LAKE BASICS

- **Site Depth**: 1 Deep – 17 feet
- **Lake Max/Mean Depth**: 17 feet / 7.9 feet
- **Location**: Wakefield, NH (Carroll Co.)
- **Watershed Area**: 5.9 square miles
- **Lake Area**: 190 acres
- **Shore Length**: 7.4 miles
- **Lake Volume**: not available
- **flushing Rate**: 5.4 times per year
- **Lake Elevation**: 564 feet

SITE STATUS

**WATER CLARITY**: 2.1

**TOTAL PHOSPHORUS**: 16.8

**CHLOROPHYLL A**: 6.2

**DISSOLVED OXYGEN**: poor

**TROPHIC STATE**: EUTROPHIC

At site 1 Deep, water quality is generally poor. While standard oxygen tests were not assessed due to the lack of the formation of distinct deep layer.

SITE RESULTS

**SITE STATUS**

**SUMMARY OF CONDITIONS**

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<thead>
<tr>
<th></th>
<th>poor</th>
<th>good</th>
<th>excellent</th>
<th>no data</th>
<th>degrading</th>
<th>improving</th>
<th>flat</th>
<th>too few data</th>
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<td>TREND</td>
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**WATER CLARITY (m)**

**CHLOROPHYLL A (mg L⁻¹)**

**TOTAL PHOSPHORUS (mg L⁻¹)**

**SEASONAL WATER QUALITY PATTERNS**

August

<table>
<thead>
<tr>
<th>WATER CLARITY (m)</th>
<th>CHLOROPHYLL A (mg L⁻¹)</th>
<th>TOTAL PHOSPHORUS (mg L⁻¹)</th>
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September

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<tr>
<th>WATER CLARITY (m)</th>
<th>CHLOROPHYLL A (mg L⁻¹)</th>
<th>TOTAL PHOSPHORUS (mg L⁻¹)</th>
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</table>
LOW DISSOLVED OXYGEN at 1 Deep indicates susceptibility to internal phosphorus loading, which could increase the amount of phosphorus available to stimulate plant and algal growth.

INVASIVES are present (water variable milfoil) and are currently being treated.

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.

WATER QUALITY REVIEW

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
  - OCCASIONALLY LOW IN BOTTOM WATERS
  - MODERATE PLANTS

- **EUTROPHIC**
  - SHALLOW
  - 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.