Lake Pleasant Questions and Answers, 2015 CSLAP

Q1. What is the condition of our lake this year?
A1. Lake Pleasant exhibited favorable water quality conditions in 2014 and 2015, with relatively high water clarity and low algae levels. No shoreline blooms or invasive plants have been found, although spiny water flea has been found at the lake.

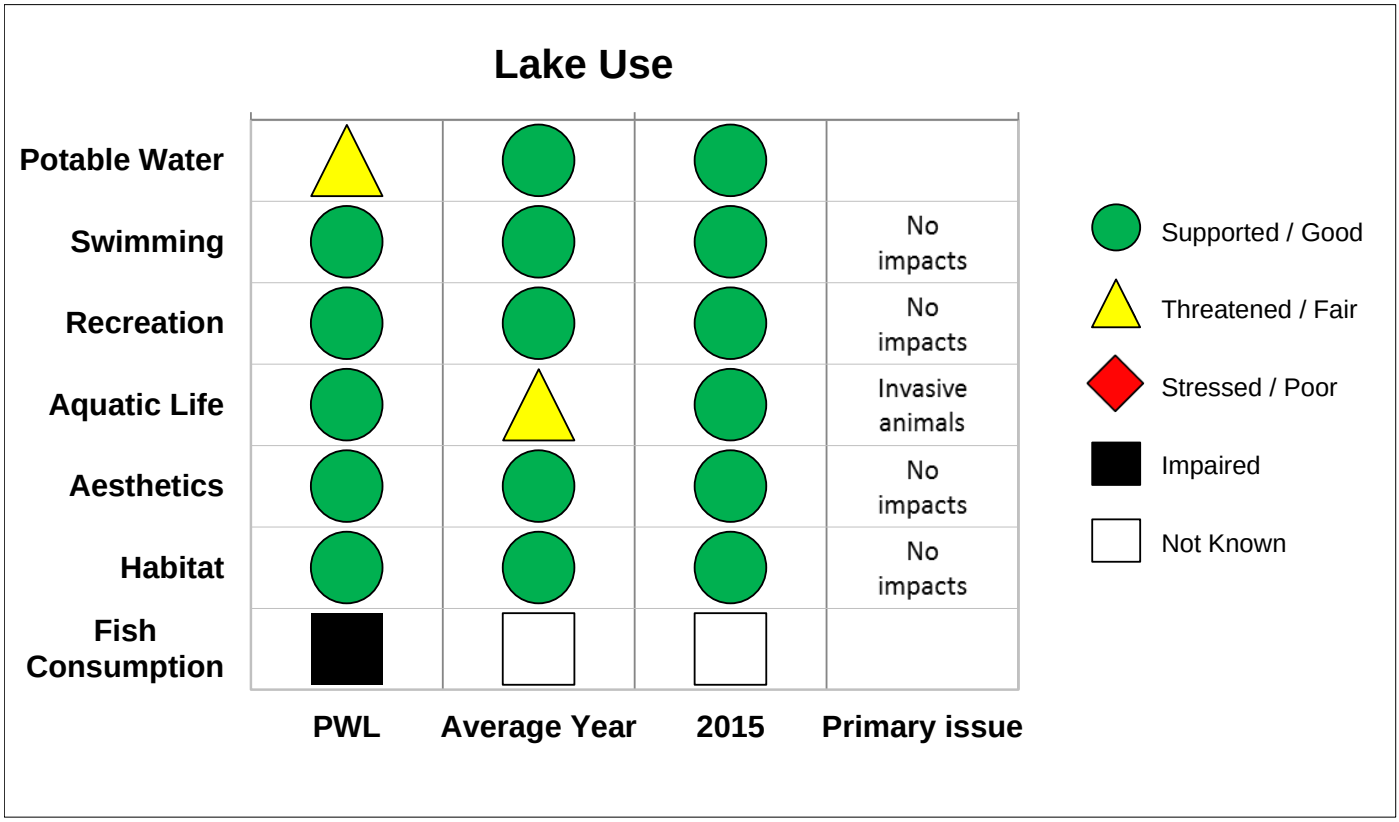
Q2. Is there anything new that showed up in the testing this year?
A2. Chloride sampling results were typical of lakes with only minor impacts from road salt runoff, although no actual impacts have been apparent. Overall water quality results were very similar in 2014 and 2015.

Q3. How does the condition of our lake this year compare with other lakes in the area?
A3. Lake Pleasant has slightly higher water clarity (though lower than expected), and lower algae and nutrient levels, than most nearby lakes, and shoreline blooms were not reported in the lake. No invasive plants have been reported.

Q4. Are there any trends in our lake's condition?
A4. No trends are apparent with only two years of data, although 2014 and 2015 data were similar.

Q5. Should we be concerned about the condition of our lake? Are we close to a tipping point?
A5. Lake Pleasant may not be susceptible to shoreline algae blooms, based on lake water chemistry. However, lake residents should be on the lookout, and should avoid exposure to, these blooms. The lake may be susceptible to new invasive species, and lake residents should continue to be vigilant in AIS surveillance.

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 should be continued to maintain water quality 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.

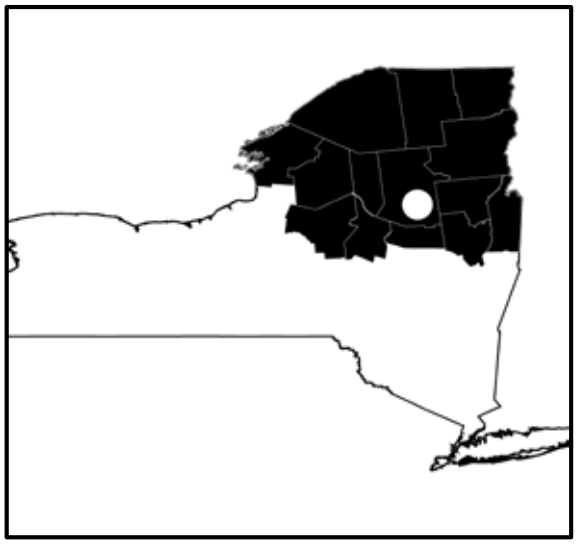


CSLAP 2015 Lake Water Quality Summary:
Lake Pleasant

General Lake Information

Location	Town of Lake Pleasant
County	Hamilton
Basin	Upper Hudson River
Size	583 hectares (1440 acres)
Lake Origins	Natural
Watershed Area	3200 hectares (7907 acres)
Retention Time	1.8 years
Mean Depth	8.8 meters
Sounding Depth	18 meters
Public Access?	Town boat launch and fishing platform
Major Tributaries	Outlet from Sacandaga Lake and Sucker Brook
Lake Tributary To…	Unnamed outlet to Sacandaga River to Upper Hudson River
WQ Classification	AA (potable water = drinking)
Lake Outlet Latitude	43.47756
Lake Outlet Longitude	-74.37739
Sampling Years	2014-2015
2015 Samplers	Jim Olsen, Peter Tobiessen
Main Contact	Peter Tobiessen

Lake Map



Background

Lake Pleasant is a 1593 acre, class AA lake found in the Town of Lake Pleasant in Hamilton County, in the interior Adirondack region of New York State. It was first sampled as part of CSLAP in 2014.

It is one of four CSLAP lakes among the nearly 700 lakes and ponds found in Hamilton County and one of 32 CSLAP lakes among the more than 1370 lakes and ponds in the Upper Hudson River drainage basin.

Lake Uses

Lake Pleasant is a Class AA lake; this means that the best intended use for the lake is for potable water—drinking—as well as contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aquatic life, and aesthetics. The lake is used by lake residents and the public for a variety of recreational purposes—the lake can be accessed through a Town boat launch and fishing platform, and a variety of private launching points.

Lake Pleasant has been regularly stocked with 29,000 walleye, 1,600 brown trout, and 2,100 lake trout. Fish species identified at the lake include smallmouth bass, largemouth bass, rainbow trout, brown trout, lake trout, brown bullhead, yellow perch, chain pickerel, rock bass, and walleye.

