Volunteer Lake Assessment Program Individual Lake Reports

THORNDIKE POND, JAFFREY, NH

MORPHOMETRIC DATA | **TROPHIC CLASSIFICATION** | **KNOWN EXOTIC SPECIES**

Watershed Area (Ac.):	2,560	**Max. Depth (m):**	7	**Flushing Rate (yr^{-1}):**	1.7	**Year**	**Trophic class**	
Surface Area (Ac.):	265	**Mean Depth (m):**	3.4	**P Retention Coef:**	0.64	1998	OLIGOTROPHIC	
Shore Length (m):	6,000	**Volume (m^3):**	3,513,500	**Elevation (ft):**	1159	2009	OLIGOTROPHIC	

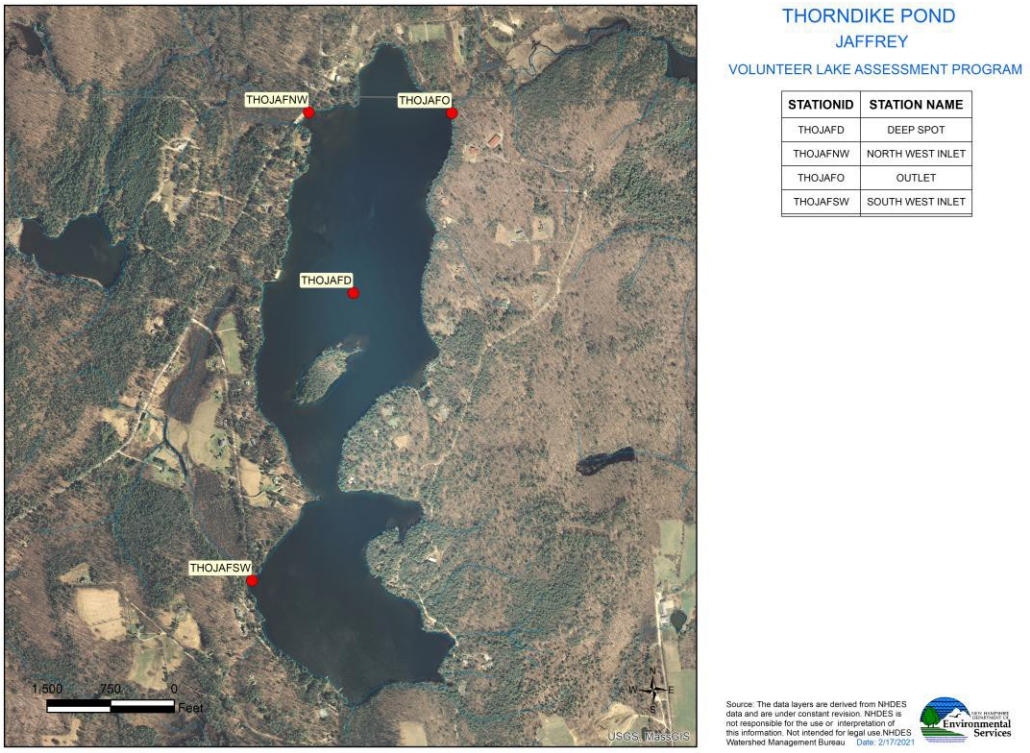
The Waterbody Report Card tables are generated from the DRAFT 2020 305(b) report on the status of N.H. waters, and are based on data collected from 2010-2019. Detailed waterbody assessment and report card information can be found at NHDES' Water Quality Assessment Website.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	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.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

THORNDIKE POND - TOWN BEACH	Escherichia coli	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
THORNDIKE POND - CAMP WANOCKSETT BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
THORNDIKE POND - CAMP WA-KLO BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

VLAP SAMPLE STATION MAP: This map depicts the location of routine sampling stations discussed on page two of the report.



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Thorndike Pond, Jaffrey
2020 Data Summary

Recommended Actions: Great job sampling in 2020! Pond quality is generally representative of oligotrophic, or high quality, conditions with nutrient levels stabilizing at a lower level since 2014. However, algal growth continues to fluctuate above the threshold for oligotrophic lakes. Drought conditions in 2020 resulted in lower nutrient levels and algal growth. Tributary flow was also noted as stagnant in 2020 and did not appear to affect flushing of nutrients out of the pond. Keep an eye on tributary flow as it relates to nutrient retention during dry/wet years. Improvements in water quality during drought years and the increased frequency and intensity of storm events highlights the importance of managing stormwater runoff within the watershed. Consider development of a watershed management plan to identify and quantify pollutant loads within the watershed and make recommendations on management strategies to minimize impacts of stormwater runoff. Encourage shoreline property owners to be certified LakeSmart through NHLAKES lake-friendly living program www.nhlakes.org/lakesmart/. Keep up the great work!

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

- **Chlorophyll-a:** Chlorophyll level was low in June and increased slightly in August but remained within a low range. Average chlorophyll level decreased from 2019 and was less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), North West Inlet, South West Inlet, and Outlet conductivity levels fluctuated within a low range and were less than the state median. Epilimnetic chloride level was also within a low range and approximately equal to the state median. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color measured in the epilimnion indicates the water was lightly tea colored, or light brown, in June and then lightened to within a clear range with little to no tea coloring in August.
- **Total Phosphorus:** Epilimnetic and Hypolimnetic phosphorus levels were within a low range in June and increased to a moderate range in August. Average epilimnetic phosphorus level decreased from 2019, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. North West Inlet phosphorus levels were elevated in July potentially due to a small storm event prior to sampling during drought conditions. South West Inlet phosphorus levels fluctuated within a moderate and average range for that station. Outlet phosphorus levels were low.
- **Transparency:** Transparency measured without the viewscope (NVS) was high (good) in June and increased (improved) in August. Average NVS transparency increased from 2019 and was higher (better) than the state median. Historical trend analysis indicates relatively stable NVS transparency since monitoring began. Viewscope transparency (VS) was slightly higher (better) than NVS transparency and likely a better measure of actual conditions.
- **Turbidity:** Epilimnetic, Hypolimnetic, North West Inlet, South West Inlet, and Outlet turbidity levels fluctuated within a low range.
- **pH:** Epilimnetic pH level was within the desirable range 6.5-8.0 units and historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Hypolimnetic and Outlet pH levels were slightly less than desirable. North West Inlet and South West Inlet pH levels were slightly acidic and less than desirable.

Station Name	Table 1. 2020 Average Water Quality Data for THORNDIKE POND - JAFFREY									
	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	3.1	2.60	5	25	28.4	8	3.85	4.20	0.48	6.67
Hypolimnion					28.0	11			0.60	6.25
North West Inlet					27.8	25			0.74	6.10
Outlet					28.2	8			0.48	6.38
South West Inlet					32.8	19			0.69	6.03

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	Stable	Trend not significant; data show low variability.	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 moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.