

CSLAP 2010 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	4,000 hectares (9,880 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, 2008-2009
2009 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 270 lakes found in Essex County, and one of 15 CSLAP lakes among the more than 240 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, and 2008 to 2010. Some of the CSLAP reports for Lincoln Pond are found on the NYSFOLA website at www.nysfola.org, under NYS Lake Association Lake List.

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 2010 CSLAP Sampling Results

Evaluation of Eutrophication Indicators

Total phosphorus readings were lower than normal in 2010, but this did not result in any change in chlorophyll *a* or Secchi disk transparency readings. Chlorophyll *a* readings have decreased slightly since about 2000, but the other trophic indicators have not exhibited long-term changes. 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 each of the trophic indicators is “internally consistent.” In other words, water clarity, chlorophyll *a* and total phosphorus readings were each in the expected range given the readings for the other trophic indicators. Phycocyanin readings were well below the levels indicating susceptibility for harmful algal blooms (HABs) in 2009; phycocyanin levels were not measured in 2010. 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 were higher than normal in 2009 and 2010, and calcium levels were lower than normal in 2010. This increase in pH has been part of a long-term trend, although these readings continue to be indicative of circumneutral (near neutral) lakes and does not appear to represent a problem. None of the other limnological indicators has exhibited long-term changes, although it is premature to evaluate changes in ammonia, total nitrogen, and calcium. It is likely that the small changes in most of these indicators from year to year represent normal (or weather-induced) variability. 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-leaved 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.

Phytoplankton, zooplankton, and macroinvertebrate surveys have not been conducted through CSLAP at Lincoln Pond.

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

Evaluation of Lake Perception

Aquatic plant coverage of Lincoln Pond has decreased over the last thirteen years, perhaps due to herbivory. Water quality assessments have also improved over this period, perhaps consistent with a slight decrease in algae levels (as measured by chlorophyll *a*) over this period. As a result, recreational assessments have also improved over this period. These long-term changes were also apparent in 2010: water quality assessments were more favorable, aquatic plant coverage was less extensive, and recreational assessments improved. The improved recreational conditions appear to more strongly correlate with reduced coverage of aquatic plants than with changes in water quality. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Neither air temperature nor water temperature were significantly different in 2010, although both air and water temperatures have decreased during the June-September index period over the last thirteen years. It is not known if this is an indication of local climate change or if these changes represent normal variability.

Lake Condition Summary

Category	Indicator	Min	97-10 Avg	Max	2010 Avg	Classification	2010 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	2.90	4.52	6.60	4.66	Mesotrophic	Within Normal Range	No Change
	Chlorophyll <i>a</i>	0.21	2.00	7.84	1.46	Mesotrophic	Within Normal Range	Decreasing Slightly
	Total Phosphorus	0.003	0.008	0.024	0.006	Oligotrophic	Lower Than Normal	No Change
Potable Water Indicators	Hypolimnetic NH4	0.01	0.03	0.10	0.04	Close to Surface NH4 Readings	Higher than Normal	Not known
	Hypolimnetic As							
	Hypolimnetic Iron							
	Hypolimnetic Mn							
Limnological Indicators	Hypolimnetic TP	0.005	0.009	0.026	0.006	Close to Surface TP Readings	Lower Than Normal	Not known
	Nitrate + Nitrite	0.00	0.01	0.10	0.01	Low NOx	Within Normal Range	No Change
	Ammonia	0.01	0.03	0.16	0.02	Low Ammonia	Within Normal Range	Not yet known
	Total Nitrogen	0.01	0.21	0.38	0.23	Low Total Nitrogen	Within Normal Range	Not yet known
	pH	6.16	7.32	8.38	7.68	Circumneutral	Higher than Normal	Increasing Slightly
	Specific Conductance	71	135	182	138	Intermediate Hardness	Within Normal Range	No Change
	True Color	5	12	26	8	Intermediate Color	Within Normal Range	No Change
	Calcium	4.1	7.2	10.8	6.2	Not Susceptible to Zebra Mussels	Lower Than Normal	Not yet known
Lake Perception	WQ Assessment	1	2.3	3	1.1	Not Quite Crystal Clear	More Favorable Than Normal	Highly Improving
	Plant Coverage	1	2.6	4	1.2	Surface Plant Growth	Less Extensive Than Normal	Significantly Decreasing
	Rec. Assessment	1	2.8	4	1.3	Slightly Impaired	More Favorable Than Normal	Highly Improving
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					Coolwater fishery?	Not known	Not known
	Invasive Species					Eurasian watermilfoil, curly-leafed pondweed	Not known	Not known
Local Climate Change	Air Temperature	12	23.4	34	22.1		Within Normal Range	Decreasing Significantly
	Water Temperature	16	22.7	28	22.6		Within Normal Range	Decreasing Slightly

