Volunteer Lake Assessment Program Individual Lake Reports

PINE ISLAND POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	44,204	**Max. Depth (m):**	3	**Flushing Rate (yr^{-1}):**	326
Surface Area (Ac.):	42	**Mean Depth (m):**	1.5	**P Retention Coef:**	0
Shore Length (m):	3,385	**Volume (m^3):**	265,000	**Elevation (ft):**	151

TROPHIC CLASSIFICATION

Year	Trophic class
1980	EUTROPHIC
1997	EUTROPHIC

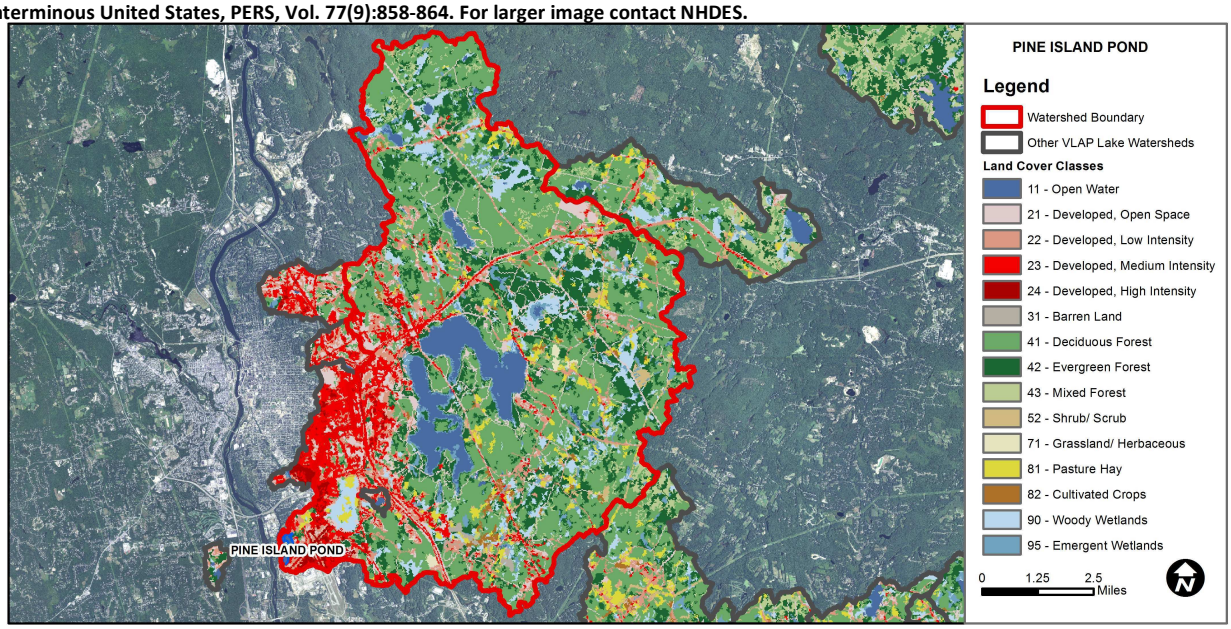
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).

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.

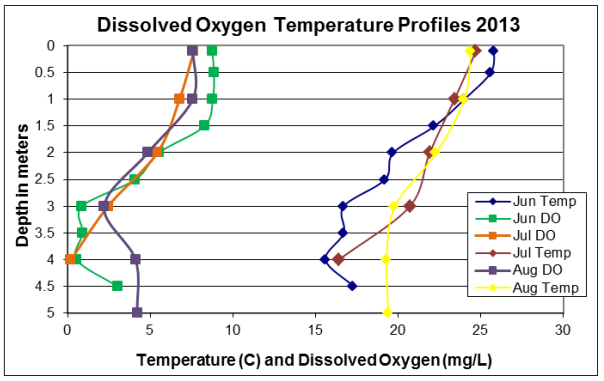


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.63	Barren Land	0.47	Grassland/Herbaceous	0.28
Developed-Open Space	6.6	Deciduous Forest	37	Pasture Hay	3.09
Developed-Low Intensity	8.16	Evergreen Forest	16.64	Cultivated Crops	0.86
Developed-Medium Intensity	6.32	Mixed Forest	2.22	Woody Wetlands	7.2
Developed-High Intensity	1.01	Shrub-Scrub	1.25	Emergent Wetlands	2.99

