

SITE STATUS SUMMARY OF CONDITIONS

WATER CLARITY 3.3

TOTAL PHOSPHORUS 15.3

CHLOROPHYLL A 3.7

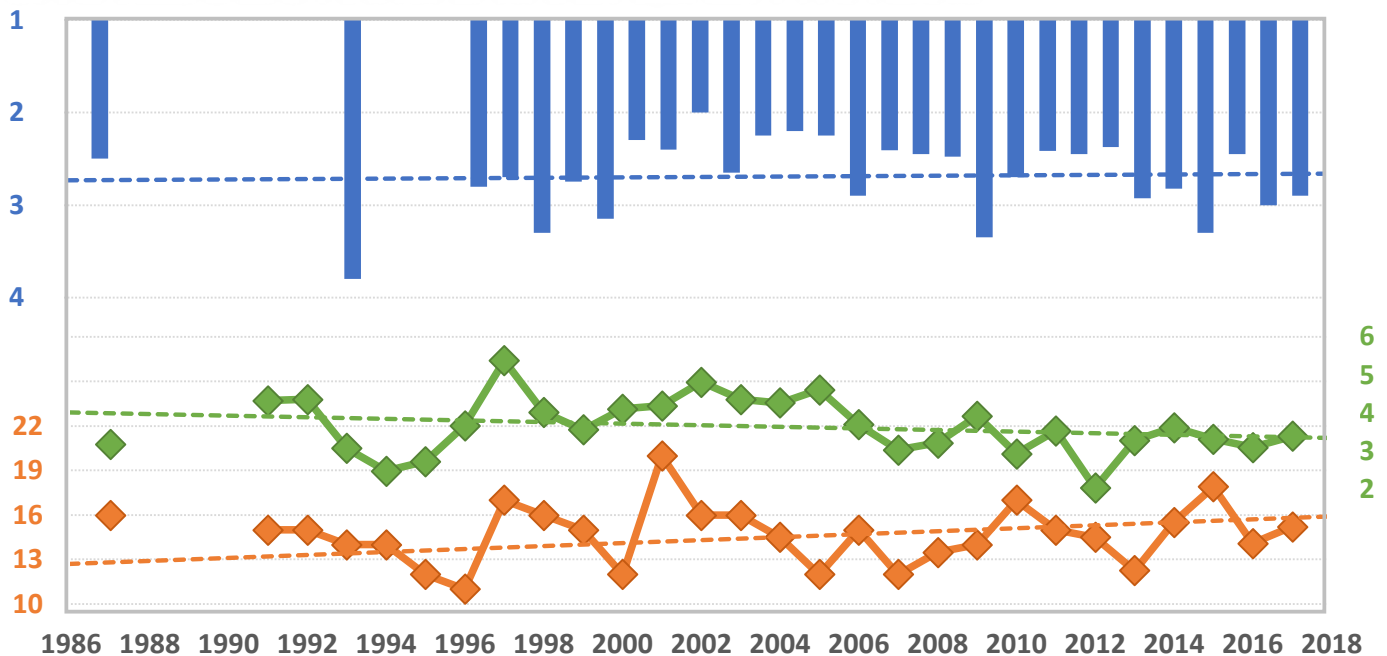
DISSOLVED OXYGEN

TROPHIC STATE MESOTROPHIC

At site 1 Deep, water quality is moderate and mixed. Phosphorus values are high and relatively steady. Chlorophyll is slightly improving and is nearly oligotrophic, but water clarity is holding steady.

CURRENT poor good excellent no data  
 TREND degrading improving flat too few data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



WATER CLARITY (m)

CHLOROPHYLL A (mg L<sup>-1</sup>)

TOTAL PHOSPHORUS (mg L<sup>-1</sup>)

LAKE BASICS BACKGROUND INFO

Site Depth 1 Deep – 16 feet  
 Lake Max/Mean Depth 16 feet / 9 feet  
 Location Wakefield & Effingham, NH  
 Parsonsfield, ME  
 Watershed Area 6.1 square miles  
 Lake Area 968 acres  
 Shore Length 5.3 miles  
 Lake Volume 11.3 million cubic meters  
 Flushing Rate 1.0 times per year  
 Lake Elevation 480 feet



Province Lake is currently **MESOTROPHIC**, but exhibits some characteristics of a more **EUTROPHIC** lake.

The lake is often subject to **WIND-INDUCED MIXING** leading to resuspension of **SEDIMENTS** and **PHOSPHORUS**.

Blooms of **CYANOBACTERIA** have occurred periodically in recent years.

**WATERSHED RESTORATION EFFORTS** by the Acton Wakefield Watersheds Alliance began in 2008 to help improve water quality. Work will be ongoing to achieve water quality goals.

Province Lake has its own **WATERSHED MANAGEMENT PLAN**

Province Lake has no recorded **INVASIVES** and supports an active **LAKE HOST** program.

## WATER QUALITY REVIEW

## LEARN MORE ABOUT LAKE HEALTH

**LAKE PRODUCTIVITY** is determined by multiple factors, including

**WATER CLARITY** Water clarity is used as an indirect measure of algal productivity, but is also influenced by suspended sediments and dissolved color.

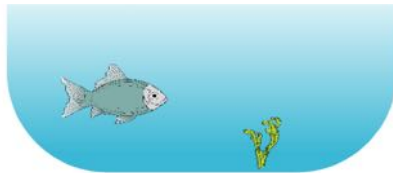
**CHLOROPHYLL A** A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.

**PHOSPHORUS** A key nutrient that stimulates algal blooms and excessive plant growth, particularly for invasive species.

**DISSOLVED OXYGEN** Low dissolved oxygen can kill or stress organisms and release phosphorus from sediments, further degrading water quality.

**LAKE TROPHIC STATE** is generally broken into three categories

### OLIGOTROPHIC



DEEP

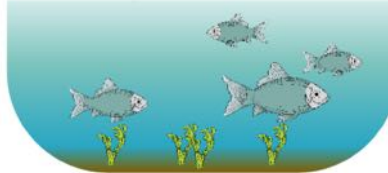
LOW

LOW

HIGH THROUGHOUT  
WATER COLUMN

MINIMAL PLANTS

### MESOTROPHIC



REDUCED

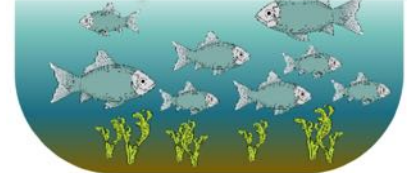
MODERATE

MODERATE

OCCASIONALLY LOW  
IN BOTTOM WATERS

MODERATE PLANTS

### EUTROPHIC



SHALLOW

HIGH

HIGH

FREQUENTLY LOW IN  
BOTTOM WATERS

ABUNDANT PLANTS

**LAKE AGING** is both natural and accelerated by human activities

Lakes **NATURALLY** age or become more productive over thousands of years. In recent geologic time, humans have enhanced the rate of nutrient enrichment and lake productivity, speeding up this natural process to tens or hundreds of years.

**HUMANS** introduce excess phosphorus enters the lake in eroding sediment, groundwater (e.g. aging septic systems), or stormwater runoff, which contains fertilizers, detergents, or other phosphorus-based products. Algal blooms and uncontrolled sediment erosion along the shoreline can decrease water clarity, which can reduce shoreline property values.



Extension