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 suggest that any use of the lake for potable water may be supported, at least based on algae levels in the lake.

Contact Recreation (Swimming)

The CSLAP dataset at Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation should be fully supported, although bacterial data are needed to evaluate the safety of the lake for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation has historically been *stressed* by the presence of excessive weed growth, particularly Eurasian watermilfoil and curly leafed pondweed, although this impairment may no longer exist.

Aquatic Life

The CSLAP dataset on Lincoln Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *threatened* by the presence of Eurasian watermilfoil, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics

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

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.

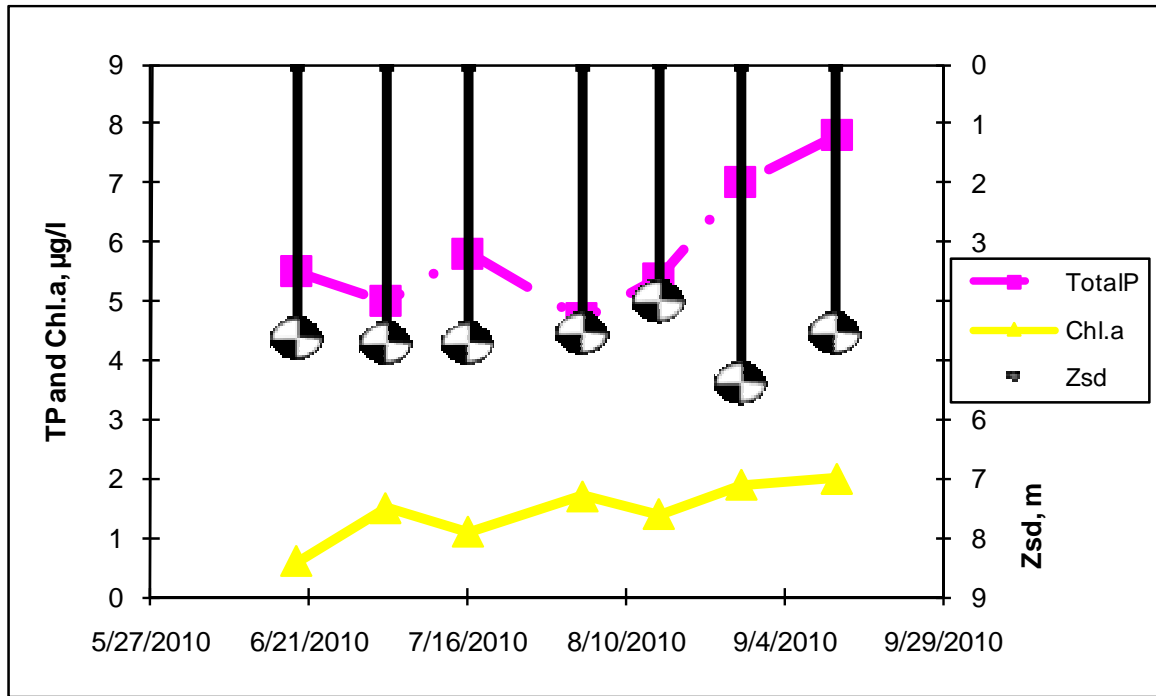
Additional Comments and Recommendations

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.

