

CSLAP 2011 Lake Water Quality Summary: Sugar Pond

General Lake Information

Location	Hastings-on-Hudson
County	Westchester
Basin	Lower Hudson River
Size	0.29 hectares (0.71 acres)
Lake Origins	Augmented by dam
Watershed Area	34.6 hectares (85.4 acres)
Retention Time	0.0 years
Mean Depth	2.4 meters
Sounding Depth	4.5 meters
Public Access?	Yes; Open to ice skating in the winter.
Major Tributaries	None
Lake Tributary To...	Minor Tribs to East of Hudson
WQ Classification	C
Lake Outlet Latitude	40.997485
Lake Outlet Longitude	-73.869326
Sampling Years	2011
2011 Samplers	Kendra Garrison
Main Contact	Kendra Garrison

Lake Map



Background

Sugar Pond is a 1 acre Class C pond in the town of Hastings-on-Hudson, Westchester County. 2011 is the first year Sugar Pond has been sampled under direction from the Citizens Statewide Lake Assessment Program (CSLAP).

It is one of 16 CSLAP lakes among the more than 120 lakes found in Westchester County, and one of 47 CSLAP lakes among the more than 350 lakes and ponds in the Lower Hudson River drainage basin

Lake Uses

Sugar Pond is a Class C pond, meaning the best intended uses are non contact recreation – boating and fishing, aquatic life, and aesthetics. The lake actively supports each of these uses.

All New York State fishing regulations are applicable. The state of New York does not stock fish in Sugar Pond; it is not known if private stocking occurs.

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

Historical Water Quality Data

CSLAP sampling was conducted on Sugar Pond for the first time in 2011. The CSLAP reports for the lake will eventually be found on the NYSFOLA website at <http://nysfola.mylaketown.com> and on the NYSDEC web page at <http://www.dec.ny.gov/lands/77821.html>.

Lake Association and Management History

Sugar Pond is located in the Riverview Manor portion of the Hillside Woods. Information about the lake association is not yet available.

Summary of 2011 CSLAP Sampling Results

Evaluation of 2011 Annual and Monthly Results Relative to 2006-2010

Since Sugar Pond was sampled for the first time through CSLAP in 2011, sampling results cannot be compared to historical data. Future generations of CSLAP reports will include a comparison to data collected starting in 2011.

Evaluation of Eutrophication Indicators

Secchi disk transparency, chlorophyll *a* levels, and total phosphorus readings in 2011 were typical of *eutrophic*, or highly productive lakes. The trophic state index (TSI) evaluation suggests that chlorophyll *a* readings (algae levels) are lower than expected given the other indicators (phosphorus and water clarity). This may be due to turbidity from other factors or elevated color reducing clarity and light transmission. However, chlorophyll *a* readings are still high. These assessments may become clearer with additional (future) data. Overall trophic conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are 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.

However, the lake is not classified for 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

Color readings are higher than those found in the typical NYS lake, and may reduce water transparency. Nitrogen readings (NO_x, ammonia, and total nitrogen) are slightly higher than in other lakes, although it is likely that algae levels are still controlled by phosphorus. pH readings are typical of alkaline lakes, and conductivity readings are typical of hardwater lakes. Calcium readings are high enough to support zebra mussel colonization, although it is not known if these exotic animals have been found in the lake. Additional data will help to determine if these assessments are representative of normal conditions in the lake. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

Phytoplankton, zooplankton, macrophyte, and macroinvertebrate data have not been collected through CSLAP at Sugar Pond. As a result, biological assessments of the lake reported in the Lake Scorecard will be incomplete.

Evaluation of Lake Perception

Water quality assessments indicated that the lake most frequently exhibited “definite algal greenness”, an assessment that is probably consistent with the measured water quality conditions in the lake. Aquatic plants typically grow to the lake surface, at times densely, and at times both “poor water clarity” and “excessive weed growth” significantly affect the recreational suitability of the lake. It is not known if exotic or invasive plants are found in the lake. Recreational assessments were “slightly” to “substantially” impaired throughout the summer, consistent with the surface weed growth, and consistent with the measured water quality conditions. Additional data will help to determine if these assessments represent normal conditions in the lake. Overall lake perception is summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

With only one year of water temperature readings, local climate change cannot be easily evaluated.

