Volunteer Lake Assessment Program Individual Lake Reports

SILVER LAKE, HARRISVILLE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,408	**Max. Depth (m):**	26.2	**Flushing Rate (yr^{-1}):**	0.2
Surface Area (Ac.):	333	**Mean Depth (m):**	10.4	**P Retention Coef:**	0.79
Shore Length (m):	7,400	**Volume (m^3):**	13,878,500	**Elevation (ft):**	1319

TROPHIC CLASSIFICATION

Year	Trophic class
1990	OLIGOTROPHIC
1998	OLIGOTROPHIC

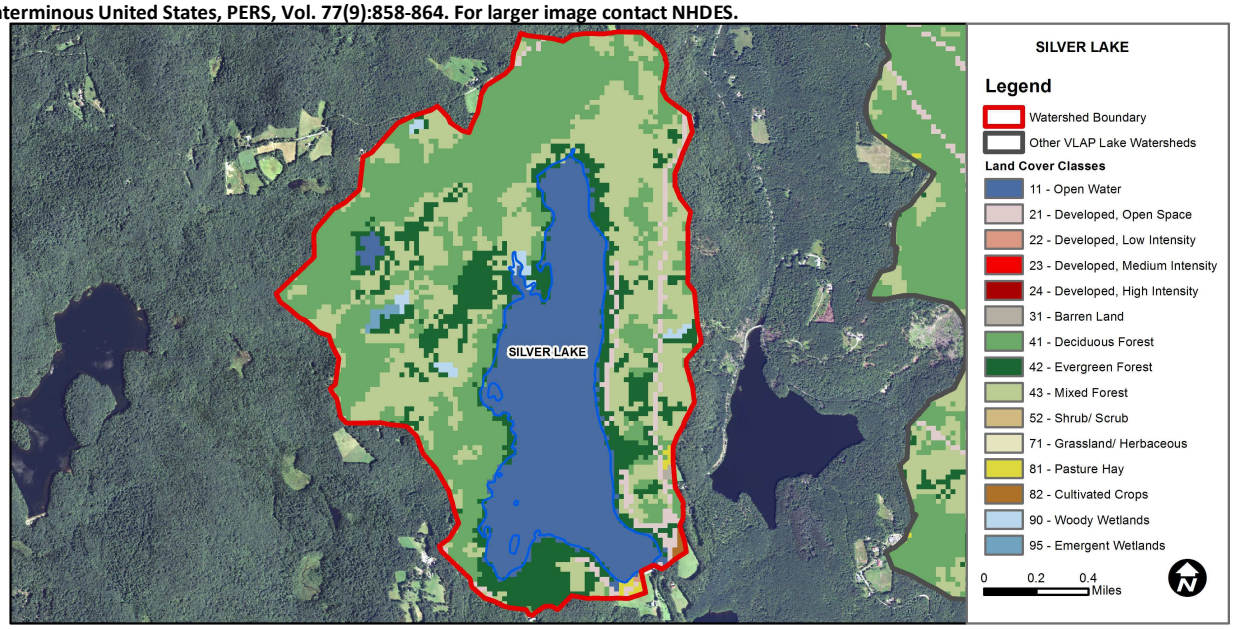
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2018 305(b) report on the status of N.H. waters, and are based on data collected from 2008-2017. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
	Oxygen, Dissolved	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



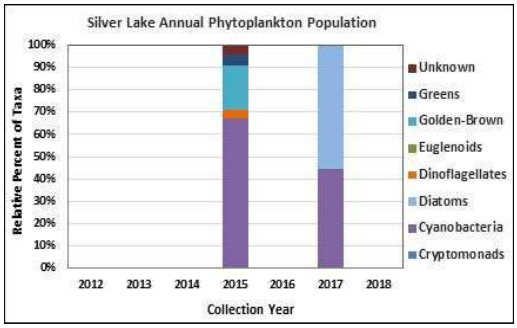
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	23.7	Barren Land	0.07	Grassland/Herbaceous	0
Developed-Open Space	2.88	Deciduous Forest	31.44	Pasture Hay	0.29
Developed-Low Intensity	0.03	Evergreen Forest	14.02	Cultivated Crops	0.15
Developed-Medium Intensity	0	Mixed Forest	26.37	Woody Wetlands	0.76
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0.26