General statewide fishing regulations are applicable in Lake Pleasant. In addition, open season for lake salmon lasts for the entire year, with a minimum size of 15 inches and a daily limit of three fish. The open season for trout lasts all season, with no size limit but a daily limit of five fish. Ice fishing is allowed for both species. The state record for lake whitefish was caught from Lake Pleasant in 1995 (http://www.dec.ny.gov/outdoor/7935.html).

Despite a consumption advisory for smallmouth bass caught from Sacandaga Lake, limiting consumption to one meal per month due to (atmospheric) mercury contamination, there are no consumption advisories for Lake Pleasant.

Historical Water Quality Data

CSLAP sampling was conducted on Lake Pleasant for the first time in 2014. The CSLAP reports for the lake can be found on the NYSFOLA website at http://nysfola.mylaketown.com, and the most recent CSLAP report can be found on the NYSDEC web page at http://www.dec.ny.gov/lands/77867.html.

Water quality information for Lake Pleasant and Sacandaga Lake has been summarized in the book The Secret Life of a Lake by lake resident, retired Union College professor, and CSLAP volunteer Peter Tobiessen.

Sacandaga Lake has been sampled through CSLAP for a number of years; lake reports can be found at the same locations as cited above on the NYSFOLA and NYSDEC web pages.

Lake Association and Management History

Lake Pleasant is served by the Lake Pleasant-Sacandaga Lake Association. The lake association was founded in 1953, and the Lake Pleasant-Sacandaga Foundation was organized in 1994 to

raise funds through tax deductible donations for projects which accomplish the purpose of the Lake Pleasant-Sacandaga Association. The functions of the lake association include:

- The lake beautification committee
- Boat stewardship
- Conducting plant surveys, as coordinated through the Adirondack Park Invasive Plant Program

The lake association maintains a web page at http://lakepleasant.mylaketown.com/..

Summary of 2015 CSLAP Sampling Results

Evaluation of 2015 Annual Results

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 – Lake Pleasant" section in Appendix C.

Evaluation of Eutrophication Indicators

It is not yet known if the 2014 data are representative of normal conditions in the lake. Lake Pleasant exhibited low phosphorus levels, resulting in low algae levels and high water clarity. Water quality conditions in Lake Pleasant are similar to those measured in Sacandaga Lake.

Lake productivity decreases slightly during the summer, with water clarity readings increasing as nutrient and algae levels decrease. This productivity appears to be similar in August and September.

The lake can be characterized as *mesoligotrophic*, or highly productive, based on water clarity, chlorophyll *a* (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 in the lake. This suggests that small changes in phosphorus may cause large changes in algae levels or water clarity Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels appear to be too low 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, and the lake is used for drinking water. Potable water conditions, at least as measurable through CSLAP, are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Limnological Indicators

If the 2014 CSLAP data are representative of conditions in the lake, then Lake Pleasant can be characterized as a circumneutral, softwater lake with intermediate color, and low nitrogen levels; the latter is consistent with low algae levels. NOx readings are highest in early summer, and decreases after snowpack runoff dilutes into the lake. None of these other limnological indicators exhibits any clear seasonal changes.

Chloride levels in the 2015 samples, collected for the first time through CSLAP and cited in Appendix A, ranged from 12 to 14 mg/l. These values fall within the "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 within than the 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

It is not known if phytoplankton, zooplankton, macrophyte, or macroinvertebrate studies have been conducted at the lake. The fluoroprobe data indicates low algae and blue green algae levels, and the algae community is comprised of a mix of algae species. Algae levels increase slightly during the summer, and the percentage of blue green algae species is highest in mid summer (though still low).

Spiny water flea has been found in the lake, but no other invasive species have been reported in the lake. However, invasive plants are found in many nearby lakes .

NYSDEC fisheries staff report that “Brown trout, smallmouth bass, chain pickerel and yellow perch fishing has improved greatly in the last decade since smelt became abundant. Walleye fishing has declined, but trophy fish are still present. We have begun stocking walleye fingerlings to rebuild the population. The smelt population within the lake is very abundant, and these are eagerly sought by ice fishermen. Large brown trout are present, but generally are hard to catch due to the abundant forage. Largemouth bass are present in the weedy areas. Smallmouth bass are found throughout the lake and average 13-16 inches in length”.

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

Evaluation of Lake Perception

The lake is most often described as “excellent” for most recreational uses, due to water quality conditions described as having “not quite crystal clear” water. This is consistent with the water quality conditions in the lake. Aquatic plants are not visible from the lake surface in most location, and no invasive plants have been reported. Additional years of data will help to determine if these assessments are representative of normal conditions in the lake. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

It is not yet known if air or water temperature readings have exhibited any clear long-term changes, if these readings could indicate local climate change or if any changes can be evaluated through CSLAP.

Evaluation of Algal Toxins

Algal toxin levels can vary significantly within blooms and from shoreline to lake, and the absence of toxins in a sample does not indicate safe swimming conditions. Phycocyanin and fluoroprobe algae readings are consistently well below levels associated with harmful algal blooms (HABs) in the main body of the lake, and no shoreline blooms have been reported. Both

microcystin-LR (liver toxin) and anatoxin-a (nerve toxin) levels are well below the World Health Organization (WHO) recommended threshold for supporting safe swimming.

Lake Condition Summary

Category	Indicator	Min	Overall Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	3.60	4.43	5.60	4.56	Mesotrophic	Higher than in 2014	
	Chlorophyll *a*	1.60	2.51	3.80	2.15	Mesotrophic	Lower than in 2014	
	Total Phosphorus	0.005	0.007	0.009	0.007	Oligotrophic	No change	
Potable Water Indicators	Hypolimnetic Ammonia	0.04	0.05	0.07	0.05	Close to Surface NH4 Readings	No change	
	Hypolimnetic Arsenic							
	Hypolimnetic Iron							
	Hypolimnetic Manganese							
Limnological Indicators	Hypolimnetic Phosphorus	0.000	0.009	0.051	0.010	Close to Surface TP Readings	No change	
	Nitrate + Nitrite	0.00	0.02	0.05	0.01	Low NOx	No change	
	Ammonia	0.03	0.03	0.04	0.03	Low Ammonia	No change	
	Total Nitrogen	0.20	0.40	1.05	0.50	Low Total Nitrogen	Higher than in 2014	
	pH	6.58	7.28	7.97	7.41	Circumneutral	Higher than in 2014	
	Specific Conductance	46	60	66	63	Softwater	Higher than in 2014	
	True Color	7	15	20	14	Intermediate Color	No change	
	Calcium	3.7	4.1	4.4	4.3	Not Susceptible to Zebra Mussels	Higher than in 2014	
Lake Perception	WQ Assessment	1	1.9	2	2.0	Not Quite Crystal Clear	No change	
	Aquatic Plant Coverage	1	1.2	3	1.4	Plants Not Visible	More plants than in 2014	
	Recreational Assessment	1	1.4	2	1.1	Could Not Be Nicer	More favorable than in 2014	
Biological Condition	Phytoplankton					Open water-low blue green algae biomass		
	Macrophytes					Excellent quality of the aquatic plant community		
	Zooplankton					Not measured through CSLAP		
	Macroinvertebrates					Not measured through CSLAP		
	Fish					Coldwater fishery		
	Invasive Species					Spiny waterflea		
Local Climate Change	Air Temperature	19	25.3	30	24.3			
	Water Temperature	17	22.2	25	23.0		Higher than in 2014	
Harmful Algal Blooms	Open Water Phycocyanin	1	6	20	5	No readings indicate high risk of BGA		
	Open Water FP Chl.a	1	2	3	2	No readings indicate high algae levels		
	Open Water FP BG Chl.a	0	0	1	0	No readings indicate high BGA levels		
	Open Water Microcystis	<DL	0.2	0.3	<DL	Mostly undetectable open water MC-LR		
	Open Water Anatoxin a	<DL	<DL	<DL	<DL	Open water Anatoxin-a consistently not detectable		
	Shoreline Phycocyanin					No shoreline blooms sampled for PC		
	Screening FP Chl.a					No shoreline blooms sampled for FP		
	Screening FP BG Chl.a					No shoreline blooms sampled for FP		
	Shoreline Microcystis					No shoreline bloom MC-LR data		
	Shoreline Anatoxin a					No shoreline bloom anatoxin data		

Evaluation of Lake Condition Impacts to Lake Uses

Lake Pleasant is presently listed on the 2003 Upper Hudson River drainage basin Priority Waterbody List (PWL) as "unassessed".

