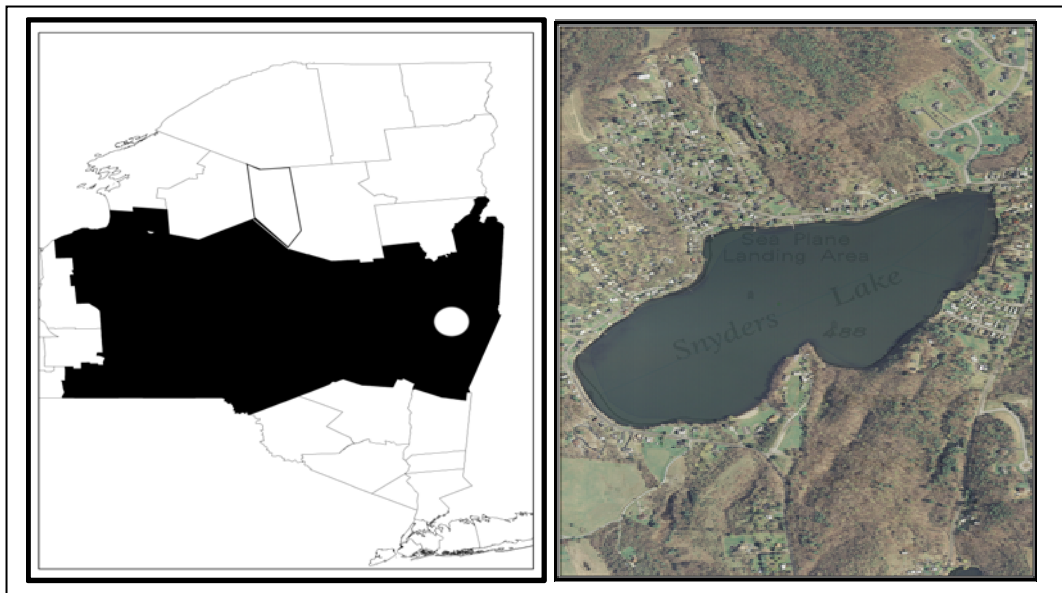


CSLAP 2011 Lake Water Quality Summary: Snyders Lake

General Lake Information

Location	Town of North Greenbush
County	Rensselaer
Basin	Lower Hudson River
Size	44 hectares (109 acres)
Lake Origins	Natural
Watershed Area	320 hectares (790 acres)
Retention Time	1.6 years
Mean Depth	5.5 meters
Sounding Depth	11 meters
Public Access?	no (town beach)
Major Tributaries	no named tribs
Lake Tributary To...	unnamed outlet to Wynants Kill to Hudson River
WQ Classification	B (contact recreation = swimming)
Lake Outlet Latitude	42.666
Lake Outlet Longitude	-73.629
Sampling Years	1996-2001, 2010-2011
2011 Samplers	Stanton Castle, John Snyder
Main Contact	Jean Holmes

Lake Map



Background

Snyders Lake is a 109 acre, class B lake in the town of North Greenbush in Rensselaer County, in Capital District area of New York State. Snyders Lake was first sampled as part of CSLAP in 1997.

It is one of 10 CSLAP lakes among the more than 55 lakes found in Rensselaer County, and one of 41 CSLAP lakes among the more than 360 lakes and ponds in the Lower Hudson River drainage basin.

Lake Uses

Snyders Lake 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 power boating and swimming, through residential shoreline access to the lake. There is a town beach and camp on the south shore, and residential access to the lake through an informal boat launch on the north shore.

It is not known if Snyders Lake has been stocked by lake residents or municipal officials. Fish species in the lake include bluegill, brown bullhead, largemouth bass, pumpkinseed sunfish, walleye, and yellow perch.

General statewide fishing regulations are applicable in Snyders Lake.

There are no lake-specific fish consumption advisories on Snyders Lake.

Historical Water Quality Data

CSLAP sampling was conducted on Snyders Lake from 1996 to 2001, and in 2010 to 2011. The CSLAP reports for each of the past several years can be found on the NYSFOLA website at <http://nysfola.mylaketown.com>. The 2009 and 2010 CSLAP reports for Snyders Lake will also be found on the NYSDEC web page at <http://www.dec.ny.gov/lands/77846.html>.

Snyders Lake was sampled by the Conservation Department (the predecessor to the NYSDEC) as part of the Biological Survey of 1934 (depth profiles and some biological data), and in 1962, and by the NYSDEC as part of the Lake Classification and Inventory Survey in 1976, 1982, 1984, 1989, 1994 and 1996. The lake was sampled by the NYSDEC as part of a TMDL (total maximum daily load) evaluation in 2009. It was also sampled by the US Environmental Protection Agency as part of the Environmental Monitoring and Assessment Program (EMAP) in 1991. The results from these monitoring programs showed some variability in water quality results from study to study, consistent with bloom-driven variability exhibited in some of the more contemporary studies of the lake.

None of the unnamed tributaries to or outlet of the lake has been sampled as part of the state Rotating Intensive Basins (RIBS) stream chemistry or state macroinvertebrate biological monitoring program.

Lake Association and Management History

Snyders Lake has been served by the L.A.K.E. Association since 1994 and the sister organization Snyders Lake Community Association since 1997. The L.A.K.E. Association is involved in a number of lake improvement and social activities, including:

- Developing a lake management plan
- Applying for lake management grants
- Conducting regular association meetings and newsletters
- Creating a neighborhood watch awareness brochure
- Conducting aquatic plant control via herbicide treatments
- Evaluate lake problems associated with invasive weeds and animals, harmful algal blooms, and stormwater runoff

The lake association maintains a web site at <http://web.me.com/snyderslake/Lake/Home.html>

Summary of 2011 CSLAP Sampling Results

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

The Lake Condition Summary Table below and Appendix B compare annual and monthly results from 2011 to those measured in previous CSLAP sampling seasons. The pertinent deviations from normal conditions are discussed below.

