Volunteer Lake Assessment Program Individual Lake Reports

THORNDIKE POND, JAFFREY, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,560	**Max. Depth (m):**	7	**Flushing Rate (yr^{1})**	1.7
Surface Area (Ac.):	265	**Mean Depth (m):**	3.4	**P Retention Coef:**	0.64
Shore Length (m):	6,000	**Volume (m^3):**	3,513,500	**Elevation (ft):**	1159

TROPHIC CLASSIFICATION

Year	Trophic class
1998	OLIGOTROPHIC
2009	OLIGOTROPHIC

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.

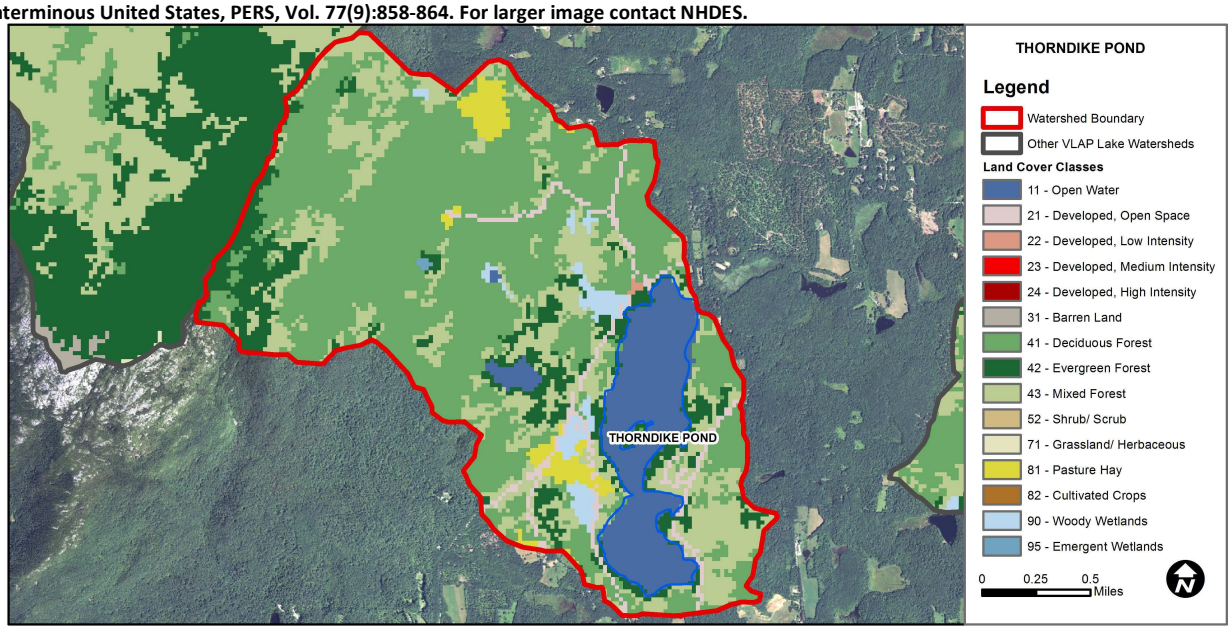
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

THORNDIKE POND - CAMP WANOCKSETT BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
THORNDIKE POND - CAMP WA-KLO BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
THORNDIKE POND - TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

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.

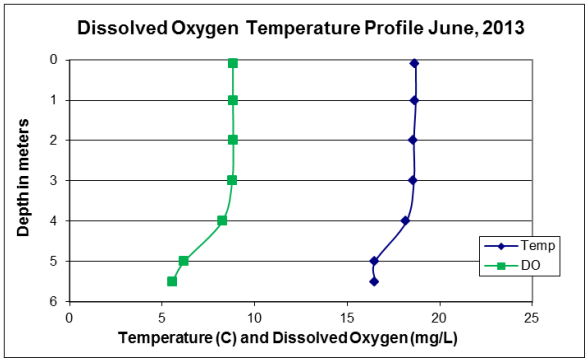


Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.08	Deciduous Forest	49.8	Pasture Hay	2.55
Developed-Low Intensity	0.08	Evergreen Forest	10.06	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	21.11	Woody Wetlands	2.07
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0.08

