

Weiden Pond Questions and Answers, 2015 CSLAP

Q1. What is the condition of our lake this year?

A1. Conditions in Weiden Pond were probably worse than normal in 2015. Algae levels were higher than usual, causing lower water clarity, although nutrient levels were close to normal. Fortunately, there was no evidence of shoreline blue green algae blooms.

Q2. Is there anything new that showed up in the testing this year?

A2. Chloride sampling results were typical of lakes with low impacts from road salt runoff, and no biological impacts were reported or measured.

Q3. How does the condition of our lake this year compare with other lakes in the area?

A3. Weiden Pond had lower water clarity, and higher algae and nutrient readings than the typical nearby lake in 2015. Plant coverage in Weiden Pond was similar to plant coverage in other nearby lakes.

Q4. Are there any trends in our lake's condition?

A4. Conductivity is the only CSLAP indicator that has exhibited clear long term trends (increases). Water clarity and color have decreased slightly, while NOx, total nitrogen, and pH have also increased slightly, but these changes have not been statistically significant.

Q5. Should we be concerned about the condition of our lake? Are we close to a tipping point?

A5. Weiden Pond does not appear to be susceptible to shoreline blue green algae blooms, perhaps due to lower residence time (higher flow) than in many other lakes. However, high nutrient levels impact water clarity, so any nutrient sources along the shoreline or in the watershed (eroding shorelines, sediment,...) should be identified and reduced working with local agencies.

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.

Lake Use				
	PWL	Average Year	2015	Primary issue
Potable Water				Not applicable
Swimming				Poor clarity
Recreation				Poor clarity
Aquatic Life				Low pH
Aesthetics				Poor perception
Habitat				No impacts
Fish Consumption				

	Supported / Good
	Threatened / Fair
	Stressed / Poor
	Impaired
	Not Known

CSLAP 2015 Lake Water Quality Summary: Weiden Pond

General Lake Information

Location	Town of Tusten
County	Sullivan
Basin	Delaware River
Size	25.9 hectares (64.0 acres)
Lake Origins	Augmented by Dam
Watershed Area	3,150 hectares (7,781 acres)
Retention Time	0.02 years
Mean Depth	1.4 meters
Sounding Depth	3 meters
Public Access?	no
Major Tributaries	East Branch Tenmile River, Shingle Creek
Lake Tributary To...	East Branch Tenmile River to Tenmile River to Delaware River
WQ Classification	B (contact recreation = swimming)
Lake Outlet Latitude	41.588
Lake Outlet Longitude	-74.989
Sampling Years	2004-2013, 2015
2015 Samplers	Tim Wood
Main Contact	Tim Wood

Lake Map



Background

Weiden Pond is a 64 acre, class B lake found in the Town of Tusten in Sullivan County, just west of the Catskill Mountain region of New York State. It has been sampled as part of CSLAP since 2004.

It is one of nine CSLAP lakes among the more than 275 lakes and ponds found in Sullivan County, and one of 15 CSLAP lakes among the nearly 1000 lakes and ponds in the Delaware River drainage basin.

Lake Uses

Weiden Pond is a Class B lake; this means that the best intended use for the lake is for contact recreation—swimming and bathing, non-contact recreation—boating and fishing, aesthetics, and aquatic life. The lake is used by lake residents and invited guests for boating and swimming, through residential shoreline access to the lake. There is no public access to the lake.

It is not known whether Weiden Pond has been stocked through any state fisheries stocking programs, or if any private stocking has occurred.

General statewide fishing regulations are applicable in Weiden Pond.

There are no lake-specific fish consumption advisories on Weiden Pond.

Historical Water Quality Data

CSLAP sampling was conducted on Weiden Pond from 2004 to 2013, and in 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 Weiden Pond can also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77835.html>.

Weiden Pond has not been sampled as part of any of the state lake monitoring programs prior to CSLAP. It is not known if local monitoring programs involved sampling on the lake.

There are no Weiden Pond tributary sites monitored through the NYSDEC Rotating Intensive Basins (RIBS) program. One of the Weiden Pond tributaries—the East Branch of Ten Mile River—has been sampled in 1999 through the state stream biomonitoring program, three kilometers downstream of the lake, in Tusten above Brooks Road bridge, just above the confluence with the main stem. The summary report (from the “30 Year Trends in Water Quality of Rivers and Streams in New York State”, DEC 2004) states the following:

“This stream arises from two ponds, and flows for about three miles into the Delaware River. Water quality is provisionally assessed as slightly impacted for the stream, based on macroinvertebrate sampling at 3 sites from Lava to Tusten in 1999. The watershed appeared mostly forested, but the fauna may be limited by both impoundment effects and headwater effects. The samples were field assessed, and were not laboratory-processed. No prior data were available for this stream.”

The other two major tributaries—Spruce Creek and Shingle Creek—have not been sampled.

Lake Association and Management History

Weiden Pond is served by the Weiden Lake Property Owners Association. The lake association is involved in a variety of lake management and social activities, from dam repair to an annual picnic to the establishment of lake use and local regulations, including those related to gas drilling.

The lake association maintains a web site at <http://www.weidenlake.org>.

Summary of 2015 CSLAP Sampling Results

Evaluation of 2015 Annual and Monthly Results Relative to 2006-2013

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 – Weiden Pond” section in Appendix C.

Evaluation of Eutrophication Indicators

Water clarity readings were slightly lower than usual in 2015, consistent with higher than usual algae (chlorophyll *a*) readings, although phosphorus readings were close to normal. The lower water clarity was part of a 10-15 year trend, although both phosphorus and chlorophyll *a* readings have varied, at times significantly, over this period.

Phosphorus and chlorophyll *a* readings typically increase from June through August, but then decrease through the rest of the summer. Water clarity is fairly stable during the typical summer. In 2015, chlorophyll *a* levels showed the same seasonal trends, while phosphorus readings generally decreased during the summer.

The lake can be characterized as *eutrophic*, or moderately to highly productive, based on chlorophyll *a*, water clarity and total phosphorus readings (all typical of *eutrophic* lakes. The trophic state indices (TSI) evaluation suggests that algae levels (as measured by chlorophyll *a*) were lower than expected given the total phosphorus and Secchi disk transparency readings. It is not known if other forms of algae (such as benthic [bottom] or attached algae) are more prevalent- some filamentous algae was reported in the north end of the lake in late 2015- or if algae growth is limited by other factors. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels may be high enough to render the lake susceptible to taste and odor compounds or elevated DBP (disinfection by product) compounds that could affect the potability of the water, although the lake is not classified for use 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

Conductivity, pH and TN readings were higher than usual in 2015, and these readings have increased over the last decade. NO_x readings were also slightly higher in 2015, but NO_x has not

trended in recent years. Color readings have generally decreased in the last 10-15 years, but all readings have been fairly high.

Chloride levels in the 2015 samples, collected for the first time through CSLAP and cited in Appendix A, ranged from 5 to 12 mg/l. These values fall within or just above the “background” runoff levels cited by the New Hampshire DES. These readings are well below the state potable water quality standard of 250 mg/l and lower than the range of values found in most NYS lakes. These readings are also typical of lakes with only limited road salting. 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

Weiden Pond was among the 12 CSLAP lakes sampled as part of the NYSDEC Biomonitoring project in 2010. The macroinvertebrate samples collected as part of this survey are still being analyzed.

The macrophyte surveying conducted as part of the biomonitoring study found at least 19 different aquatic plant species, including one protected plant species (*Potamogeton strictifolius*, narrow leafed pondweed). The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is “excellent.”

The composition of the fish community is not known, but it is assumed that the lake supports a warmwater fishery.

Phytoplankton and zooplankton have not been evaluated through CSLAP in Weiden Pond. The fluoroprobe screening results analyzed by SUNY ESF in recent years indicate a low abundance of blue green algae within the overall algal community, suggesting a low susceptibility to harmful algal blooms. No shoreline blooms have been reported or sampled.

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

Evaluation of Lake Perception

Water quality and recreational assessments were slightly less favorable than usual in 2015, consistent with higher algae levels and lower water clarity. These assessments have not changed significantly since first evaluated in the mid-2000s. Aquatic plant coverage was also likely close to normal in 2015. Lake perception typically degrades slightly during the summer. Although plant coverage increased in early summer in 2015, water quality and recreational assessments did not vary seasonally in 2015. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Air temperatures were slightly higher than normal in 2013 and 2015, although these differences were not statistically significant, and neither air nor water temperature readings has exhibited any long-term trends. It is not known if this is an indication of the lack of local climate change or if these changes cannot be well 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. Fluoroprobe blue green algae readings have been well below the threshold for harmful algal blooms (HABs), consistent with all other measures of algae. The algal toxin sampling has found low to undetectable toxin levels at all times, suggesting a low risk for recreational contact, and no shoreline blooms were reported in 2015. However, swimmers should avoid exposure to any shoreline blooms.