Potable Water (Drinking Water)

The CSLAP dataset at Lake Pleasant, including water chemistry data, physical measurements, and volunteer samplers' perception data, is inadequate to evaluate the use of the lake for potable water, and the lake is not used for this purpose. There are no identified threats to any "unofficial" potable water use.

Public Bathing

The CSLAP dataset at Lake Pleasant, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation is fully supported. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Recreation (Swimming and Non-Contact Uses)

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

Aquatic Life

The CSLAP dataset on Lake Pleasant, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life is *threatened* by spiny water flea. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics and Habitat

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

Fish Consumption

There are no fish consumption advisories posted for Lake Pleasant; this use may be *threatened* by migration of fish from Sacandaga Lake, where elevated mercury levels trigger a fish consumption advisory.

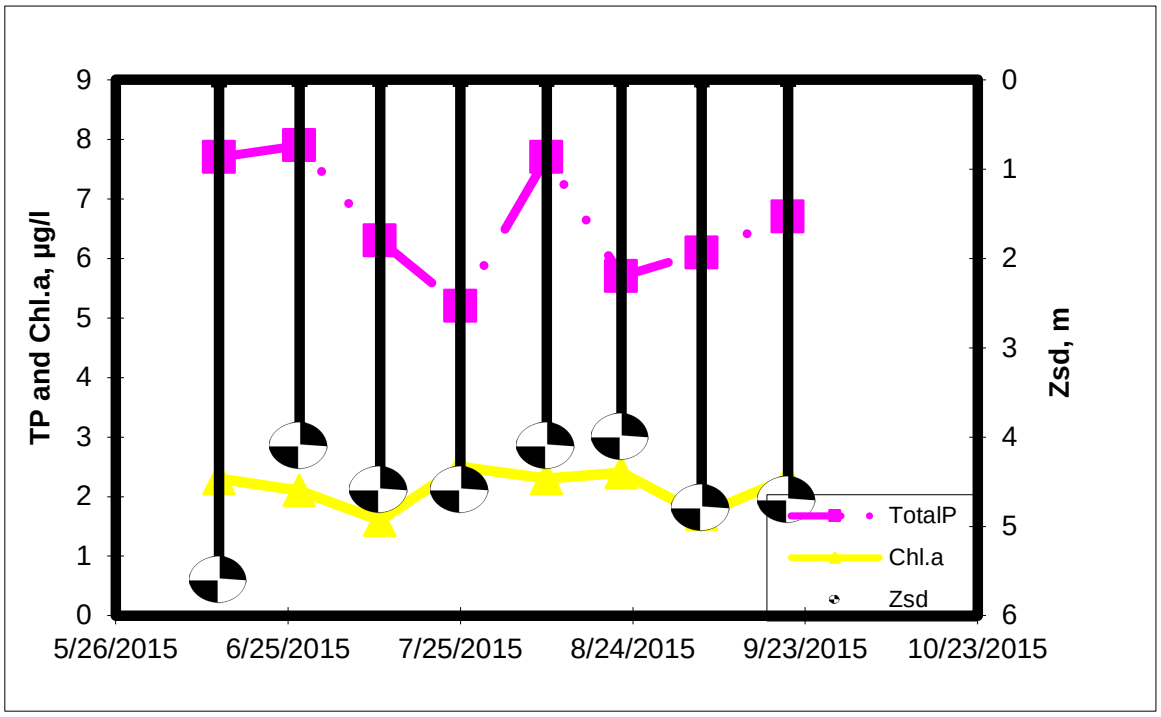
Additional Comments and Recommendations

Aquatic plant surveys should be conducted at Lake Pleasant to determine if other invasive species found in nearby lakes, including Eurasian watermilfoil, are present in the lake. Shoreline surveillance should continue to look for the presence of shoreline algae blooms.

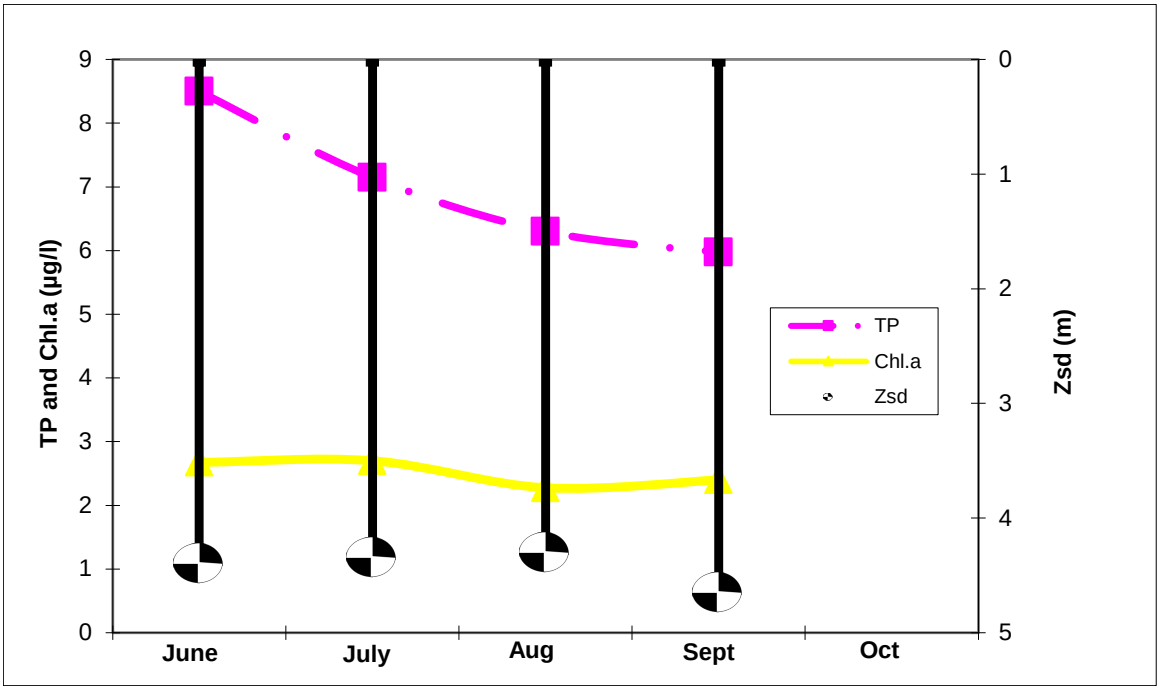
Aquatic Plant IDs-2015

No aquatic plants were submitted for identification in 2015.