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. However, phycocyanin readings were below the levels indicating susceptibility for harmful algal blooms (HABs). The limited analysis of algae samples from the open water and shoreline blooms indicated microcystin readings below the levels indicating unsafe swimming conditions. These suggest that the algal communities are not dominated by blue green algae, although this will become clearer with additional data.

Lake Condition Summary

Category	Indicator	Min	2011 Avg	Max		Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.55	0.55	0.55		Eutrophic	Not known	Not yet known
	Chlorophyll <i>a</i>	0.05	10.91	36.70		Eutrophic	Not known	Not yet known
	Total Phosphorus	0.026	0.049	0.073		Eutrophic	Not known	Not yet known
Potable Water Indicators	Hypolimnetic NH ₄					Not sampled through CSLAP	Not known	Not known
	Hypolimnetic As					Not sampled through CSLAP	Not known	Not known
	Hypolimnetic Iron					Not sampled through CSLAP	Not known	Not known
	Hypolimnetic Mn					Not sampled through CSLAP	Not known	Not known
Limnological Indicators	Hypolimnetic TP					Not sampled through CSLAP	Not known	Not known
	Nitrate + Nitrite	0.01	0.10	0.27		Intermediate NO _x	Not known	Not yet known
	Ammonia	0.02	0.06	0.13		Low Ammonia	Not known	Not yet known
	Total Nitrogen	0.90	1.25	1.50		High Total Nitrogen	Not known	Not yet known
	pH	7.05	8.04	8.73		Alkaline	Not known	Not yet known
	Specific Conductance	614	703	793		Hardwater	Not known	Not yet known
	True Color	27	38	59		Intermediate Color	Not known	Not yet known
	Calcium	24.0	24.0	24.0		Highly Susceptible to Zebra Mussels	Not known	Not yet known
Lake Perception	WQ Assessment	3	3.0	3		Definite Algal Greenness	Not known	Not yet known
	Plant Coverage	3	3.3	4		Surface Plant Growth	Not known	Not yet known
	Rec. Assessment	4	4.3	5		Substantially Impaired	Not known	Not yet known
Biological Condition	Phytoplankton					Not measured through CSLAP	Not known	Not known
	Macrophytes					Not measured through CSLAP	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Not measured through CSLAP	Not known	Not known
	Fish					Warmwater fishery?	Not known	Not known
	Invasive Species					None observed	Not known	Not known
Local Climate Change	Air Temperature	29	30.2	32			Not known	Not yet known
	Water Temperature	26	27.3	28			Not known	Not yet known
Harmful Algal Blooms	Open Water Phycocyanin	5	25	66		All readings indicate low risk of BGA in open water	Not known	Not known
	Open Water Microcystis					No lakewide toxins data	Not known	Not known
	Shoreline Phycocyanin	0	0	0		Some shoreline BGA blooms likely	Not known	Not known
	Shoreline Microcystis	1.3	1.3	1.3		Shoreline bloom toxins above drinking water criteria but below swimming criteria	Not known	Not known
	Other Toxins					Low anatoxin-a and cylindrospermopsin	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

Sugar Pond is not cited on the 2008 Lower Hudson River basin Priority Waterbody List (PWL).

Potable Water (Drinking Water)

The CSLAP dataset at Sugar 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 limited CSLAP indicators suggest that any “unofficial” potable water use of the lake might be impaired by excessive algae.

Contact Recreation (Swimming)

The CSLAP dataset at Sugar Pond, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggests that swimming and contact recreation may be *impaired* by excessive algae and low water clarity.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Sugar Pond, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggest that non-contact recreation may be *stressed* by excessive weeds.

Aquatic Life

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

Aesthetics

The CSLAP dataset on Sugar Pond, including water chemistry data, physical measurements, and volunteer samplers’ perception data, suggest that aesthetics may be *threatened* by excessive weeds and algae, consistent with persistent reports that the lake “looks bad”.

Fish Consumption

There are no fish consumption advisories posted for Sugar Pond.

