types, and the primary algal toxin (microcystin-LR, a liver toxin). Analysis was completed on open water samples and, for some lakes, shoreline samples that were collected when visual evidence of blooms were apparent. Results are compared to the DEC criteria of 25-30 ug/l blue green chlorophyll a and 20 ug/l microcystin-LR (based on the World Health Organization (WHO) threshold for unsafe swimming conditions) and the WHO provisional criteria for long-term protection of treated water supplies (= 1 ug/l microcystin-LR). The data for algae types are drawn from a high end fluorometer used by SUNY ESF. While these results are useful for timely approximation of lake conditions, they are not as accurate as the total chlorophyll results measured as a regular part of CSLAP since 1986 in all open water samples. Therefore these results are used judiciously in the assessment of sampled waterbodies.

Two separate samples are evaluated. A sample is taken at the CSLAP sample point at the deepest point of the lake at every sample session. In addition, shoreline samples can be taken when a bloom is visible. It should be noted that shoreline conditions can vary significantly over time and from one location to another. The shoreline bloom sampling results summarized below are not collected as routinely as open water samples, and therefore represent snapshots in time. It is assumed that sampling results showing high blue green algae and/or toxin levels indicate that algae blooms may be common and/or widespread on these lakes. However, the absence of elevated blue green algae and toxin levels does not assure the lack of shoreline blooms on these lakes. Elevated open water readings may indicate a higher likelihood of shoreline blooms, but in some lakes, these shoreline blooms have not been (well) documented.

The results from these samples are summarized within the CSLAP report for the lake.