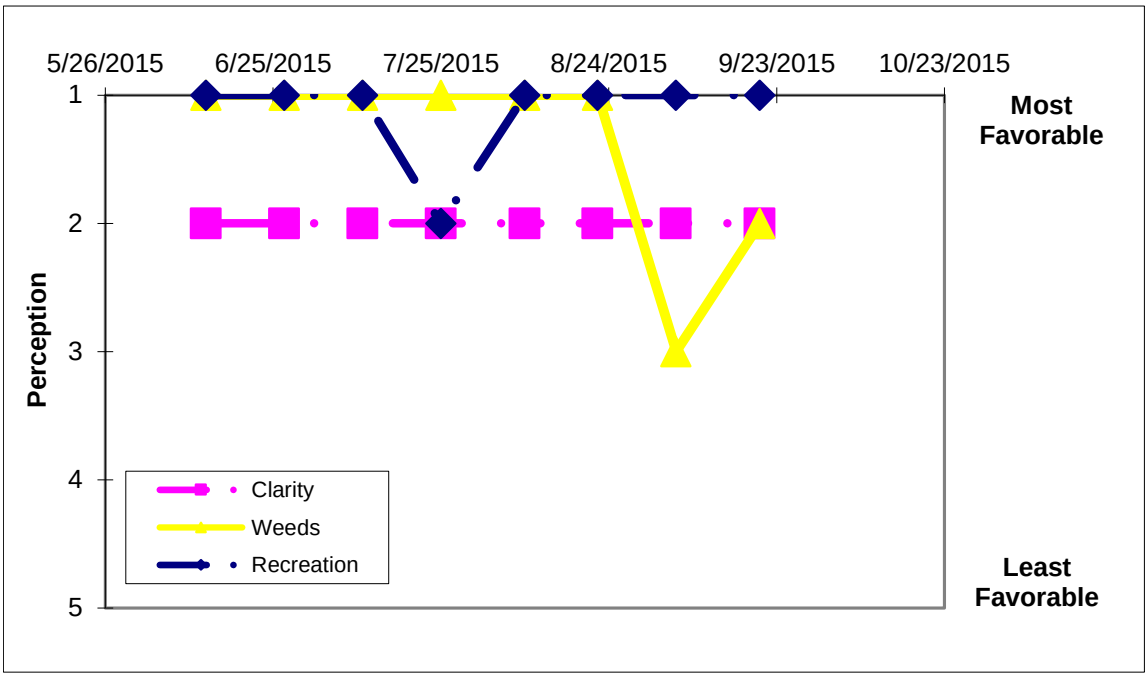
Time Series: Trophic Indicators, 2015



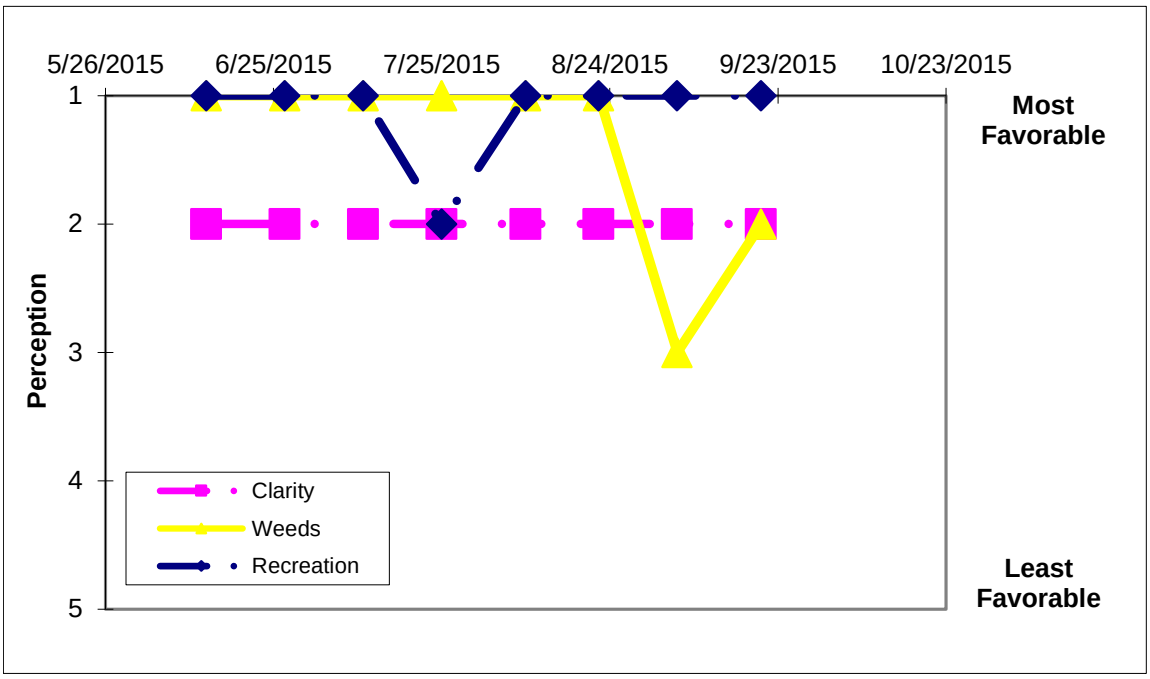
Time Series: Trophic Indicators, Typical Year (2014-2015)



Time Series: Lake Perception Indicators, 2015



Time Series: Lake Perception Indicators, Typical Year (2014-2015)



Appendix A- CSLAP Water Quality Sampling Results for Lake Pleasant

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
240	Lake Pleasant	6/15/2014	16.0	4.20	1.5	0.009	0.05	0.03	0.42	99.59	17	7.08	59	3.7	2.60	
240	Lake Pleasant	6/28/2014	17.0	3.70	1.5	0.009			0.37	89.69	20	7.64	58		3.70	
240	Lake Pleasant	7/12/2014	17.4	3.60	1.5	0.008	0.01	0.03	0.33	89.38	16	6.90	60		3.80	
240	Lake Pleasant	7/27/2014	16.7	4.60	1.5	0.009			0.25	60.44	15	6.99	63		2.90	
240	Lake Pleasant	8/9/2014	18.0	4.80	1.5	0.006	0.01	0.03	0.40	148.03	17	7.97	61	3.9	2.20	
240	Lake Pleasant	8/24/2014	16.7	4.30	1.5	0.006			0.28	103.66	16	7.12	59		2.20	
240	Lake Pleasant	9/6/2014	16.0	5.10	1.5	0.006	0.01	0.03	0.23	89.16	13	6.93	60		2.60	
240	Lake Pleasant	9/21/2014	17.4	4.00	1.5	0.005			0.20	79.85	13	6.58	46		3.00	
240	Lake Pleasant	6/13/2015	15.0	5.60	1.5	0.008	0.01	0.03	0.38	48.83	14	7.12	63	4.1	2.30	
240	Lake Pleasant	6/27/2015	14.0	4.10	1.5	0.008			1.05	132.78	14	7.17	62		2.10	
240	Lake Pleasant	7/11/2015	14.0	4.60	1.5	0.006	0.00	0.04	0.30	46.83	18	7.36	59		1.60	13.6
240	Lake Pleasant	7/25/2015	18.0	4.60	1.5	0.005			0.66	126.73	18	7.38	63		2.50	
240	Lake Pleasant	8/9/2015	20.0	4.10	1.5	0.008	0.03	0.04	0.46	59.35	19	7.42	66	4.4	2.30	
240	Lake Pleasant	8/22/2015	18.0	4.00	1.5	0.006			0.69	121.40	10	7.54	66		2.40	
240	Lake Pleasant	9/5/2015	15.0	4.80	1.5	0.006	0.02	0.04	0.24	38.52	7	7.96	61		1.70	12.5
240	Lake Pleasant	9/20/2015	15.0	4.70	1.5	0.007			0.21	31.34	8	7.36	61		2.30	
240	Lake Pleasant	6/15/2014			13.0	0.007		0.06								
240	Lake Pleasant	6/28/2014			13.0	0.010										
240	Lake Pleasant	7/12/2014			15.0	0.006		0.05								
240	Lake Pleasant	7/27/2014			15.0	0.007										
240	Lake Pleasant	8/9/2014			15.0	0.010		0.04								
240	Lake Pleasant	8/24/2014			15.0	0.007										
240	Lake Pleasant	9/6/2014			15.0	0.004		0.05								
240	Lake Pleasant	9/21/2014			15.0	**0.007**										
240	Lake Pleasant	06/13/15			12.0	0.006		0.05								
240	Lake Pleasant	06/27/15			12.0	0.006										
240	Lake Pleasant	07/11/15			12.0	0.006		0.07								
240	Lake Pleasant	07/25/15			15.0	0.004										
240	Lake Pleasant	08/09/15			16.0	0.051		0.04								
240	Lake Pleasant	08/22/15			16	0.006										
240	Lake Pleasant	09/05/15			13	0.002		0.04								
240	Lake Pleasant	09/20/15			13	0.000										