Volunteer Lake Assessment Program Individual Lake Reports
Silver Lake, Harrisville
2018 Data Summary

Recommended Actions: Lake quality remains representative of oligotrophic, or high quality, waters. A significant storm event occurred prior to the August sampling event and did not seem to negatively impact tributary or lake quality which is a positive sign that stormwater runoff is managed within the watershed. However, stormwater runoff from dirt/gravel roads and parking areas at Brantwood Camp was observed during the summer. Consider utilizing the DES "Homeowner's Guide to Stormwater Management" to divert stormwater from the lake. Lake clarity has significantly decreased or worsened in recent years. This may be due to an increase of algae and/or cyanobacteria growth in Metalimnetic waters (thermocline). Trend analysis of lake turbidity levels revealed a significant increase in turbidity levels in the Metalimnion which is likely due to more abundant algae or cyanobacteria growth that form layers in the middle of the lake. It may also be due to sediments from increased boating traffic and impacts to shallow waters and shorelines. DES Fact Sheet WD-WMB-25 "Impacts of Motorized Craft on New Hampshire's Waterbodies" is a great resource. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in June, increased slightly in July, and then decreased in August. Average chlorophyll level decreased from 2017 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and tributary conductivity levels were within a low range and less than the state median. Epilimnetic (upper water layer) chloride levels were very low and less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color was measured in the epilimnion and indicates the lake water was generally lightly tea colored, or light brown.
- **Total Phosphorus:** Epilimnetic, Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) phosphorus levels were within a low range from June to August. Average epilimnetic phosphorus level decreased slightly from 2017 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels with high variability between years. Eastside Inlet, Lead Mine Inlet 1 and 2, and Outlet phosphorus levels were within a low range. Sucker Bk. phosphorus levels were elevated in June and July and lab data noted moderately colored water indicating wetland influences. Sandy Bch. 1 phosphorus levels were slightly elevated in July.
- **Transparency:** Transparency measured without the viewscope (NVS) was low (worse) in June due to wave action, and then increased (improved) to a normal range in July and August. Average NVS transparency increased (improved) from 2017 and was much higher (better) than the state median. However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. Viewcope transparency (VS) was much higher (better) than NVS transparency and likely a better measured of actual conditions.
- **Turbidity:** Deep spot turbidity levels fluctuated within a low range from June through August. Tributary turbidity levels were slightly elevated in June during low flow conditions and then improved when flow increased.
- **pH:** Epilimnetic, Outlet and Sandy Bch. Inlet 1 pH levels were within the desirable range 6.5-8.0 units, however epilmnetic pH levels have historically fluctuated below the desirable range. Historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Metalimnetic, Hypolimnetic and Lead Mine Inlet 1 pH levels were slightly less than the low end of the desirable range. Eastside Inlet, Lead Mine Inlet 2 and Sucker Brook pH levels were slightly acidic and less than desirable.



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 mg/m^3
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

Station Name	Table 1. 2018 Average Water Quality Data for SILVER LAKE - HARRISVILLE									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	2.5	1.54	3	27	24.0	3	7.67	9.08	0.36	6.64
Metalimnion					23.9	3			0.43	6.46
Hypolimnion					24.6	6			0.40	6.26
Eastside Inlet					25.4	5			3.58	5.67
Lead Mine Inlet 1					29.4	5			0.65	6.43
Lead Mine Inlet 2					13.5	3			0.08	5.80
Outlet In Stream					30.2	4			0.90	6.52
Sandy Bch. Inlet 1					36.7	11			0.58	6.59
Sucker Brook					18.2	27			0.88	5.78

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.