Volunteer Lake Assessment Program Individual Lake Reports

WALKER POND, BOSCAWEN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	5,888	**Max. Depth (m):**	12.8	**Flushing Rate (yr^1)**	3.2
Surface Area (Ac.):	174	**Mean Depth (m):**	4.5	**P Retention Coef:**	0.51
Shore Length (m):	4,000	**Volume (m^3):**	3,205,500	**Elevation (ft):**	500

TROPHIC CLASSIFICATION

Year	Trophic class
1996	EUTROPHIC
2013	TROPHIC

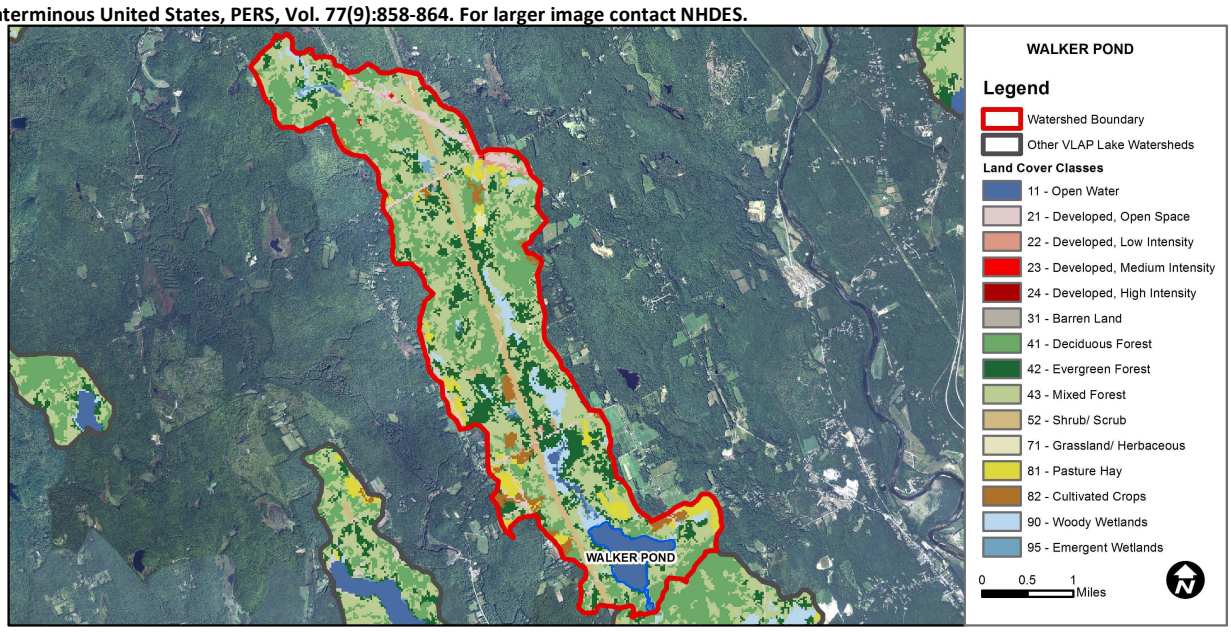
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Bad	There are >10% of samples (minimum of 2), exceeding criteria with one or more samples considered large exceedance.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Encouraging	There are no geometric means or there are > 2 single samples but those samples are within 75% of the geometric means criteria. More data needed.
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

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	3.97	Barren Land	0	Grassland/Herbaceous	0.29
Developed-Open Space	3.4	Deciduous Forest	22.58	Pasture Hay	4.64
Developed-Low Intensity	0.86	Evergreen Forest	15	Cultivated Crops	2.77
Developed-Medium Intensity	0.09	Mixed Forest	36.35	Woody Wetlands	4.64
Developed-High Intensity	0.02	Shrub-Scrub	4.38	Emergent Wetlands	0.8

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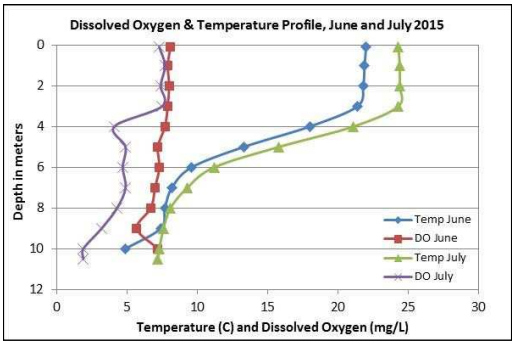
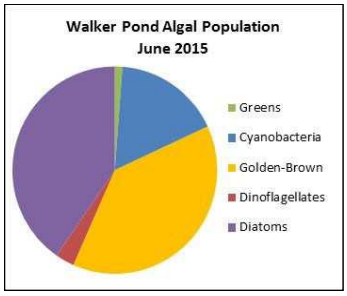
2015 Data Summary