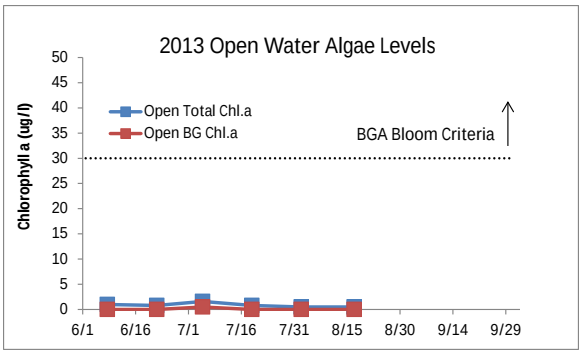


Figure D1:
2013 Open Water Total and BGA Chl.a

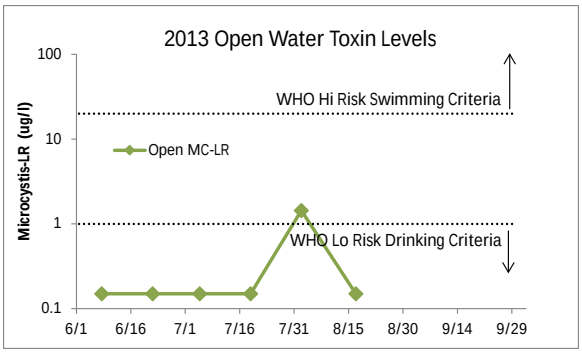


Figure D2:
2013 Open Water Microcystin-LR

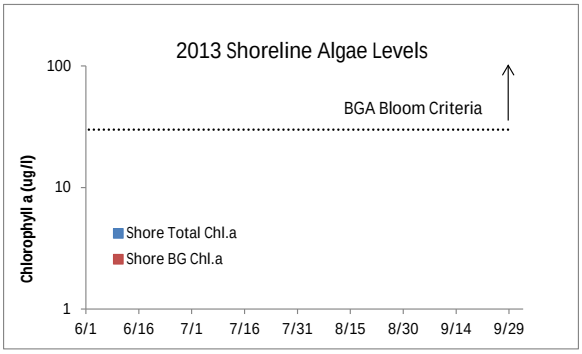


Figure D3:
2013 Shoreline Total and BGA Chl.a

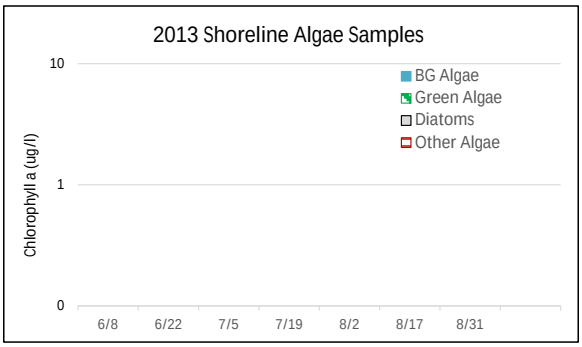


Figure D4:
2013 Shoreline Microcystin-LR

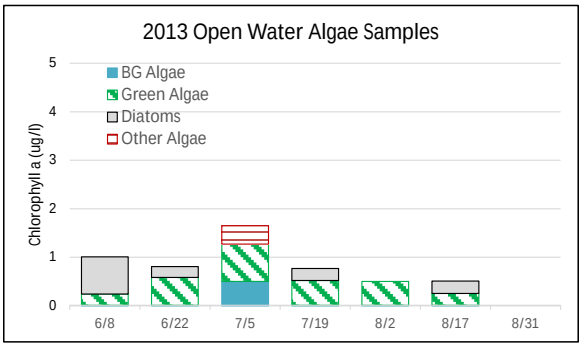


Figure D5:
2013 Open Water Algae Types

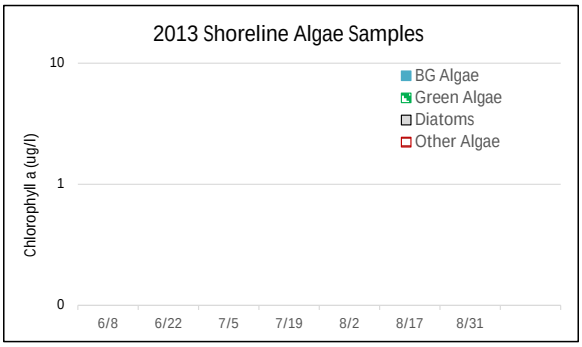


Figure D6:
2013 Shoreline Algae Types

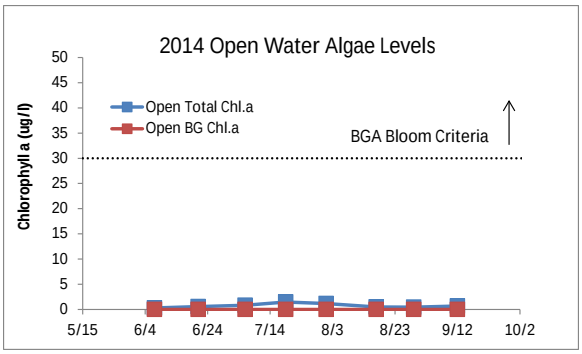


Figure D7:
2014 Open Water Total and BGA Chl.a

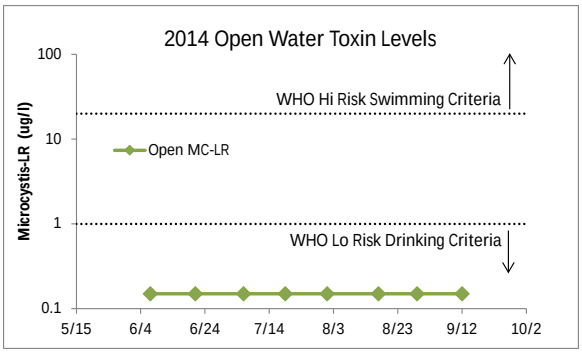


Figure D8:
2014 Open Water Microcystin-LR

