Effley Falls Lake Questions and Answers, 2014 CSLAP

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

A1. Water quality conditions in Effley Falls Lake were slightly less favorable than usual in 2014- water clarity was slightly lower than normal, and aquatic plant coverage was greater than usual. However, overall water quality conditions continue to be favorable, and these small changes have not affected recreational assessments of the lake.

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

A2. The HABs testing includes information about the types of algae found in the water samples. These results showed very low open water algae levels that are usually comprised of a mix of algae, particularly green algae, with low blue green algae levels. No shoreline blooms have been reported or sampled.

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

A3. Effley Falls Lake had slightly lower water clarity, but similar nutrient levels and slightly lower algae levels, than other Adirondack lakes. As with most Adirondack lakes, no shoreline blooms have been reported. Aquatic plant coverage was slightly higher than in many nearby lakes.

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

A4. Aquatic plant coverage has increased over the last decade in Effley Falls Lake. It is not known if this is due to native or exotic plants. Water clarity has been lower in the last few years, but this may not represent a trend.

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

A5. Water quality conditions continue to be favorable in the lake- the drop in water clarity is not the result of increasing nutrient or algae levels, so it may represent normal variability. The increase in plant growth may also be normal or cyclical, so this should continue to be evaluated by the lake community.

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	2014	Primary issue
Potable Water	Not Known	Not Known	Not Known	Not applicable
Swimming	Not Known	Supported	Supported	No impacts
Boating / Fishing	Not Known	Threatened	Threatened	Native plants
Aquatic Life	Stressed	Threatened	Threatened	Low pH
Aesthetics	Not Known	Threatened	Threatened	Native plants
Fish Consumption	Impaired	Not Known	Not Known	Metals

Legend:
- 🟢 Supported
- 🔺 Threatened
- 🔴 Stressed
- ⬛ Impaired
- ⬜ Not Known

CSLAP 2014 Lake Water Quality Summary:
Effley Falls Lake

General Lake Information

Location	Town of Croghan
County	Lewis
Basin	Black River
Size	137.3 hectares (339.1 acres)
Lake Origins	Augmented by 32ft by 500ft hydroelectric dam (1903)
Watershed Area	64,570 hectares (159,488 acres)
Retention Time	0.01 years
Mean Depth	4.4 meters
Sounding Depth	4.9 meters
Public Access?	DEC cartop launch
Major Tributaries	Beaver River, Sammys Creek
Lake Tributary To…	Beaver River to Black River to Black River Bay to Lake Ontario
WQ Classification	C(T) (non-contact recreation = boating, angling)
Lake Outlet Latitude	43.923
Lake Outlet Longitude	-75.277
Sampling Years	1997-2001, 2004-2011, 2013-2014
2014 Samplers	Kathy and John Bast
Main Contact	Kathy and John Bast

Lake Map
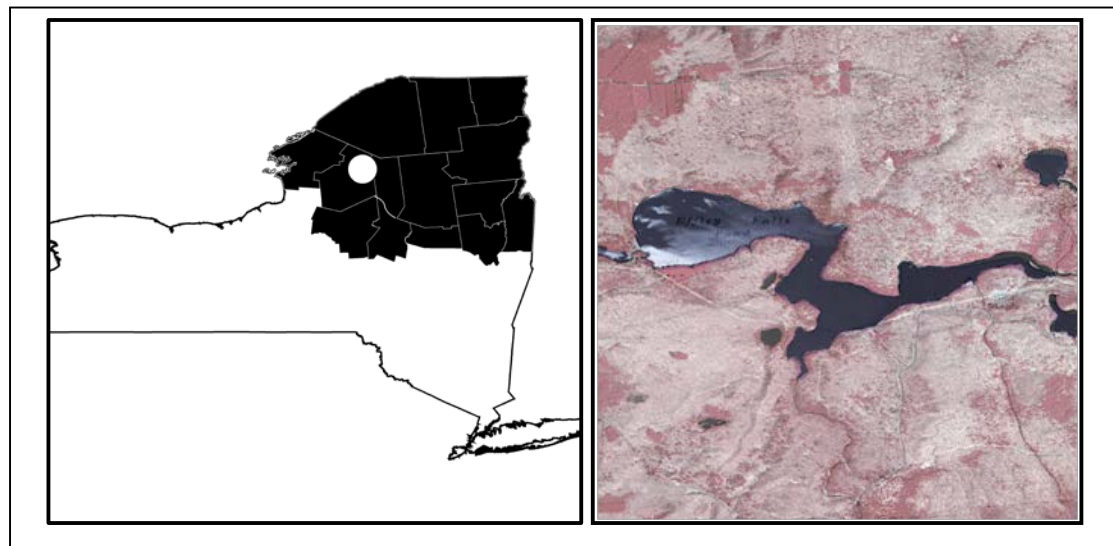
Background

Effley Falls Lake is a 339 acre, class C(T) lake found in the Town of Croghan in Lewis County, lying just outside the eastern boundary of the Adirondack region of New York State. It was first sampled as part of CSLAP in 1997.

It is one of four CSLAP lakes among the more than 75 lakes found in Lewis County, and one of eight CSLAP lakes among the more than 460 lakes and ponds in the Oswegatchie and Black Rivers drainage basin.

Lake Uses

Effley Falls Lake is a Class C(T) lake; this means that the best intended use for the lake is non-contact recreation—boating and aesthetics—and support of aquatic life. It is likely that the lake is also used for contact recreation—swimming and bathing—although it is not classified for this use. The (T) designation refers to the support of trout survival. The lake is used by lake residents and the public for boating and other recreation via shoreline properties and a DEC cartop launch. It is not known if the lake actively supports swimming.

Effley Falls Lake is not stocked by the state; it is not known by the report authors if private stocking occurs in Effley Falls Lake. Fish species on the lake include brown bullhead, chain pickerel, rock bass, and smallmouth bass. There is a fish consumption advisory for chain pickerel and smallmouth bass (one fish meal per month for each fish species) on Effley Falls Lake.

General statewide fishing regulations are applicable in Effley Falls Lake.

Historical Water Quality Data

CSLAP sampling was conducted on Effley Falls Lake from 1997 to 2001, 2004 to 2011, and 2013 to 2014. 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 Effley Falls Lake can also be found on the NYSDEC web page at http://www.dec.ny.gov/lands/77863.html.

Effley Falls Lake was sampled by the NYSDEC as part of the Adirondack Lake Survey Corporation (ALSC) study of about 1500 Adirondack Lakes in the mid-1980s, and as part of the USEPA Environmental Monitoring and Assessment Program (EMAP) in 1992. These results showed levels of each of the measured water quality indicators within the same range as found in CSLAP. This suggests that water quality conditions have not changed significantly since the mid-1980s at Effley Falls Lake.

The lake was also sampled by the NYSDEC Division of Water in 2008 as part of a biomonitoring study of about 25 CSLAP lakes throughout the state. About a dozen shoreline sites were sampled for benthic (bottom-dwelling) organisms, to understand the connection between nutrients and biological communities in lakes—Effley Falls Lake is an example of an unproductive, shallow Adirondack lake. The biological samples are broadly discussed in the statewide CSLAP report. The chemical monitoring data indicate conditions comparable to those measured through CSLAP. The depth profiles slightly depressed pH and oxygen levels, elevated iron levels, and slightly elevated ammonia levels near the lake bottom, but otherwise no indications of anoxia or significant differences at various depths in the lake.

None of the tributaries to the lake (Beaver River, Sammys Creek), nor the outlet of the lake have been monitored through the NYSDEC Rotating Intensive Basins (RIBS) program or the state stream macroinvertebrate monitoring program. The lake was not sampled by DEC fisheries staff in support of fish stocking activities or resource management.

Lake Association and Management History

Effley Falls Lake is represented by the Effley Falls Lake Association. It is not known if the lake association is involved in any lake management activities, or if the Effley Falls Lake Association maintains a website. The management of Effley Falls Lake is discussed within the Lewis County master plan.

Summary of 2014 CSLAP Sampling Results

Evaluation of 2014 Annual Results Relative to 1997-2013

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 – Effley Falls Lake" section in Appendix C.

Evaluation of Eutrophication Indicators

Water clarity readings in Effley Falls Lake were slightly lower than normal in 2013 and 2014, but chlorophyll *a*, total phosphorus, and color readings were close to normal in 2014. The decrease in water clarity observed in the last two years was first observed in the mid 2000s; phosphorus readings increased for the first few years of that "trend", but have decreased slightly since then. Since algae levels did not exhibit any clear trends over this period, it is likely that the small decrease in water clarity over this period represents normal variability.

The trophic indicators vary slightly during the summer during the typical year. Phosphorus readings decrease from June through August, but increase from August through the fall. Both water clarity and algae levels decrease slightly from mid summer through the fall. In 2014, algae levels were much higher than normal in the last (late August) sample, but water clarity was also slightly higher than normal.

The lake continues to be characterized as *mesoligotrophic*, based on water clarity, chlorophyll *a* (both typical of *mesotrophic* lakes) and total phosphorus readings (typical of *oligotrophic* lakes. The trophic state indices (TSI) evaluation suggests that the phosphorus readings are lower than expected, given the Secchi disk transparency readings in the lake. This phenomenon is common in other southeastern and southwestern Adirondack lakes, and may indicate some regional characteristic of the algae or high "efficiency" of the phosphorus in these lakes, as well as the influence of water color (natural brownness). This suggests than any increase in phosphorus loading to the lake may result in significant increases in algae. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are 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 not classified for this use. Effley Falls Lake is not (strongly) thermally stratified, so any surface impacts to potable water could not be mitigated by lowering the water intakes to the

bottom waters of the lake (should any surface water intakes be 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

Each of the other limnological indicators (NOx, ammonia, total nitrogen, pH, conductivity, color and calcium) was close to normal in 2014. NOx and TN readings increased slightly from the late 2000s to the present, but these changes were not significant, and none of these indicators has exhibited any clear long-term trends. It is likely that the small changes in each of these other indicators from year to year represent normal variability. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

The fluoroprobe data analyzed by SUNY ESF in the last few years found low overall algae levels and a low percentage of blue green algae, indicating a low susceptibility to harmful algal blooms. The algae samples were comprised mostly of green algae, and no shoreline blooms have been reported.