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
THORNDIKE POND, JAFFREY, NH
2013 DATA SUMMARY

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

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in June but decreased to lower levels by July and August. Stormwater runoff from significant early summer storm events may have provided the nutrients necessary to fuel excess algal growth in June. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were low and less than the state median. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low, less than the state median, and relatively stable. Historical trend analysis indicates stable epilimnetic phosphorus with low variability between years. South West Inlet phosphorus was elevated in July following a significant rain event.
- **TRANSPARENCY:** Transparency was lowest in June due to the elevated algal growth and recent storm events, however improved as the summer progressed. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Deep spot, North West Inlet and Outlet turbidities were average for the pond. South West Inlet turbidity was slightly elevated in July following a significant rain event.
- **pH:** Deep spot and tributary pH levels were less than desirable range 6.5 – 8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- **DISSOLVED OXYGEN:** Dissolved oxygen levels were lower in the hypolimnion immediately off the pond bottom but were high throughout the rest of the water column.
- **RECOMMENDED ACTIONS:** South West Inlet phosphorus and turbidity were elevated in July following a significant rain event. Upstream agricultural activities may be contributing to elevated phosphorus levels. Bracket tributary to identify potential phosphorus sources and if possible work with land owners to reduce stormwater runoff into the tributary. Keep up the great work!

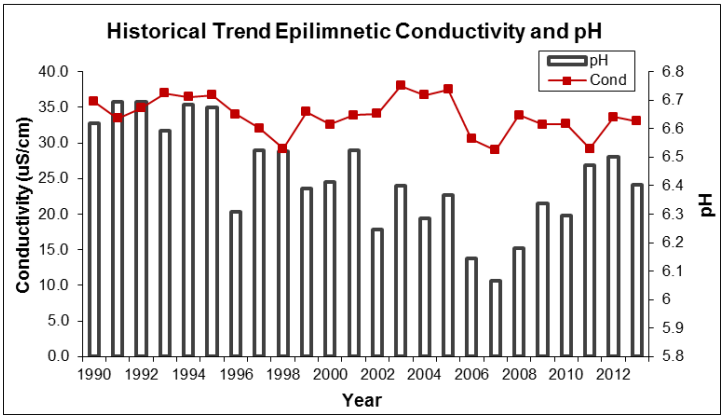
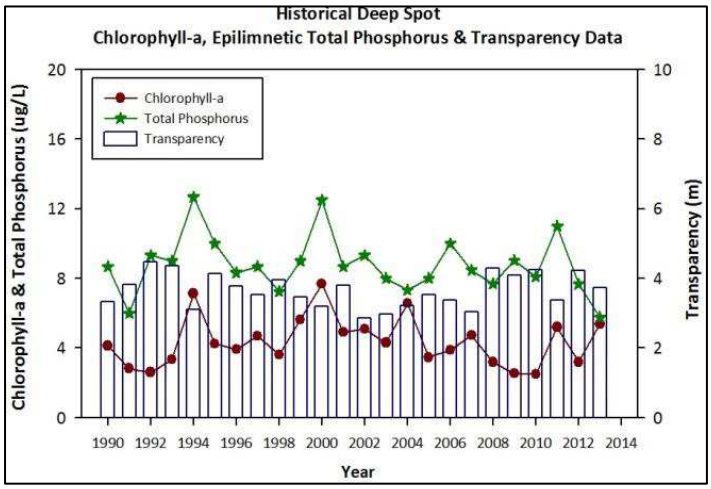


Station	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	1.90	5.38	33.0	6	3.73	4.20	1.00	6.40
Hypolimnion			32.8	8			1.25	6.04
North West Inlet			32.1	11			0.89	6.23
Outlet			32.6	4			0.67	6.45
South West Inlet			41.5	18			1.21	6.27

Table 1. 2013 Average Water Quality Data for THORNDIKE POND

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)

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	Degrading	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.