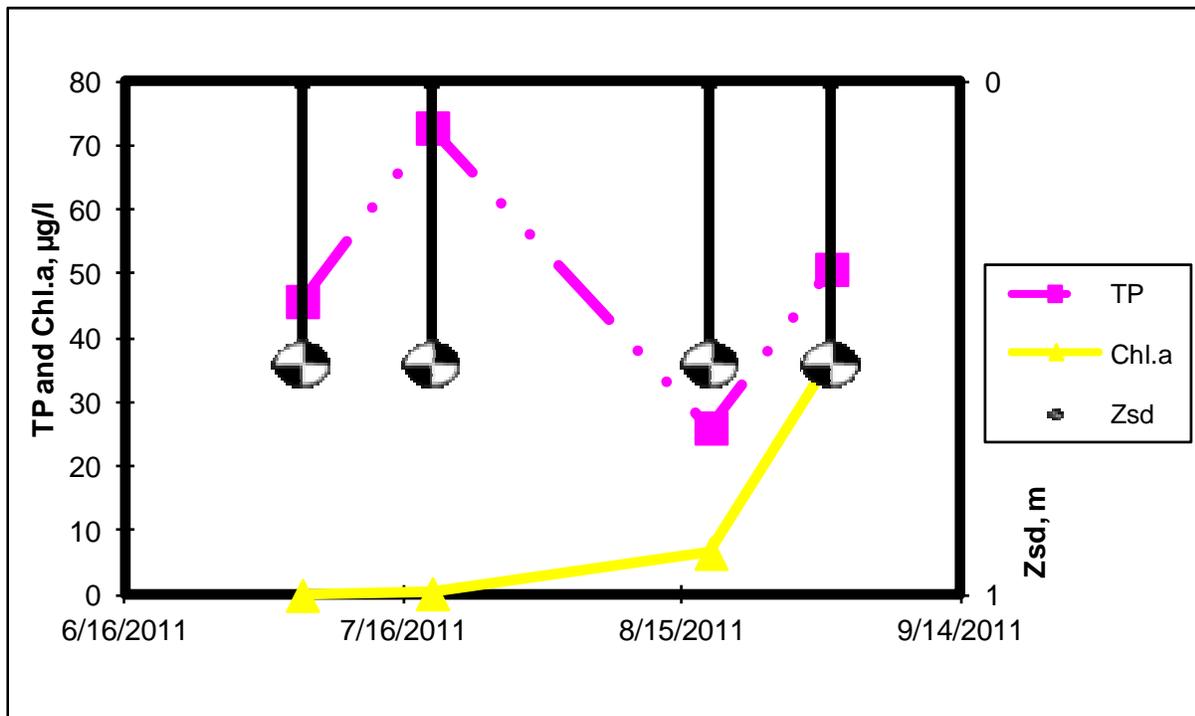
Additional Comments and Recommendations

Additional CSLAP data and information from other sources may help to determine if the 2011 evaluation outlined above is representative of normal conditions in the lake.

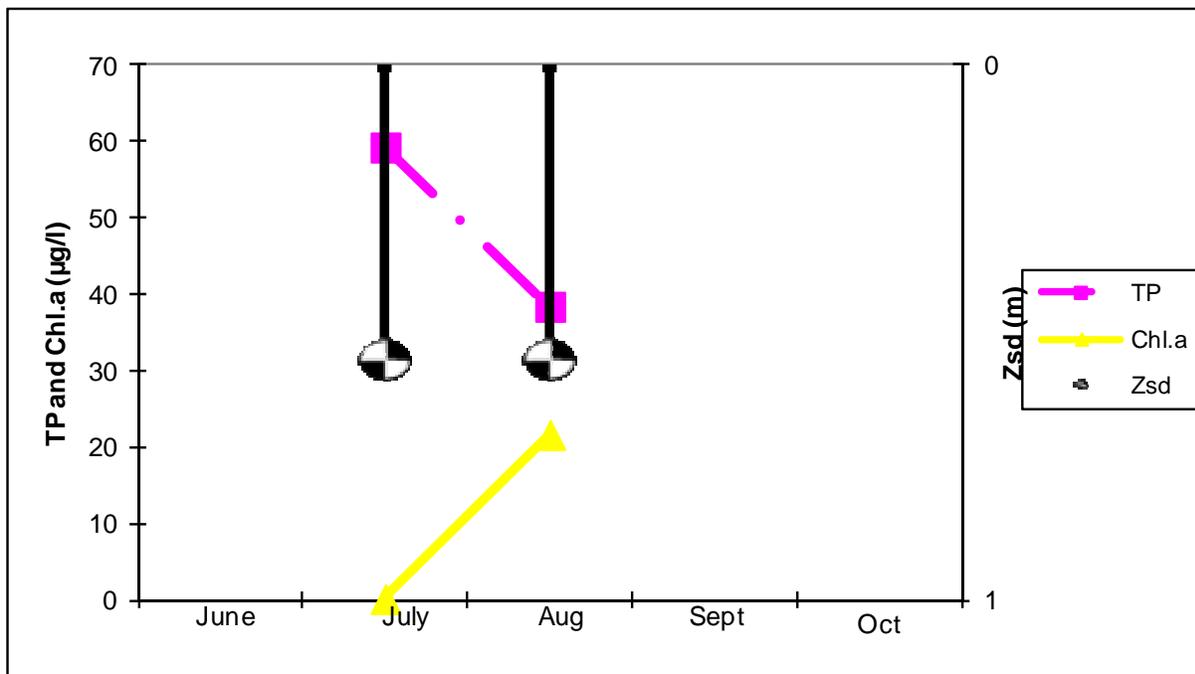
Aquatic Plant IDs-2011

No aquatic plants submitted for identification

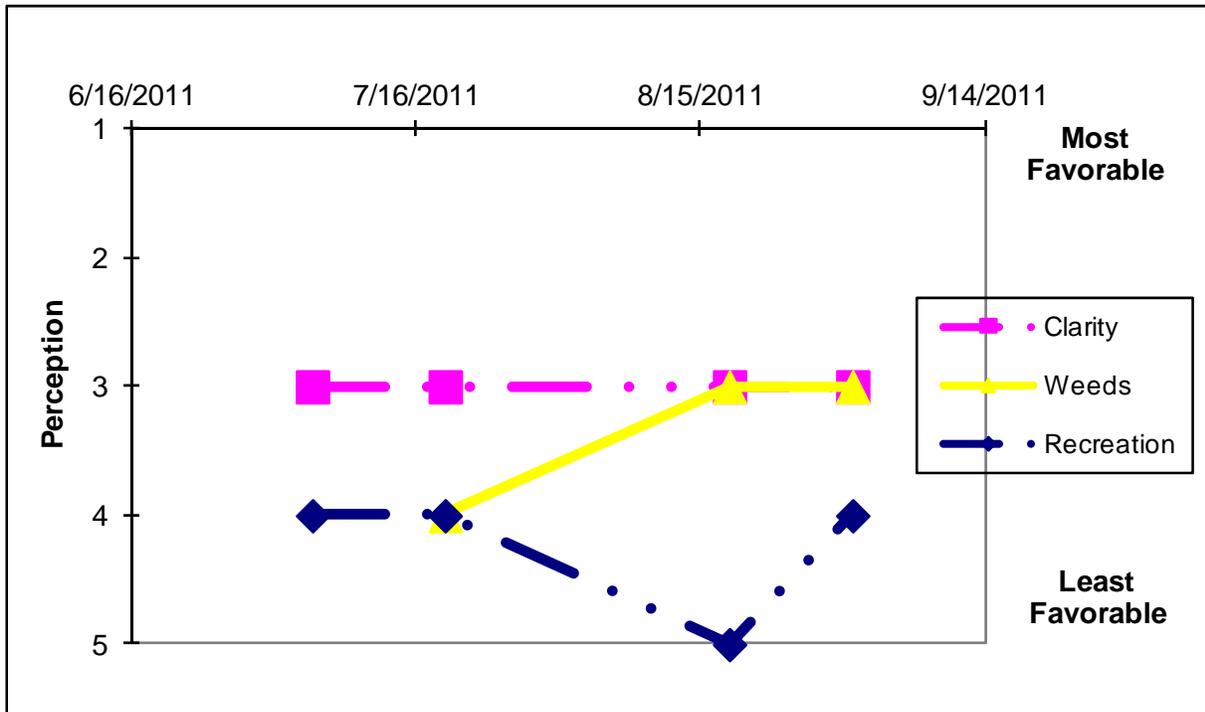
Time Series: Trophic Indicators, 2011



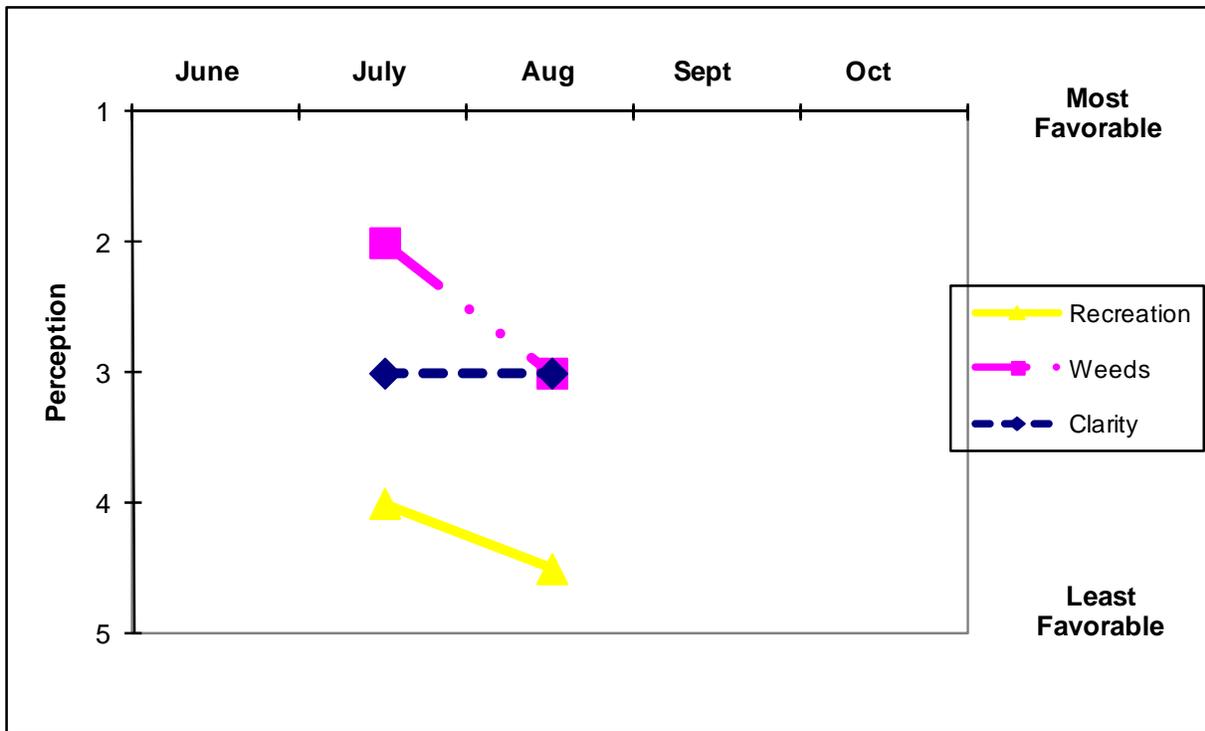
Time Series: Trophic Indicators, Typical Year (2011)



Time Series: Lake Perception Indicators, 2011



Time Series: Lake Perception Indicators, Typical Year (2011)



Appendix A- CSLAP Water Quality Sampling Results for Sugar Pond

LNum	PName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
227	Sugar Pond	7/5/2011	4.5	0.55	2.6	0.046	0.13	0.13	0.90	43.23	59	7.94	635	24.0	0.05
227	Sugar Pond	7/19/2011	4.5	0.55	2.6	0.073	0.27	0.02	1.50	45.24	34	8.42	614		0.30
227	Sugar Pond	8/18/2011	3.5	0.55	1.8	0.026	0.01	0.04	1.22	102.75	30	8.73	793		6.60
227	Sugar Pond	8/31/2011	3.5	0.55		0.051	0.01	0.04	1.40	60.72	27	7.05	771		36.70
227	Sugar Pond		grab	HAB											
227	Sugar Pond		grab	HAB											

LNum	PName	Date	Zbot	Site	TAir	TH20	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyc
227	Sugar Pond	7/5/2011	4.5	surf	32	26	3		4	2	0	0	8.10	4.80			
227	Sugar Pond	7/19/2011	4.5	surf	29	28	3	4	4	2	0	0	5.40	3.80			
227	Sugar Pond	8/18/2011	3.5	surf	29	28	3	3	5	12	0	0	66.30	8.60			
227	Sugar Pond	8/31/2011	3.5	surf	30	27	3	3	4	268	0	0	19.60	26.00			
227	Sugar Pond		grab	surf											1.31	<0.8	<0.1
227	Sugar Pond		grab	surf													

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)
AQ-PC	Phycocyanin (aquafior) (unitless)	1 unit	none
AQ-Chl	Chlorophyll a (aquafior) (ug/l)	1 ug/l	none
MC-LR	Microcystis-LR (ug/l)	0.01 ug/l	1 ug/l potable (C) 20 ug/l swimming (C)
Ana	Anatoxin-a (ug/l)	0.3 ug/l	none
Cyl	Cylindrospermopsin (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		