The macrophyte data collected by CSLAP volunteers and through the ALSC program show low plant diversity, as commonly occurs in lakes with a high flow rate. One protected plant species— *Utricularia minor* (lesser bladderwort)—was found in the lake. However, this incomplete dataset suggests that the quality of the aquatic plant community is "excellent."

The 2008 DEC macroinvertebrate survey results from Effley Falls Lake continue to be evaluated. The preliminary data show a small number of macroinvertebrate species, a low percentage of COTE (*Coleoptera, Odonate, Tricoptera*, and *Ephemeroptera*) species (indicating moderate to poor water quality), and a low diversity (based on the relative dominance of a single organism). However, the percentage of tolerant species was low, indicating a macroinvertebrate community sensitive to pollution (often indicative of healthy lakes). These apparently contradictory results preclude a definitive assessment of the macroinvertebrate community in the lake, although this may become more apparent with additional analysis of the data.

The fish community in the lake is comprised of a mix of coolwater (at least three species) and warmwater (at least five species) fish. The fisheries data collected through the ALSC indicate a fisheries community that would be identified as less that favorable using the Minnesota index for biotic integrity.

Mud bithynia snail (*Bithynia tentaculata*) has been reported at the lake, but it is not known if this has resulted in any ecological problems.

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

Evaluation of Lake Perception

Aquatic plant coverage in Effley Falls Lake was higher than normal in 2013 and 2014, part of a long-term increase over the last decade. This does not appear to have affected recreational assessments in the lake, which were close to normal in 2014 (consistent with stable water quality conditions and assessments). Neither water quality assessments nor recreational assessments

have exhibited any long-term trends. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Neither air nor water temperatures have exhibited long-term trends over the last twenty years, and both were close to normal in 2014. It is not known if this reflects the lack of local climate change or if lake temperature readings are not sensitive enough to measure these changes.

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 readings have been below the levels indicating susceptibility for harmful algal blooms (HABs), consistent with the fluoroprobe results over the last few years. Algal toxins have not been detectable in any open water samples, and no shoreline blooms have been reported (or sampled).

Lake Condition Summary

Category	Indicator	Min	97-14 Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	1.45	2.61	4.30	2.42	Mesotrophic	Within Normal Range	No Change
	Chlorophyll *a*	0.13	2.86	20.00	2.81	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.001	0.007	0.032	0.006	Oligotrophic	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	0.005	0.011	0.023		Close to Surface TP Readings	Higher than Normal	Not known
	Nitrate + Nitrite	0.01	0.14	0.36	0.19	Intermediate NOx	Within Normal Range	No Change
	Ammonia	0.01	0.06	0.61	0.05	Low Ammonia	Within Normal Range	No Change
	Total Nitrogen	0.18	0.43	0.97	0.45	Low Total Nitrogen	Within Normal Range	No Change
	pH	4.50	6.77	8.24	6.86	Circumneutral	Within Normal Range	No Change
	Specific Conductance	5	21	109	16	Softwater	Within Normal Range	No Change
	True Color	3	34	75	35	Intermediate Color	Within Normal Range	No Change
	Calcium	0.9	1.9	4.2	1.7	Not Susceptible to Zebra Mussels	Within Normal Range	No Change
Lake Perception	WQ Assessment	1	1.2	3	1.0	Crystal Clear	Within Normal Range	No Change
	Aquatic Plant Coverage	1	1.8	3	2.6	Subsurface Plant Growth	Less Favorable than Normal	Highly Degrading
	Recreational Assessment	1	1.3	4	1.5	Could Not Be Nicer	Within Normal Range	No Change
Biological Condition	Phytoplankton					Open water-low blue green algae biomass	Not known	Not known
	Macrophytes					Excellent quality of aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Low tolerance and diversity	Not known	Not known
	Fish					Mix of cool- and warm-water fish	Not known	Not known
	Invasive Species					Mud bithynia snail	Not known	Not known
Local Climate Change	Air Temperature	6	23.7	35	23.9		Within Normal Range	No Change
	Water Temperature	12	20.8	27	19.7		Lower Than Normal	No Change

Category	Indicator	Min	97-14 Avg	Max	2014 Avg	Classification	2014 Change?	Long-term Change?
Harmful Algal Blooms	Open Water Phycocyanin	0	4	33	1	No readings indicate high risk of BGA	Not known	Not known
	Open Water FP Chl.a	0	1	2	1	No readings indicate high algae levels	Not known	Not known
	Open Water FP BG Chl.a	0	0	0	0	No readings indicate high BGA levels	Not known	Not known
	Open Water Microcystis	<DL	<DL	<DL	<0.30	Open water MC-LR consistently not detectable	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					No shoreline bloom MC-LR data	Not known	Not known
	Shoreline Anatoxin a					No shoreline bloom anatoxin data	Not known	Not known

Evaluation of Lake Condition Impacts to Lake Uses

The most recent (2008) Priority Waterbody Listings (PWL) for the Black River basin indicate that *fish consumption* is *impaired* by mercury and *aquatic life* is *stressed* by low pH. The PWL summary for the lake can be found in Appendix B.

Potable Water (Drinking Water)

The CSLAP dataset at Effley Falls Lake, 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.

Contact Recreation (Swimming)

The CSLAP dataset at Effley Falls Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation should be fully supported, although additional information about bacterial levels is needed to evaluate the safety of the water for swimming. It should be noted that the lake is not classified for this use.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Effley Falls Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation may be *threatened* by excessive weed growth- it is not known if the 'offending' weeds are native or non-native.

Aquatic Life

The CSLAP dataset on Effley Falls Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *threatened* by depressed pH, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

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

Fish Consumption
There is a fish consumption advisory posted for Effley Falls Lake, limiting consumption to one meal per month of chain pickerel and smallmouth bass due to (atmospheric) mercury contamination.

Additional Comments and Recommendations
The continued evaluation of the 2008 biomonitoring survey data will help to better evaluate aquatic life impacts and the biological condition of the lake. The lake residents should conduct aquatic plant surveys to determine if the recent increase in aquatic plant coverage is associated with native or non-native (exotic) plants.

Aquatic Plant IDs-2014
No aquatic plants were collected for identification by CSLAP volunteers in 2014.

Time Series: Trophic Indicators, 2014
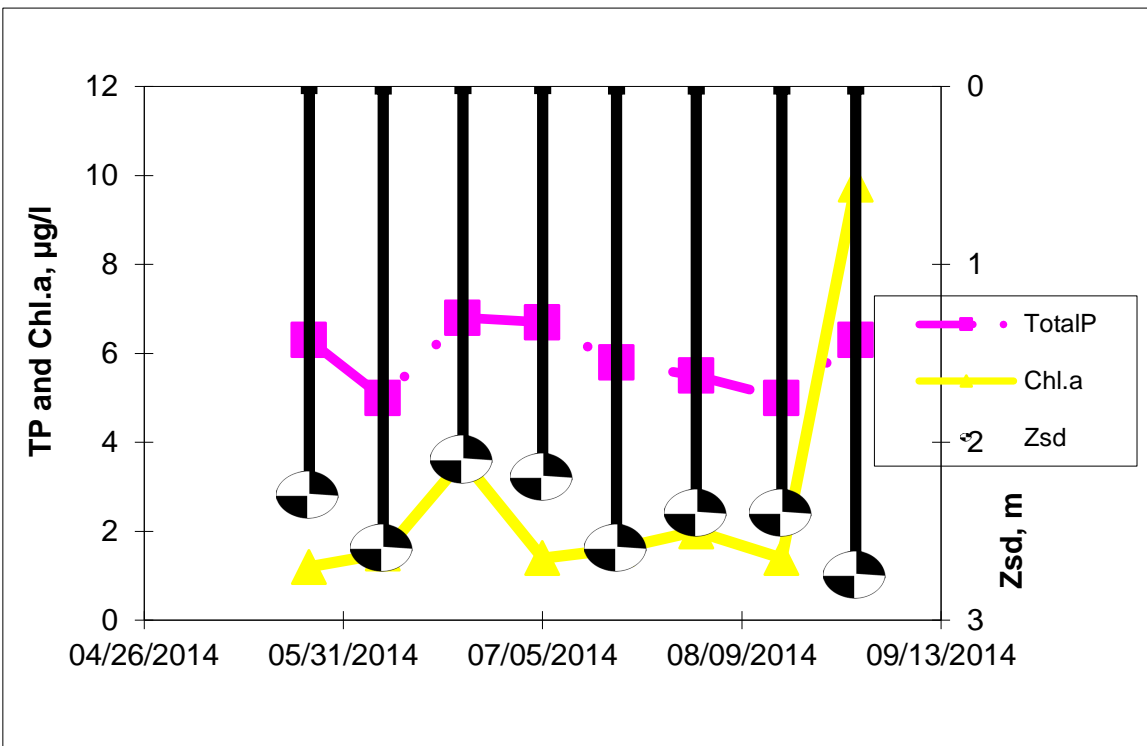
Time Series: Trophic Indicators, Typical Year (1997-2014)

Time Series: Lake Perception Indicators, 2014

Time Series: Lake Perception Indicators, Typical Year (1997-2014)