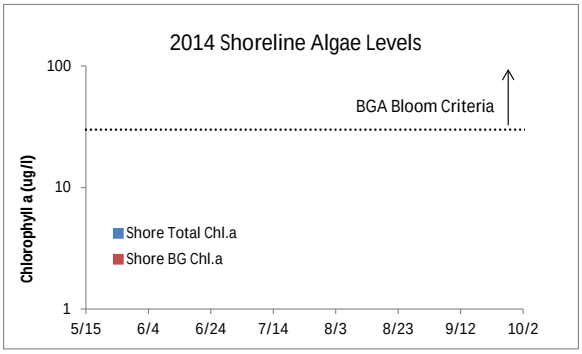


Figure D9:
2014 Shoreline Total and BGA Chl.a

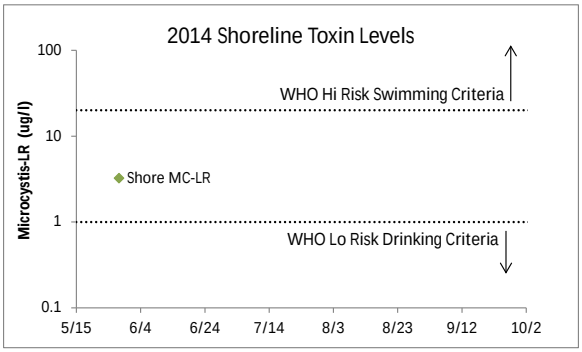


Figure D10:
2014 Shoreline Microcystin-LR

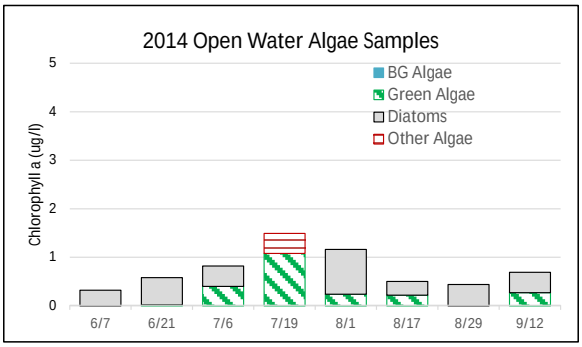


Figure D11:
2014 Open Water Algae Types

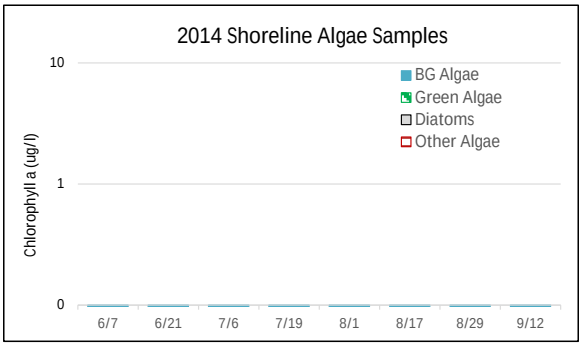


Figure D12:
2014 Shoreline Algae Types

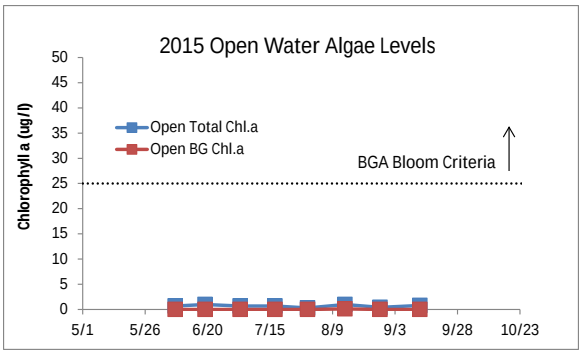


Figure D13:
2015 Open Water Total and BGA Chl.a

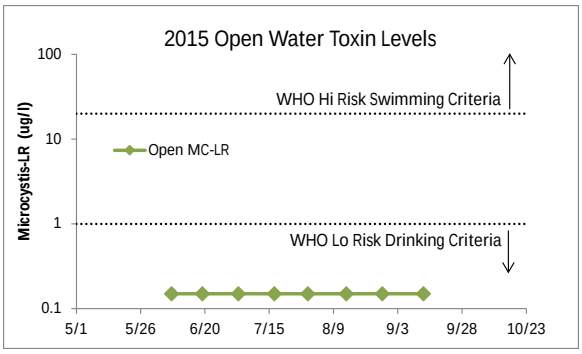


Figure D14:
2015 Open Water Microcystin-LR

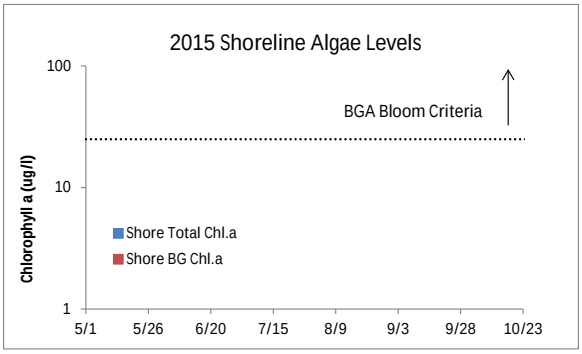


Figure D15:
2015 Shoreline Total and BGA Chl.a

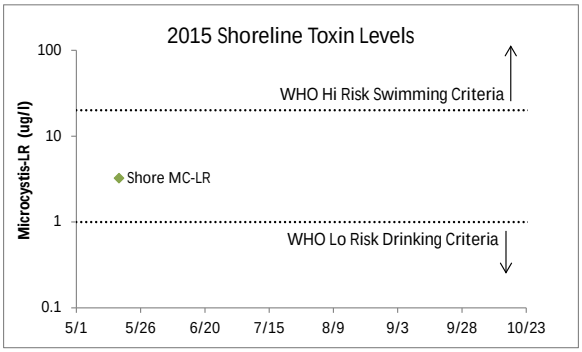


Figure D16:
2015 Shoreline Microcystin-LR