Lake Condition Summary

Category	Indicator	Min	Annual Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.85	1.57	2.55	1.24	Eutrophic	Within Normal Range	No Change
	Chlorophyll <i>a</i>	0.10	8.21	42.80	10.49	Eutrophic	Within Normal Range	No Change
	Total Phosphorus	0.011	0.044	0.235	0.037	Eutrophic	Within Normal Range	No Change
Potable Water Indicators	Hypolimnetic Ammonia							Not known
	Hypolimnetic Arsenic							Not known
	Hypolimnetic Iron							Not known
	Hypolimnetic Manganese							Not known
Limnological Indicators	Hypolimnetic Phosphorus							Not known
	Nitrate + Nitrite	0.00	0.03	0.24	0.07	Low NOx	Higher than Normal	No Change
	Ammonia	0.01	0.09	0.67	0.05	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.01	0.58	1.93	0.68	Intermediate Total Nitrogen	Within Normal Range	No Change
	pH	4.96	7.08	9.25	7.34	Circumneutral	Within Normal Range	No Change
	Specific Conductance	23	48	107	65	Softwater	Higher than Normal	Increasing Slightly
	True Color	8	43	228	39	Intermediate Color	Within Normal Range	No Change
	Calcium	1.3	3.5	4.5	3.8	Not Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	2.0	3	2.7	Not Quite Crystal Clear	Less Favorable than Normal	No Change
	Aquatic Plant Coverage	1	2.4	4	2.6	Subsurface Plant Growth	Within Normal Range	No Change
	Recreational Assessment	1	2.1	4	2.4	Excellent	Within Normal Range	No Change
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 evaluated through CSLAP	Not known	Not known
	Macroinvertebrates					Not yet analyzed	Not known	Not known
	Fish					Warmwater fishery?	Not known	Not known
	Invasive Species					None observed	Not known	Not known
Local Climate Change	Air Temperature	9	21.9	32	24.1		Within Normal Range	No Change
	Water Temperature	5	21.4	30	20.3		Within Normal Range	No Change

Category	Indicator	Min	Annual Avg	Max	2015 Avg	Classification	2015 Change?	Long-term Change?
Harmful Algal Blooms	Open Water Phycocyanin	0	4	28	4	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	3	1	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	2	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	0.5	<DL	Low to undetectable open water microcystins	Not known	Not known
	Open Water Anatoxin a	<DL	<DL	<DL	<DL	Open water Anatoxin-a consistently not detectable	Not known	Not known
	Shoreline Phycocyanin					No shoreline blooms sampled for PC	Not known	Not known
	Screening FP Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Screening FP BG Chl.a					No shoreline blooms sampled for FP	Not known	Not known
	Shoreline Microcystis	<DL	<DL	0.0		Low to undetectable shoreline microcystins	Not known	Not known
	Shoreline Anatoxin a	<DL	<DL	<DL		Shoreline bloom Anatoxin-a consistently not detectable	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Weiden Pond is not presently among the lakes listed on the 2000 Delaware River Basin Priority Waterbody List (PWL).

Potable Water (Drinking Water)

The CSLAP dataset at Weiden 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 used for this purpose. The occasionally elevated algae levels may not support any "unofficial" potable water use from the surface waters of the lake, although algae levels vary from year to year.

Public Bathing

The CSLAP dataset at Weiden Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that public bathing, if conducted at a public swimming beach, may be *stressed* by poor water clarity, excessive nutrients, and occasionally excessive algae, although these impacts were greater in 2015. 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 Weiden Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation may be *threatened* by excessive weeds, although the 2010 biomonitoring study did not find any exotic plants in the lake and these impacts were not apparent in any of the last three years.

Aquatic Life

The CSLAP dataset on Weiden Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by depressed pH. Additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics and Habitat

The CSLAP dataset on Weiden Pond, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *poor* at times due to poor perception associated with excessive algae and weeds. Habitat may be *good* due to the lack of invasive species.

Fish Consumption

There are no fish consumption advisories posted for Weiden Pond.

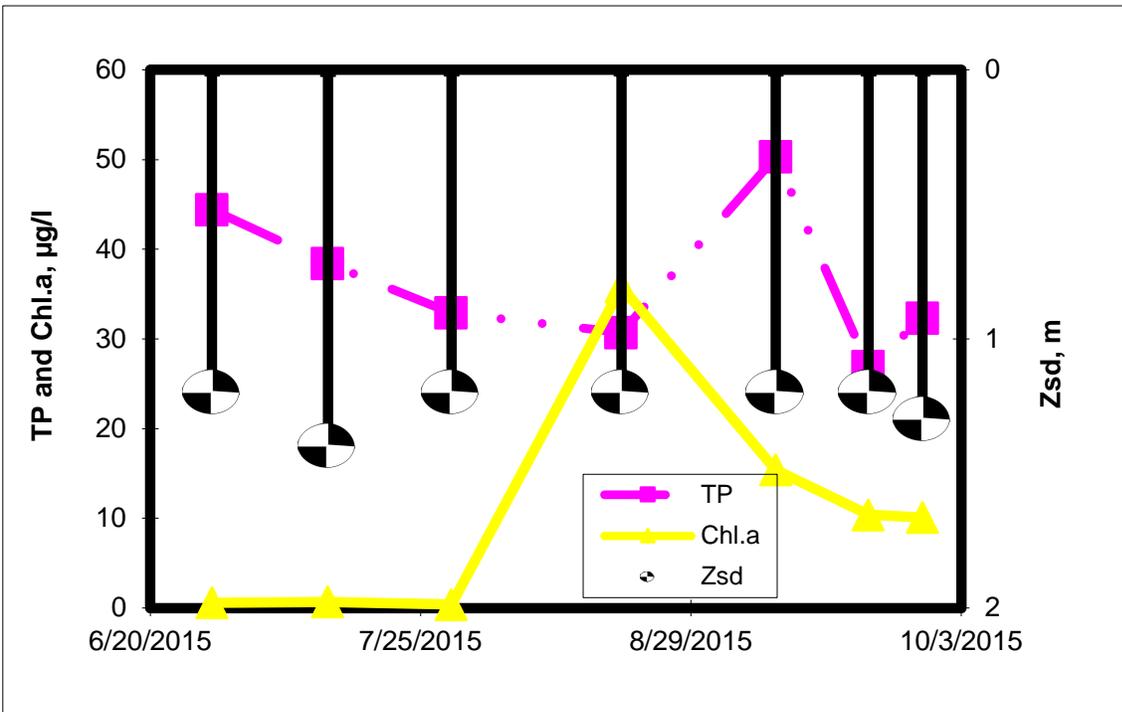
Additional Comments and Recommendations

Continued evaluation of the macroinvertebrate samples collected in 2010 may help to better evaluate the biological health of Weiden Pond. Lake residents should report and avoid exposure to any surface scums or heavily discolored water.