Evaluation of Eutrophication Indicators

Average total phosphorus readings were higher than normal in 2011, although if the TP readings associated with a single bloom sample in early August, overall readings were close to normal. Chlorophyll *a* readings were also higher than normal in August and September, but average 2011 readings were only slightly higher than normal, and none of these trophic indicators has exhibited a clear long-term trend. Trophic conditions are highly variable in the lake, and have also been influenced by periodic and unpredictable blooms and the zebra mussel introduction to the lake in the last several years. The lake can be characterized as *mesoeutrophic*, or moderately productive, based on water clarity, chlorophyll *a* (both typical of *mesotrophic* lakes) and total phosphorus readings (typical of *eutrophic* lakes), although chlorophyll *a* readings were typical of *eutrophic* lakes in 2011. Lake productivity typically increases during the summer, as manifested in decreasing water clarity and increasing nutrient and algae levels. This was generally apparent in 2011. The trophic state indices (TSI) evaluation in 2011 show that water clarity readings were higher than expected given the nutrient and algae levels, but this may have been due to spotty algae growth and periodic blooms not strongly influencing lakewide water transparency readings. Overall trophic conditions are summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Potable Water Indicators

Algae levels are at times 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, but the lake is not classified for use for drinking water (and algal blooms are very sporadic). Deepwater phosphorus readings are elevated, but deepwater ammonia readings are similar to those measured at the lake surface, so deepwater intakes may support “unofficial” 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

NO_x and color readings were higher than normal in 2011, although these higher readings did not indicate any problems. pH, conductivity and ammonia readings were lower than normal in 2011, particularly in late summer (after Hurricane Irene and Tropical Storm Lee). However, none of these indicators has exhibited a long-term trend. It is likely that the small changes in these other indicators have been within the normal range of variability in the lake. Overall limnological conditions are summarized in the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Biological Condition

Macrophyte surveys have been conducted each year by the NYSDEC as a means to evaluate the late 1990s and mid 2000s aquatic herbicide treatments of the lake. The 2010 and 2011 surveys found at least 16 different aquatic plant species, including three exotic plants—Eurasian watermilfoil (*Myriophyllum spicatum*), curly-leaved pondweed (*Potamogeton crispus*), and brittle naiad (*Najas minor*). While the most extensive plant growth in 2010 was associated with common waterweed (*Elodea canadensis*), a native plant, this plant was barely found in 2011, indicating normal variability. The number of aquatic plant species in the lake increased significantly after the herbicide treatment, and has been relatively stable in recent years. However, the biological survey of the lake in 1932 found at least 25 different aquatic plant species. The modified floristic quality index (FQI) for the lake indicates that the quality of the aquatic plant community is “fair;” the modified FQI for the lake in 1932 would have been considered “excellent.”

The composition of the fish community is comprised of at least four warmwater fish species, and at least two coolwater fish species. This suggests that the lake can most likely be characterized as a coolwater fishery. It is not likely that this represents a complete inventory of the fish species in the lake. 11 fish species were found in the lake in the 1932 biological survey. The relative (expected) weight of yellow perch appears to be lower than expected given the length of the fish, based on DEC fish collection data.

Phytoplankton, zooplankton, and macroinvertebrates have not been evaluated through CSLAP in Snyders Lake, although the lake has historically suffered from occasional blooms of *Oscillatoria rubescens*, a cyanobacteria (bluegreen alga) that has a reddish appearance.

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 and aquatic plant coverage were close to normal in 2011, despite the periodic blooms. None of these measures of lake perception has exhibited a clear long-term trend, although this assessment may change with future data. Lake perception does not normally exhibit any clear seasonal trends, although lake perception degraded slightly during the summer of 2011, coincident with (and attributed to) the onset of blooms. Overall lake perception is summarized on the Lake Scorecard and Lake Condition Summary Table.

Evaluation of Local Climate Change

Air temperatures in the summer index period were higher than normal in 2011, but neither air nor water temperature readings has changed significantly in the last fifteen years. It is not known

if this is an indication of a lack of local climate change or if these (climate) 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. Phycocyanin readings at times exceed the levels indicating susceptibility for harmful algal blooms (HABs), and shoreline phycocyanin levels can be very highly elevated. Open water algal toxins data are not available, but shoreline microcystis levels at times are well above the threshold associated with safe swimming. Lake residents are advised to avoid direct contact with algal blooms.