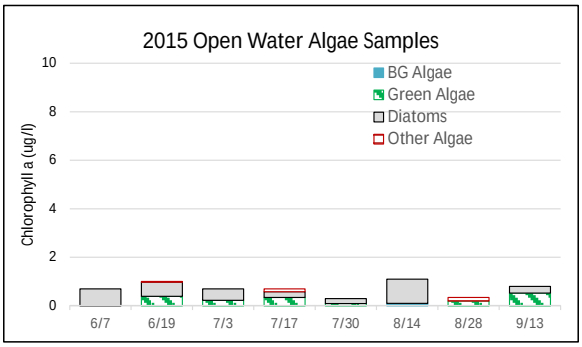


Figure D17:
2015 Open Water Algae Types

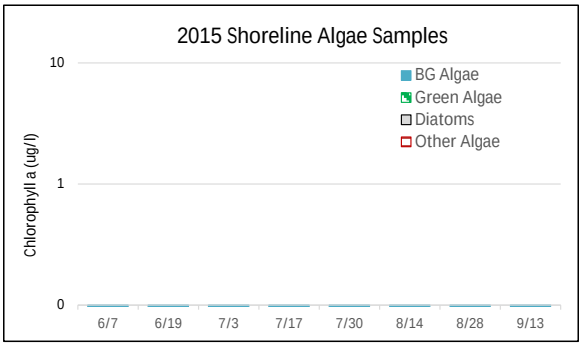


Figure D18:
2015 Shoreline Algae Types

Appendix E:
AIS Species in Essex County

The table below shows the invasive aquatic plants and animals that have been documented in Essex County, as cited in either the iMapInvasives database (http://www.imapinvasives.org/) or in the NYSDEC Division of Water database. These databases may include some, but not all, non-native plants or animals that have not been identified as "Prohibited and Regulated Invasive Species" in New York state regulations (6 NYCRR Part 575; http://www.dec.ny.gov/docs/lands_forests_pdf/islist.pdf).