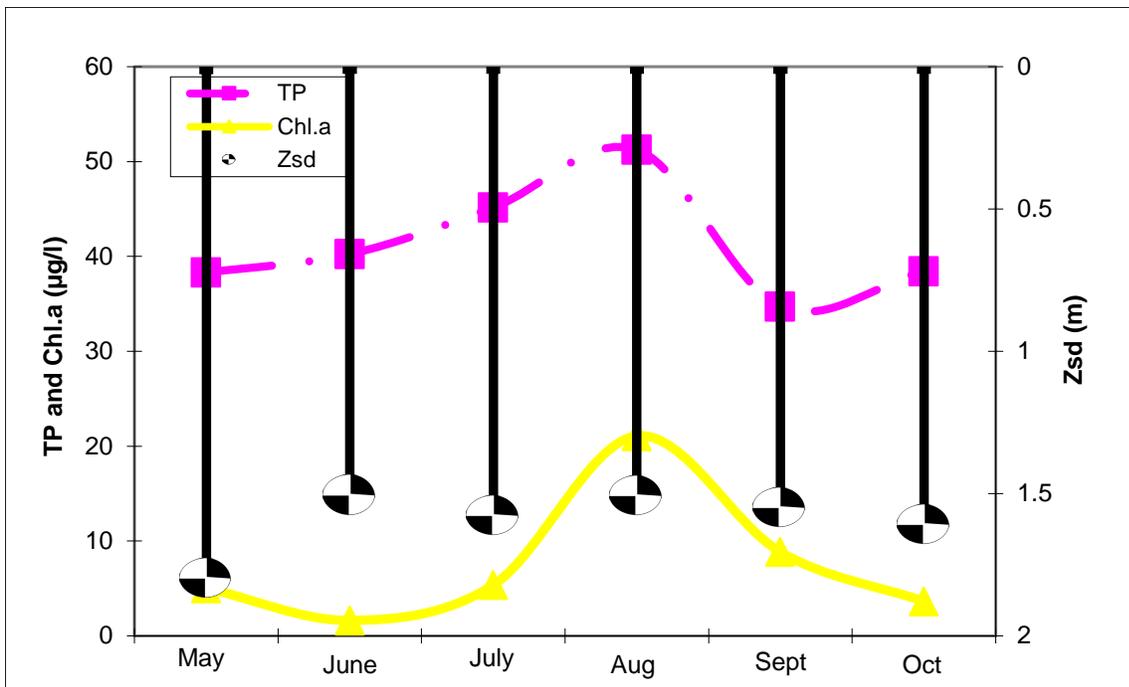
Aquatic Plant IDs-2015

None submitted for identification in 2015.

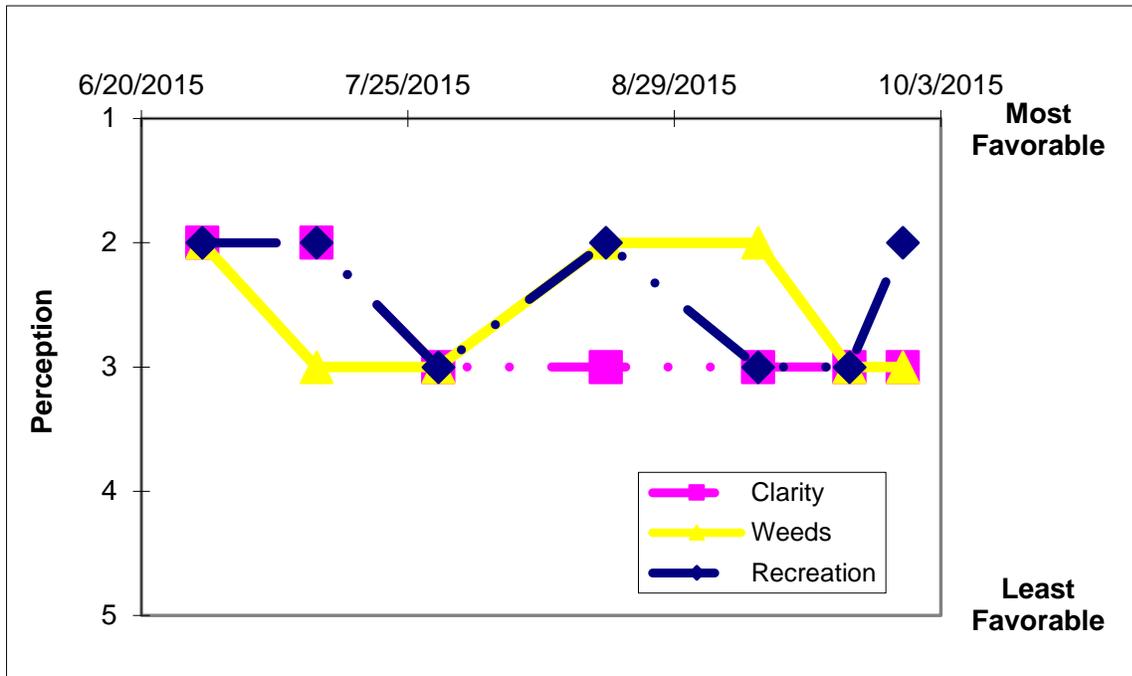
Time Series: Trophic Indicators, 2015



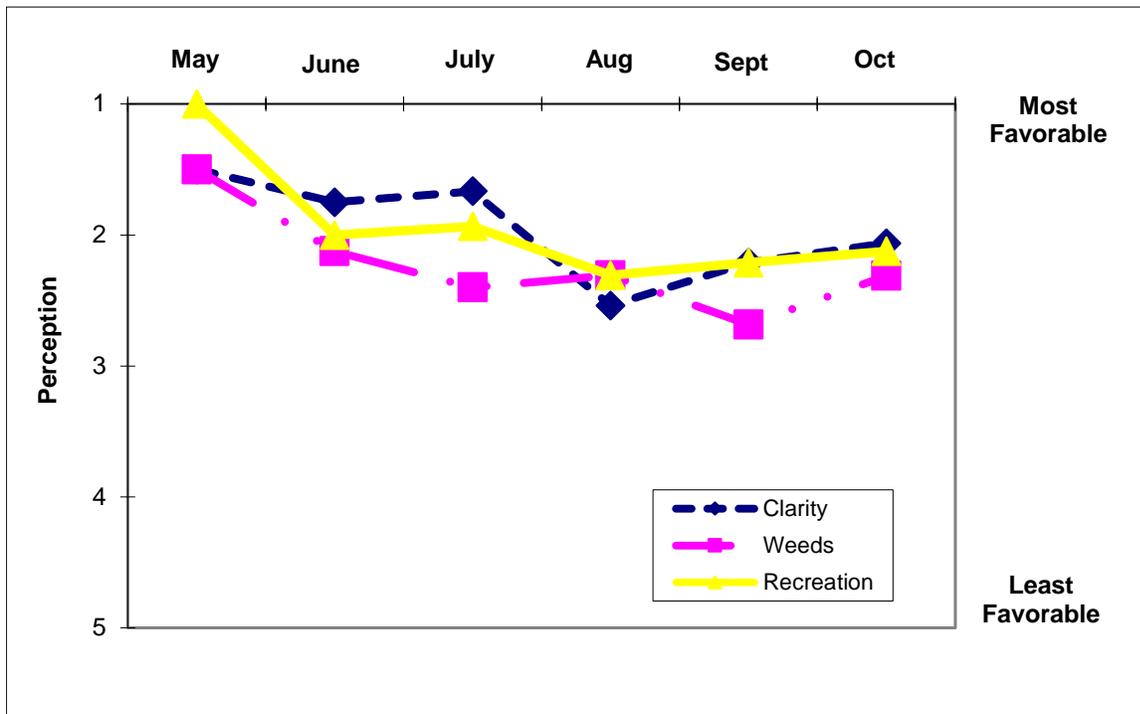
Time Series: Trophic Indicators, Typical Year (2004-2015)



Time Series: Lake Perception Indicators, 2015



Time Series: Lake Perception Indicators, Typical Year (2004-2015)