Appendix A- CSLAP Water Quality Sampling Results for Effley Falls Lake

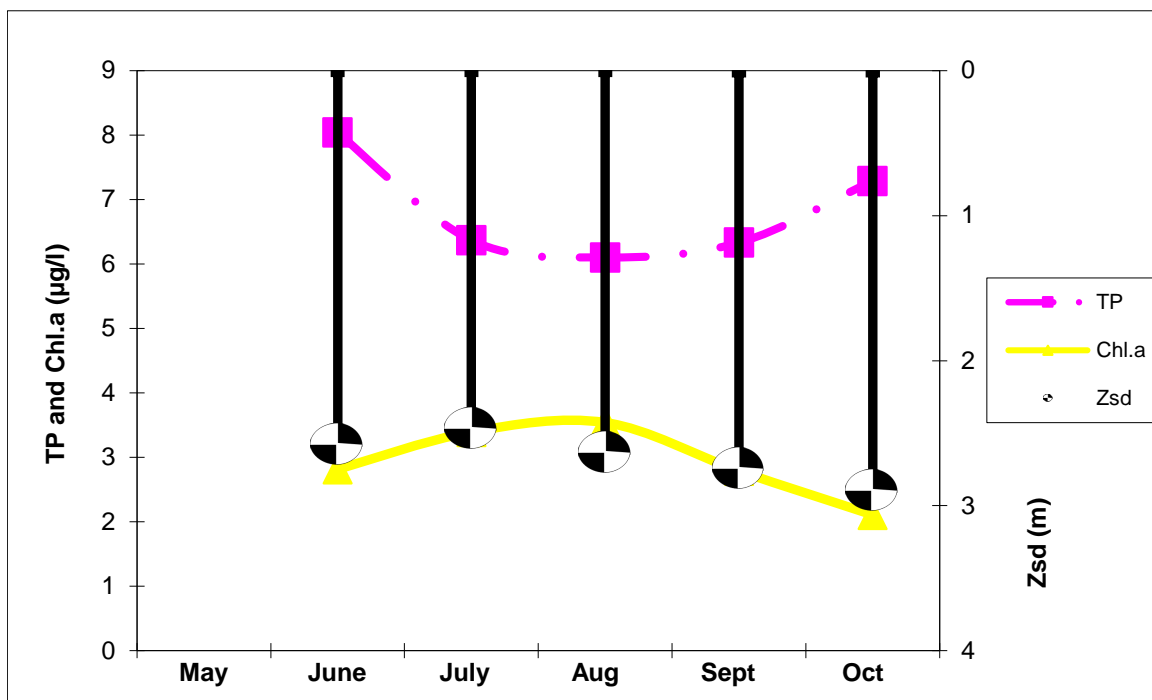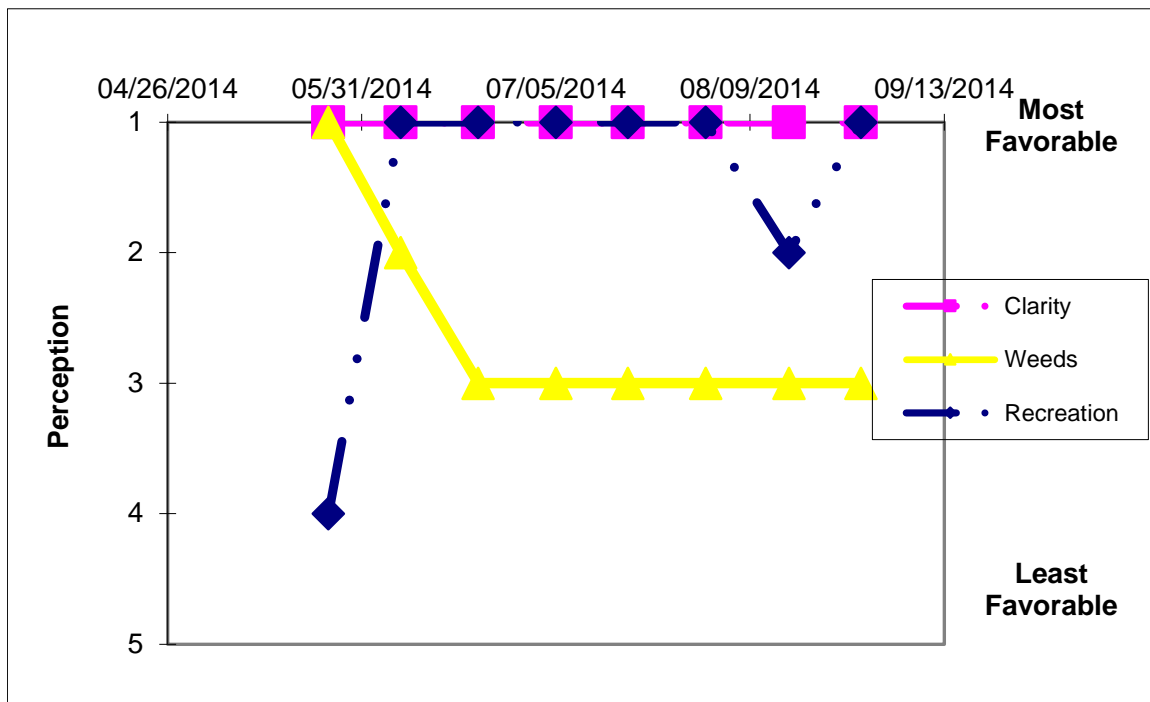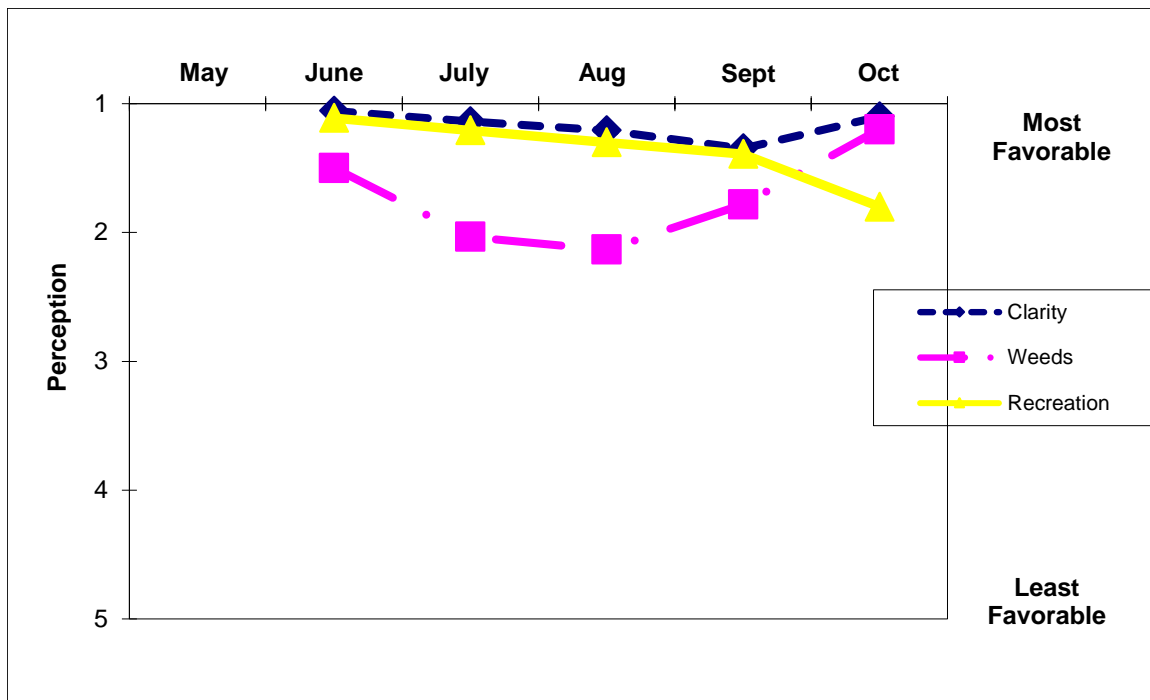| LNum	LName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
124	Effley Falls L	6/28/1997	5.7	3.20	1.5	0.007	0.32				25	6.60	22		1.63
124	Effley Falls L	7/12/1997	6.1	3.05	1.5	0.008	0.29				30	6.58	21		1.35
124	Effley Falls L	7/27/1997	9.1	2.85	1.5	0.003	0.23				40	6.35	21		0.76
124	Effley Falls L	8/9/1997	7.0	2.85	1.5	0.006	0.27				19	6.88	21		4.00
124	Effley Falls L	8/24/1997	7.2	2.40	1.5	0.005	0.23				22	6.75	21		4.51
124	Effley Falls L	9/8/1997				0.006	0.21				23	7.62	21		2.17
124	Effley Falls L	9/22/1997	5.5	2.85	1.5	0.006	0.19				25	6.97	21		0.43
124	Effley Falls L	10/5/1997				0.008	0.21				25	7.67	40		0.13
124	Effley Falls L	6/8/1998	5.5	3.10	1.5	0.006	0.32				22	7.30	21		1.88
124	Effley Falls L	6/24/1998	5.4	2.20	1.5		0.20				47	6.93	19		2.87
124	Effley Falls L	7/5/1998	5.6	1.90	1.5		0.19				58	5.75	19		3.25
124	Effley Falls L	7/31/1998	6.1	2.30	1.5		0.18				30	6.52	19		3.49
124	Effley Falls L	8/17/1998	6.8	2.30	1.5		0.17				37	6.37	20		3.38
124	Effley Falls L	9/2/1998	7.1	2.05	1.5						70	4.50	37		2.46
124	Effley Falls L	9/14/1998	7.2	2.40	1.5	0.014					45	6.52	19		
124	Effley Falls L	10/12/1998	8.4	2.70	1.5	0.012					45	5.93	20		3.56
124	Effley Falls L	6/28/1999	7.2	2.80	1.5	0.006	0.27				27	7.15	21		0.97
124	Effley Falls L	7/4/1999	6.3	2.85	1.5	0.004	0.26				26	7.21	21		3.04
124	Effley Falls L	7/18/1999	6.8	2.55	1.5	0.006	0.24				32	7.70	23		2.74
124	Effley Falls L	8/1/1999	6.8	2.75	1.5	0.011	0.20				27	6.83	25		5.00
124	Effley Falls L	8/15/1999	6.9	3.05	1.5	0.006	0.06				24	6.44	26		2.55
124	Effley Falls L	9/3/1999	7.3	3.25	1.5	0.005	0.17				23	7.83	23		2.12
124	Effley Falls L	9/19/1999	6.8	3.20	1.5	0.006	0.16				23	7.30	24		2.95
124	Effley Falls L	7/9/2000	6.0	2.75	1.5	0.009	0.18				16	4.97	27		
124	Effley Falls L	7/24/2000	5.9	2.90	1.5	0.004	0.14				34	6.50	5		20.00
124	Effley Falls L	8/7/2000	6.3	2.35	1.5	0.008	0.12				47	6.85	19		12.60
124	Effley Falls L	8/21/2000	6.3	2.15	1.5	0.007	0.12				42	5.72	19		5.70
124	Effley Falls L	9/4/2000	6.3	2.50	1.5	0.005					40	7.07	20		1.73
124	Effley Falls L	9/18/2000	5.9	2.25	1.5	0.012					35	4.86	26		3.60
124	Effley Falls L	10/2/2000	6.3	2.55	1.5	0.010					35	7.43	20		3.68
124	Effley Falls L	10/16/2000	6.3	2.20	1.5	0.011					33	7.27	20		4.50
124	Effley Falls L	6/9/2001	6.3	3.20	1.5	0.032	0.36				29	6.73	19		3.94
124	Effley Falls L	6/24/2001	6.3	3.05	1.5	0.005	0.32				24	6.51	25		2.83
124	Effley Falls L	7/8/2001	6.5	2.45	1.5	0.007	0.24				27	6.06	20		3.05
124	Effley Falls L	7/22/2001	6.1	2.50	1.5	0.005	0.19				28	7.38	19		5.46
124	Effley Falls L	8/5/2001	6.5	2.95	1.5	0.009	0.13				3	7.59	20		3.85
124	Effley Falls L	8/20/2001	6.7	3.45	1.5	0.005	0.13				35	7.39	22		4.47
124	Effley Falls L	9/4/2001	6.8	2.60	1.5	0.007	0.12				34	7.95	23		
124	Effley Falls L	9/15/2001	6.5	2.75	1.5	0.006	0.10				26	6.54	23		1.71
124	Effley Falls L	8/7/2004	4.6	2.10	1.5	0.006	0.18	0.03			36	6.03	18		2.20
124	Effley Falls L	8/20/2004	4.6	2.20	1.5	0.006	0.14	0.01	0.48	168.98	21	6.34	40		2.60
124	Effley Falls L	9/3/2004	4.6	2.05	1.5	0.008	0.14	0.03	0.62	177.43	11	6.36	109		2.40
124	Effley Falls L	9/17/2004	4.3	2.15	1.5	0.009	0.08	0.01	0.47	119.72	11	5.58	55		0.81
124	Effley Falls L	10/1/2004	4.6	3.15	1.5	0.008	0.01	0.01	0.22	63.38	38	6.06	9	2.4	0.86
124	Effley Falls L	10/15/2004	4.3	2.55	1.5	0.003	0.09	0.02	0.24	162.33	22	6.39	16		0.50
124	Effley Falls L	6/24/2005	4.6	2.19	1.5	0.004	0.01	0.19			42	5.71	13	1.8	2.24
124	Effley Falls L	7/9/2005	4.6	2.68	1.5	0.005	0.01	0.16	0.31	138.77	12	7.90	17		1.24
124	Effley Falls L	7/22/2005	4.6	2.23	1.5	0.004	0.10	0.15	0.33	177.87	18	6.70	20		2.53
124	Effley Falls L	8/3/2005	4.6	2.70	1.5	0.005	0.01	0.11	0.33	135.58	35	6.68	20		
124	Effley Falls L	8/20/2005	4.6	2.85	1.5	0.002	0.01	0.01	0.32	409.23	23	6.53	21	2.1	3.19
124	Effley Falls L	9/3/2005	4.6	3.45	1.5	0.006	0.01	0.08	0.18	65.37	23	6.60	17		1.36
124	Effley Falls L	9/16/2005	4.6	2.80	1.5	0.005	0.01	0.07	0.26	123.19	32	6.89	23		1.92
124	Effley Falls L	9/30/2005	3.1	2.45	1.5	0.006	0.02	0.07	0.27	97.60	33	6.59	22		1.11
124	Effley Falls L	7/7/2006	4.9	1.90	1.0	0.002	0.08	0.03	0.50	613.81	75	5.83	14	1.28	2.07
124	Effley Falls L	7/21/2006	4.9	2.65	1.5	0.005	0.10	0.02	0.62	261.34	47	6.74	19		3.10
124	Effley Falls L	8/4/2006	4.9	3.28	1.5	0.006	0.08	0.04	0.61	219.37	46	6.98	21		2.70
124	Effley Falls L	8/18/2006	4.9	2.90	1.5	0.005	0.08	0.02	0.60	255.90	26	6.72	17		2.05
124	Effley Falls L	9/1/2006	4.9	2.95	1.5	0.005			0.48	217.60	36	8.01	12	1.74	1.45
124	Effley Falls L	9/14/2006	4.9	3.05	1.5	0.006	0.07	0.04	0.43	166.46	37	7.88	14		1.62
124	Effley Falls L	10/2/2006	4.9	3.00	1.5	0.006	0.10	0.05	0.66	230.15	34	6.27	17		2.05
124	Effley Falls L	10/13/2006	4.9	2.90	1.5	0.006	0.10	0.07	0.42	146.46	32	7.30	13		1.81
124	Effley Falls L	6/29/2007	4.9	2.10	1.5	0.006	0.09	0.01	0.29	113.40	36	7.57	20	0.9	2.95
124	Effley Falls L	7/13/2007	4.9	2.40	1.5	0.009	0.23	0.02	0.95	234.02	22	6.84	30		2.58