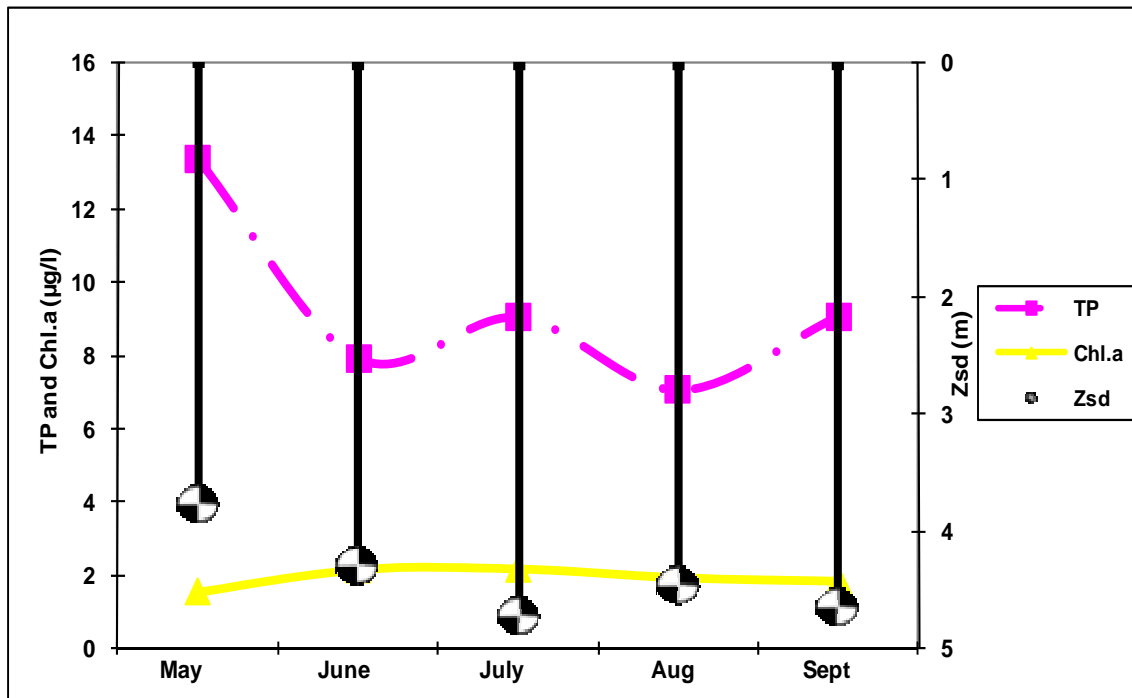
Aquatic Plant IDs-2010

None submitted for identification

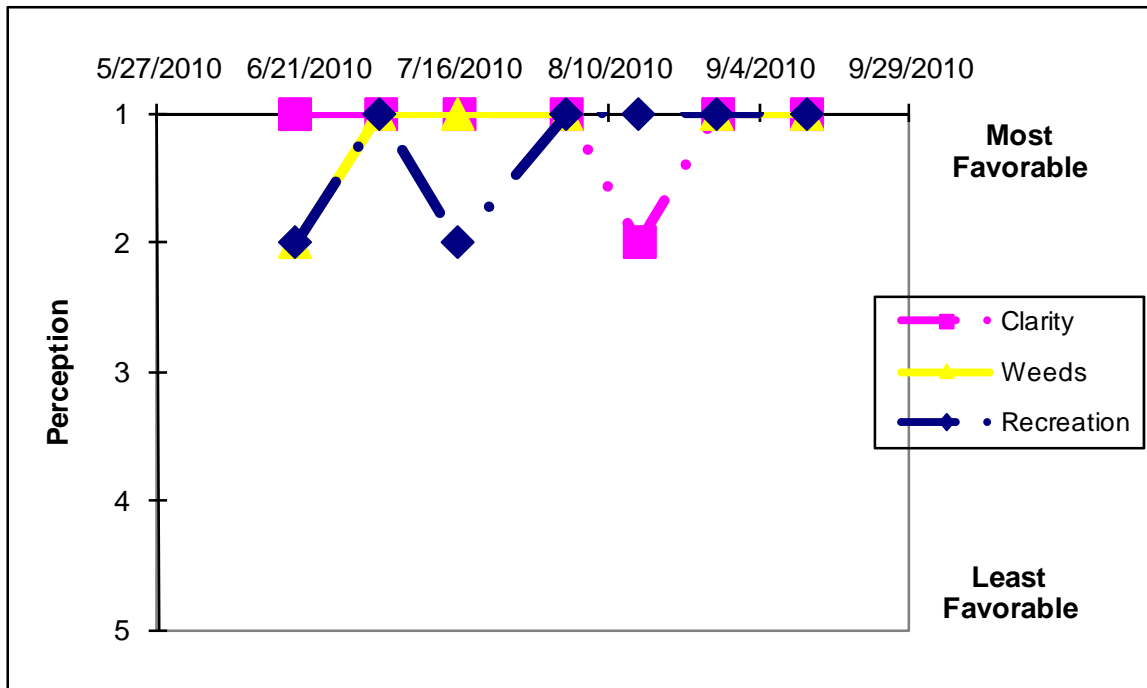
Time Series: Trophic Indicators, 2010



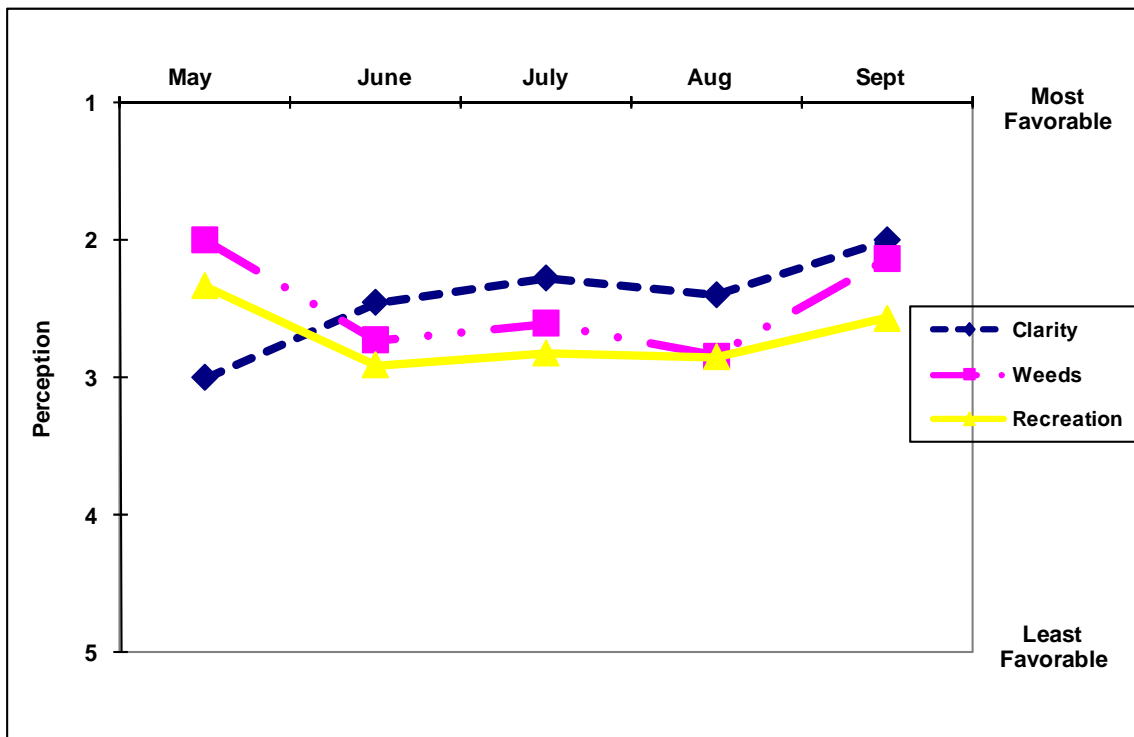
Time Series: Trophic Indicators, Typical Year (1997-2010)



Time Series: Lake Perception Indicators, 2010



Time Series: Lake Perception Indicators, Typical Year (1997-2010)



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
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
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	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							