Appendix A- CSLAP Water Quality Sampling Results for Weiden Pond

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
192	Weiden L	5/22/2004	3.0	1.95	1.6	0.044	0.01	0.01			37	7.06	49		4.8	
192	Weiden L	6/6/2004	3.0	2.35	1.5	0.026	0.01	0.01	0.26	22.1	37	5.99	41		1.5	
192	Weiden L	6/19/2004	3.0	2.05	1.5	0.026	0.02	0.03	0.83	69.3	27	6.65	40		1.6	
192	Weiden L	7/5/2004	2.8	2.10	1.5		0.01	0.06	0.87		40	7.00	32		1.5	
192	Weiden L	7/18/2004	3.0	1.80	1.5	0.038	0.01	0.01	0.01	0.3	48	7.64	42	3.5	4.9	
192	Weiden L	7/30/2004	2.7	1.70	1.5	0.052	0.01	0.01	0.27	11.5	27	6.85	39		3.2	
192	Weiden L	8/15/2004	3.0	1.35	1.5	0.073	0.01	0.02	0.38	11.3	135	4.96	33		1.4	
192	Weiden L	9/5/2004	3.0	1.90	1.5	0.023	0.01	0.01	0.20	19.0	54	5.26	24		5.7	
192	Weiden L	7/2/2005	3.0	1.10		0.063	0.20	0.01	0.51	18.0	20	6.67	54	4.1	10.2	
192	Weiden L	7/14/2005	3.0	1.45		0.057	0.01	0.01	0.38	14.5	31	6.86	48		8.4	
192	Weiden L	8/9/2005	3.0	0.85		0.060	0.03	0.01	0.30	10.9	16	7.53	50		9.7	
192	Weiden L	9/7/2005	3.0	1.90		0.042	0.21	0.02	0.55	28.7	35	7.74	53		8.7	
192	Weiden L	9/17/2005	2.0	1.85		0.042	0.13	0.03	0.43	22.6	26	7.66	61	3.6	7.3	
192	Weiden L	10/8/2005	3.0	1.25		0.064	0.02	0.04	0.34	11.8	31	7.49	36		17.4	
192	Weiden L	10/19/05	3.0	1.75		0.043	0.05	0.02	0.27	13.7	57	5.84	38		1.6	
192	Weiden L	6/9/2006	3.0	1.75		0.034	0.07	0.13	0.51	32.9	84		41	4.51	3.36	
192	Weiden L	6/29/2006	3.0	1.00		0.037	0.01	0.04	0.74	43.7	228	5.56	23		0.92	
192	Weiden L	7/13/2006	2.7	1.30		0.042	0.00	0.02	0.54	28.8	81	6.71	35		12.01	
192	Weiden L	7/27/2006	3.0	1.20		0.043			0.31	16.0	45	7.1	44		5.83	
192	Weiden L	8/17/2006	3.0	1.20		0.034			0.78	51.2	31	9.25	35	3.32	30.62	
192	Weiden L	9/13/2006	3.0	1.35		0.055	0.02	0.04	0.52	20.9	39	7.75	54		25.00	
192	Weiden L	9/28/2006	3.0	1.25		0.027	0.02	0.02	0.55	44.4	42	6.9	49		13.36	
192	Weiden L	5/31/2007	3.0	1.65		0.033	0.00	0.04	0.36	24.3	20	6.71	51	3.2	5.26	
192	Weiden L	7/11/2007	3.0	2.50		0.042	0.00	0.05	0.66	34.9	26	7.86	42		5.98	
192	Weiden L	8/8/2007	3.0	2.55		0.044	0.00	0.11	0.73	36.4	50	7.49	43		7.90	
192	Weiden L	9/10/2007	3.0	2.55		0.028	0.01	0.04	0.65	51.3	22	7.74	48		5.69	
192	Weiden L	10/7/2007	3.0	2.50		0.027	0.03	0.16	0.83	68.2	30	7.34	48	4.3	8.11	
192	Weiden L	10/25/2007		2.50		0.046	0.01	0.05	0.53	25.1	61	6.90	37		3.09	
192	Weiden L	8/17/2008	3.0	2.10	1.2	0.106	0.01	0.40	1.40	28.97	23	7.57	58	4.0	27.38	
192	Weiden L	8/24/2008	3.0	2.30	1.2	0.066	0.01	0.12	1.19	39.78	29	8.11	66		28.76	
192	Weiden L	9/21/2008	3.0	2.35		0.040	0.01	0.04	0.60	33.50	8	5.68	48		14.56	
192	Weiden L	10/9/2008	3.0	2.25		0.021	0.01	0.10	0.50	53.26	13	7.04	50		8.59	
192	Weiden L	10/18/2008	3.0	2.25		0.037	0.01	0.08	0.55	32.36	23	6.66	46	3.7	6.68	
192	Weiden L	07/03/2009	1.5	1.25		0.038	0.03	0.03	0.36	20.68	76	7.35	30	2.9	5.04	
192	Weiden L	07/11/2009	1.6	1.35		0.032			0.27	18.41	51	7.61	34		3.74	
192	Weiden L	07/27/2009	1.6	1.60		0.087	0.03	0.29	0.43	10.94	63	6.22	36		11.94	
192	Weiden L	09/26/2009	2.0	1.35		0.024	0.02	0.15	0.36	33.05	67	7.72	34		1.40	
192	Weiden L	10/03/2009	2.0	1.25		0.011	0.03	0.08	0.32	65.80	37	6.96	44	3.6	0.30	
192	Weiden L	6/1/2010		0.95		0.059	0.02	0.10	0.29	10.83		7.42	58	3.7	1.90	
192	Weiden L	8/28/2010	2.0	1.40		0.039	0.01	0.22	0.63	35.85	24	7.09	54		4.30	
192	Weiden L	9/5/2010	2.0	1.35		0.056	0.01	0.04	0.53	20.52	44	8.14	71		13.30	
192	Weiden L	9/16/2010		1.35		0.029	0.21	0.05	0.47	35.60	30	6.62	75		9.70	
192	Weiden L	9/22/2010		1.35		0.034	0.02	0.02	0.52	33.39	36	6.96	54		12.20	
192	Weiden L	10/18/2010	3.0	1.35		0.037	0.02	0.19	0.64	37.89	23	7.31	70	3.7	4.60	
192	Weiden L	10/24/2010	3.0	1.30		0.021	0.02	0.16	0.57	58.19	60	7.70	51		0.90	
192	Weiden L	6/18/2011	3.0	1.55		0.051	0.04	0.08	0.48	20.70	62	7.81	43	3.1	2.50	
192	Weiden L	7/16/2011		1.45		0.041	0.04	0.13	0.66	35.05	47	7.47	50		2.30	
192	Weiden L	9/10/2011	3.0	1.30		0.033	0.01	0.16	0.48	32.27	37	6.21	52		1.50	
192	Weiden L	9/20/2011		1.25		0.235	0.01	0.03	0.39	3.61	63	6.23	38			
192	Weiden L	10/1/2011		1.35		0.028	0.01	0.06	0.42	33.35		5.96	26	1.3	0.80	
192	Weiden L	10/8/2011		1.30		0.030	0.01	0.08	0.45	32.56	63	7.81	33		0.80	
192	Weiden L	10/15/2011		1.30		0.019	0.01	0.05	0.36	40.81	51	6.75	32		0.90	

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a	Cl
192	Weiden L	10/22/2011		1.38		0.023	0.01	0.05	0.38	36.35	53	5.82	31		0.80	
192	Weiden L	6/24/2012		2.15	3.0	0.054	0.02	0.12	0.81	33.25	43	7.89	46	2.9	5.10	
192	Weiden L	7/13/2012		2.00		0.045	0.01	0.07	0.49	23.60	31	8.16	55		9.60	
192	Weiden L	8/4/2012		1.10		0.053	0.01	0.14	0.86	35.95		8.35	55		40.90	
192	Weiden L	8/9/2012		0.95		0.046	0.01	0.15	1.02	48.27	19	6.28	56		40.70	
192	Weiden L	8/19/2012		1.10		0.057	0.01	0.19	1.25	48.23	22	6.35	64	3.8	42.80	
192	Weiden L	9/3/2012		1.05		0.029	0.07	0.67	1.41	107.7	18	7.34	69		3.50	
192	Weiden L	10/7/2012		1.15		0.028	0.01	0.29	0.78	62.04	53	6.84	45		1.80	
192	Weiden L	10/21/2012		1.10		0.165	0.02	0.43	1.93	25.73	66	6.21	43		0.80	
192	Weiden L	7/11/2013	1.5	0.95		0.042	0.01	0.03	0.34	17.94	56	7.13	34		2.80	
192	Weiden L	7/22/2013	2.0	1.85		0.026			0.41	34.64	24	6.91	46		0.10	
192	Weiden L	8/15/2013	2.0	1.85		0.023	0.01	0.09	0.41	40.04	25	7.00	57		2.40	
192	Weiden L	8/27/2013	2.0	1.65		0.035			0.45	28.00	22	8.71	57		1.30	
192	Weiden L	9/8/2013	2.0	1.75		0.018	0.01	0.09			25	7.12	52		0.50	
192	Weiden L	9/24/2013	2.0	1.85		0.036			0.51	31.74	25	6.60	52		0.80	
192	Weiden L	10/3/2013	2.0	1.75		0.016	0.01	0.02	0.47	66.71	22	7.17	54		1.00	
192	Weiden L	6/28/2015	2.0	1.20	1.5	0.044	0.24	0.04	0.85	19.08	26	7.17	68	3.8	0.60	
192	Weiden L	7/13/2015	2.0	1.40	1.5	0.038			0.84	21.77	65	6.21	39		0.70	
192	Weiden L	7/29/2015	2.0	1.20	1.5	0.033	0.01	0.11	0.62	18.75		6.31	52		0.40	12.2
192	Weiden L	8/20/2015	2.0	1.20	1.2	0.031			0.91	29.54	30	9.18	107		35.80	
192	Weiden L	9/9/2015	2.0	1.20	1.5	0.050	0.01	0.04	0.51	10.08	32	8.61	72	3.7	15.40	
192	Weiden L	9/21/2015	2.0	1.20	1.2	0.027			0.52	19.48	39	6.99	60		10.40	
192	Weiden L	9/28/2015	2.0	1.30	1.2	0.032	0.01	0.04	0.51	15.76	40	6.93	58		10.10	5.0