LNum	LName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
124	Effley Falls L	7/27/2007	4.9	2.95	1.5	0.007	0.20	0.02	0.53	174.79	25	6.62	18		2.78
124	Effley Falls L	8/10/2007	4.9	3.25	1.5	0.005	0.16	0.04	0.62	283.89	24	7.04	18		1.92
124	Effley Falls L	8/24/2007	4.9	3.45	1.5	0.005	0.16	0.04	0.70	285.97	25	7.44	19	2.1	1.63
124	Effley Falls L	9/7/2007	4.9	3.85	1.5	0.005	0.16	0.03	0.58	269.29	16	7.58	15		2.27
124	Effley Falls L	9/21/2007	4.9	3.20	1.5	0.006	0.13	0.03	0.53	208.26	22	8.24	20		1.48
124	Effley Falls L	10/5/2007	4.9	4.30	1.50	0.007	0.15	0.05	0.73	235.57	24	7.4	22		1.38
124	Effley Falls L	6/27/2008	4.9	2.45	1.5	0.006	0.02	0.03	0.49	170.27	28	6.97	19	1.4	7.89
124	Effley Falls L	7/11/2008	4.9	2.25	1.5	0.006	0.11	0.02	0.31	114.43		5.99	17		6.33
124	Effley Falls L	7/25/2008	4.9	1.90	1.5	0.008	0.08	0.03	0.31	84.23	26	6.21	10		6.26
124	Effley Falls L	8/8/2008		2.00	1.5	0.007	0.06	0.02	0.28	85.20	42	6.37	13		5.68
124	Effley Falls L	8/22/2008	4.9	2.75	1.5	0.006	0.03	0.02	0.18	65.04	46	6.37	12	1.5	4.13
124	Effley Falls L	9/5/2008	4.9	2.65	1.5	0.001	0.02	0.02	0.25	455.08	30	7.37	16		3.66
124	Effley Falls L	9/18/2008	4.9	2.40	1.5	0.007	0.04	0.04	0.34	106.82	35	6.90	14		1.73
124	Effley Falls L	10/3/2008	4.9	2.70	1.5	0.002	0.05	0.04	0.25	350.23	39	6.11			2.60
124	Effley Falls L	06/14/2009	4.9	2.83	1.5	0.010	0.13	0.01	0.34	76.45	31	7.08	14	4.2	6.07
124	Effley Falls L	06/29/2009	4.9	2.75	1.5	0.004	0.13	0.01	0.29	178.39	34	7.63	14		3.69
124	Effley Falls L	07/10/2009	4.9	2.75	1.5	0.008	0.10	0.02	0.33	94.29	69	7.46	21		2.56
124	Effley Falls L	07/24/2009	4.9	2.45	1.5	0.009	0.09	0.02	0.27	70.92	48	7.37	9		2.86
124	Effley Falls L	08/07/2009	4.9	2.70	1.5	0.007	0.08	0.02	0.27	81.28	42			2.2	2.00
124	Effley Falls L	08/22/2009	5.2	2.70	1.5	0.006	0.05	0.32	0.61	221.44	48				2.20
124	Effley Falls L	09/05/2009	5.2	2.35	1.5	0.007	0.06	0.46	0.91	300.12	44				2.30
124	Effley Falls L	09/19/2009	5.2	3.10	1.5	0.007	0.06	0.61	0.97	303.29	36				1.30
124	Effley Falls L	06/04/2010	5.5	2.95	1.5	0.008	0.09	0.03			28	7.59	18	1.9	3.00
124	Effley Falls L	06/20/2010	5.5	2.50	1.5	0.008	0.14	0.03	0.30	78.99	26	6.35	21		1.70
124	Effley Falls L	07/03/2010	5.5	2.55	1.5	0.008	0.12	0.05	0.39	102.40	42	6.31	24		1.90
124	Effley Falls L	07/17/2010	5.5	2.15	1.5	0.006	0.14	0.05	0.37	132.36	40	6.43	23		1.70
124	Effley Falls L	07/31/2010	5.5	2.45	1.5	0.007	0.11	0.03	0.45	137.50	32	6.34	18	2.3	3.30
124	Effley Falls L	08/13/2010	5.5	2.55	1.5	0.008	0.10	0.03	0.45	124.30	39	6.51	19		2.80
124	Effley Falls L	08/27/2010	5.5	2.30	1.5	0.009	0.12	0.06	0.29	69.14	36	6.77	22		2.40
124	Effley Falls L	09/06/2010	5.5	2.75	1.5	0.009	0.08	0.04	0.31	79.40	34	6.85	19		2.10
124	Effley Falls L	05/23/2011	5.5	2.30	1.5	0.008	0.21	0.03	0.36	94.81	50	6.20	20	1.2	2.00
124	Effley Falls L	06/03/2011	5.5	2.20	1.5	0.013	0.23	0.03	0.32	54.14	47	6.12	21		1.50
124	Effley Falls L	06/19/2011	5.5	2.75	1.5	0.006	0.18	0.03	0.29	98.31	38	6.75	39		1.80
124	Effley Falls L	07/01/2011	5.5	2.05	1.5	0.010	0.13	0.03	0.31	70.35	62	6.83	19		1.10
124	Effley Falls L	07/17/2011	5.5	2.05	1.5	0.006	0.11	0.03	0.35	124.43	42	6.43	18	2.1	3.50
124	Effley Falls L	07/17/2011	grab		bloom										
124	Effley Falls L	07/30/2011	5.5	2.85	1.5	0.006	0.12	0.03	0.45	163.38	39	8.15	17		3.10
124	Effley Falls L	08/14/2011	5.5	2.30	1.5	0.006	0.12	0.05	0.52	203.89	30	7.91	30		2.50
124	Effley Falls L	08/26/2011	5.5	2.25	1.5	0.009	0.10	0.04	0.42	104.07	44	6.66	19		1.70
124	Effley Falls L	05/31/2013	5.5	2.20	1.5	0.010	0.20	0.02	0.41	90.18	32	6.57	17	1.6	1.40
124	Effley Falls L	06/14/2013	5.5	1.45	1.5	0.008			0.42	123.49		6.19	15		1.60
124	Effley Falls L	06/29/2013	5.5	2.53	1.5	0.006	0.16	0.02	0.34	126.78	36	6.42	15		1.80
124	Effley Falls L	07/13/2013	5.5	2.10	1.5	0.010			0.39	89.47	47	6.26	15		2.00
124	Effley Falls L	07/26/2013	5.5	2.70	1.5	0.006	0.13	0.01	0.29	105.97	34	7.25	16		
124	Effley Falls L	08/08/2013	5.5	2.65	1.5	0.006			0.46	180.83	31	6.59	16		1.40
124	Effley Falls L	08/23/2013	5.5	2.35	1.5	0.005	0.10	0.03	0.42	190.67	29	6.99	17		2.30
124	Effley Falls L	09/06/2013				0.007			0.42	141.82	29	6.91	16		1.10
124	Effley Falls L	5/25/2014	5.5	2.30	1.5	0.006	0.24	0.03	0.42	146.32	43	7.28	15.2	1.6	1.20
124	Effley Falls L	6/7/2014	5.5	2.60	1.5	0.005			0.40	176.88	30	7.08	15.3		1.50
124	Effley Falls L	6/21/2014	5.5	2.10	1.5	0.007	0.17	0.08	0.57	184.09	50	5.76	15		3.60
124	Effley Falls L	7/5/2014	5.5	2.20	1.5	0.007			0.48	156.63	45	6.04	14.8		1.40
124	Effley Falls L	7/18/2014	5.5	2.60	1.5	0.006	0.18	0.06	0.49	184.72	32	7.25	17.2	1.7	1.60
124	Effley Falls L	8/1/2014	5.5	2.40	1.5	0.006			0.41	162.40	23	7.12	15.3		2.00
124	Effley Falls L	8/16/2014	5.5	2.40	1.5	0.005	0.15	0.03	0.43	187.00	29	6.80	16		1.40
124	Effley Falls L	8/29/2014	5.5	2.75	1.5	0.006			0.39	134.44	28	7.55	19.4		9.80
124	Effley Falls L	6/8/1998			5.0	0.005									
124	Effley Falls L	6/24/1998				0.016									
124	Effley Falls L	7/5/1998			4.5	0.023									
124	Effley Falls L	8/17/1998			5.5	0.019									
124	Effley Falls L	6/28/1999			6.0	0.005									
124	Effley Falls L	7/18/1999			5.0	0.007									
124	Effley Falls L	8/15/1999			5.0	0.005									
124	Effley Falls L	9/19/1999			5.5	0.005									