LNum	PName	Date	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cylin	FP-Chl	FP-BG	HAB form	Shore HAB
240	Lake Pleasant	6/15/2014	epi	26	19	1	1	1	0	0	0	0.60	0.20	<0.61	<0.08	<0.002	1.29	0.18	i	i
240	Lake Pleasant	6/28/2014	epi	26	24	2	1	1	0	0	0	10.00	0.30	<0.48	<0.48	<0.002	2.79	1.49	i	i
240	Lake Pleasant	7/12/2014	epi	26	23	2	1	2	0	0	0	10.30	0.30	<0.40	<0.21	<0.003	2.81	1.33	i	i
240	Lake Pleasant	7/27/2014	epi	28	22	2	1	2	0	0	0	2.40	0.40	<0.63	<0.03	<0.001	1.77	0.05	i	i
240	Lake Pleasant	8/9/2014	epi	28	23	2	1	1	0	0	0	19.60	0.60	<0.28	<0.05	<0.001	1.21	0.00	i	i
240	Lake Pleasant	8/24/2014	epi	27	21	2	1	2	0	0	0	4.00	0.40	<0.26	<0.10	<0.002	1.79	0.05	i	i
240	Lake Pleasant	9/6/2014	epi	26	22	2	1	2	0	0	0	3.80	0.30	<0.64	<0.14	<0.002	0.98	0.00	i	i
240	Lake Pleasant	9/21/2014	epi	23	17	2	1	2	0	0	0	4.40	0.30	<0.19	<0.12	<0.001	1.21	0.26	i	i
240	Lake Pleasant	6/13/2015	epi	21	20	2	1	1	0	0	0	2.80	0.40	<0.55	<0.018	<0.139	1.00	0.00	I	I
240	Lake Pleasant	6/27/2015	epi	21	23	2	1	1	5	0	0	3.40	0.40	<1.01	<0.007	<0.040	1.10	0.10	I	I
240	Lake Pleasant	7/11/2015	epi	30	24	2	1	1	0	0	0	2.00	0.40	<1.01	<0.003	<0.011	1.20	0.00	I	I
240	Lake Pleasant	7/25/2015	epi	27	24	2	1	2	5	0	0	11.60	0.30	<0.23	<0.004	<0.015	2.50	1.10	I	I
240	Lake Pleasant	8/9/2015	epi	24	24	2	1	1	0	0	0	4.50	0.60	<1.13	<0.002	<0.014	1.60	0.00	I	I
240	Lake Pleasant	8/22/2015	epi	24	24	2	1	1	0	0	0			<0.49	<0.003	<0.014	1.00	0.30	I	I
240	Lake Pleasant	9/5/2015	epi	28	25	2	3	1	0	0	0			<0.30	<0.007	<0.035	2.40	1.00	I	I
240	Lake Pleasant	9/20/2015	epi	19	20	2	2	1	0	0	0	3.10	0.40	<0.39	<0.009	<0.022	1.50	0.00	I	I
240	Lake Pleasant	6/15/2014	hypo		7															
240	Lake Pleasant	6/28/2014	hypo		16															
240	Lake Pleasant	7/12/2014	hypo		10															
240	Lake Pleasant	7/27/2014	hypo		13															
240	Lake Pleasant	8/9/2014	hypo		8															
240	Lake Pleasant	8/24/2014	hypo		8															
240	Lake Pleasant	9/6/2014	hypo		7															
240	Lake Pleasant	9/21/2014	hypo		8															
240	Lake Pleasant	6/13/2015	hypo		11															
240	Lake Pleasant	6/27/2015	hypo		12															
240	Lake Pleasant	7/11/2015	hypo		12															
240	Lake Pleasant	7/25/2015	hypo		11															
240	Lake Pleasant	8/9/2015	hypo		10															
240	Lake Pleasant	8/22/2015	hypo		10															
240	Lake Pleasant	9/5/2015	hypo		12															
240	Lake Pleasant	9/20/2015	hypo		12															

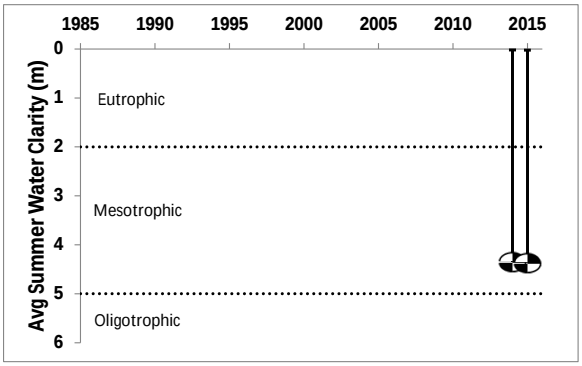
Legend Information

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	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 C: Long Term Trends: Lake Pleasant

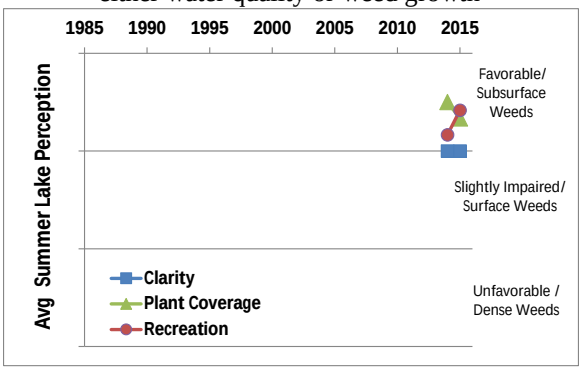
Long Term Trends: Water Clarity

- Water clarity similar 2014 and 2015
- Most readings typical of *mesotrophic* lakes



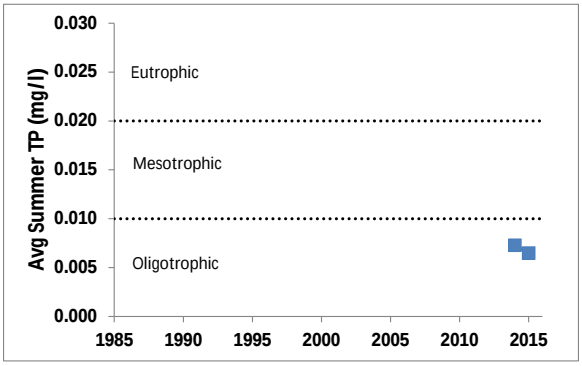
Long Term Trends: Lake Perception

- More plants but more favorable recr. 2015
- Recreational perception not closely tied to either water quality or weed growth



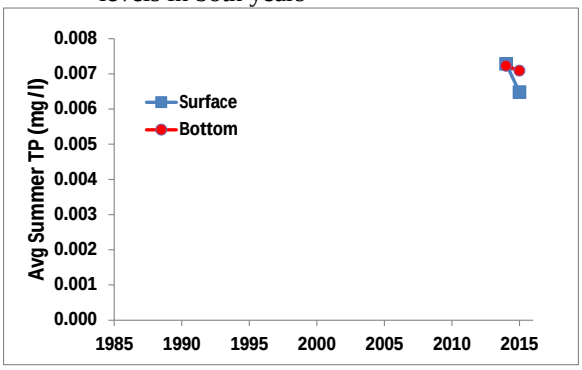
Long Term Trends: Phosphorus

- Slightly lower TP in 2015 than in 2014
- Most readings typical of *oligotrophic* lakes