LNum	PName	Date	Zbot	Zsd	Zsamp	Site	TAir	TH20	QA	QB	QC	QD
135	Lincoln P	5/25/1997	9.0	3.10	1.5	epi	12	16	3	2	2	5
135	Lincoln P	6/8/1997	10.5	4.70	1.5	epi	23	23	2	3	3	2
135	Lincoln P	6/22/1997	10.5	3.70	1.5	epi	27	28	3	2	3	256
135	Lincoln P	7/6/1997	9.5	4.73	1.5	epi	29		2	2	3	2
135	Lincoln P	7/20/1997	8.5	5.00	1.5	epi	27	25	3	3	3	2
135	Lincoln P	8/3/1997	8.0	3.80		epi	23	25	3	4	4	25
135	Lincoln P	8/17/1997	7.0	4.50		epi	26	25	3	4	4	2
135	Lincoln P	8/31/1997	7.5	3.70	1.5	epi	24	25	3	4	4	25
135	Lincoln P	5/24/1998	5.2	3.65	1.0	epi	24	21	3	2	3	2
135	Lincoln P	6/7/1998	5.6	5.10	1.0	epi	21	22	3	3	4	25
135	Lincoln P	6/27/1998	6.3	4.40	1.0	epi	25	26	3			
135	Lincoln P	7/12/1998	4.7	3.65		epi	25	25	3	3	4	2
135	Lincoln P	7/26/1998	5.1	3.95	1.5	epi	26	26	3	4	4	2
135	Lincoln P	8/9/1998	5.5	3.45	1.5	epi	31	25	3	4	4	2
135	Lincoln P	8/23/1998	5.4	3.20	1.5	epi	24	23	3	4	4	2
135	Lincoln P	9/7/1998	5.0	3.85	1.5	epi	29	23	3	4	4	25
135	Lincoln P	9/20/1998	5.3	3.85	1.5	epi	24	22	2	3	4	2
135	Lincoln P	6/13/1999	7.5	3.75	1.5	epi	33	25	3	3	3	2
135	Lincoln P	6/27/1999	5.5	4.00	1.5	epi	34	25	3	3	3	2
135	Lincoln P	7/11/1999	5.5	4.75	1.5	epi	21	25	3	3	4	25
135	Lincoln P	7/25/1999	7.5	5.70	1.5	epi	24	27	3			
135	Lincoln P	8/8/1999	7.5	4.00	1.5	epi	22	24	3	3	4	25
135	Lincoln P	8/22/1999	4.5		1.5	epi	19	23	3	3	4	25
135	Lincoln P	9/5/1999	7.5	5.75	1.5	epi	30	24	3	3	4	25
135	Lincoln P	9/19/1999	7.5	4.50	1.5	epi	19	18	3	3	4	2
135	Lincoln P	6/4/2000	7.7	2.90	1.5	epi	16	20	3	3	4	5
135	Lincoln P	6/18/2000	7.7	4.20	1.5	epi	20	21				
135	Lincoln P	7/2/2000	7.7	4.35	1.5	epi	30	24	3	3	3	2
135	Lincoln P	7/16/2000	7.7	5.25	1.5	epi	23	23	3	3	3	25
135	Lincoln P	7/30/2000	7.7	4.50	1.5	epi	27	25	3	3	4	2
135	Lincoln P	8/13/2000	7.8	4.50	1.5	epi	26	24	3	3	3	2
135	Lincoln P	8/27/2000	7.7	6.60	1.5	epi	24	23	3	3	4	2
135	Lincoln P	9/10/2000	7.8	5.75	1.5	epi	24	22	3	2	4	2
135	Lincoln P	6/17/2001	7.5	5.00	1.5	epi	26	25	3	3	3	25

LNum	PName	Date	Zbot	Zsd	Zsamp	Site	TAir	TH20	QA	QB	QC	QD
135	Lincoln P	7/1/2001	7.8	5.45	1.5	epi	23	24	2	3		25
135	Lincoln P	7/15/2001	7.5	4.50	1.5	epi	22	23	2	2	4	25
135	Lincoln P	7/29/2001	7.5	6.00	1.5	epi	25	23	3	3	3	25
135	Lincoln P	8/12/2001	7.5	5.75	1.5	epi	28	26	3	3	4	2
135	Lincoln P	8/26/2001	7.3	6.00	1.5	epi	27	23	3	3	3	2
135	Lincoln P	9/9/2001	7.3	5.00	1.5	epi	28		2	3	3	2
135	Lincoln P	9/22/2001	7.3	5.55	1.5	epi	20	18	3	3	3	25
135	Lincoln P	5/30/2004	7.5	4.55		epi	18	19	3	2	2	5
135	Lincoln P	6/13/2004	7.5	4.50	1.0	epi	24	20	2	3	2	2
135	Lincoln P	6/27/2004	7.5	4.20	1.0	epi	20	21	2	3	4	5
135	Lincoln P	7/12/2004	7.6	4.30	1.0	epi	25	24	3	3	2	2
135	Lincoln P	7/25/2004	7.6	4.20	1.0	epi	20	24	3	3	4	468
135	Lincoln P	8/9/2004	7.7	4.30	1.0	epi	21	22	3	4	3	2
135	Lincoln P	8/22/2004	7.7	3.60	1.0	epi	18	22	3	3	3	2
135	Lincoln P	9/4/2004	7.7	4.65	1.0	epi	20	22	3	3	3	25
131	Lincoln P	6/15/2008	7.7	4.85	1.5	epi	26	24	2	2	1	8
131	Lincoln P	7/6/2008	7.6	4.90	1.5	epi	26	23	1	2	1	8
131	Lincoln P	7/21/2008	7.5	4.95	1.5	epi	22	24	1	2	1	8
131	Lincoln P	8/2/2008	7.5	4.30	1.5	epi	22	23	1	2	1	58
131	Lincoln P	8/17/2008	7.5	3.95	1.5	epi	24	22	1	1	1	8
131	Lincoln P	9/1/2008	7.4	4.70	1.5	epi	22	22	1	1	1	8
131	Lincoln P	9/13/2008	7.3	3.40	1.5	epi	20	20	1	1	2	8
131	Lincoln P	9/28/2008	6.9	4.60	1.5	epi	20	18	1	1	1	8
135	Lincoln P	07/25/2009	7.4	4.30	1.5	epi	24	23	1	3	2	58
135	Lincoln P	08/09/2009	7.4	3.85	1.5	epi	21	22	2	2	2	8
135	Lincoln P	08/23/2009	7.4	5.50	1.5	epi	25	25	1	2	2	0
135	Lincoln P	09/05/2009	7.4	4.25	1.5	epi	20	22	1	1	1	0
135	Lincoln P	09/20/2009	7.3	4.70	1.5	epi	18	20	1	1	1	0
135	Lincoln P	6/19/2010	7.4	4.65	1.5	epi	26	22	1	2	2	0
135	Lincoln P	7/3/2010	7.4	4.75	1.5	epi	24	22	1	1	1	0
135	Lincoln P	7/16/2010	7.3	4.75	1.5	epi	25	26	1	1	2	0
135	Lincoln P	8/3/2010	7.4	4.55	1.5	epi	25	25	1	1	1	0
135	Lincoln P	8/15/2010	7.2	4.00	1.5	epi	21	24	2		1	0
135	Lincoln P	8/28/2010	7.4	5.40	1.5	epi	18	22	1	1	1	8
135	Lincoln P	9/12/2010	7.3	4.55	1.5	epi	16	20	1	1	1	5
135	Lincoln P	7/25/1999			6.5	hypo		23				
135	Lincoln P	8/22/1999	7.5	4.50	6.5	hypo	19	22				
135	Lincoln P	07/25/2009	7.4		6.5	hypo		20				
135	Lincoln P	08/09/2009	7.4		6.5	hypo		22				
135	Lincoln P	08/23/2009	7.4		6.5	hypo		22				
135	Lincoln P	09/05/2009	7.4		6.5	hypo		21				
135	Lincoln P	09/20/2009	7.3		6.5	hypo		19				
135	Lincoln P	6/19/2010	7.4		5.5	hypo		20				
135	Lincoln P	7/16/2010	7.3		6.0	hypo		21				
135	Lincoln P	8/15/2010	7.2		6.0	hypo		24				
135	Lincoln P	9/12/2010	7.3		6.0	hypo		20				

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)	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)
Lake Assessment			
QA	water quality assessment, 5 point scale; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment, 5 point scale; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment, 5 point scale; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment, 8 choices; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		

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: ATMOSPHERIC 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)