



Volunteer Lake Assessment Program Individual Lake Reports

STEVENS POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	445	Max. Depth (m):	5.2	Flushing Rate (yr ¹):	4.9
Surface Area (Ac.):	15	Mean Depth (m):	2.8	P Retention Coef:	0.51
Shore Length (m):	1,075	Volume (m ³):	176,000	Elevation (ft):	315

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1997	EUTROPHIC

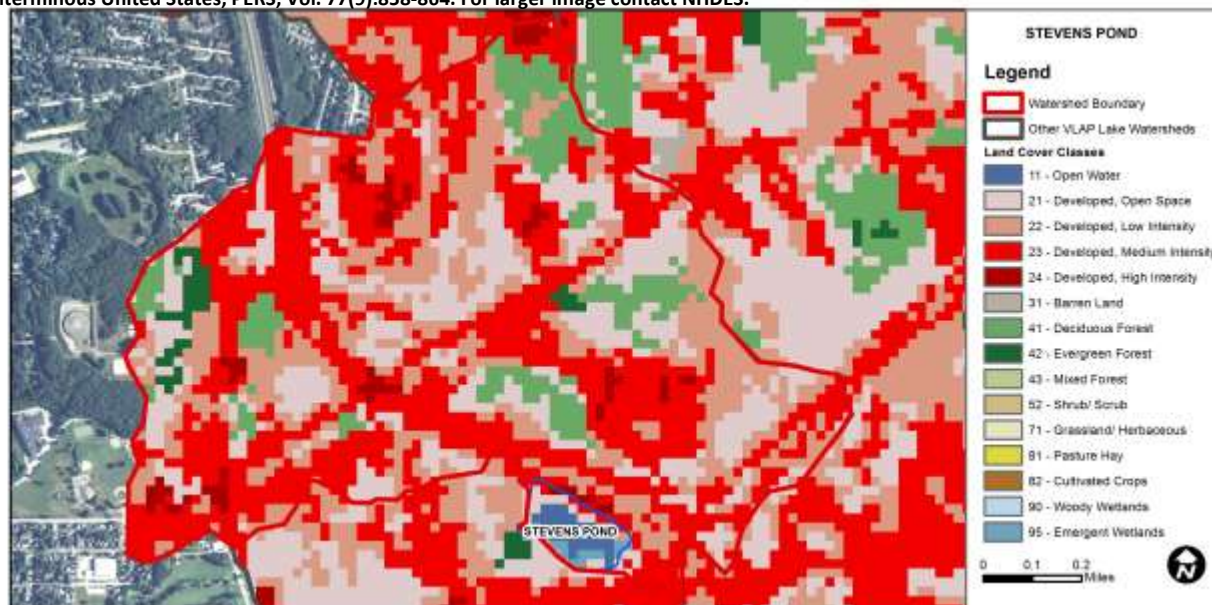
KNOWN EXOTIC SPECIES

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	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
	Dissolved oxygen satura	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Chlorophyll-a	Good	Sampling data is 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	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.

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	1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	20.7	Deciduous Forest	7.98	Pasture Hay	0
Developed-Low Intensity	26.3	Evergreen Forest	1.45	Cultivated Crops	0
Developed-Medium Intensity	38.4	Mixed Forest	0	Woody Wetlands	0
Developed-High Intensity	2.82	Shrub-Scrub	0	Emergent Wetlands	0.52



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

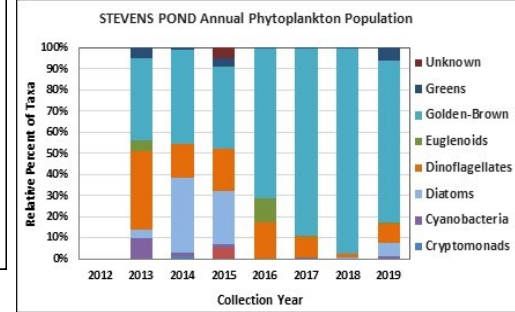
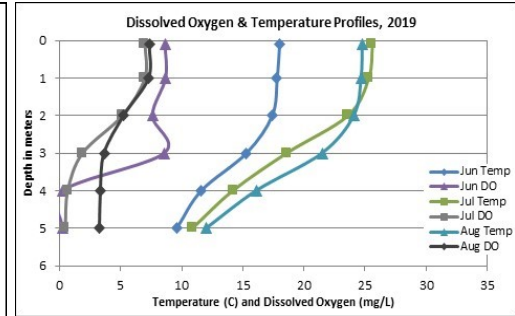
STEVENS POND, MANCHESTER

2019 DATA SUMMARY

RECOMMENDED ACTIONS: Pond quality improved in 2019 with nutrient (phosphorus) levels and algal (chlorophyll) growth decreasing below the thresholds for eutrophic lakes. However, Stevens Pond is an urban pond that receives a high pollutant load from the surrounding watershed. The elevated conductivity and chloride levels are a result of road salting practices. Due to the urban environment combined with fluctuating climate conditions, occasional spikes in nutrient loads and algal growth are expected, however we hope to see levels stabilize below the eutrophic thresholds in the future. Keep up the great work!

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was slightly elevated in June, decreased to a moderate level in July, and decreased to a low level in August. Average chlorophyll level decreased from 2018, was slightly greater than the state median, and was less than the threshold for eutrophic lakes. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Outlet conductivity and/or chloride levels remained elevated and much greater than the state medians. Epilimnetic and Outlet chloride levels exceeded the state chronic chloride standard on each sampling event. Historical trend analysis indicates highly variable epilimnetic conductivity levels since monitoring began.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was moderately tea colored or brown.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic phosphorus levels were slightly elevated in June when algal growth was elevated and decreased to low and moderate levels as the summer progressed. Average epilimnetic phosphorus level decreased from 2018, was greater than the state median, and was less than the threshold for eutrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus level was elevated in June and increased as the summer progressed likely due to the release of phosphorus from bottom sediments under anoxic (no dissolved oxygen) conditions. Outlet phosphorus levels fluctuated within a low range.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in June, increased (improved) to within a high range for the pond in July, and then decreased slightly in August. Average NVS transparency increased slightly from 2018 but remained less than the state median. Historical trend analysis indicates relatively stable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic turbidity levels were slightly elevated in June when algal growth was elevated and decreased to a low level as the summer progressed. Metalimnetic turbidity levels were moderate in June and July and decreased to a low level in August. Hypolimnetic turbidity levels were elevated on each sampling event, particularly in June and lab data noted gray water. Outlet turbidity levels increased slightly as the summer progressed but remained within a low range for this station.
- ◆ **PH:** Epilimnetic, Metalimnetic, Hypolimnetic, and Outlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH levels since monitoring began.



Station Name	Table 1. 2019 Average Water Quality Data for STEVENS POND - MANCHESTER									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	Total P mg/l	Trans. m		Turb. ntu	pH
Epilimnion	36.3	7.88	296	77	1000.0	19	2.33	2.34	1.77	7.24
Metalimnion					1018.7	26			2.13	6.94
Hypolimnion					1318.0	91			24.37	6.66
Outlet			298		999.7	17			1.43	6.92

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.5 mg/L
Chlorophyll-a: 4.39 ug/L
Conductivity: 42.3 uS/cm
Chloride: 5 mg/L
Total Phosphorus: 11 ug/L
Transparency: 3.3 m
pH: 6.6

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)

HISTORICAL WATER QUALITY TREND ANALYSIS

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

