



Volunteer Lake Assessment Program Individual Lake Reports

COLD POND, ANDOVER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	738	Max. Depth (m):	5.5	Flushing Rate (yr ¹)	10.7
Surface Area (Ac.):	15	Mean Depth (m):	2.4	P Retention Coef:	0.45
Shore Length (m):	1,000	Volume (m ³):	141,500	Elevation (ft):	1081

TROPHIC CLASSIFICATION

Year	Trophic class
1993	OLIGOTROPHIC

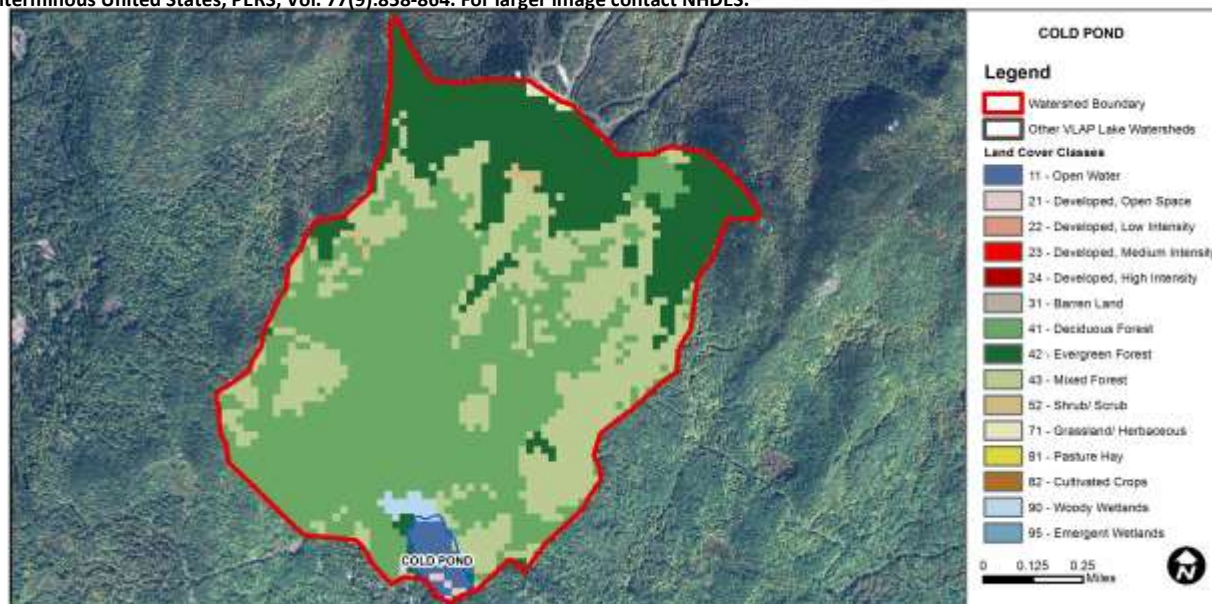
KNOWN EXOTIC SPECIES

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	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	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.
	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.
Primary Contact Recreation	Chlorophyll-a	Very Good	Sampling data is 50 percent better than the water quality standards or thresholds for this parameter.
	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	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.

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	1.72	Barren Land	0	Grassland/Herbaceous	0.23
Developed-Open Space	0.26	Deciduous Forest	47.66	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	21.68	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	27.02	Woody Wetlands	0.71
Developed-High Intensity	0	Shrub-Scrub	0.45	Emergent Wetlands	0