LNum	LName	Date	Type	TAir	TH2O	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
124	Effley Falls L	6/28/1997	epi	32	25	1	1	1												
124	Effley Falls L	7/12/1997	epi	28	23	1	1	1												
124	Effley Falls L	7/27/1997	epi	27	22	1	1	1	6											
124	Effley Falls L	8/9/1997	epi	24	24	1	1	1												
124	Effley Falls L	8/24/1997	epi	23	21	1	1	1	6											
124	Effley Falls L	9/22/1997	epi	15	18	1	1	1												
124	Effley Falls L	10/5/1997	epi			1	1	1												
124	Effley Falls L	6/8/1998	epi	16	17	1	1	2												
124	Effley Falls L	6/24/1998	epi	18	22															
124	Effley Falls L	7/5/1998	epi	25	21															
124	Effley Falls L	7/31/1998	epi	18	23	2	1	1												
124	Effley Falls L	8/17/1998	epi	25	23		1	2												
124	Effley Falls L	9/2/1998	epi	22	20	3	1	2												
124	Effley Falls L	9/14/1998	epi	22	19	3	1	2												
124	Effley Falls L	10/12/1998	epi	18	14	2	2	2												
124	Effley Falls L	6/28/1999	epi	27	24	2	2	2												
124	Effley Falls L	7/4/1999	epi	27	25	2	2	2												
124	Effley Falls L	7/18/1999	epi	27	25	2	2	2												
124	Effley Falls L	8/1/1999	epi	28	25	2	2	2												
124	Effley Falls L	8/15/1999	epi	24	22	2	2	2												
124	Effley Falls L	9/3/1999	epi	23	22	2	2	2												
124	Effley Falls L	9/19/1999	epi	18	19	2	2	2												
124	Effley Falls L	7/9/2000	epi	24	21	1	1	1	5											
124	Effley Falls L	7/24/2000	epi	25	21	1	1	1	6											
124	Effley Falls L	8/7/2000	epi	30	27	1	1	1												
124	Effley Falls L	8/21/2000	epi	26	18	1	1	1												
124	Effley Falls L	9/4/2000	epi	15	20	1	1	1	5											
124	Effley Falls L	9/18/2000	epi	20	16	1	1	1	5											
124	Effley Falls L	10/2/2000	epi	16	15	1	1	1												
124	Effley Falls L	10/16/2000	epi	16	12	1	1	1												
124	Effley Falls L	6/9/2001	epi	24	16	1	1	1	0											
124	Effley Falls L	6/24/2001	epi	20	20	1	1	1												
124	Effley Falls L	7/8/2001	epi	24	21	1	1	1	6											
124	Effley Falls L	7/22/2001	epi	30	24	1	1	1	6											
124	Effley Falls L	8/5/2001	epi	35	25	1	1	1	6											
124	Effley Falls L	8/20/2001	epi	25	24	1	1	1												
124	Effley Falls L	9/4/2001	epi	22	21	1	1	1												
124	Effley Falls L	9/15/2001	epi	20	19	1	1	1												
124	Effley Falls L	8/7/2004	epi	24	21	1	1	1	5											
124	Effley Falls L	8/20/2004	epi	20	20	1	1	1	5											
124	Effley Falls L	9/3/2004	epi	25	21	1	1	1	0											
124	Effley Falls L	9/17/2004	epi	16	19	1	1	1	5											
124	Effley Falls L	10/1/2004	epi	19	17	1	1	1	5											
124	Effley Falls L	10/15/2004	epi	19	14	1	1	3	58											
124	Effley Falls L	6/24/2005	epi	27	22	1	1	1	0											
124	Effley Falls L	7/9/2005	epi	19	23	1	1	1	5											
124	Effley Falls L	7/22/2005	epi	26	25	1	1	1	5											
124	Effley Falls L	8/3/2005	epi	29	26	1	1	1	8											
124	Effley Falls L	8/20/2005	epi	23	22	1	1	2	5											
124	Effley Falls L	9/3/2005	epi	26	22	1	1	1	0											
124	Effley Falls L	9/16/2005	epi	27	22	1	2	1	0											
124	Effley Falls L	9/30/2005	epi	16	16	1	2	3	5											
124	Effley Falls L	7/7/2006	epi	24	21	1	1	1	0											
124	Effley Falls L	7/21/2006	epi	30	26	1	2	1	0											
124	Effley Falls L	8/4/2006	epi	27	24	1	3	1	0											
124	Effley Falls L	8/18/2006	epi	28	22	1	3	1	0											
124	Effley Falls L	9/1/2006	epi	25	20	1	3	1	0											
124	Effley Falls L	9/14/2006	epi	19	18	1	3	2	5											
124	Effley Falls L	10/2/2006	epi	15	15	1	1	2	5											
124	Effley Falls L	10/13/2006	epi	6	12	1	1	3	5											
124	Effley Falls L	6/29/2007	epi	23	23	1	1	1	0											

