Volunteer Lake Assessment Program Individual Lake Reports

TUREE POND, BOW, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,953	**Max. Depth (m):**	3	**Flushing Rate (yr^{-1}):**	9.5
Surface Area (Ac.):	47	**Mean Depth (m):**	1.9	**P Retention Coef:**	0.49
Shore Length (m):	1,800	**Volume (m^3):**	357,000	**Elevation (ft):**	328

TROPHIC CLASSIFICATION

Year	Trophic class
1989	EUTROPHIC

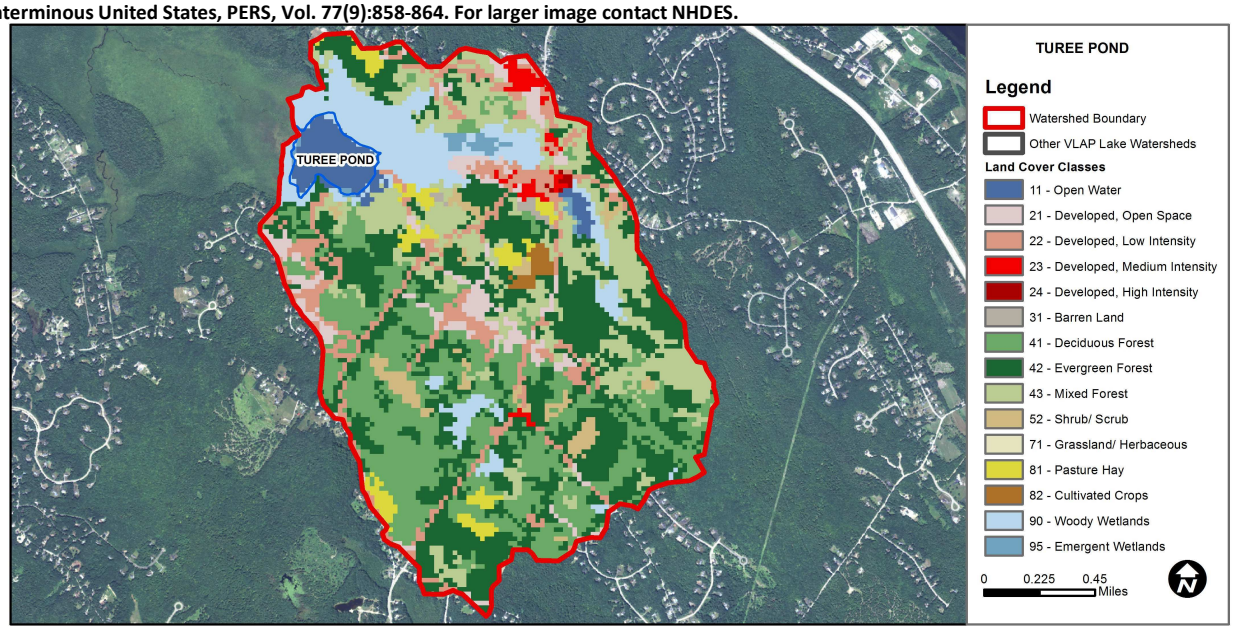
KNOWN EXOTIC SPECIES

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 a given parameter by a small margin.
	Oxygen, Dissolved	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; 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	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	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	3.29	Barren Land	0.29	Grassland/Herbaceous	0
Developed-Open Space	4.64	Deciduous Forest	22.25	Pasture Hay	2.66
Developed-Low Intensity	8.39	Evergreen Forest	27.92	Cultivated Crops	0.58
Developed-Medium Intensity	1.14	Mixed Forest	15.64	Woody Wetlands	9.78
Developed-High Intensity	0.13	Shrub-Scrub	2.5	Emergent Wetlands	0.78

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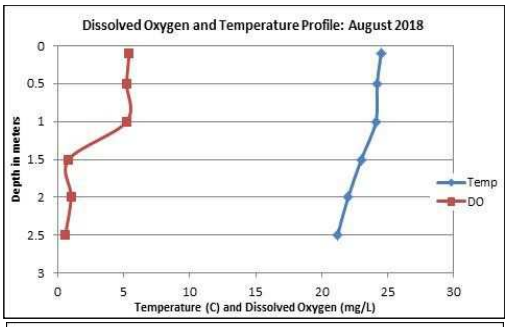
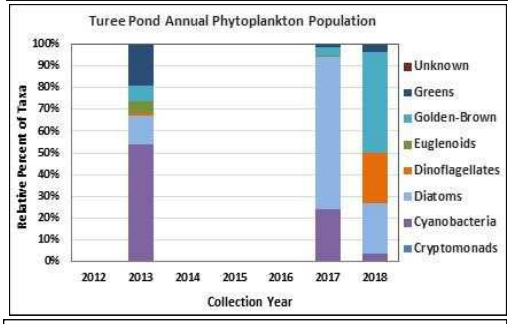
2018 Data Summary