LNum	PName	Date	Type	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
192	Weiden L	5/22/2004	surf	22	22	1	2	1	0											
192	Weiden L	6/6/2004	surf	14	19	1	2	2	5											
192	Weiden L	6/19/2004	surf	23	26	1	3	2	5											
192	Weiden L	7/5/2004	surf	25	25	1	2	2	5											
192	Weiden L	7/18/2004	surf	21	24	2	3	1	5											
192	Weiden L	7/30/2004	surf	25	23	1	4	3	48											
192	Weiden L	8/15/2004	surf	23	22	2	3	3	2											
192	Weiden L	9/5/2004	surf	18	22	2	3	3	25											
192	Weiden L	7/2/2005	surf	25	26	2	2	2	0											
192	Weiden L	7/14/2005	surf	32	28															
192	Weiden L	8/9/2005	surf	27	25	3	2	4	23											
192	Weiden L	9/7/2005	surf	21	23	2	2	3	2											
192	Weiden L	9/17/2005	surf	23	16	3	3	3	0											
192	Weiden L	10/8/2005	surf	23	20	3	3	3	0											
192	Weiden L	10/19/05	surf	12	13	2	3	3	0											
192	Weiden L	6/9/2006	surf	19	17	2	2	2	5											
192	Weiden L	6/29/2006	surf	27	22	2	2	2	0											
192	Weiden L	7/13/2006	surf	25	23	2	2	3	15											
192	Weiden L	7/27/2006	surf	25	26	2	3	3	2											
192	Weiden L	8/17/2006	surf	26	24	3	3	3	13											
192	Weiden L	9/13/2006	surf	16	19	2	2	3	2											
192	Weiden L	9/28/2006	surf	20	16	3	3	3	2											
192	Weiden L	5/31/2007	surf	28	20	2	1	1	0											
192	Weiden L	7/11/2007	surf	23	20	2	2	2	0											
192	Weiden L	8/8/2007	surf	28	25	2	2	2	0											
192	Weiden L	9/10/2007	surf	16	20	2	3	2	2											
192	Weiden L	10/7/2007	surf	19	17	2	3	2	2											
192	Weiden L	10/25/2007	surf	10	5	2	2	2	2											
192	Weiden L	8/17/2008	surf	28	29	3	3	2	3											
192	Weiden L	8/24/2008	surf	27	30	3	3	2	3											
192	Weiden L	9/21/2008	surf	22	20	2	3	3	28											
192	Weiden L	10/9/2008	surf	17	19	2	3	3	2											
192	Weiden L	10/18/2008	surf	13	15	2	3	3	2											

LNum	PName	Date	Zbot	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
192	Weiden L	07/03/2009	surf	27	22	1	2	1	2											
192	Weiden L	07/11/2009	surf	26	24	1	2	1	2											
192	Weiden L	07/27/2009	surf	20	27	1	2	1	2											
192	Weiden L	09/26/2009	surf	16	18	2	3	2	2											
192	Weiden L	10/03/2009	surf	18	20	2	2	2	2											
192	Weiden L	6/1/2010	surf	27	24	2	2	2	3	4										
192	Weiden L	8/28/2010	surf	21	25	2	2	2		0	0									
192	Weiden L	9/5/2010	surf	21	25	2	3	2	2	0	0									
192	Weiden L	9/16/2010	surf	19	21	1	2	2	2	0	0									
192	Weiden L	9/22/2010	surf	25	22	1	3	1	2	0	0									
192	Weiden L	10/18/2010	surf	24	17	2	2	2	2	0	0									
192	Weiden L	10/24/2010	surf	13	10	2	2	2	2	0	0									
192	Weiden L	6/18/2011	surf			2	2	2	0	0	0	4.70	5.59							
192	Weiden L	7/16/2011	surf	28		2	2	2	0	0	0	3.10	4.26							
192	Weiden L	9/10/2011	surf	25		2	3	1	0	0	0	5.80	3.90							
192	Weiden L	9/20/2011	surf	16		2	3	1	0	0	0	27.50	21.40							
192	Weiden L	10/1/2011	surf	14		2	2	1	2	0	0	5.30	6.20							
192	Weiden L	10/8/2011	surf	14		2	2	1	2	0	0	4.60	6.20							
192	Weiden L	10/15/2011	surf	18		2	2	2	2	0	0	3.90	5.60							
192	Weiden L	10/22/2011	surf			2	2	2	2	0	0	4.30	5.40							
192	Weiden L	6/24/2012	surf	29	19	1	2	2	0	0	0	2.00	0.40	<0.30	<0.585		1.23	0.36	I	
192	Weiden L	7/13/2012	surf	29	26	1	2	1	2	0	0	0.30	0.50	<0.30	<0.292		0.84	0.07	I	
192	Weiden L	8/4/2012	surf	23	26	2	2	2	2	0	0	3.00	0.60	<0.30	<0.551		1.88	0.80	I	
192	Weiden L	8/9/2012	surf	26	30	3	2	2	3	4	0	3.40	0.70	<0.30	<0.551		2.25	0.37	FG	
192	Weiden L	8/19/2012	surf	22	25	3	2	2	3	4	4	0.10	0.70	<0.30	<0.551		1.70	1.36	FG	
192	Weiden L	9/3/2012	surf	18	22	3	3	2	3	4	4	0.90	0.40	<0.30	<3.205		0.83	0.00	GI	
192	Weiden L	10/7/2012	surf	9	15	2	2	2	8	0	0	3.20	0.70	<0.30	<3.205		0.97	0.00	I	
192	Weiden L	10/21/2012	surf			2	2	2	2	0	0	3.70	0.70	<0.30	<3.205		1.36	0.00	I	
192	Weiden L	7/11/2013	surf	27	24	2	3	2	0	0	0			0.42	<19.130		0.80	0.00		
192	Weiden L	7/22/2013	surf	25		2	2	2	2	0	0			0.48	<19.130		0.30	0.00	I	
192	Weiden L	8/15/2013	surf	19		2	2	2	0	0	0			0.37	<19.130		0.20	0.00	I	
192	Weiden L	8/27/2013	surf	26		2	2	2	2	0	0	1.10	0.80	0.36	<0.090		0.20	0.00	I	
192	Weiden L	9/8/2013	surf	20		2	2	2	0	0	0	1.00	1.00	<0.30	<0.090		0.10	0.00	I	I
192	Weiden L	9/24/2013	surf	21		2	2	1	0	0	0	1.00	0.90	<0.30	<0.090		0.10	0.00	I	I
192	Weiden L	10/3/2013	surf	22		2	2	2	0	0	0	1.10	0.90	<0.30	<0.090		0.10	0.00	I	I
192	Weiden L	6/28/2015	surf	16		2	2	2	2	4	4	2.20	0.30	<0.18	<0.002	<0.009	0.33	0.00	I	
192	Weiden L	7/13/2015	surf	26	13	2	3	2	28	0	0	1.70	0.60	<0.18	<0.002	<0.009	1.11	0.00	I	I
192	Weiden L	7/29/2015	surf	29	16	3	3	3	238	4	4	0.10	0.60	<0.18	<0.002	<0.009	1.19	0.00	H	H
192	Weiden L	8/20/2015	surf	27	28	3	2	2	23	4	4	3.90	0.40	<0.21	<0.003	<0.010	1.21	0.40	H	H
192	Weiden L	9/9/2015	surf	26	27	3	2	3	3	4	4	12.80	0.50	<0.27	<0.009	<0.022	3.44	2.02	H	H
192	Weiden L	9/21/2015	surf	22	19	3	3	3	2	4	4	4.30	0.80	<0.30	<0.007	<0.035	1.96	0.00	H	H
192	Weiden L	9/28/2015	surf	23	19	3	3	2	2	4	4			<0.58	<0.082	<0.016	0.55	0.00	H	H