LNum	LName	Date	Type	TAir	TH2O	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Ana-a	Cyl	FP-Chl	FP-BG	HAB form	Shore HAB
124	Effley Falls L	7/13/2007	epi	20	22	1	1	2	5											
124	Effley Falls L	7/27/2007	epi	30	24	1	1	1	0											
124	Effley Falls L	8/10/2007	epi	25	23	1	2	1	0											
124	Effley Falls L	8/24/2007	epi	26	21	1	2	1	0											
124	Effley Falls L	9/7/2007	epi	31	21	1	2	1	0											
124	Effley Falls L	9/21/2007	epi	30	20	1	1	1	0											
124	Effley Falls L	10/5/2007	epi	27	18	1	1	1	0											
124	Effley Falls L	6/27/2008	epi	26	21	1	1	1	0											
124	Effley Falls L	7/11/2008	epi	22	21	1	2	2	5											
124	Effley Falls L	7/25/2008	epi	25	23	1	3	1	0											
124	Effley Falls L	8/8/2008	epi	24	22	1	3	4	5											
124	Effley Falls L	8/22/2008	epi	31	21	1	3	1	0											
124	Effley Falls L	9/5/2008	epi	29	21	1	3	1	0											
124	Effley Falls L	9/18/2008	epi	16	18	1	3	3	5											
124	Effley Falls L	10/3/2008	epi	13	14	1	2	3	5											
124	Effley Falls L	06/14/2009	epi	29	21	1	1	1	5											
124	Effley Falls L	06/29/2009	epi	25	22	1	2	1	0											
124	Effley Falls L	07/10/2009	epi		21	1	3	1	0											
124	Effley Falls L	07/24/2009	epi	24	21	1	3	1	0											
124	Effley Falls L	08/07/2009	epi	24	22	2	3	1	0											
124	Effley Falls L	08/22/2009	epi	24	23	2	3	1	0											
124	Effley Falls L	09/05/2009	epi	24	21	2	3	1	0			10.8								
124	Effley Falls L	09/19/2009	epi	18	16	1	2	1	0			3.19								
124	Effley Falls L	06/04/2010	epi	27	21	1	1	1	5	0	0									
124	Effley Falls L	06/20/2010	epi	26	23	1	1	1	0	0	0									
124	Effley Falls L	07/03/2010	epi	25	20	1	3	1	0	0	0									
124	Effley Falls L	07/17/2010	epi	27	24	1	3	1	0	0	0									
124	Effley Falls L	07/31/2010	epi	24	22	1	3	1	0	0	0									
124	Effley Falls L	08/13/2010	epi	24	24	1	3	1	0	0	0									
124	Effley Falls L	08/27/2010	epi	21	20	2	3	1	0	0	0									
124	Effley Falls L	09/06/2010	epi	19	20	2	3	1	0	0	0	32.59								
124	Effley Falls L	05/23/2011	epi	23	16	1	1	1	5	0	0		2.40							
124	Effley Falls L	06/03/2011	epi	22	18	1	1	1	0	0	0		0.60							
124	Effley Falls L	06/19/2011	epi	28	22	1	2	1	0	0	0	5.40	3.60							
124	Effley Falls L	07/01/2011	epi	25	21	1	3	1	0	0	0	4.10	5.30							
124	Effley Falls L	07/17/2011	epi	30	26	1	3	1	0	0	0	4.20	4.50	0.56	<0.5	<0.1				
124	Effley Falls L	07/17/2011	bloom																	
124	Effley Falls L	07/30/2011	epi	29	25	2	3	1	0	7	0	3.70	3.60							
124	Effley Falls L	08/14/2011	epi	19	23	2	3	2	5	0	0	4.00	3.70	0.15	<0.4	<0.1				
124	Effley Falls L	08/26/2011	epi	26	23	1	3	1	0	0	QG	6.10	3.20							
124	Effley Falls L	05/31/2013	epi	26	18	1	2	1	0	0	0	1.70	1.50	<0.30	<0.630	0.90	0.00	1.70	I	I
124	Effley Falls L	06/14/2013	epi	25	17	1	2	1	0	0	0	1.30	1.80	<0.30	<0.440	1.40	0.00	1.30	I	I
124	Effley Falls L	06/29/2013	epi	24	21	1	3	1	0	0	0	0.40	1.60	<0.30	<0.650	1.50	0.00	0.40	I	I
124	Effley Falls L	07/13/2013	epi	21	22	1	3	3	5	0	0	1.70	1.70	<0.30	<0.490	1.00	0.00	1.70	I	I
124	Effley Falls L	07/26/2013	epi	26	24	1	3	1	0	0	0	1.20	1.30	<0.30	<0.400	0.10	0.00	1.20	I	I
124	Effley Falls L	08/08/2013	epi	29	23	1	3	1	0	0	0	2.70	1.20	<0.30	<0.340	0.90	0.00	2.70	I	I
124	Effley Falls L	08/23/2013	epi	25	22	1	3	1	0	0	0	1.10	1.60	<0.30	<0.390	0.90	0.00	1.10	I	I
124	Effley Falls L	09/06/2013	epi									1.10	1.20	<0.30	<1.100	0.90	0.00	1.10		
124	Effley Falls L	5/25/2014	epi	25	17	1	1	4	5	0	0	0.30	1.30	<1.83	<0.40	<0.001	1.00	0.00	I	I
124	Effley Falls L	6/7/2014	epi	25	18	1	2	1	0	0	0	0.20	1.60	<1.83	<0.17	<0.001	0.70	0.00	I	I
124	Effley Falls L	6/21/2014	epi	26	19	1	3	1	0	0	0	1.20	0.50	<0.58	<0.44	<0.002	1.10	0.00	I	I
124	Effley Falls L	7/5/2014	epi	25	22	1	3	1	0	0	0	1.00	0.30	<0.40	<0.21	<0.003	0.50	0.00	I	I
124	Effley Falls L	7/18/2014	epi	22	21	1	3	1	0	0	0	2.00	0.30	<0.39	<0.21	<0.003	1.00	0.00	I	I
124	Effley Falls L	8/1/2014	epi	25	21	1	3	1	0	0	0	1.60	0.30	<0.33	<0.01	<0.002	0.50	0.00	I	I
124	Effley Falls L	8/16/2014	epi	18	19	1	3	2	5	0	0			<0.39	<0.03	<0.001	0.30	0.00	I	I
124	Effley Falls L	8/29/2014	epi	26	21	1	3	1	0	0	0	2.10	0.30	<0.25	<0.14	<0.002	0.70	0.00	I	I
124	Effley Falls L	6/8/1998	hypo		16							10.8								

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	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/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)	0.3 ug/l	none
Cyl	Cylindrospermposin (ug/l)	0.1 ug/l	none
Lake Assessment			
QA	water quality assessment; 1 = crystal clear, 2 = not quite crystal clear, 3 = definite algae greenness, 4 = high algae levels, 5 = severely high algae levels		
QB	aquatic plant assessment; 1 = no plants visible, 2 = plants below surface, 3 = plants at surface, 4 = plants dense at surface, 5 = surface plant coverage		
QC	recreational assessment; 1 = could not be nicer, 2 = excellent, 3 = slightly impaired, 4 = substantially impaired, 5 = lake not usable		
QD	reasons for recreational assessment; 1 = poor water clarity, 2 = excessive weeds, 3 = too much algae, 4 = lake looks bad, 5 = poor weather, 6 = litter/surface debris, 7 = too many lake users, 8 = other		
QF, QG	Health and safety issues today (QF) and past week (QG); 0 = none, 1 = taste/odor, 2 = GI illness humans/animals, 3 = swimmers itch, 4 = algae blooms, 5 = dead fish, 6 = unusual animals, 7 = other		
HAB form, Shore HAB	HAB evaluation; A=spilled paint, B=pea soup, C=streaks, D=green dots, E=bubbling scum, F=green/brown tint, G=duckweed, H=other, I=no bloom		

Appendix B: Priority Waterbody Listing for Effley Falls Lake

Effley Falls Reservoir (0801-0172)   **Impaired Seg**

Waterbody Location Information   Revised: 03/12/2007

Water Index No:	Ont 19- 40 (portion 5)/P426	**Drain Basin:**	Black River
Hydro Unit Code:	04150101/150 **Str Class:** C(T)		Black River
Waterbody Type:	Lake(R) (Mesotrophic)	**Reg/County:**	6/Lewis Co. (25)
Waterbody Size:	339.3 Acres	**Quad Map:**	BELFORT (F-19-2)
Seg Description:	entire reservoir		

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

Use(s) Impacted	Severity	Problem Documentation
FISH CONSUMPTION	Impaired	Known
Aquatic Life	Stressed	Suspected

Type of Pollutant(s)
Known:	METALS (mercury)
Suspected:	Acid/Base (pH)
Possible:	- - -

Source(s) of Pollutant(s)
Known:	- - -
Suspected:	ATMOSPH. DEPOSITION
Possible:	- - -

Resolution/Management Information

Issue Resolvability:	1 (Needs Verification/Study (see STATUS))	
Verification Status:	4 (Source Identified, Strategy Needed)	
Lead Agency/Office:	ext/EPA	**Resolution Potential:** Low
TMDL/303d Status:	2b (Multiple Segment/Categorical Water, Fish Consumption)	

Further Details

Fish consumption in Effley Falls Reservoir is known to be impaired by mercury contamination, a result of atmospheric deposition. Slightly lower pH readings indicating lake acidity have also been documented and are considered to be stressing aquatic life support in the lake.

Fish consumption in Effley Falls Reservoir is impaired due to a NYS DOH health advisory that recommends eating no more than one meal per month of chain pickerel and smallmouth bass because of elevated mercury levels. The source of mercury is considered to be atmospheric deposition, as there are not other apparent sources in the lake watershed. The advisory for this lake was first issued in 2004-05. (2006-07 NYS DOH Health Advisories and DEC/DFWMR, Habitat, December 2006).

Effley Falls Reservoir has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1997 thru 2001 and from 2004 continuing through the present. An Interpretive Summary report of the findings of this sampling was published in 2006. These data indicate that the lake continues to be best characterized as mesoligotrophic, or moderately unproductive. Phosphorus levels in the lake do not typically exceed the state guidance

values indicating impacted/stressed recreational uses. Corresponding transparency measurements typically exceed what is recommended for swimming beaches. Measurements of pH regularly fall below the state water quality range of 6.5 to 8.5 indicating acidity. The lake water is moderately to highly colored, which is also typical of northwestern Adirondack Lakes and considered to be normal. (DEC/DOW, BWAM/CSLAP, July 2006)

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. These assessment indicate recreational suitability of the lake to be very favorable. The recreational suitability of the lake is described most frequently as either "cold not be nicer" or "excellent." The lake itself is most often described as "crystal clear" or "not quite crystal clear," an assessment that is somewhat higher than expected based on water clarity measurements in the lake but likely reflects recognition of natural color of the lake. Assessments have noted that aquatic plants rarely grows to the lake surface. Aquatic plants that are present are native species and have not been cited as impacting recreational uses. (DEC/DOW, BWAM/CSLAP, July 2006)

This lake waterbody is designated class C(T), suitable for general recreation use and aquatic life support, but not as a water supply, public bathing beach. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life.

Effley Falls Reservoir is included on the NYS 2006 Section 303(d) List of Impaired Waters. The lake is included on Part 2b of the List as a Fish Consumption Water.

Operation of the hydroelectric facility and dam cause water level and flow fluctuations in the reservoir. However, requirements of the most recent FERC relicensing of this operation in August 1996 include limiting the water level fluctuations in the reservoir to protect the fishery. The relicensing also requires the maintenance of a minimum flow downstream of the reservoir which may enhance the fishery in the Beaver River. (DEC/Reg 6 Fisheries, August 1998)

Smaller unnamed ponds (P427,P428) are also included in this segment.