Lake Condition Summary

Category	Indicator	Min	97-11 Avg	Max	2011 Avg	Classification	2011 Change?	Long-term Change?
Eutrophication Indicators	Water Clarity	0.80	3.66	6.40	3.60	Mesotrophic	Within Normal Range	No Change
	Chlorophyll <i>a</i>	0.10	7.37	69.90	10.21	Mesotrophic	Within Normal Range	No Change
	Total Phosphorus	0.009	0.021	0.114	0.029	Eutrophic	Higher than Normal	No Change
Potable Water Indicators	Hypolimnetic NH4	0.01	0.10	0.30	0.18	Close to Surface NH4 Readings	Higher than Normal	Not known
	Hypolimnetic As					Not measured through CSLAP		
	Hypolimnetic Iron					Not measured through CSLAP		
	Hypolimnetic Mn					Not measured through CSLAP		
Limnological Indicators	Hypolimnetic TP	0.009	0.044	0.454	0.044	Close to Surface TP Readings	Within Normal Range	Not known
	Nitrate + Nitrite	0.01	0.02	0.11	0.04	Low NOx	Higher than Normal	No Change
	Ammonia	0.01	0.06	0.27	0.05	Low Ammonia	Lower Than Normal	Not yet known
	Total Nitrogen	0.21	0.49	0.80	0.52	Low Total Nitrogen	Within Normal Range	Not yet known
	pH	6.67	8.00	9.13	7.55	Alkaline	Lower Than Normal	No Change
	Specific Conductance	181	327	382	293	Hardwater	Lower Than Normal	No Change
	True Color	1	7	25	16	Uncolored	Higher than Normal	Not yet known
	Calcium	23.0	25.2	28.4	28.0	Highly Susceptible to Zebra Mussels	Within Normal Range	Not yet known
Lake Perception	WQ Assessment	1	2.3	5	2.3	Not Quite Crystal Clear	Within Normal Range	No Change
	Plant Coverage	1	3.1	4	3.0	Surface Plant Growth	Within Normal Range	No Change
	Rec. Assessment	2	2.8	5	3.4	Slightly Impaired	Within Normal Range	No Change
Biological Condition	Phytoplankton					Occasional incidences of Oscillatoria rubescens	Not known	Not known
	Macrophytes					Fair quality of the aquatic plant community	Not known	Not known
	Zooplankton					Not measured through CSLAP	Not known	Not known
	Macroinvertebrates					Not measured through CSLAP	Not known	Not known
	Fish					Coolwater fishery	Not known	Not known
	Invasive Species					Zebra mussels, Eurasian watermilfoil, curly-leafed pondweed, brittle naiad	Not known	Not known
Local Climate Change	Air Temperature	8	22.8	38	27.3		Higher Than Normal	No Change
	Water Temperature	15	21.9	28	20.0		Within Normal Range	No Change
Harmful Algal Blooms	Open Water Phycocyanin	6	74	230	75	Some readings indicate moderate to high risk of BGA	Not known	Not known
	Open Water Microcystis					No lakewide toxins data	Not known	Not known
	Shoreline Phycocyanin	1945920	1945920	1945920		Shoreline BGA blooms frequent to persistent	Not known	Not known
	Shoreline Microcystis	1.9	42.5	114.3	6.6	Shoreline bloom toxins at times above drinking water and 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

Snyders Lake is presently among the lakes listed on the 2008 Lower Hudson River Basin Priority Waterbody List (PWL), with recreation listed as *stressed* due to excessive algae and weeds. The PWL listing for Snyders Lake is listed in Appendix C.

Potable Water (Drinking Water)

The CSLAP dataset at Snyders 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. The occasional algae blooms at the surface and in the deep water, and the presence of algal toxins may impact any "unofficial" potable water use from the lake.

Contact Recreation (Swimming)

The CSLAP dataset at Snyders Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggests that swimming and contact recreation may be *stressed* by excessive weeds, occasional algal blooms, and the presence of shoreline algal toxins, particularly if the latter are found during the summer recreational season. Additional information about bacterial levels is needed to evaluate the safety of the water for swimming.

Non-Contact Recreation (Boating and Fishing)

The CSLAP dataset on Snyders Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that non-contact recreation may be *stressed* by excessive weeds, particularly Eurasian watermilfoil (although the density of some native plants, such as common waterweed, should continue to be watched). These impacts vary in association with plant management actions and the variability of plant communities in the lake.

Aquatic Life

The CSLAP dataset on Snyders Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aquatic life may be *stressed* by zebra mussels and the presence of invasive weeds, although additional data are needed to evaluate the food and habitat conditions for aquatic organisms in the lake.

Aesthetics

The CSLAP dataset on Snyders Lake, including water chemistry data, physical measurements, and volunteer samplers' perception data, suggest that aesthetics may be *stressed* by excessive weeds and algae. At times the lake was regularly cited by the CSLAP volunteers as "looks bad."

Fish Consumption

There are no fish consumption advisories posted for Snyders Lake.