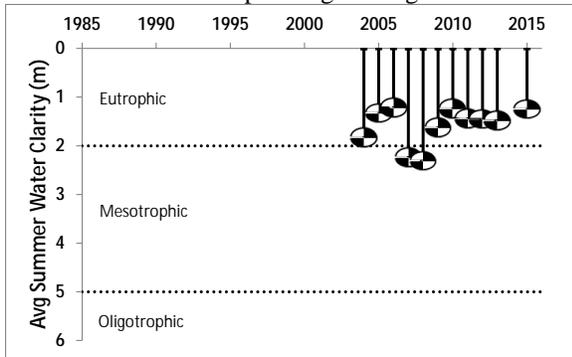
Legend Information

<i>Indicator</i>	<i>Description</i>	<i>Detection Limit</i>	<i>Standard (S) / Criteria (C)</i>
General Information			
Lnum	lake number (unique to CSLAP)		
Lname	name of lake (as it appears in the Gazetteer of NYS Lakes)		
Date	sampling date		
Field Parameters			
Zbot	lake depth at sampling point, meters (m)		
Zsd	Secchi disk transparency or clarity	0.1m	1.2m (C)
Zsamp	water sample depth (m) (epi = epilimnion or surface; bot = bottom)	0.1m	none
Tair	air temperature (C)	-10C	none
TH20	water temperature (C)	-10C	none
Laboratory Parameters			
Tot.P	total phosphorus (mg/l)	0.003 mg/l	0.020 mg/l (C)
NOx	nitrate + nitrite (mg/l)	0.01 mg/l	10 mg/l NO3 (S), 2 mg/l NO2 (S)
NH4	total ammonia (mg/l)	0.01 mg/l	2 mg/l NH4 (S)
TN	total nitrogen (mg/l)	0.01 mg/l	none
TN/TP	nitrogen to phosphorus (molar) ratio, = (TKN + NOx)*2.2/TP		none
TCOLOR	true (filtered) color (ptu, platinum color units)	1 ptu	none
pH	powers of hydrogen (S.U., standard pH units)	0.1 S.U.	6.5, 8.5 S.U. (S)
Cond25	specific conductance, corrected to 25C (umho/cm)	1 umho/cm	none
Ca, 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/l	1.0 mg/l (S)
Mn	manganese (mg/l)	0.01 mg/l	0.3 mg/l (S)
As	arsenic (ug/l)	1 ug/l	10 ug/l (S)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	variable	none
Cyl	Cylindrospermopsin (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: Weiden Pond

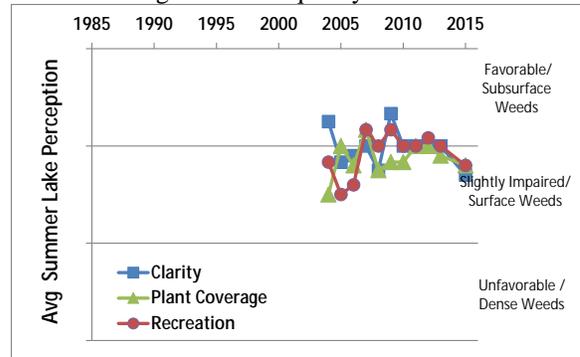
Long Term Trends: Water Clarity

- No long term trend, but recent decrease
- Most readings typical of *eutrophic* lakes, lower than expected given algae levels



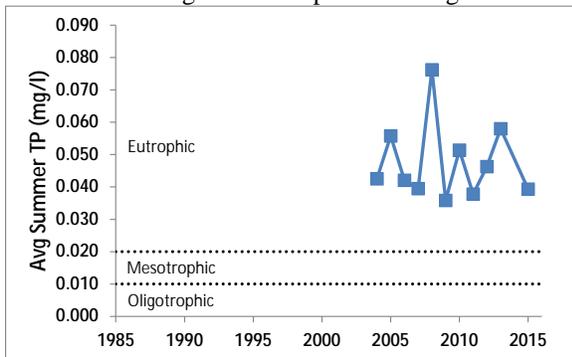
Long Term Trends: Lake Perception

- No long term trends, but recently ↓
- Recreational perception changes aligned with changes in water quality and weeds



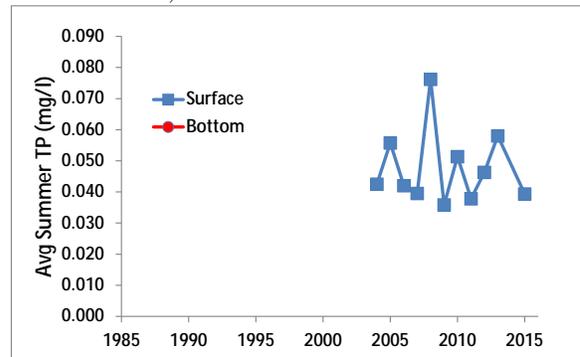
Long Term Trends: Phosphorus

- No long term trend; highly variable
- Most readings typical of *eutrophic* lakes, often higher than expected for algae levels



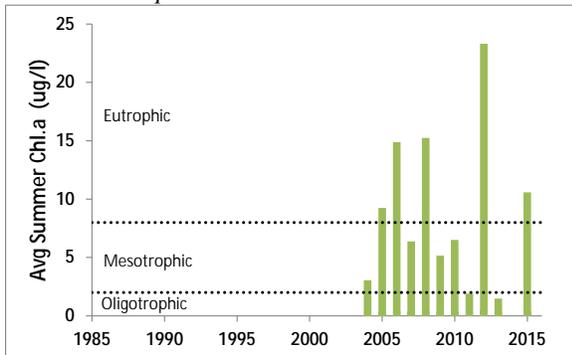
Long Term Trends: Bottom Phosphorus

- No thermal stratification
- Likely similar surface and deepwater TP levels, as in most shallow lakes



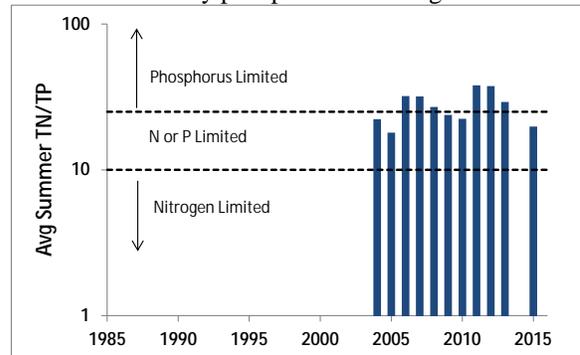
Long Term Trends: Chlorophyll a

- No long term trend; highly variable readings
- Most readings typical of *mesotrophic* to *eutrophic* lakes



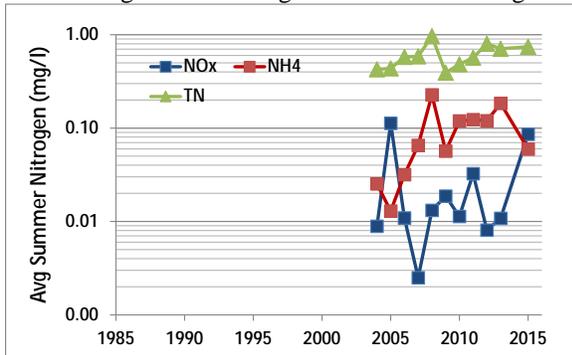
Long Term Trends: N:P Ratio

- No long term trend
- Most readings indicate algae growth may be limited by phosphorus or nitrogen levels



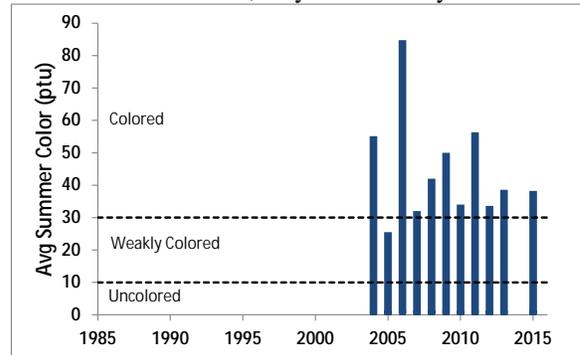
Long Term Trends: Nitrogen

- Increase in ammonia and TN
- Low nitrate, ammonia and total nitrogen; higher total nitrogen associated with algae



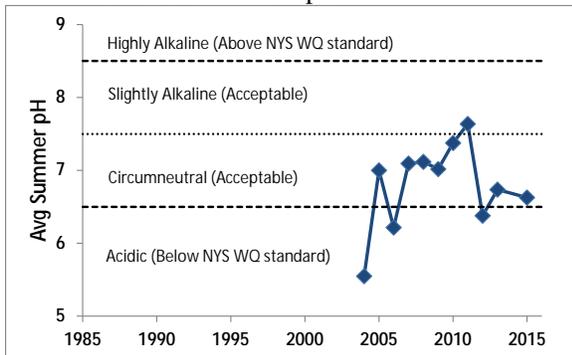
Long Term Trends: Color

- No long term trend; perhaps decreasing
- Most readings typical of moderately to highly colored lakes; may affect clarity