Appendix C- Long Term Trends: Effley Falls Lake

Long Term Trends: Water Clarity
- Decreasing since '07, but no clear long trend
- Readings typical of *mesoeutrophic* lakes, consistent with algae but lower than TP
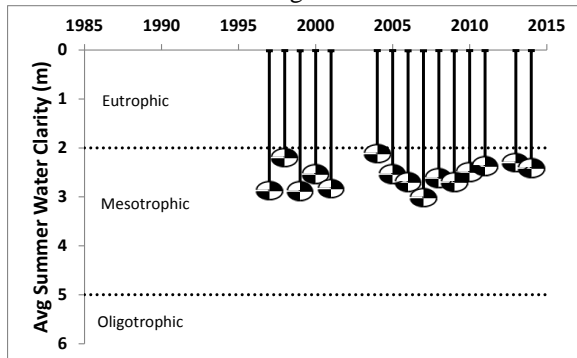
Long Term Trends: Lake Perception
- Weeds increasing; recreation stable
- Recreational perception not closely linked to changes in water quality or weeds
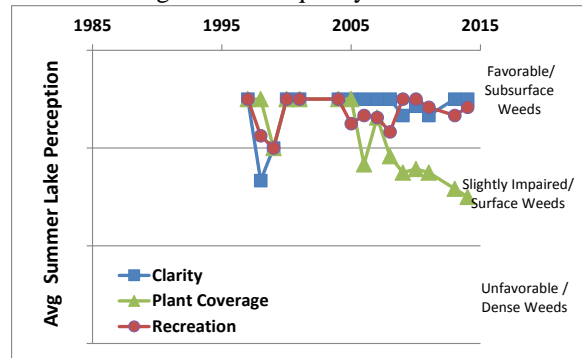
Long Term Trends: Phosphorus
- Increased '05 to '10, but decreased since
- Most readings typical of *oligotrophic* lakes, lower than expected given algae and clarity
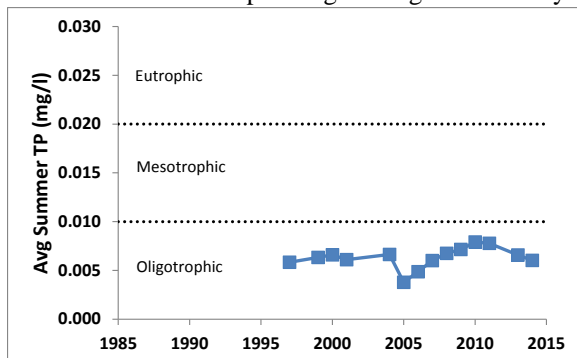
Long Term Trends: Bottom Phosphorus
- Bottom TP usually close to surface TP
- TP and temp data usually shows little TP loading from bottom to surface waters
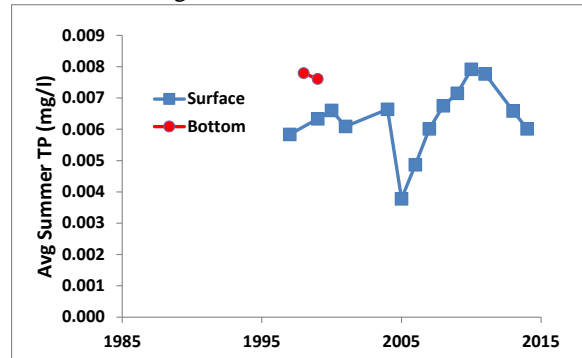
Long Term Trends: Chlorophyll a
- Algae levels vary from year to year
- Most readings typical of *mesoligotrophic* lakes, consistent with TP, lower than clarity
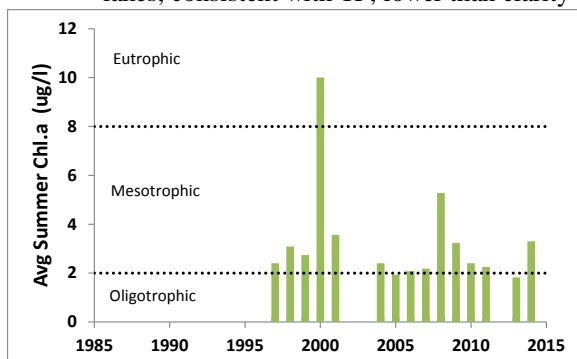
Long Term Trends: N:P Ratio
- No trends apparent
- Most readings indicate phosphorus limits algae growth
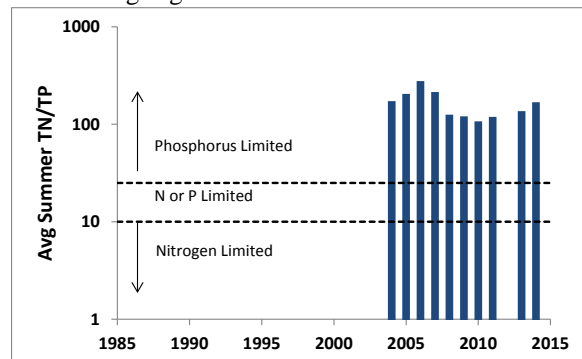
Long Term Trends: Nitrogen

- NOx and TN rising slightly since '08
- Low nitrate, ammonia and total nitrogen readings with some natural variability
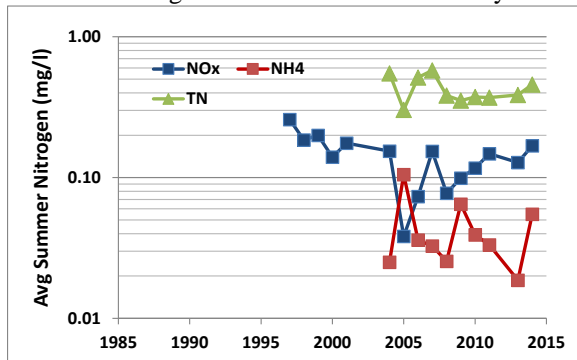
Long Term Trends: Color

- Color may affect water clarity
- Most readings typical of *weakly colored to colored* (probably due to natural organics)
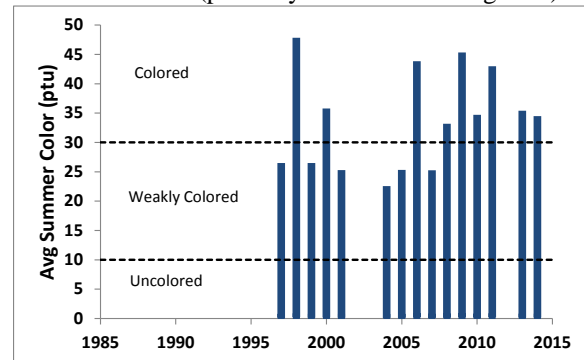
Long Term Trends: pH

- pH variable from year to year
- Most readings typical of *circumneutral* to *slightly acidic* lakes
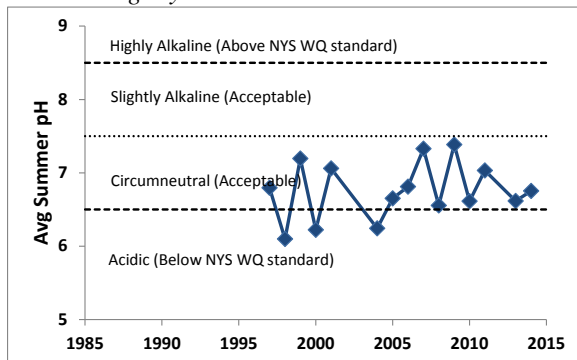
Long Term Trends: Calcium

- No trends apparent
- Most readings indicate low susceptibility to zebra mussels, which are not found in lake
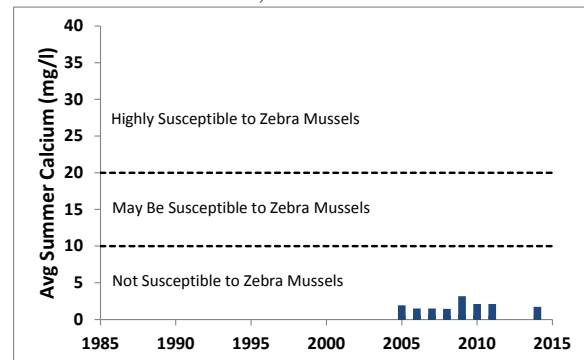
Long Term Trends: Conductivity

- Conductivity usually very low and stable
- Most readings still typical of lakes with *soft water*
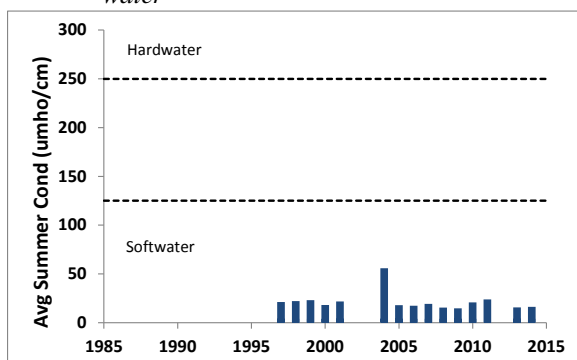
Long Term Trends: Water Temperature

- No trends apparent; perhaps slight drop
- Relatively high deepwater temperature indicates weak thermal layer
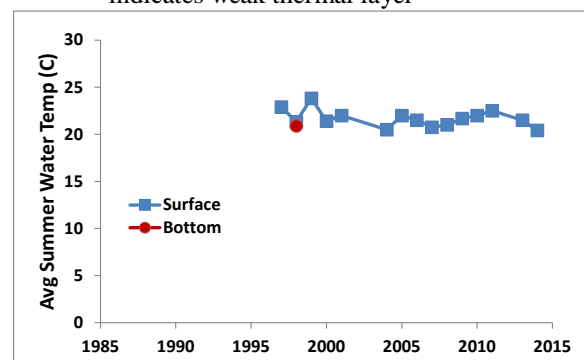
Appendix D:
Algae Testing Results from SUNY ESF Study

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 30 ug/l blue green chlorophyll a and 20 ug/l microcystin-LR (based on the World Health Organization (WHO) threshold for unsafe swimming conditions) and the WHO provisional criteria for long-term protection of treated water supplies (= 1 ug/l microcystin-LR). The data for algae types are drawn from a high end fluorometer used by SUNY ESF. While these results are useful for timely approximation of lake conditions, they are not as accurate as the total chlorophyll results measured as a regular part of CSLAP since 1986 in all open water samples. Therefore these results are used judiciously in the assessment of sampled waterbodies.