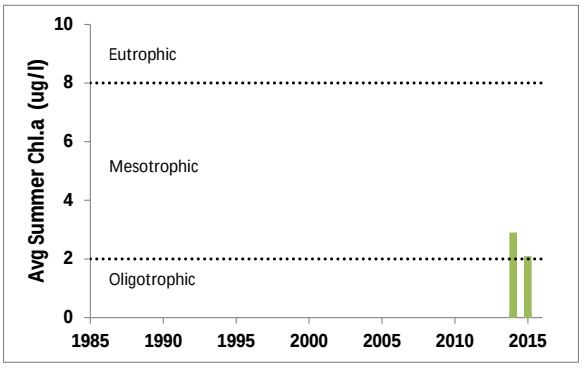
Long Term Trends: Bottom Phosphorus

- Lake Pleasant thermally stratified
- Deepwater TP levels similar to surface TP levels in both years



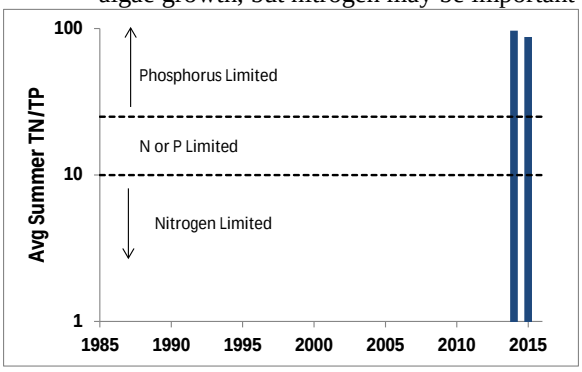
Long Term Trends: Chlorophyll a

- Lower chlorophyll readings in 2015
- Most readings typical of *mesotrophic* lakes with seasonal increases



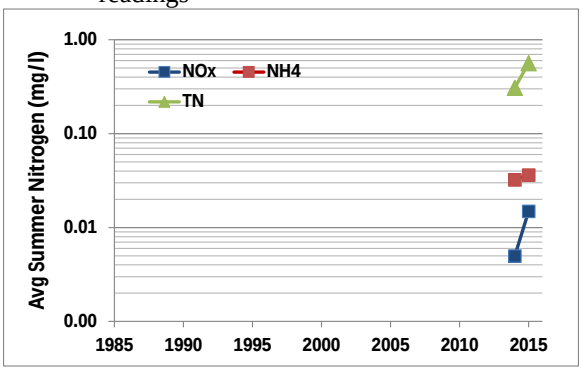
Long Term Trends: N:P Ratio

- Similar ratios 2014, 2015
- Most readings indicate phosphorus limits algae growth, but nitrogen may be important



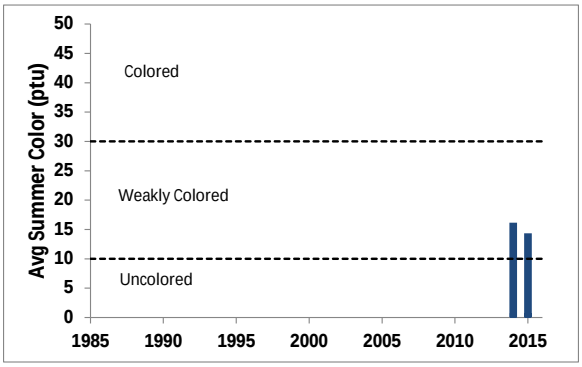
Long Term Trends: Nitrogen

- Slightly higher NOx, NH4, TN in 2015
- Low total nitrogen, ammonia and NOx readings



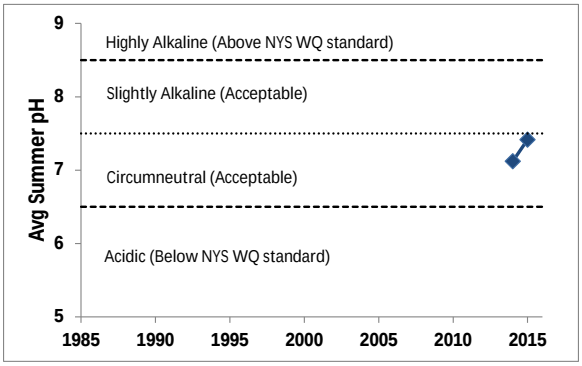
Long Term Trends: Color

- Slightly lower color in 2015 than in 2014
- Most readings typical of *weakly colored* lakes



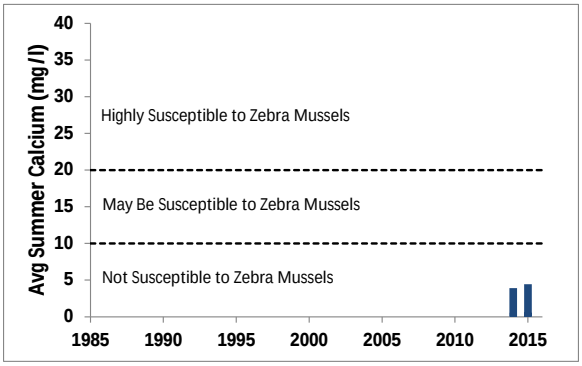
Long Term Trends: pH

- pH higher in 2015 than in 2014
- Most readings typical of *circumneutral* lakes



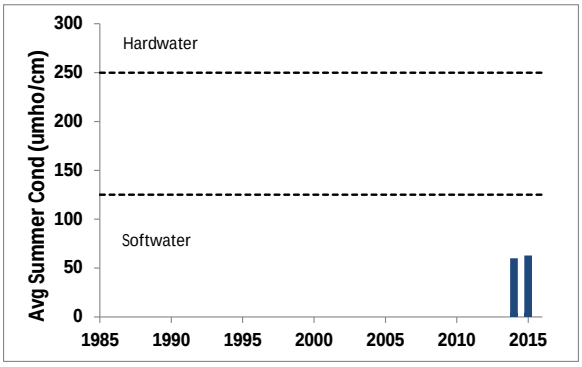
Long Term Trends: Calcium

- Similar calcium levels in 2015 and 2014
- 2014 data indicate low susceptibility to zebra mussels



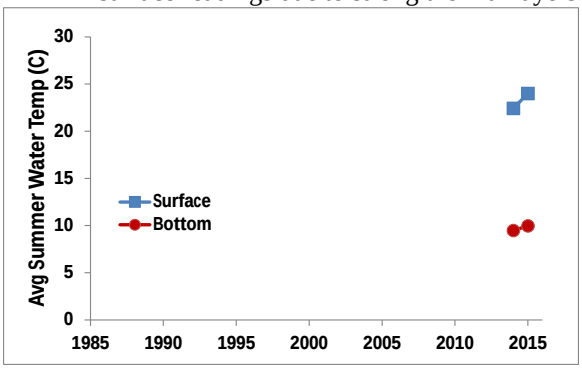
Long Term Trends: Conductivity

- Similar conductivity in 2015 and 2014
- Most readings typical of lakes with *softwater*



Long Term Trends: Water Temperature

- Slightly higher 2015 surface and bottom T
- Deepwater temperature much lower than surface readings due to strong thermal layers



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.

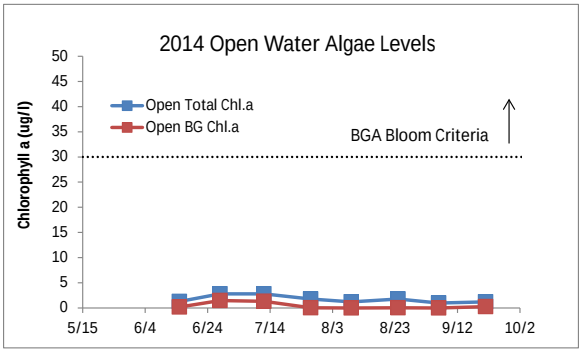


Figure D1:
2014 Open Water Total and BGA Chl.a

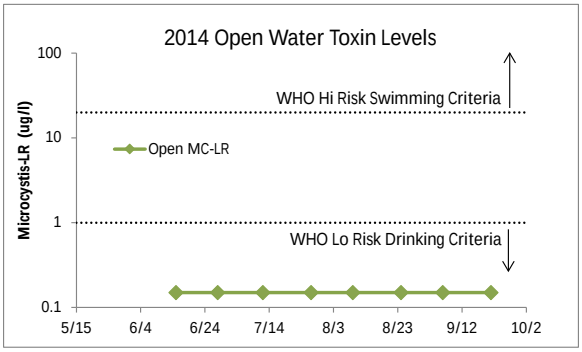


Figure D2:
2014 Open Water Microcystin-LR

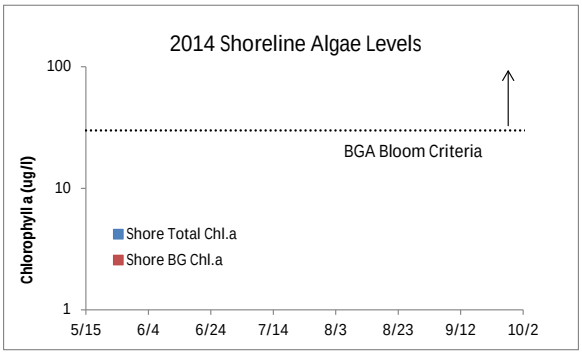


Figure D3:
2014 Shoreline Total and BGA Chl.a

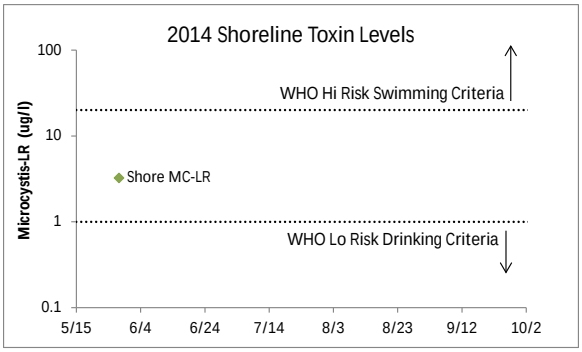


Figure D4:
2014 Shoreline Microcystin-LR

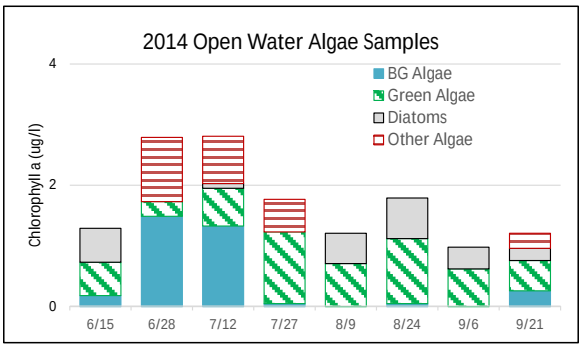


Figure D5:
2014 Open Water Algae Types

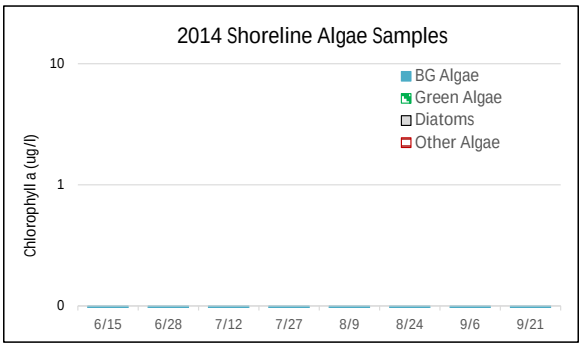


Figure D6:
2014 Shoreline Algae Types

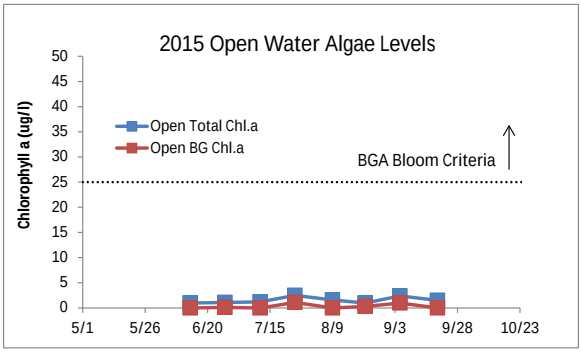


Figure D7:
2015 Open Water Total and BGA Chl.a

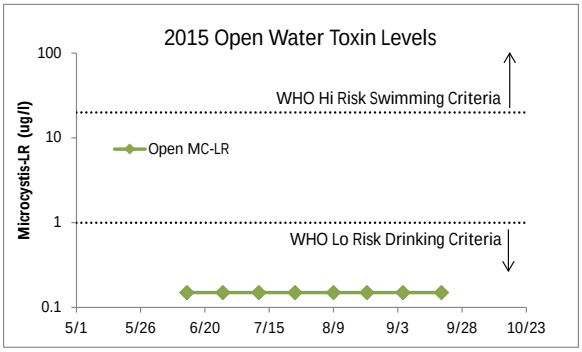


Figure D8:
2015 Open Water Microcystin-LR

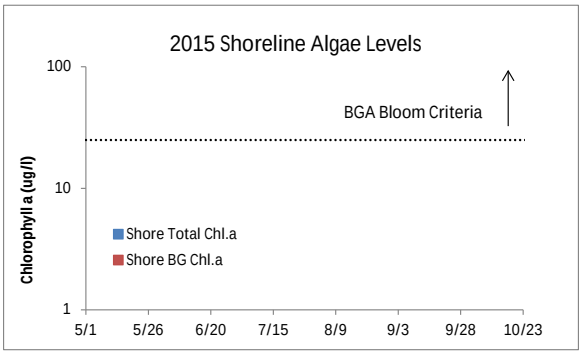


Figure D9:
2015 Shoreline Total and BGA Chl.a

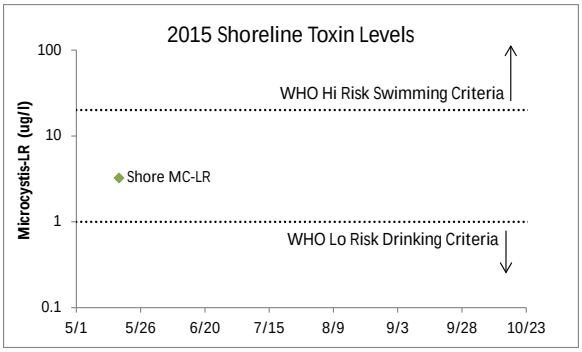


Figure D10:
2015 Shoreline Microcystin-LR

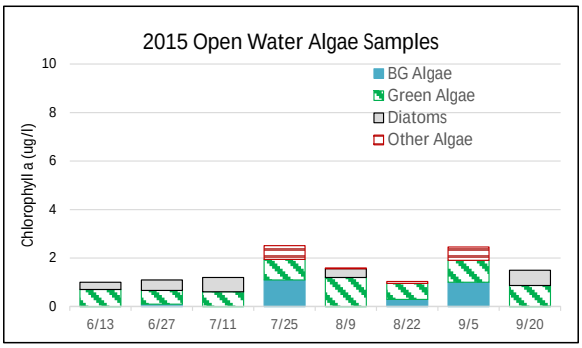


Figure D11:
2015 Open Water Algae Types

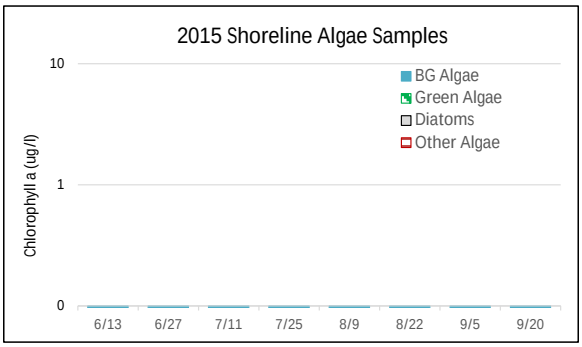


Figure D12:
2015 Shoreline Algae Types

Appendix E:
AIS Species in Hamilton County

The table below shows the invasive aquatic plants and animals that have been documented in Hamilton 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.