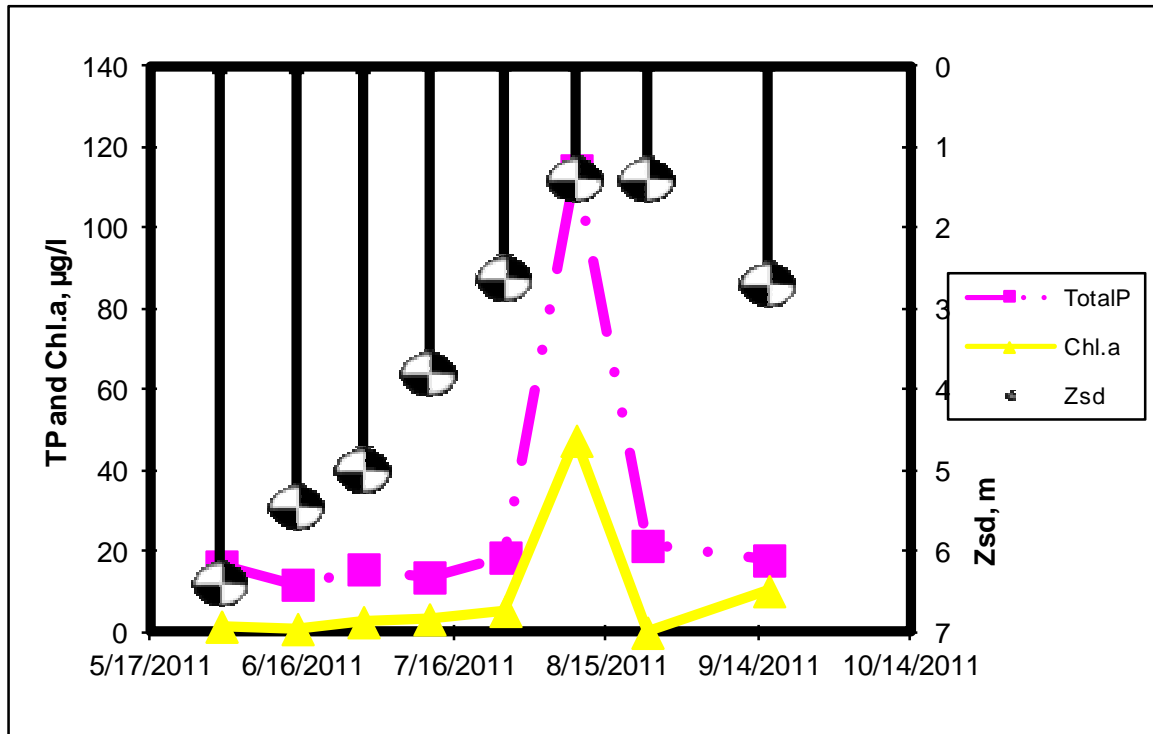
Additional Comments and Recommendations

Continued aquatic plant survey data may help to determine if the aquatic plant community is dominated by exotic plants, or if the occasional management of the nuisance weed problems in the lake has resulted in a shift to dominance by native plant species. The lake should continue to be evaluated for harmful algal blooms.

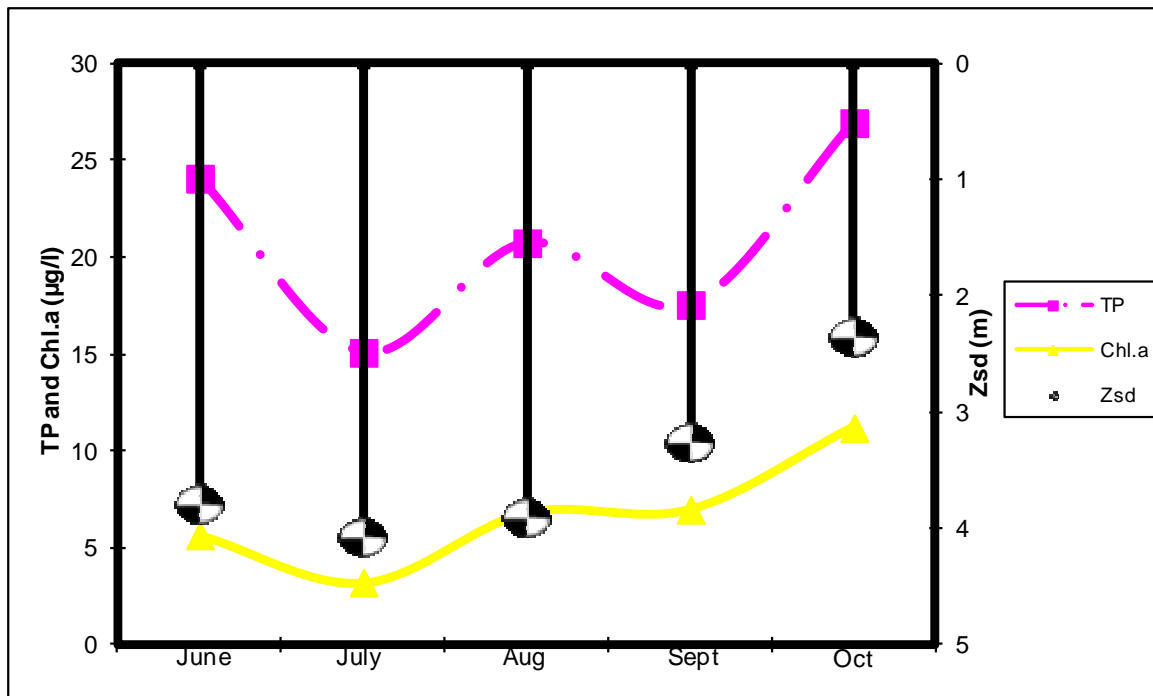
Aquatic Plant IDs-2011

Separate reports are issued summarizing the annual aquatic plant survey results from the lake.

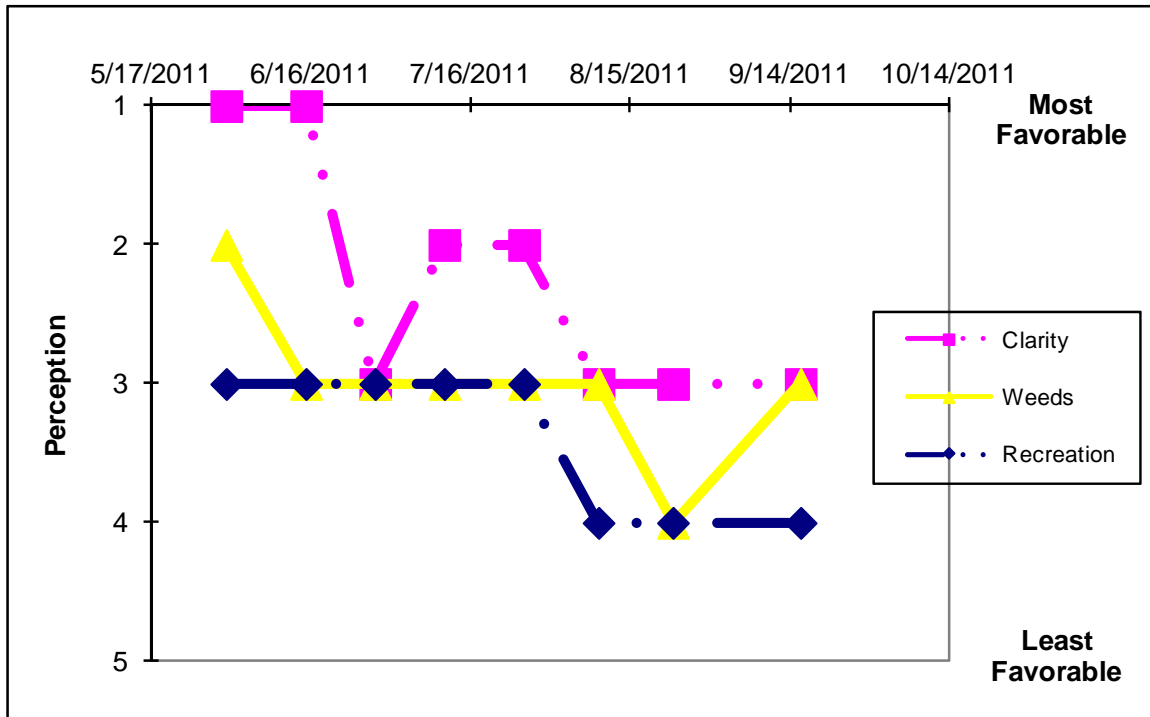
Time Series: Trophic Indicators, 2011



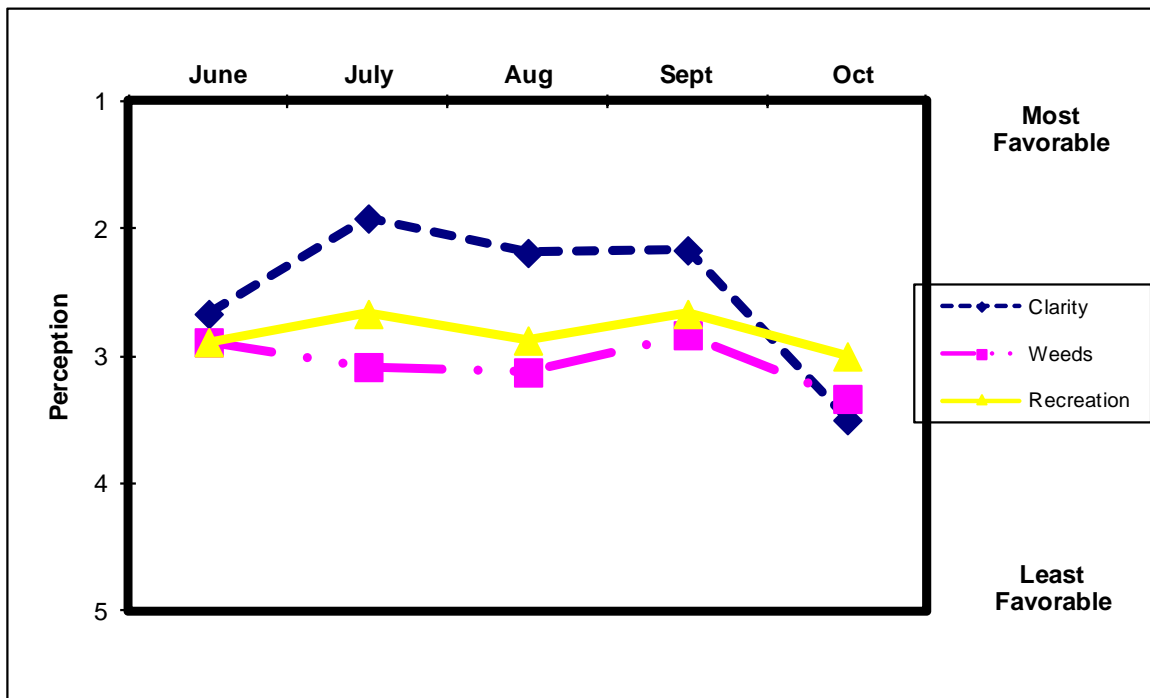
Time Series: Trophic Indicators, Typical Year (1997-2011)



Time Series: Lake Perception Indicators, 2011



Time Series: Lake Perception Indicators, Typical Year (1997-2011)



Appendix A- CSLAP Water Quality Sampling Results for Snyders Lake

LNum	LName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
140	Snyders L	5/28/1996	11.0	3.60	1.5	0.022	0.02				5	7.46	329		4.70
140	Snyders L	6/18/1996	10.0	5.50	1.5		0.03				1	7.68	319		3.80
140	Snyders L	7/11/1996	9.7	3.35	1.5	0.011	0.01				5	7.16	315		4.30
140	Snyders L	8/6/1996	9.7	4.30	1.5	0.012	0.01				5	7.94	312		3.20
140	Snyders L	8/28/1996	9.7	4.30	1.5	0.009	0.01				5	6.67	280		5.30
140	Snyders L	10/7/1996	8.8	1.65	1.5	0.025	0.01				4	7.67	322		9.34
140	Snyders L	11/12/1996	9.9	0.80	1.5	0.081	0.03				7	7.74	331		69.90
140	Snyders L	6/3/1997	11.0	1.95	1.5	0.029	0.01				10	8.75	332		8.16
140	Snyders L	7/16/1997	10.7	3.35	1.5	0.011	0.01				5	7.84	330		3.20
140	Snyders L	8/17/1997	11.2	3.35	1.5	0.013	0.01				6	8.18	331		5.92
140	Snyders L	10/7/1997	11.0	1.20	1.5	0.028	0.01				5	9.09	323		19.80
140	Snyders L	8/11/1998	8.5	3.88	1.5		0.01				1	8.53	336		6.52
140	Snyders L	8/25/1998	8	3.63	1.5		0.01				2	8.74	337		10.60
140	Snyders L	9/16/1998	8.5	3.50	1.5	0.021	0.01				3	8.26	349		5.96
140	Snyders L	10/6/1998	9	1.63	1.5	0.011	0.01				2	8.11	353		6.54
140	Snyders L	6/15/1999	9.0	6.00	1.5	0.015	0.01				8	8.17	380		1.08
140	Snyders L	6/27/1999	8.9	4.63	1.5	0.016	0.01				5	8.44	378		1.66
140	Snyders L	7/12/1999	8.5	2.88	1.5	0.019	0.01				5	8.59	371		4.38
140	Snyders L	7/26/1999	8.5	3.80	1.5	0.015	0.01				5	8.78	358		4.40
140	Snyders L	8/9/1999	8.5	5.50	1.5	0.018	0.01				3	8.13	373		1.88
140	Snyders L	8/23/1999	8.5	3.50		0.018	0.01				2	7.97	362		4.45
140	Snyders L	9/14/1999	8.5	3.25	1.5	0.018	0.01				6	8.40	382		4.23
140	Snyders L	10/5/1999	9.2	1.38	1.5	0.024	0.01				8	7.74	371		24.60
140	Snyders L	6/5/2000	9.0	0.88	1.5	0.044	0.01				5	9.13	339		15.20
140	Snyders L	6/19/2000	9.0	1.13	1.5	0.044	0.01				8	8.71	307		12.40
140	Snyders L	7/10/2000	9.0	3.38	1.5	0.020	0.01				3	8.12	319		4.83
140	Snyders L	7/26/2000	9.0	5.88	1.5	0.015	0.01				3	7.94	315		2.02
140	Snyders L	8/8/2000	8.3	3.50	1.5	0.015					4	7.88	315		2.61
140	Snyders L	8/28/2000	9.0	5.63	1.5	0.011					6	7.78	306		1.70
140	Snyders L	9/11/2000	7.8	5.25	1.5	0.015	0.01				6	7.86	311		2.64
140	Snyders L	10/2/2000	8.0	4.63	1.5	0.025					7	7.56	327		6.65
140	Snyders L	6/19/2001	8.8	3.63	1.5	0.017	0.01				4	6.85	357		5.10
140	Snyders L	7/2/2001	9.0	4.88	1.5	0.019	0.01				3	8.75	337		1.98
140	Snyders L	7/18/2001	8.4	4.63	1.5	0.013	0.01				3	8.00	339		3.29
140	Snyders L	8/8/2001	9.0	4.88	1.5	0.010	0.01				1	8.91	332		1.34
140	Snyders L	8/13/2001	8.4	4.63	1.5	0.013	0.01				1	7.13	337		2.36
140	Snyders L	8/29/2001	8.0	3.50	1.5	0.010	0.01				2	8.06	336		3.31
140	Snyders L	9/17/2001	8.5	2.75	1.5	0.016	0.01				6	8.67	336		8.21
140	Snyders L	9/24/2001	8.3	2.13	1.5	0.017	0.01				6	8.79	334		10.51
140	Snyders L	7/12/2010	9.0	4.90	1.5	0.015	0.01	0.01	0.21	29.57	10	8.09	302	23	0.10
140	Snyders L	7/29/2010	8.8	5.50	1.5	0.011	0.02	0.11	0.48	98.49	16	8.17	297		1.30
140	Snyders L	8/7/2010	8.7	3.75	1.5	0.017	0.01	0.02	0.38	48.50	20	8.28	311		3.40
140	Snyders L	8/10/2010	8.4	5.25		0.013	0.02	0.05	0.55	94.41	14	7.70	303		3.40
140	Snyders L	8/24/2010	8.7	4.10		0.017	0.02	0.02	0.42	55.13	10	7.99	323	24	5.20
140	Snyders L	9/26/2010													
140	Snyders L	10/18/2010	8.3	3.65	1.5	0.049	0.06	0.27	0.66	30.01	6	7.38	325	24	0.20
140	Snyders L	5/31/2011	8.1	6.40		0.016	0.04	0.08	0.51	68.41	17	7.13	328	28	1.50
140	Snyders L	6/15/2011	8.1	5.45	1.5	0.012	0.03	0.07	0.25	45.29	16	7.14	316		0.90
140	Snyders L	6/28/2011	8.5	5.00	3.0	0.016	0.03	0.06	0.47	66.42	1	7.51	181		2.60
140	Snyders L	7/11/2011	9.0	3.80		0.014	0.11	0.05	0.43	69.05	11	8.03	316		3.30
140	Snyders L	7/26/2011	10.0	2.63		0.019	0.01	0.02	0.55	64.46	12	7.38	332	28	5.40
140	Snyders L		grab		bloom										
140	Snyders L	8/9/2011	8.4	1.40		0.114	0.02	0.02	0.80	15.33	25	8.07	298		47.50
140	Snyders L	8/23/2011	9.0	1.40		0.022	0.02	0.04	0.77	78.48	25	7.83	296		
140	Snyders L	8/26/2011	grab		bloom										
140	Snyders L	9/16/2011	8.9	2.70	not rec	0.018	0.03	0.05	0.36	43.88	18	7.34	279		10.30
140	Snyders L	8/25/1998			7.0	0.454									
140	Snyders L	9/16/1998				0.140	0.64								
140	Snyders L	10/6/1998			8.0	0.022									
140	Snyders L	6/27/1999			7	0.410									
140	Snyders L	7/26/1999			8	0.240									
140	Snyders L	8/23/1999			7	0.130									
140	Snyders L	10/5/1999			8	0.094									

LNum	LName	Date	Zbot	Zsd	Zsamp	Tot.P	NO3	NH4	TDN	TN/TP	TColor	pH	Cond25	Ca	Chl.a
140	Snyders L	7/12/2010	9.0			0.027		0.013							
140	Snyders L	7/29/2010	8.8			0.023		0.053							
140	Snyders L	8/7/2010	8.7			0.035		0.038							
140	Snyders L	8/10/2010	8.4			0.024		0.036							
140	Snyders L	8/24/2010	8.7			0.022		0.016							
140	Snyders L	5/31/2011	8.1	6.40	7	0.022		0.137							
140	Snyders L	6/28/2011	8.5	5.00		0.040		0.242							
140	Snyders L	7/26/2011	10.0	2.63	>6	0.050		0.049							
140	Snyders L	8/23/2011	9.0	1.40	7.6	0.075		0.301							