Two separate samples are evaluated. A sample is taken at the CSLAP sample point at the deepest point of the lake at every sample session. In addition, shoreline samples can be taken when a bloom is visible. It should be noted that shoreline conditions can vary significantly over time and from one location to another. The shoreline bloom sampling results summarized below are not collected as routinely as open water samples, and therefore represent snapshots in time. It is assumed that sampling results showing high blue green algae and/or toxin levels indicate that algae blooms may be common and/or widespread on these lakes. However, the absence of elevated blue green algae and toxin levels does not assure the lack of shoreline blooms on these lakes. Elevated open water readings may indicate a higher likelihood of shoreline blooms, but in some lakes, these shoreline blooms have not been (well) documented.
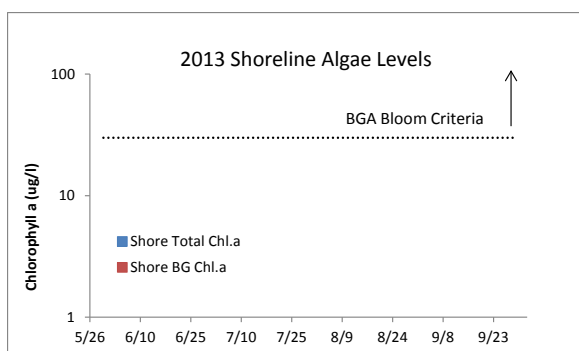
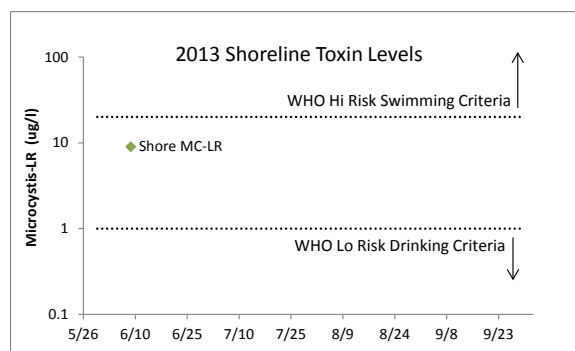The results from these samples are summarized within the CSLAP report for the lake.
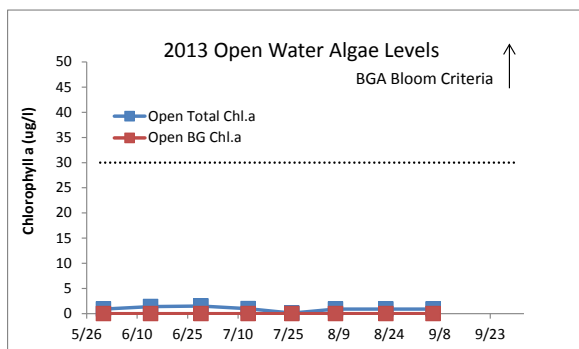
Figure D1:
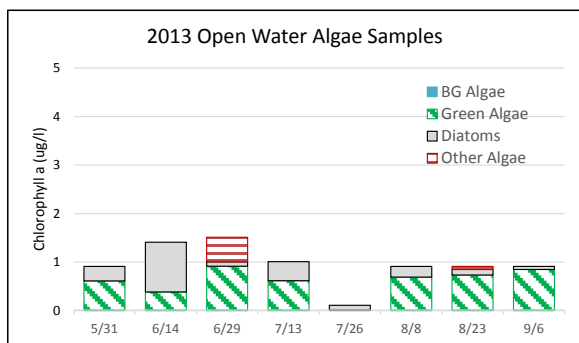2013 Open Water Total and BGA Chl.a
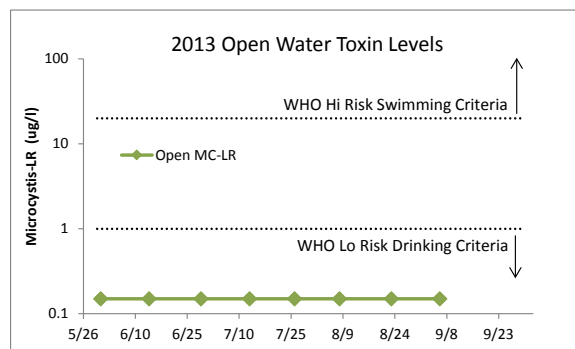
Figure D2:
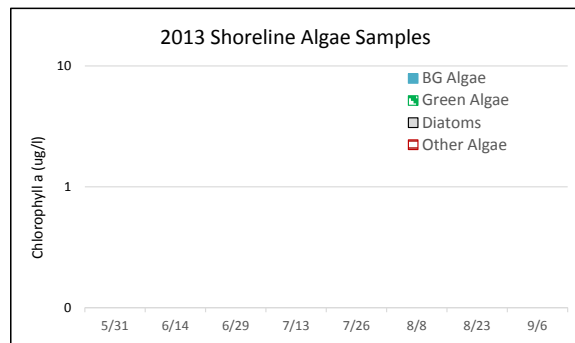2013 Open Water Microcystin-LR

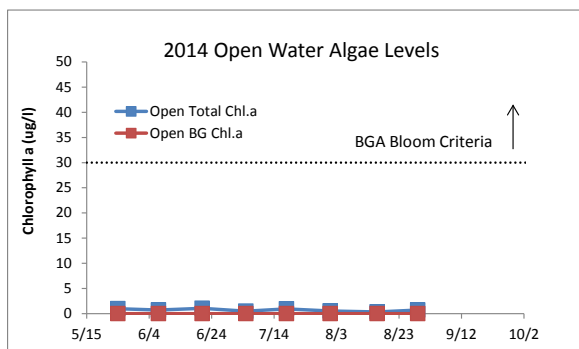**Figure D3:**
2013 Shoreline Total and BGA Chl.a

Figure D4:
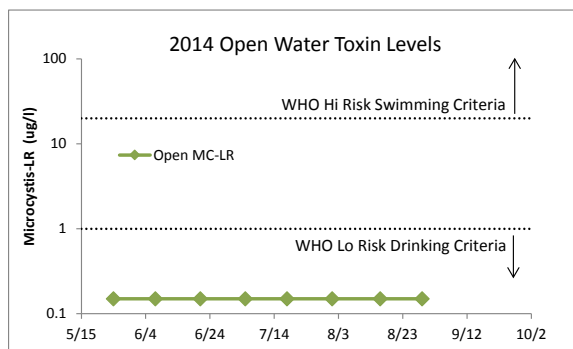2013 Shoreline Microcystin-LR

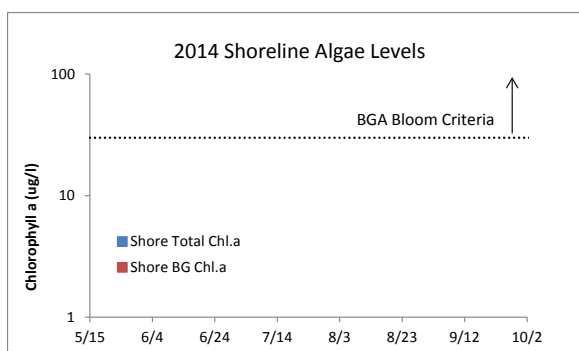**Figure D5:**
2013 Open Water Algae Types

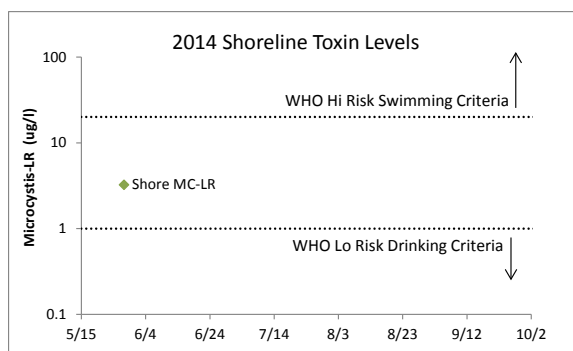**Figure D6:**
2013 Shoreline Algae Types

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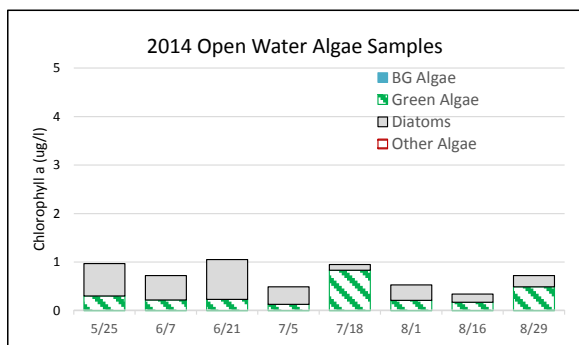2014 Open Water Total and BGA Chl.a

Figure D8:
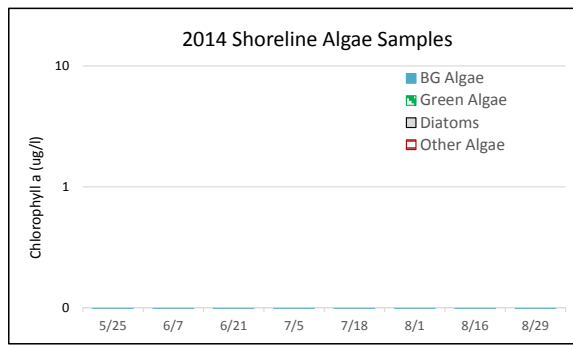2014 Open Water Microcystin-LR

Figure D9:
2014 Shoreline Total and BGA Chl.a

Figure D10:
2014 Shoreline Microcystin-LR

Figure D11:
2014 Open Water Algae Types

Figure D12:
2014 Shoreline Algae Types

The table below shows the invasive aquatic plants and animals that have been documented in Lewis 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 - Lewis County			
Waterbody	**Kingdom**	**Common name**	**Scientific name**
Effley Falls Lake	Animal	Mud bithynia snail	*Bithynia tentaculata*
Lake Bonaparte	Plant	Eurasian watermilfoil	*Myriophyllum spicatum*
Soft Maple Reservoir	Plant	Variable watermilfoil	*Myriophylluum heterophyllum*

Appendix F: Watershed and Land Use Map for Effley Falls Lake

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

Land Use	% Watershed
Open water	9.0%
Developed Open Space	0.0%
Developed Medium Intensity	0.0%
Barren Land	0.8%
Deciduous Forest	54.1%
Evergreen Forest	15.3%
Mixed Forest	8.8%
Scrub/Shrub	5.5%
Grassland/Herbaceous	0.1%
Pasture/Hay	0.0%
Cultivated Crops	0.0%
Woody Wetlands	5.1%
Emergent Herbaceous Wetland	1.2%

Effley Falls Lake Watershed Land Uses

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock, Sand, Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grasslands/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands