



Volunteer Lake Assessment Program Individual Lake Reports

PLEASANT LAKE, DEERFIELD, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,240	Max. Depth (m):	19.8	Flushing Rate (yr ⁻¹)	0.4
Surface Area (Ac.):	493	Mean Depth (m):	7	P Retention Coef:	0.78
Shore Length (m):	7,200	Volume (m ³):	13,995,000	Elevation (ft):	578

TROPHIC CLASSIFICATION

Year	Trophic class
1982	OLIGOTROPIC
1996	OLIGOTROPIC

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

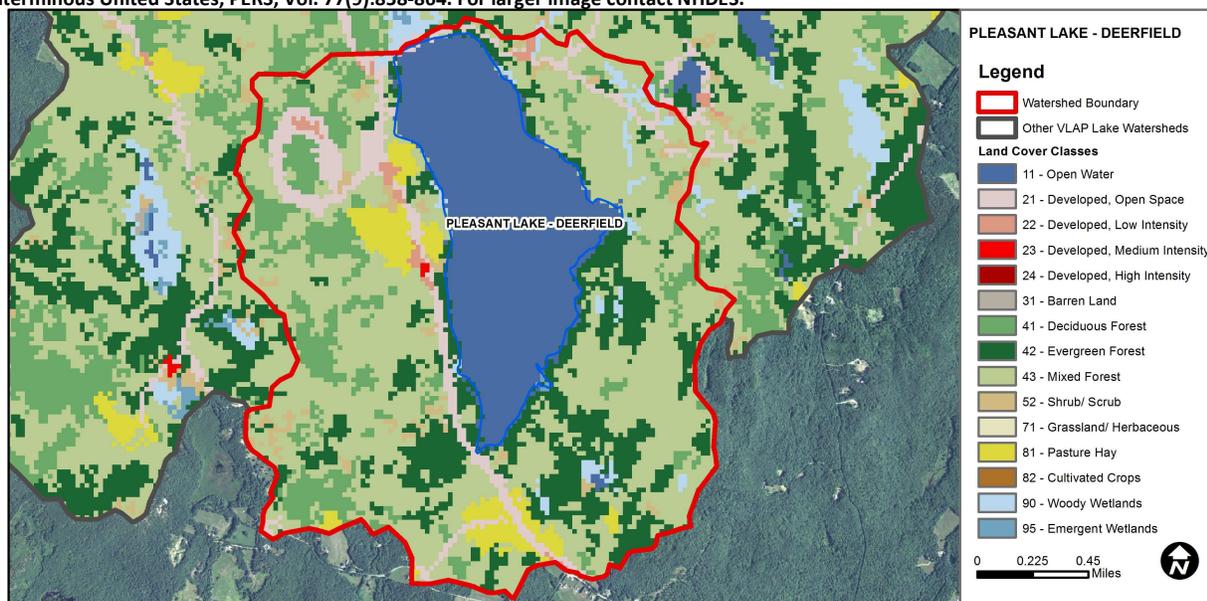
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	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	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PLEASANT LAKE - VEASEY PARK BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.
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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	20.9	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	5.72	Deciduous Forest	9.74	Pasture Hay	3.79
Developed-Low Intensity	0.73	Evergreen Forest	14.84	Cultivated Crops	0
Developed-Medium Intensity	0.05	Mixed Forest	40.54	Woody Wetlands	1.49
Developed-High Intensity	0	Shrub-Scrub	1.86	Emergent Wetlands	0.06



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

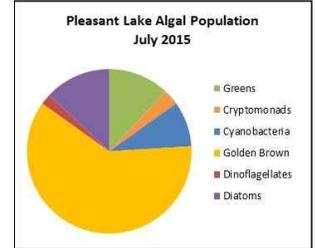
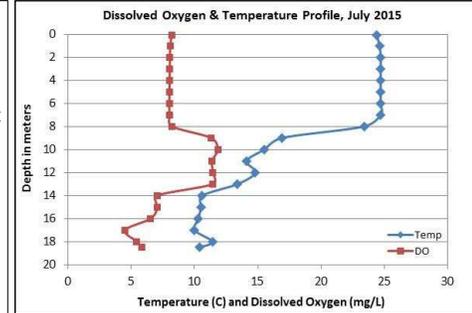
PLEASANT LAKE, DEERFIELD

2015 DATA SUMMARY

RECOMMENDED ACTIONS: Continue the development of a watershed management plan to identify and quantify pollutant loads. Increase monitoring frequency as necessary to help with plan development. Overall, water quality is representative of Oligotrophic, high quality water, conditions and we hope to see this continue. Conductivity and chloride levels are likely impacted by winter road salting activities. Encourage local road agents to obtain a Voluntary NH Salt Applicator license through UNH Technology Transfer Center's Green SnowPro Certification program. Keep up the great work!

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

- CHLOROPHYLL-A:** Chlorophyll levels decreased slightly from June to July, increased slightly from July to October, and remained at low levels. The 2015 average chlorophyll level decreased from 2014 and was much less than the state median. Historical trend analysis indicates stable chlorophyll with high variability between years.
- CONDUCTIVITY/CHLORIDE:** Deep spot, Clarks Bk., Outlet, and Wilsons Bk. conductivity and chloride levels remained slightly greater than the state medians. June conductivity levels were higher at all stations, particularly Wilsons Bk., indicating that spring snowmelt transports accumulated salts from winter road salting to tributaries and the lake. Philbrick Bk. conductivity and chloride levels were very low in June which is a great sign. Historical trend analysis indicates relatively stable epilimnetic (upper water layer) conductivity with moderate variability between years.
- TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels remained very low and much less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began. Hypolimnetic phosphorus was low in June and July and increased to moderate levels in October, and average hypolimnetic phosphorus remained within a low range. Clarks Bk. phosphorus level was elevated in June during low flow conditions and water was noted as lightly colored. Philbrick Bk. phosphorus was also slightly elevated in June during low flows. Both Brooks have a history of elevated and fluctuating phosphorus levels. Outlet and Wilsons Bk. phosphorus levels were low on each sampling event.
- TRANSPARENCY:** Transparency measured without the viewscope (NVS) was good in June and then decreased (worsened) in July due to wave conditions. Average NVS transparency increased (improved) from 2014 and was much better than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Transparency measured with the viewscope (VS) was approximately equal to the NVS readings in June and then increased (improved) to 8.0 meters in July and helped to eliminate surface conditions from interference with Secchi disk viewing. The VS transparency is generally much better than NVS and likely a better representation of conditions.
- TURBIDITY:** Epilimnetic and Metalimnetic turbidities remained stable and low. Hypolimnetic turbidity was elevated in October and may reflect fall lake turnover conditions. Clarks Bk. turbidity was in a low range for this station and likely affected by water with low to moderate color content and rich in organic acids. Outlet, Philbrick Bk. and Wilson Bk. turbidities were low.
- pH:** Epilimnetic and Metalimnetic pH fluctuated below the desirable range 6.5-8.0 units particularly in October likely as a result of fall lake turnover. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years. Hypolimnetic and tributary pH levels were all less than the desirable range.



Station Name	Table 1. 2015 Average Water Quality Data for PLEASANT LAKE								
	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	3.6	1.84	16	81.3	3	6.08	7.20	0.57	6.40
Metalimnion				81.2	4			0.81	6.23
Hypolimnion				79.0	9			2.67	5.71
Clarks Brook			16	106.4	40			1.91	5.11
Dam Outlet In Stream				82.0	4			0.97	6.43
Philbrick Brook			3	18.0	23			0.64	5.33
Wilsons Brook			20	106.1	5			0.67	6.40

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)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

- Alkalinity:** 4.9 mg/L
- Chlorophyll-a:** 4.58 mg/m³
- 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
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