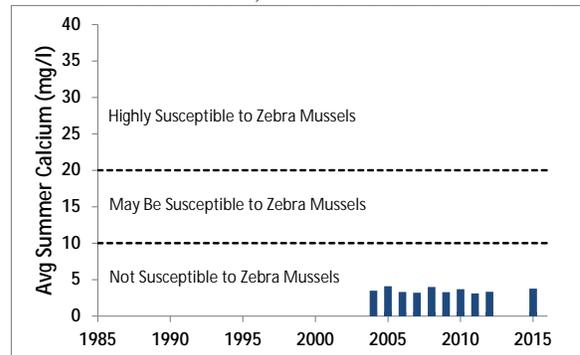
Long Term Trends: pH

- pH increasing?
- Most readings typical of circumneutral lakes, but occasional low pH



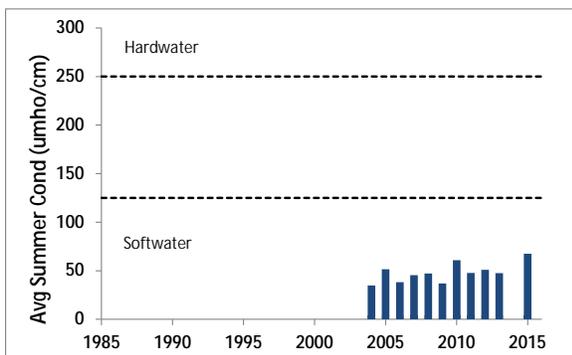
Long Term Trends: Calcium

- No long term trend
- Most readings indicate low susceptibility to zebra mussels, which are not found in lake



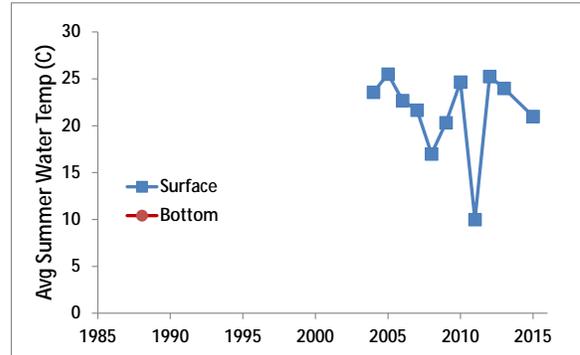
Long Term Trends: Conductivity

- Slight long-term increase
- Most readings typical of softwater lakes



Long Term Trends: Water Temperature

- No deepwater T; surface T variable
- Surface and bottom readings likely similar due to weak or no 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

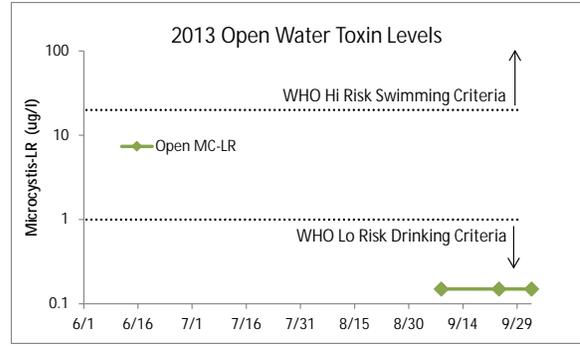


Figure D2:
2013 Open Water Microcystin-LR



Figure D3:
2013 Shoreline Total and BGA Chl.a

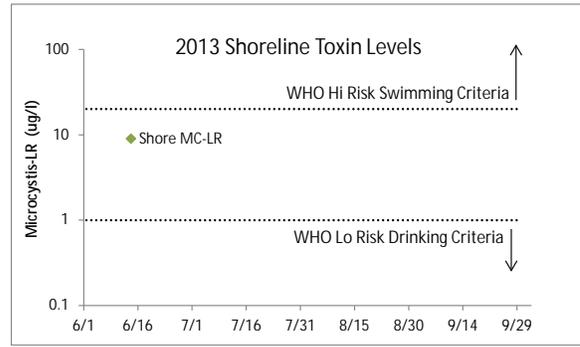


Figure D4:
2013 Shoreline Microcystin-LR

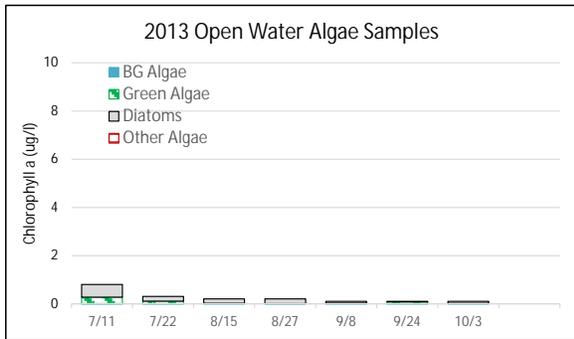


Figure D5:
2013 Open Water Algae Types

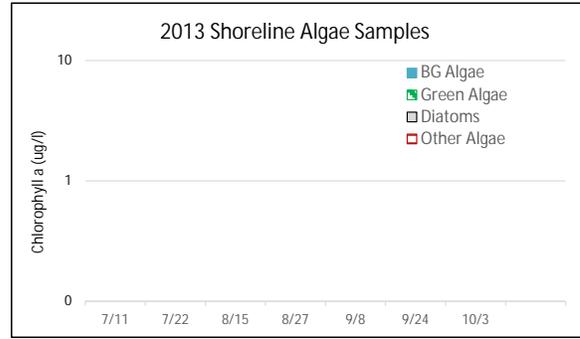


Figure D6:
2013 Shoreline Algae Types

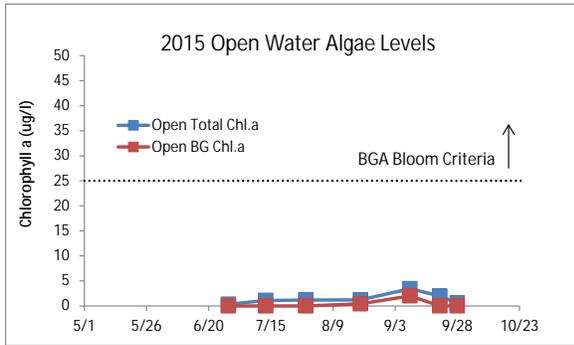


Figure D7:
2015 Open Water Total and BGA Chl.a

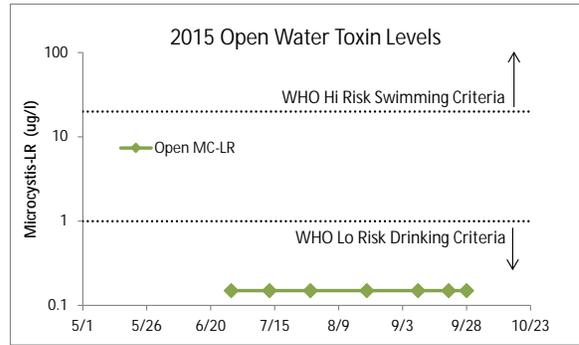


Figure D8:
2015 Open Water Microcystin-LR

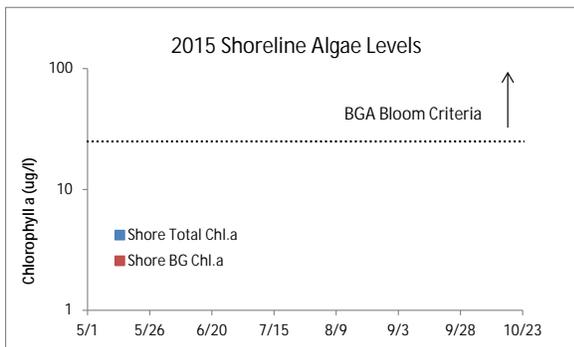


Figure D9:
2015 Shoreline Total and BGA Chl.a

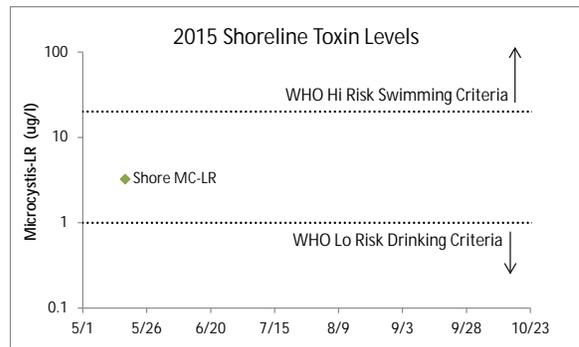


Figure D10:
2015 Shoreline Microcystin-LR

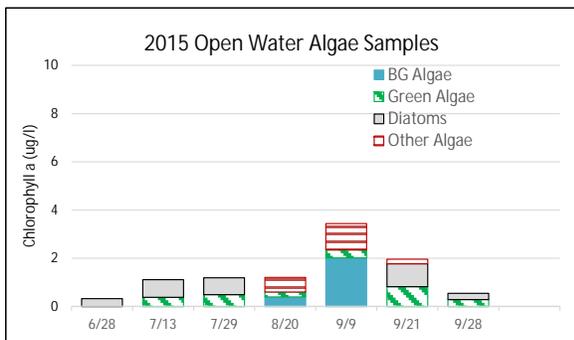


Figure D11:
2015 Open Water Algae Types

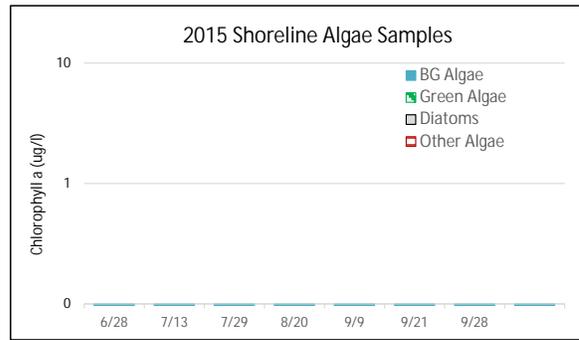


Figure D12:
2015 Shoreline Algae Types

Appendix E: AIS Species in Sullivan County

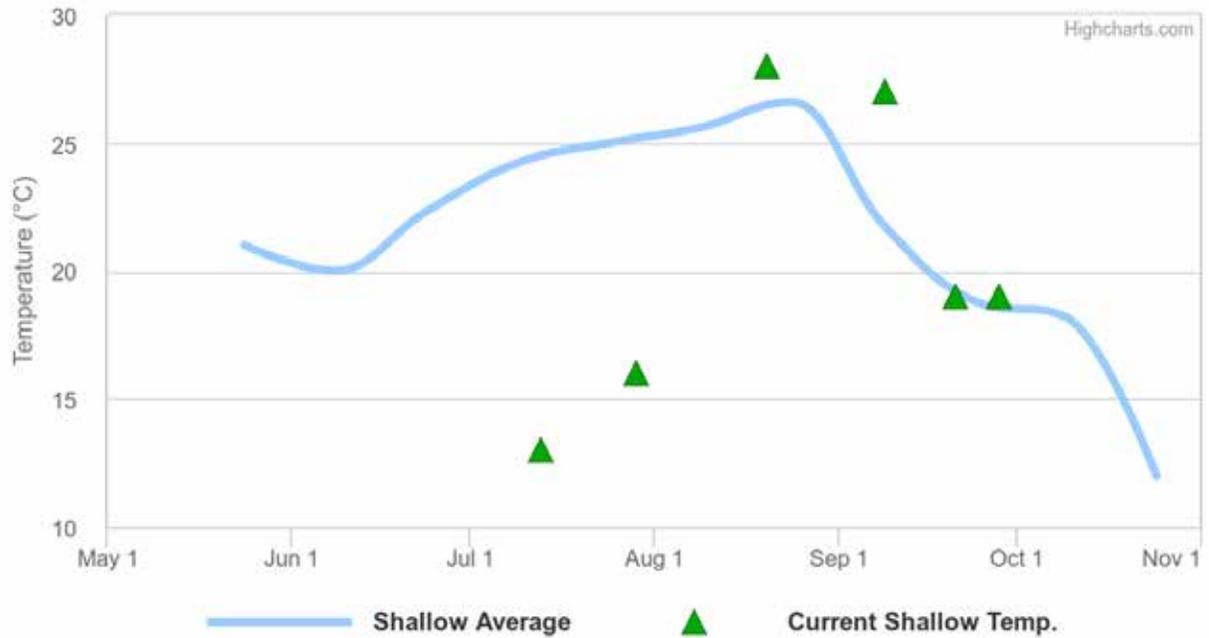
The table below shows the invasive aquatic plants and animals that have been documented in Sullivan County, as cited in either the iMapInvasives database (<http://www.imapinvasives.org/>) or in the NYSDEC Division of Water database. These databases may include some, but not all, non-native plants or 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 - Sullivan County			
Waterbody	Kingdom	Common name	Scientific name
Basherkill South	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Beaverman Lake	Plant	European frogbit	<i>Hydrocharis morsus-ranae</i>
Black Lake	Plant	Water chestnut	<i>Trapa natans</i>
Cliff Lake	Plant	Fanwort	<i>Cabomba caroliniana</i>
Kiamesha Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Martin Lake	Plant	Fanwort	<i>Cabomba caroliniana</i>
Morningside Lake	Plant	Water chestnut	<i>Trapa natans</i>
Morningside Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Pleasure Lake	Plant	Water chestnut	<i>Trapa natans</i>
Sackett Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Saint Josephs Lake	Plant	Floating primrose willow	<i>Ludwigia peploides ssp. glabrescens</i>
Silver Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Silver Lake	Plant	Water chestnut	<i>Trapa natans</i>
Swan Lake	Plant	Curly leafed pondweed	<i>Potamogeton crispus</i>
Swan Lake	Plant	Water chestnut	<i>Trapa natans</i>
Swinging Bridge Reservoir	Animal	Common carp	<i>Cyprinus carpio</i>
Swinging Bridge Reservoir	Animal	Green sunfish	<i>Lepomis cyanellus</i>
Waneta Lake	Plant	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>

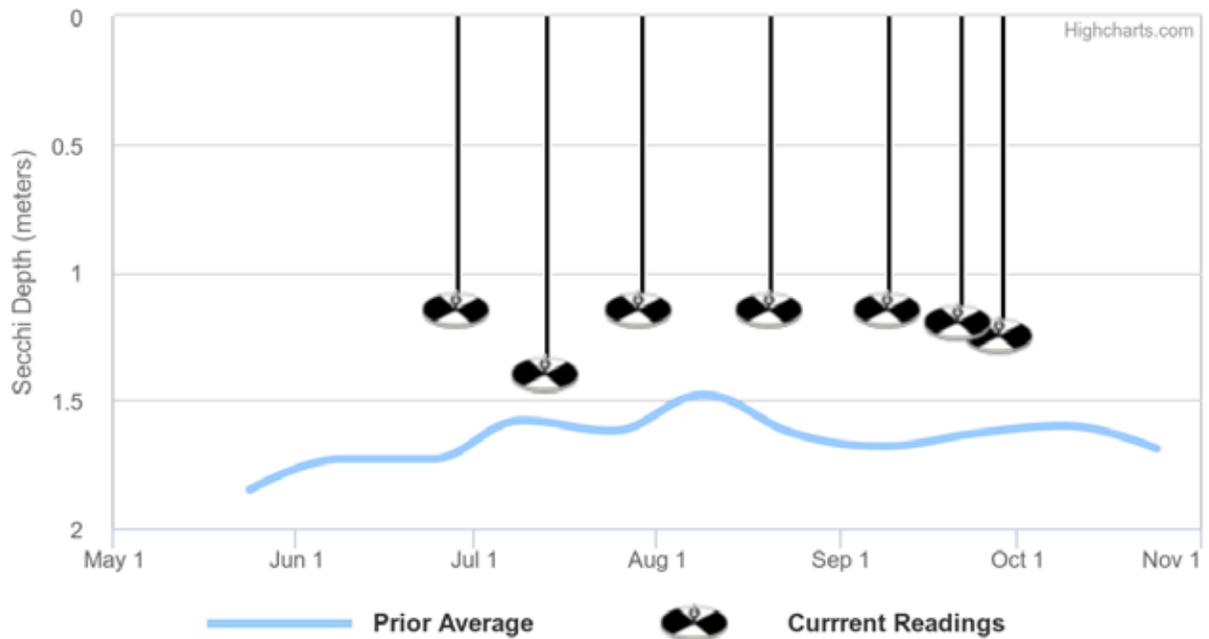
Appendix F: Current Year vs. Prior Averages for Weiden Pond

Current Year Water Temperatures vs. Prior Average



This year's shallow water sample temperatures are about the same as the average of readings collected from 2004 to 2013.

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 2004 to 2013.

Appendix G: Watershed and Land Use Map for Weiden 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.