Recommended Actions: Pond phosphorus and chlorophyll levels have remained within a slightly higher range since 2009, and although levels remain below the thresholds for eutrophic lakes, it is important to note as exotic aquatic plant management activities may cause levels to increase further. The increased frequency and intensity of significant storm events and flushing of waters rich in dissolved organic matter has likely contributed to the reduced water clarity. Conductivity and chloride levels were highest at White Rock Hill Rd. Culvert and further downstream at the Firehouse Pond Inlet station, particularly in June when flows were lower. Station 1B phosphorus levels were elevated following significant storm events and it is recommended to investigate potential sources of phosphorus upstream. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll levels were low in June, remained stable in August, and increased in September but remained within a moderate range. Average chlorophyll level decreased slightly from 2017, was slightly greater than the state median, and was less than the threshold for eutrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since 2007.
- **Conductivity/Chloride:** Epilimnetic (deep spot), 1B, 1C, Firehouse Pond Inlet, and White Rock Hill Rd. Culvert conductivity and/or chloride levels fluctuated within an elevated range however chloride levels did not exceed the state chronic chloride standard. Historical trend analysis indicates relatively stable epilimnetic conductivity levels since 2007. Firehouse Pond Outlet and Seasonal Inlet experienced slightly lower conductivity and chloride levels. Firehouse Pond Outlet and White Rock Hill Rd. Culvert chloride levels were lower in March during spring snowmelt and spiked in June likely when tributary flows were low.
- **Color:** Apparent color was measured in the epilimnion and indicates the pond water fluctuates within a highly colored range and the highest color was measured in August following above average rainfall prior to sampling.
- **Total Phosphorus:** Epilimnetic phosphorus levels were slightly elevated in June and remained stable into September. Average epilimnetic phosphorus level increased slightly from 2017, was much greater than the state median, was approximately equal to the threshold for eutrophic lakes, and was the highest measured since monitoring began. Historical trend analysis indicates stable epilimnetic phosphorus levels since 2007. Station 1B phosphorus levels were moderate in June and increased to elevated levels in August and September following significant storm events. Firehouse Pond Outlet phosphorus levels were moderate in June, decreased to a low level downstream at White Rock Hill Rd. Culvert, and increased to a moderate level further downstream at Firehouse Pond Inlet. In August, phosphorus levels increased at all stations, and then decreased back to normal levels at the Firehouse Pond Outlet and White Rock Hill Rd. Culvert in September.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was higher (better) in June, decreased (worsened) in August when water color was darkest, and then increased (improved) slightly in September. Average NVS transparency remained stable with 2017 and was below average for the pond. Historical trend analysis indicates stable transparency with high variability since 2007.
- **Turbidity:** Epilimnetic turbidity levels were slightly elevated in June and decreased to an average range in September. Station 1B, Firehouse Pond Outlet and White Rock Hill Rd. Culvert turbidity levels were low on each sampling event. Firehouse Pond Outlet turbidity levels were slightly elevated in June and organic matter was noted in the sample.
- **pH:** Epilimnetic, Station 1B, and Firehouse Pond Inlet pH levels were within the desirable range 6.5-8.0 units. Historical trend analysis indicates stable epilimnetic pH levels since 2007. Firehouse Pond Outlet and White Rock Hill Rd. Culvert pH levels were slightly 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)

Table 1. 2018 Average Water Quality Data for TUREE POND - BOW

Station Name	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	12.3	5.27	69	192	269.2	27	1.22	1.82	1.28	6.60
1B			50		204.1	25			0.49	6.68
1C			62		227.0					
Firehouse Pond Inlet			69		276.3	22			1.60	6.60
Firehouse Pond Outlet			42		192.6	19			0.88	6.41
Seasonal Inlet			34		169.6					
White Rock Hill Rd. Culvert			74		308.3	15			0.64	6.44

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

Historical Water Quality Trend Analysis

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