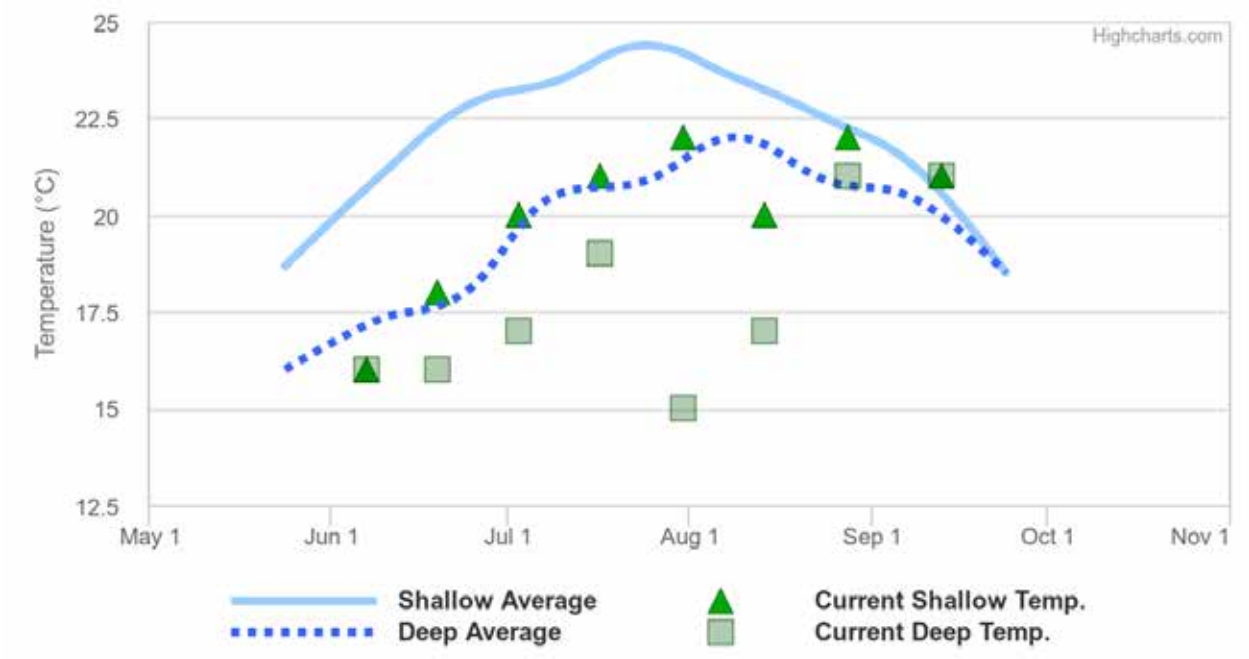
This list is not complete, but instead represents only those species that have been reported and verified within the county. If any additional aquatic invasive species (AIS) are known or suspected in these or other waterbodies in the county, this information should be reported through iMap invasives or by contacting NYSDEC at dowinfo@dec.ny.gov.

Aquatic Invasive Species - Essex County			
Waterbody	**Kingdom**	**Common name**	**Scientific name**
Augur Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Bartlett Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Butternut Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Chapel Pond	Animal	Allegheny crayfish	*Orconectes obscurus*
Eagle Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Franklin Falls Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Franklin Falls Pond	Plant	Curly leafed pondweed	*Potamogeton crispus*
Franklin Falls Pond	Plant	Curly leafed pondweed	*Potamogeton crispus*
Goodnow Flowage	Plant	Brittle naiad	*Najas minor*
Highlands Forge Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Lake Champlain	Animal	Spiny waterflea	*Bythotrephes longimanus*
Lake Champlain	Animal	Zebra mussel	*Dreissena polymorpha*
Lake Champlain	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lake Champlain	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Lake Champlain	Plant	Water chestnut	*Trapa natans*
Lake Eaton	Plant	European frogbit	*Hydrocharis morsus-ranae*
Lake Flower	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lake George	Animal	Zebra mussel	*Dreissena polymorpha*
Lake George	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Lake George	Animal	Virile crayfish	*Orconectes virilis*
Lake George	Plant	Curly leafed pondweed	*Potamogeton crispus*
Lake Placid	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lake Placid	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lincoln Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*

Waterbody	Kingdom	Common name	Scientific name
Long Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Long Pond	Animal	Allegheny crayfish	*Orconectes obscurus*
Minerva Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Mirror Lake	Plant	Broadleaf Water-milfoil	*Myriophyllum heterophyllum*
Mirror Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Nichols Pond	Animal	Allegheny crayfish	*Orconectes obscurus*
North Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Oseetah Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Paradox Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Paradox Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Paradox Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Penfield Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Putnam Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Rogers Pond	Plant	European frogbit	*Hydrocharis morsus-ranae*
Schroon Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Schroon Lake	Plant	Curly leafed pondweed	*Potamogeton crispus*
Schroon Lake	Animal	Rudd	*Scardinius erythrophthalmus*
Webb Royce Swamp	Plant	European frogbit	*Hydrocharis morsus-ranae*
Woodruff Pond	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*