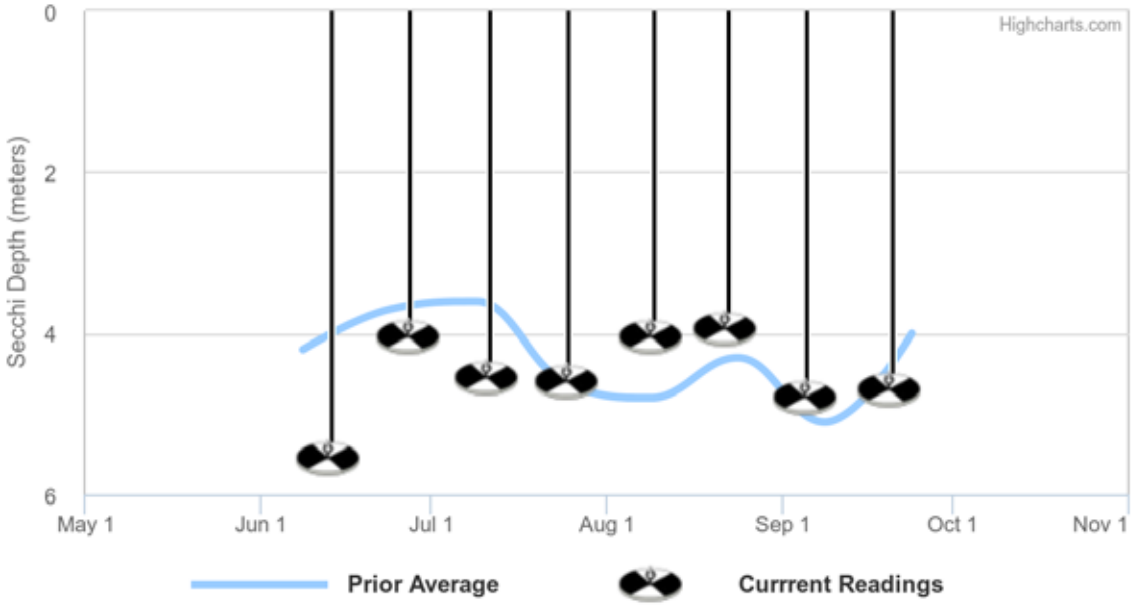
Aquatic Invasive Species - Hamilton County			
Waterbody	**Kingdom**	**Common name**	**Scientific name**
Adirondack Lake	Plant	Banded mystery snail	*Viviparus georgianus*
Beaver Lake	Animal	Virile crayfish	*Orconectes virilis*
Eighth Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Eldon Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Eldon Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Fifth Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Fifth Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Lake Algonquin	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Lake Durant	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lake Durant	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Lake Pleasant	Animal	Spiny waterflea	*Bythotrephes longimanus*
Lewey Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Long Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Long Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Piseco Lake	Animal	Spiny waterflea	*Bythotrephes longimanus*
Raquette Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Sacandaga Lake	Animal	Spiny waterflea	*Bythotrephes longimanus*
Seventh Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Seventh Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Sixth Lake	Plant	Variable watermilfoil	*Myriophyllum heterophyllum*
Sixth Lake	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*

Appendix F: Current Year vs. Prior Averages for Lake Pleasant

Current Year Water Temperatures vs. Prior Average

There are not enough shallow water sample temperatures to determine a trend for the current year when compared to the average of readings collected during 2014. There are not enough deep water sample temperatures to determine a trend for the current year when compared to the average of readings collected during 2014.

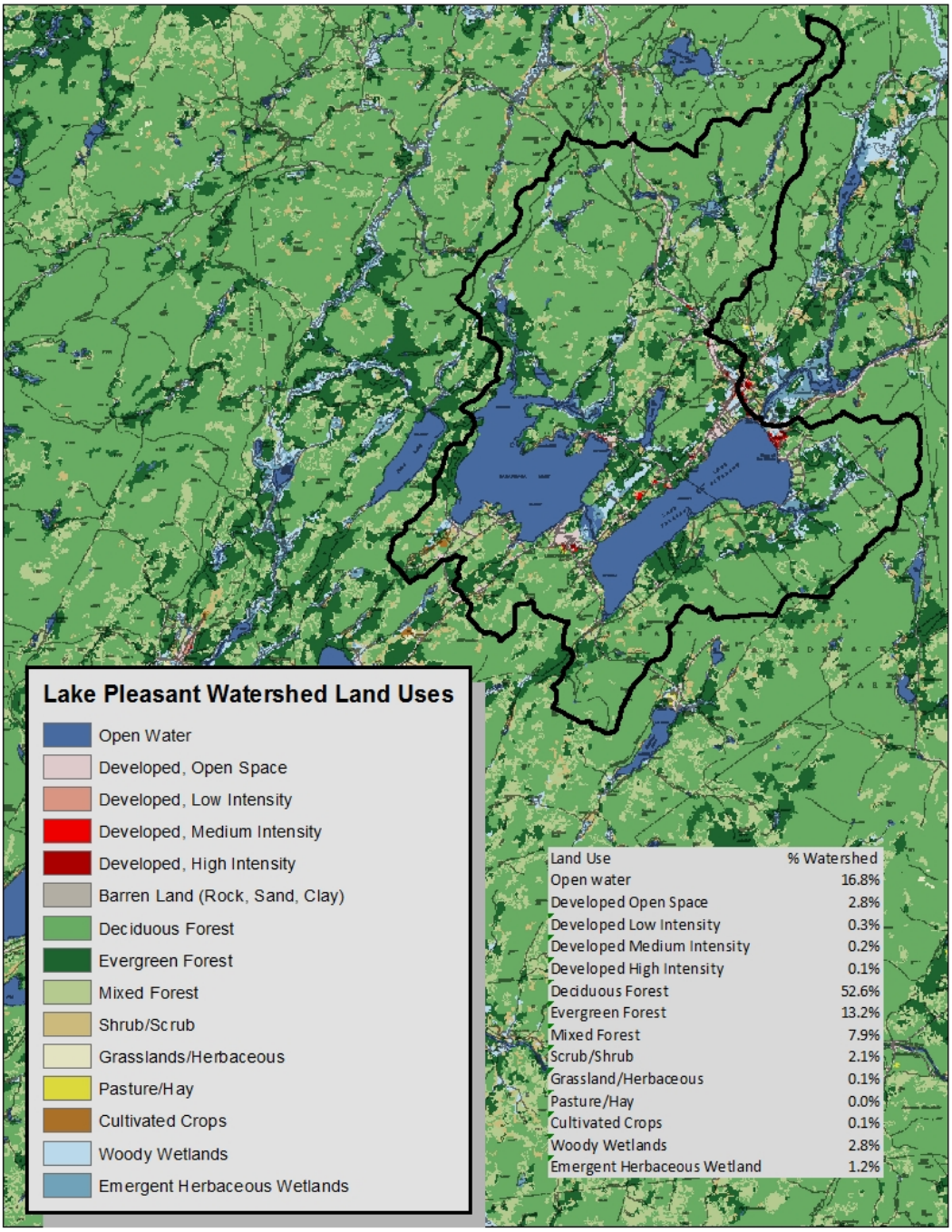
Current Year Secchi Readings vs. Prior Average



There are not enough session Secchi readings to determine a trend for the current year when compared to the average of readings collected during 2014

Appendix G: Watershed and Land Use Map for Lake Pleasant

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	16.8%
Developed Open Space	2.8%
Developed Low Intensity	0.3%
Developed Medium Intensity	0.2%
Developed High Intensity	0.1%
Deciduous Forest	52.6%
Evergreen Forest	13.2%
Mixed Forest	7.9%
Scrub/Shrub	2.1%
Grassland/Herbaceous	0.1%
Pasture/Hay	0.0%
Cultivated Crops	0.1%
Woody Wetlands	2.8%
Emergent Herbaceous Wetland	1.2%