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
PINE ISLAND POND, MANCHESTER, NH
2013 DATA SUMMARY

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

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated in June and August and greater than the state median; however average levels decreased in 2013. Historical trend analysis indicates highly variable chlorophyll since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride levels were elevated and much greater than the state median. Historical trend analysis indicates highly variable epilimnetic conductivity since monitoring began.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus was elevated and greater than the state median, particularly in July. Historical trend analysis indicates relatively stable epilimentic phosphorus with moderate variability between years. Metalimnetic phosphorus was elevated in July and August and turbidity was also elevated indicating potential algae or sediment in the sample. Hypolimnetic turbidity was elevated in June and July and turbidity was also elevated indicating potential sediment in the sample. Inlet phosphorus levels were elevated in June and July following significant storm events.
- **TRANSPARENCY:** Transparency improved as the summer progressed however remained below the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic turbidity was slightly elevated in June and July following significant storm events. Metalimnetic turbidity was slightly elevated likely due to algal growth. Hypolimnetic turbidity was elevated in June and July potentially due to bottom sediment.
- **PH:** pH levels tend to decrease below acceptable range of 6.5 -8.0 in the metalimnion and hypolimnion.
- **RECOMMENDED ACTIONS:** Pine Island Pond is surrounded by a highly urban environment which typically results in elevated phosphorus, chloride, and chlorophyll levels. Significant storm events in June and July results in increased pollutant load to the pond. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management".

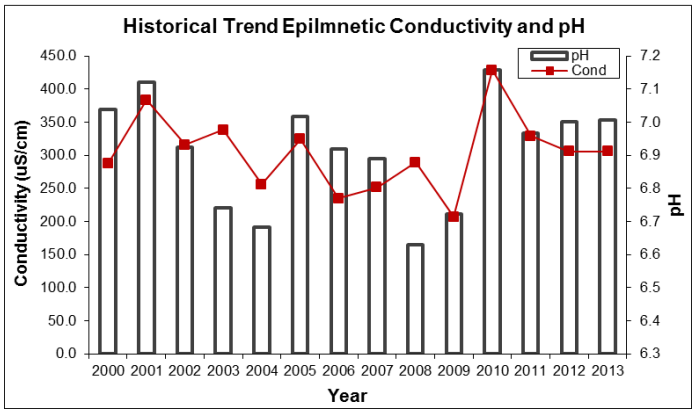
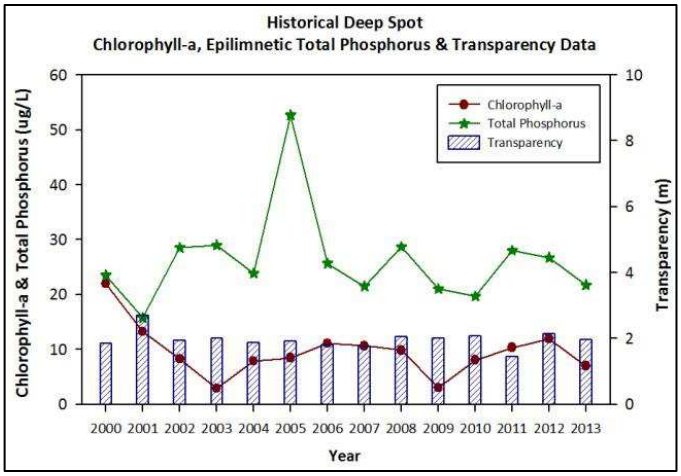


NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

Table 1. 2013 Average Water Quality Data for PINE ISLAND POND

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	17.8	6.97	86	306.0	22	1.97	2.10	1.48	7.01
Metalimnion				333.7	34			2.46	5.63
Hypolimnion				284.8	33			9.15	6.71
Inlet			93	382.7	20			1.39	7.08
Outlet				296.3	21			1.01	7.20

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

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