LNum	LName	Date	Site	TAir	TH2O	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
140	Snyders L	5/28/1996	epi			1	4	3	2							
140	Snyders L	6/18/1996	epi			3	3	3	235							
140	Snyders L	7/11/1996	epi			2	4	2	26							
140	Snyders L	8/6/1996	epi			3	4	3	24							
140	Snyders L	8/28/1996	epi			3	4	5	36							
140	Snyders L	10/7/1996	epi			3	3	3	3							
140	Snyders L	11/12/1996	epi			3	3	4	5							
140	Snyders L	6/3/1997	epi	26	20	3	2	3	13							
140	Snyders L	7/16/1997	epi	30	27	3	3	3	12							
140	Snyders L	8/17/1997	epi	25	24	3	3	3	23							
140	Snyders L	10/7/1997	epi	22	17	5	4	4	1234							
140	Snyders L	8/11/1998	epi	26	25	2	3	2								
140	Snyders L	8/25/1998	epi	17	24	1	1	2								
140	Snyders L	9/16/1998	epi	23	22	2	3	2								
140	Snyders L	10/6/1998	epi	9	16	3	3	2	5							
140	Snyders L	6/15/1999	epi	20	24	1	3	2	5							
140	Snyders L	6/27/1999	epi	34	24	2	3	2								
140	Snyders L	7/12/1999	epi	34	25	3	3	3	15							
140	Snyders L	7/26/1999	epi	25	27	2	3	2								
140	Snyders L	8/9/1999	epi	17	24	1	3	2								
140	Snyders L	8/23/1999	epi		21	2	3	2								
140	Snyders L	9/14/1999	epi	19	23	2	3	2	5							
140	Snyders L	10/5/1999	epi	8	15	3	3	3								
140	Snyders L	6/5/2000	epi	16	19	5	3	4	34							
140	Snyders L	6/19/2000	epi	16	20	4	3	4	134							
140	Snyders L	7/10/2000	epi	27	23	2	3	2								
140	Snyders L	7/26/2000	epi	20	23	1	3	2								
140	Snyders L	8/8/2000	epi	20	19	1	3	2								
140	Snyders L	8/28/2000	epi	19	22	1	3	2								
140	Snyders L	9/11/2000	epi	19	21	1	2	2								
140	Snyders L	10/2/2000	epi	12	16	2	3	2	15							
140	Snyders L	6/19/2001	epi	26	28	2	3	2	0							
140	Snyders L	7/2/2001	epi	18	23	2	3	2	6							
140	Snyders L	7/18/2001	epi	20	22	1	3	2								
140	Snyders L	8/8/2001	epi	28	27	2	3	2	3							
140	Snyders L	8/13/2001	epi	29	26	3	3	3	23							
140	Snyders L	8/29/2001	epi	25	23	2	3	3	35							
140	Snyders L	9/17/2001	epi	14	19	2	3	3	13							
140	Snyders L	9/24/2001	epi	19	20	3	3	3	15							
140	Snyders L	7/12/2010	epi	32	28	1	4	4	2348							
140	Snyders L	7/29/2010	epi	25	26	2	2	4	26							
140	Snyders L	8/7/2010	epi	33	25	3	4	4	3							
140	Snyders L	8/10/2010	epi	25	26	2	3	3				63.58				
140	Snyders L	9/26/2010	bloom									1945920		114.28		
140	Snyders L	10/18/2010	epi	9	15	5	4	4	23		4					
140	Snyders L	5/31/2011	epi	30	19	1	2	3	27							
140	Snyders L	6/15/2011	epi	13	22	1	3	3	25			5.70	1.40			
140	Snyders L	6/28/2011	epi	32	22	3	3	3	2	0	0	12.90	1.80			
140	Snyders L	7/11/2011	epi	36	26	2	3	3	2	4	4	7.10	1.20			
140	Snyders L	7/26/2011	epi	38	19	2	3	3	1	4	4	56.60	3.36			
140	Snyders L		bloom											11.27	<0.4	<0.1

LNum	LName	Date	Site	TAir	TH2O	QA	QB	QC	QD	QF	QG	AQ-PC	AQ-Chla	MC-LR	Anatoxin-a	Cyclin
140	Snyders L	8/9/2011	epi	32	17	3	3	4	4	4		230.10	7.40			
140	Snyders L	8/23/2011	epi	23	15	3	4	4	34	4	4	133.40	6.50			
140	Snyders L	8/26/2011	bloom											1.94	<0.9	<0.1
140	Snyders L	9/16/2011	epi	15	20	3	3	4	235	4	4	80.80	3.30			
140	Snyders L	8/25/1998	hypo		12											
140	Snyders L	9/16/1998	hypo													
140	Snyders L	10/6/1998	hypo		16											
140	Snyders L	6/27/1999	hypo		11											
140	Snyders L	7/26/1999	hypo		13											
140	Snyders L	8/23/1999	hypo		15											
140	Snyders L	10/5/1999	hypo		15											
140	Snyders L	7/12/2010	hypo													
140	Snyders L	7/29/2010	hypo													
140	Snyders L	8/7/2010	hypo													
140	Snyders L	8/10/2010	hypo		8											
140	Snyders L	8/24/2010	hypo		7											

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	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		

Appendix B- Monthly Evaluation of Snyders Lake Data, 2006-2011

June Data

	2006	2007	2008	2009	2010	2011
Zsd						NORMAL
TP						NORMAL
Chl.a						NORMAL
NOx						HIGH
NH4						NORMAL
TN						NORMAL
pH						LOW
SpCond						LOW
Color						NORMAL
Ca						
QA						NORMAL
QB						NORMAL
QC						NORMAL
TH20						NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