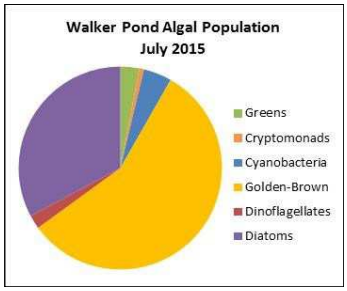
Recommended Actions: Maintain the current monitoring program to build a baseline data set to assess seasonal and historical water quality trends. Overall, water quality is generally within an average range for most parameters. The DES Lake Trophic Survey Program conducted monitoring in 2013, 2014 and 2015 to update the trophic status of the pond. Stay tuned for the final trophic assessment and report to be issued in 2016. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll levels increased slightly from June to July but remained within an average range for the pond. The 2015 average chlorophyll level remained stable from 2014 and was approximately equal to the state median. Visual inspection of historical data indicates stable chlorophyll levels since 2010.
- **Conductivity/Chloride:** Deep spot conductivity was slightly greater than the state median however not above a level of concern. The epilimnetic (upper water layer) chloride level was also slightly greater than the state median but much less than the state chronic chloride standard. Visual inspection of historical data indicates stable conductivity levels in the pond.
- **Total Phosphorus:** Epilimnetic and metalimnetic (middle water layer) phosphorus levels were stable and low in June and July. Average epilimnetic phosphorus remained stable from 2014 and was less than the state median. Visual inspection of historical data indicates slightly variable epilimnetic phosphorus levels since 2009. Hypolimnetic (lower water layer) phosphorus levels were low in June and increased to elevated levels in July. The turbidity of the sample was also slightly elevated suggesting that as the summer progresses and dissolved oxygen are depleted, phosphorus may be released into the water column from bottom sediments, a process called internal loading.
- **Transparency:** Transparency measured without the viewscope (NVS) was good and remained fairly stable from June to July. Average NVS transparency was much better (higher) than the state median and was the best measured since monitoring began. Transparency measured with the viewscope (VS) was better than that measured without and likely a better representation of water clarity. Visual inspection of historical data indicates slightly variable transparency since 2009.
- **Turbidity:** Epilimnetic and Metalimnetic turbidities were low in June and July. Hypolimnetic turbidity was low in June and slightly elevated in July suggesting the accumulation of organic compounds in hypolimnetic waters under low dissolved oxygen levels.
- **pH:** Deep spot pH levels were less than the desirable range of 6.5-8.0 units. pH decreased from the surface to the bottom of the pond once again suggesting the accumulation of organic compounds and acids in hypolimnetic waters under low dissolved oxygen levels.



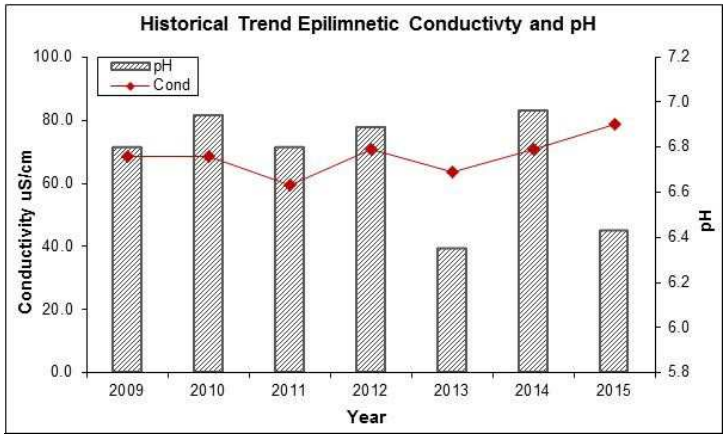
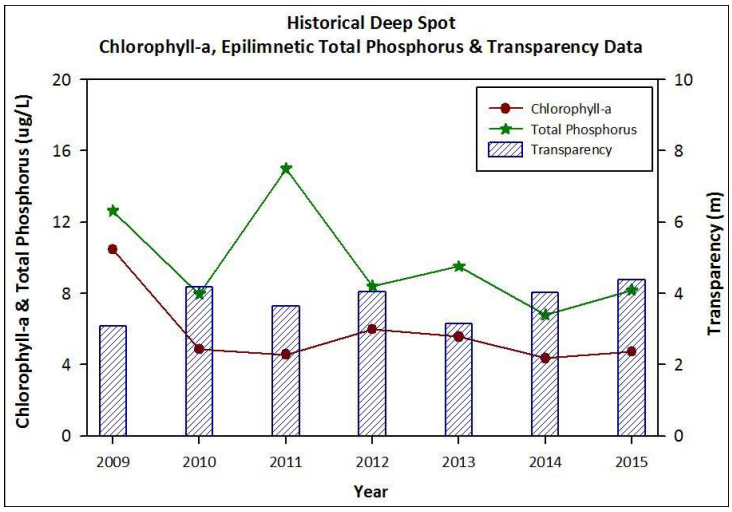




Station Name	Table 1. 2015 Average Water Quality Data for WALKER POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	9.4	4.72	14	78.6	8	4.38	4.95	0.78	6.43
Metalimnion				78.1	9			0.87	6.04
Hypolimnion				76.7	17			2.34	5.88

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

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.