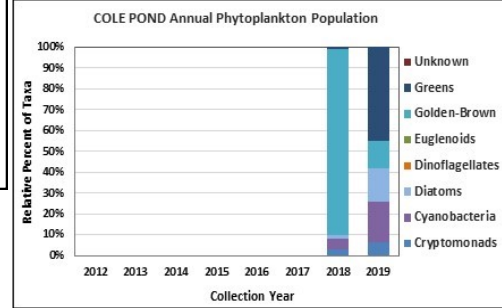
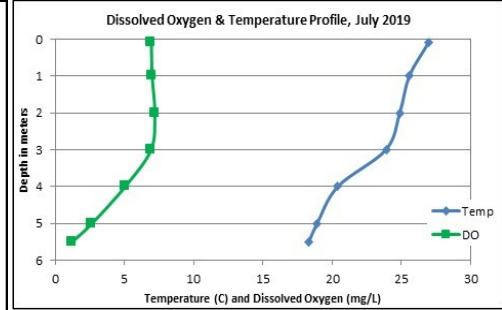
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

COLE POND, ANDOVER 2019 DATA SUMMARY

RECOMMENDED ACTIONS: Increase monitoring frequency to once per month, typically June, July and August, to better assess seasonal and annual variations in water quality. Continue annual monitoring program to re-establish a baseline data set to determine water quality trends over time. Hypolimnetic and 2nd Inlet phosphorus levels were elevated suggesting excess nutrient loading to the pond. The increased frequency and intensity of storm events, earlier ice-out and warmer water temperatures highlight the importance of managing phosphorus sources and stormwater runoff to the pond to keep algal and aquatic plant growth low. Evaluate areas within the watershed prone to stormwater runoff and install best practices to reduce runoff to the pond. DES' "NH Homeowner's Guide to Stormwater Runoff" is a great resource.

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

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was low in July and much less than the state median and the threshold for oligotrophic lakes. Visual inspection of historical data indicates stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), 2nd Inlet, Main Inlet, and Outlet conductivity levels were very low and much less than the state median. Epilimnetic chloride level was also very low and less than the state median. Visual inspection of historical data indicates slightly decreasing or improving conductivity levels.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown.
- ◆ **E. COLI:** No E. coli were detected at the Beach.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was slightly elevated in July, decreased slightly from 2018, was less than the state median, and was greater than the threshold for oligotrophic lakes. Visual inspection of the historical data indicates variable phosphorus levels since monitoring began. Hypolimnetic phosphorus level was elevated suggesting the potential for release of phosphorus from bottom sediments under anoxic (low dissolved oxygen) conditions. Main Inlet and Outlet phosphorus levels were low. 2nd Inlet phosphorus level was slightly elevated and the highest measured since monitoring began.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was high (good) in July, was better than the state median, and the Secchi disk was visible on the pond bottom. Visual inspection of historical data indicates stable transparency since monitoring began.
- ◆ **TURBIDITY:** Epilimnetic, Hypolimnetic, Main Inlet, and Outlet turbidity levels were within a low range for those stations. 2nd Inlet turbidity level was slightly elevated for that station.
- ◆ **pH:** Epilimnetic pH level was within the desirable range 6.5-8.0 units, however epilimnetic pH levels have historically fluctuated below the desirable range. Visual inspection of historical data indicates variable epilimnetic pH levels since monitoring began. Hypolimnetic pH levels were acidic and potentially critical to aquatic life. 2nd Inlet, Main Inlet and Outlet pH levels were slightly less than desirable.



Station Name	Table 1. 2019 Average Water Quality Data for COLE POND - ANDOVER										
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color pcu	Cond. us/cm	E. coli mpn/100ml	Total P mg/l	Trans. m		Turb. ntu	pH
Epilimnion	3.0	1.03	3	30	14.1	9	5.30	6.00	0.50	6.57	
Hypolimnion					14.4	17			0.45	5.74	
2nd Inlet					14.8	12			0.51	6.23	
Beach						0					
Dam Outlet					14.2	6			0.24	6.44	
Main Inlet					14.4	7			0.30	6.28	

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	N/A	Ten consecutive years of data necessary for analysis.	Chlorophyll-a	N/A	Ten consecutive years of data necessary for analysis.
pH (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.	Transparency	N/A	Ten consecutive years of data necessary for analysis.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for analysis.