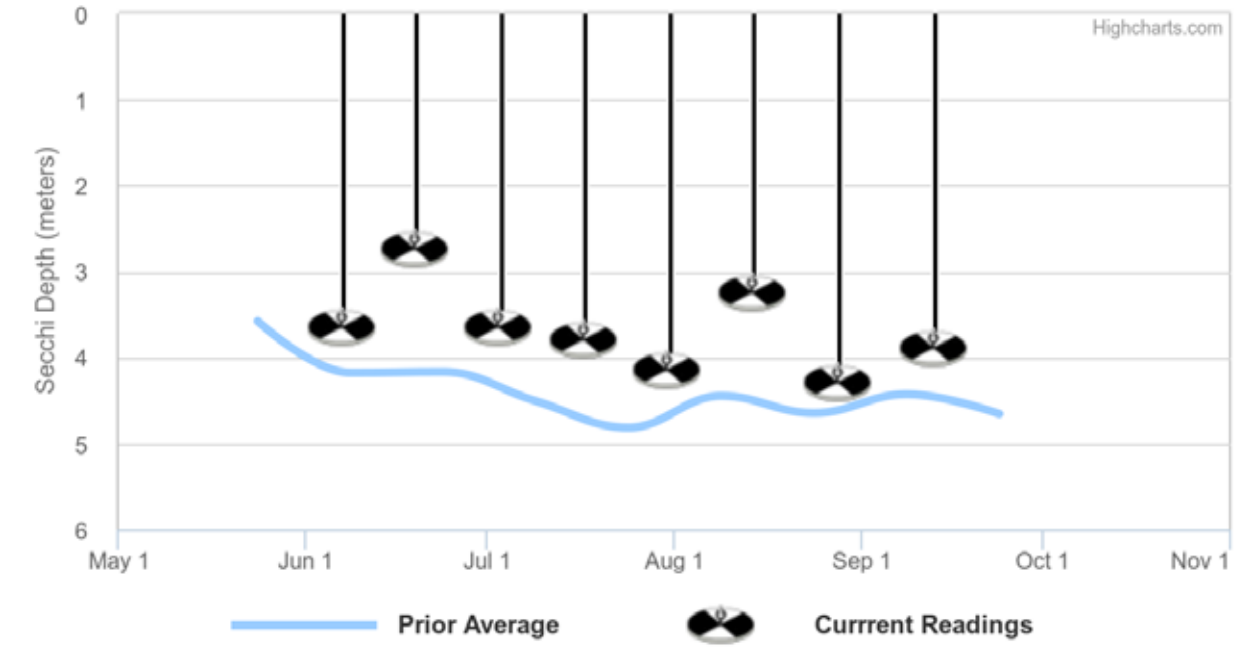
Appendix F: Current Year vs. Prior Averages for Lincoln Pond

Current Year Water Temperatures vs. Prior Average



This year's shallow water sample temperatures are tending to be lower than normal when compared to the average of readings collected from 1997 to 2014. This year's deep water sample temperatures are tending to be lower than normal when compared to the average of readings collected from 1999 to 2014.

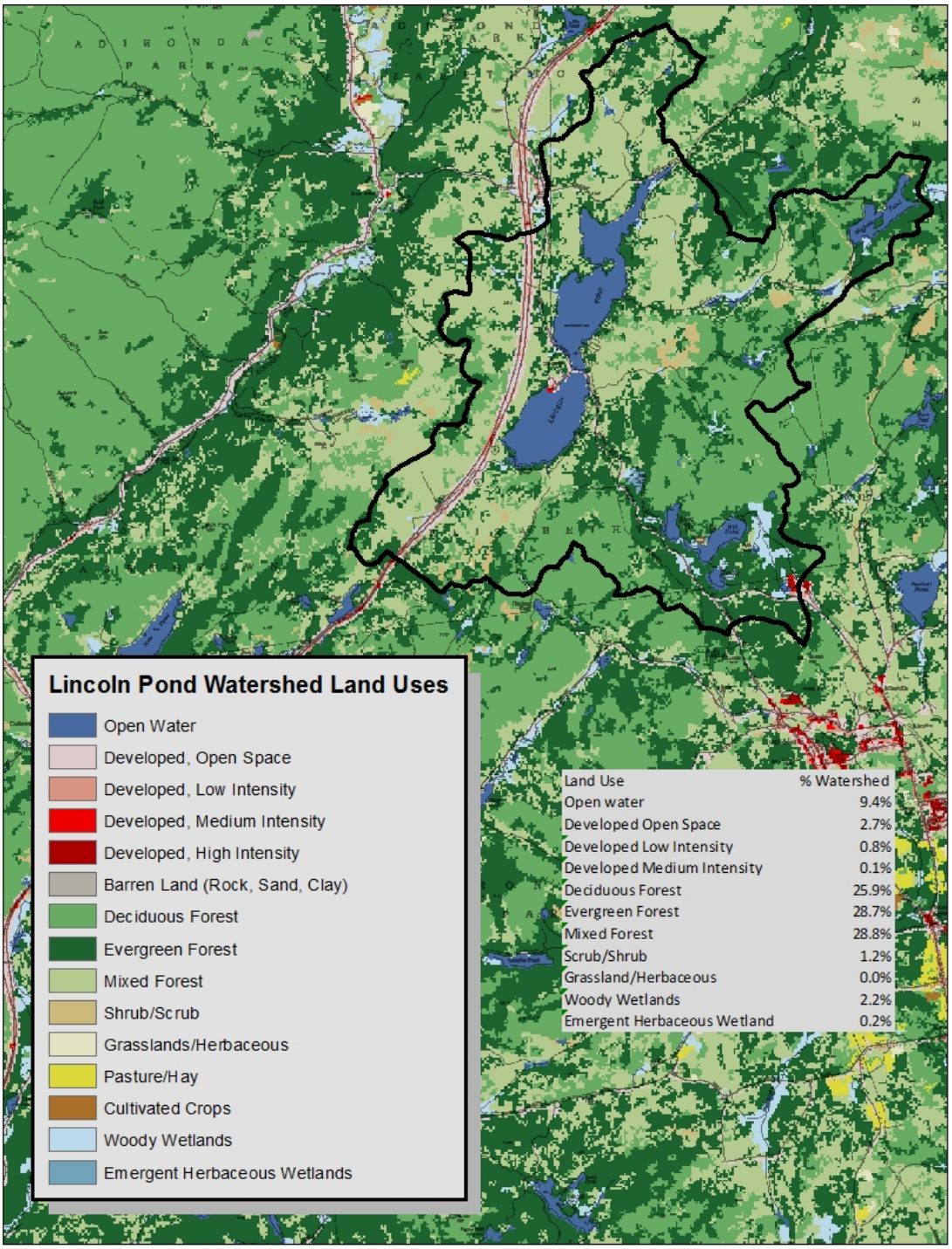
Current Year Secchi Readings vs. Prior Average



This year's session Secchi readings are tending to be lower than normal when compared to the average of readings collected from 1997 to 2014.

Appendix G: Watershed and Land Use Map for Lincoln Pond

This watershed and land use map was developed using USGS StreamStats and ESRI ArcGIS using the 2006 land use satellite imagery. The actual watershed map and present land uses within this watershed may be slightly different due to the age of the underlying data and some limits to the use of these tools in some geographic regions and under varying flow conditions. However, these maps are intended to show the approximate extent of the lake drainage basin and the major land uses found within the boundaries of the basin.



Land Use	% Watershed
Open water	9.4%
Developed Open Space	2.7%
Developed Low Intensity	0.8%
Developed Medium Intensity	0.1%
Deciduous Forest	25.9%
Evergreen Forest	28.7%
Mixed Forest	28.8%
Scrub/Shrub	1.2%
Grassland/Herbaceous	0.0%
Woody Wetlands	2.2%
Emergent Herbaceous Wetland	0.2%