July Data

	2006	2007	2008	2009	2010	2011
Zsd					NORMAL	NORMAL
TP					NORMAL	NORMAL
Chl.a					LOW	NORMAL
NOx					NORMAL	HIGH
NH4					NORMAL	NORMAL
TN					NORMAL	NORMAL
pH					NORMAL	NORMAL
SpCond					LOW	NORMAL
Color					NORMAL	NORMAL
Ca					LOW	HIGH
QA					NORMAL	NORMAL
QB					NORMAL	NORMAL
QC					NORMAL	NORMAL
TH20					HIGH	NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

August Data

	2006	2007	2008	2009	2010	2011
Zsd					NORMAL	LOW
TP					NORMAL	HIGH
Chl.a					NORMAL	HIGH
NOx					NORMAL	HIGH
NH4					NORMAL	NORMAL
TN					NORMAL	HIGH
pH					NORMAL	NORMAL
SpCond					NORMAL	LOW
Color					HIGH	HIGH
Ca					NORMAL	
QA					NORMAL	NORMAL
QB					NORMAL	NORMAL
QC					NORMAL	NORMAL
TH20					NORMAL	LOW

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

September Data

	2006	2007	2008	2009	2010	2011
Zsd						NORMAL
TP						NORMAL
Chl.a						HIGH
NOx						HIGH
NH4						NORMAL
TN						NORMAL
pH						LOW
SpCond						LOW
Color						HIGH
Ca						
QA						NORMAL
QB						NORMAL
QC						NORMAL
TH20						NORMAL

High = average monthly reading > 90th percentile reading for lake, 2000-2010

Low = average monthly reading < 10th percentile reading for lake, 2000-2010

Normal = average monthly reading between 10th and 90th percentile reading for lake, 2000-2010

Snyders Lake (1301-0043)

MinorImpacts

Waterbody Location Information

Revised: 04/25/2008

Water Index No:	H-235-11-P377	Drain Basin:	Lower Hudson River
Hydro Unit Code:	02020006/020	Str Class:	B
Waterbody Type:	Lake	Reg/County:	4/Rensselaer Co. (42)
Waterbody Size:	108.1 Acres	Quad Map:	TROY SOUTH (K-26-1)
Seg Description:	entire lake		

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

Use(s) Impacted	Severity	Problem Documentation
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: ALGAL/WEED GROWTH (algal blooms, vegetation)
 Suspected: NUTRIENTS (phosphorus)
 Possible: D.O./Oxygen Demand

Source(s) of Pollutant(s)

Known: ---
 Suspected: OTHER SOURCE (nutrient recycling)
 Possible: ---

Resolution/Management Information

Issue Resolvability:	1 (Needs Verification/Study (see STATUS))	
Verification Status:	4 (Source Identified, Strategy Needed)	
Lead Agency/Office:	ext/WQCC	Resolution Potential: Medium
TMDL/303d Status:	1/4c->n/a	

Further Details

Overview

Recreational uses in Snyders Lake are thought to experience minor impacts due to occasional algal blooms and weed growth related to seasonal phosphorus releases from lake bottom sediments.

Water Quality Sampling

Snyders Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1997 and continuing through 2001. An Interpretive Summary report of the findings of this sampling was published in 2002. These data indicate that the lake continues to be best characterized as mesotrophic, or moderately productive. These conditions have been relatively stable during the sampling period. Phosphorus levels in the lake only occasionally exceed the state guidance values indicating impacted/stressed recreational uses. However corresponding transparency measurements meet what is recommended for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5; occasional high pH does not appear to result in ecological impacts. (DEC/DOW, BWAM/CSLAP, November 2002)

Recreational Assessment

Public perception of the lake and its uses is also evaluated as part of the CSLAP program. This assessment indicates

recreational suitability of the lake to be very favorable since the lake was first evaluated and continuing through the most recent assessment. The recreational suitability of the lake is best characterized as "excellent" to "slightly" impacted for most uses. The lake itself is most often described as between "not quite crystal clear," an assessment that is consistent with the perceived water quality conditions in the lake and its measured water quality characteristics. More recent assessments have noted that rooted aquatic plants grow to the lake surface but do not impact recreational use. Native and less invasive plants have replaced Eurasian milfoil, a result attributed to 1998 herbicide treatment of the lake. The greatest impact of recreational assessments continues to be sporadic but occasionally intense algal blooms. (DEC/DOW, BWAM/CSLAP, November 2002)

Lake Uses

This lake waterbody is designated class B, suitable for use as a public bathing beach, general recreation and aquatic life support, but not as a water supply. Water quality monitoring by NYSDEC focuses primarily on support of general recreation and aquatic life. Samples to evaluate the bacteriological condition and bathing use of the lake or to evaluate contamination from organic compounds, metals or other inorganic pollutants have not been collected as part of the CSLAP monitoring program. Monitoring to assess public bathing use is generally the responsibility of state and/or local health departments.

Previous Assessment

Recreational use impacts due to excessive aquatic weed growth and algal blooms, have been cited in previous assessments. Treatment of the lake with aquatic herbicide (Sonar) has been used to control Eurasian milfoil and curly-leaf pondweed. Historically, failing and/or inadequate on-site septic systems serving homes along the lake were a significant sources of water quality impairment. Construction of a sewer system for lakeshore residents to address this source was completed in 1980s. (DEC/DOW, BWAM/SWMS, 2007)

Section 303(d) Listing

Snyders Lake is currently included on the NYS 2006 Section 303(d) List of Impaired Waters. The lake is included on Part 1 of the List as a Water Requiring a TMDL for phosphorus, however this updated assessment indicates that phosphorus levels only occasionally exceed the criteria reflecting stressed recreational uses and along with recreational assessment do not suggests that these impacts to water quality and uses are sufficient to warrant continued listing. (DEC/DOW, BWAM/WQAS, March 2008)