LOVELL LAKE

2019 SAMPLING HIGHLIGHTS
Station – 2 South
Sanbornville, NH

Station 2 South was used as a reference point to represent the overall Lovell Lake water quality. Water quality data displayed in Tables 1, 2 and 3 are surface water measurements with the exception of the dissolved oxygen data that were collected near the lake bottom.

### Table 1. 2019 Lovell Lake Seasonal Averages and NH DES Aquatic Life Nutrient Criteria

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Oligotrophic</th>
<th>Mesotrophic</th>
<th>Eutrophic</th>
<th>Lovell Lake Average (range)</th>
<th>Lovell Lake Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Clarity (meters)</td>
<td>4.0 – 7.0</td>
<td>2.5 - 4.0</td>
<td>&lt; 2.5</td>
<td>6.6 meters (5.2 – 7.5)</td>
<td>Oligotrophic</td>
</tr>
<tr>
<td>Chlorophyll α (ppb)</td>
<td>&lt; 3.3</td>
<td>&gt; 3.3 – 5.0</td>
<td>&gt; 5.0 – 11.0</td>
<td>2.7 ppb (1.8 – 3.4)</td>
<td>Oligotrophic</td>
</tr>
<tr>
<td>Total Phosphorus (ppb)</td>
<td>&lt; 8.0</td>
<td>&gt; 8.0 – 12.0</td>
<td>&gt; 12.0 – 28.0</td>
<td>6.9 ppb (5.0 – 8.0)</td>
<td>Oligotrophic</td>
</tr>
<tr>
<td>Dissolved Oxygen (mg/L)</td>
<td>5.0 – 7.0</td>
<td>2.0 – 5.0</td>
<td>&lt;2.0</td>
<td>0.5 mg/L (0.0 – 3.1)</td>
<td>Eutrophic</td>
</tr>
</tbody>
</table>

* Dissolved oxygen concentrations were measured between 8.0 and 11.5 meters, in the layer of rapidly decreasing temperatures, on September 3, 2019.

### Table 2. 2019 Lovell Lake Seasonal Average Accessory Water Quality Measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Assessment Criteria</th>
<th>Lovell Lake Average (range)</th>
<th>Lovell Lake Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color (color units)</td>
<td>&lt; 10 uncolored</td>
<td>10.6 color units (range: 7.4 – 16.1)</td>
<td>Slightly colored</td>
</tr>
<tr>
<td>Alkalinity (mg/L)</td>
<td>&lt; 0.0 acidified</td>
<td>13.8 mg/L (range: 12.4 – 14.5)</td>
<td>Low vulnerability</td>
</tr>
<tr>
<td>pH (std units)</td>
<td>&lt; 5.5 suboptimal for successful growth and reproduction</td>
<td>7.5 standard units (range: 7.4 – 7.5)</td>
<td>Optimal range for fish growth and reproduction</td>
</tr>
<tr>
<td>Specific Conductivity (uS/cm)</td>
<td>&lt; 50 uS/cm Characteristic of minimally impacted NH lakes</td>
<td>128.2 uS/cm (range: 123.9 – 134.4)</td>
<td>Characteristic of lakes experiencing human disturbances</td>
</tr>
</tbody>
</table>

### Figure 1. Lovell Lake Water Quality (2019)

**Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll α concentrations and dissolved color concentrations.** Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll α and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll α and/or color concentrations.
LONG-TERM TRENDS

WATER CLARITY: The Lovell Lake water clarity measurements, measured as Secchi Disk transparency, display a trend of increasing water clarity over the past thirty-one years (Figure 4).

CHLOROPHYLL: The Lovell Lake chlorophyll a concentrations, a measure of microscopic plant life within the lake, display a trend of decreasing concentrations over the past thirty-one years (Figure 4).

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. The Lovell Lake total phosphorus concentrations display a trend of increasing concentrations over the thirty-one year span (Figure 5).

COLOR: The Lovell Lake color data, the result of naturally occurring “tea” colored substances from the breakdown of soils and plant materials, have decreased over the past thirty-one years (Figure 5).

Table 3. Salmon Falls Headwaters Seasonal Average Water Quality Inter-comparison (2019)

<table>
<thead>
<tr>
<th>Lake</th>
<th>Average Secchi Disk Transparency (meters)</th>
<th>Average Chlorophyll a (ppb)</th>
<th>Average Total Phosphorus (ppb)</th>
<th>Average Dissolved Oxygen (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great East Lake</td>
<td>10.4</td>
<td>1.3</td>
<td>4.2</td>
<td>6.6</td>
</tr>
<tr>
<td>Wilson Lake</td>
<td>Not Sampled in 2019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lovell Lake</td>
<td>6.6</td>
<td>2.7</td>
<td>6.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Horn Pond</td>
<td>Not Sampled in 2019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Ivanhoe</td>
<td>5.0</td>
<td>3.7</td>
<td>8.8</td>
<td>------</td>
</tr>
</tbody>
</table>

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Recommendations

Implement Best Management Practices within the Lovell Lake watershed to minimize the adverse impacts of polluted runoff and erosion on the lake. Refer to “Landscaping at the Water’s Edge: An Ecological Approach” and “New Hampshire Homeowner’s Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home” for more information on how to reduce nutrient loading caused by overland run-off. The Acton Wakefield Watersheds Alliance also offers technical assistance to help design and implement erosion control projects that protect and improve the water quality.

- https://awwatersheds.org/healthy-lakes/conservation-practices-for-homeowners/
Figure 7. Lovell Lake
Sanbornville, NH
2018 deep water sampling site locations that display the seasonal average water clarity

Average Depth = 13.0 feet
Maximum Depth = 41.0 feet
Surface Area = 538 acres

Disclaimer: Due to the COVID-19 pandemic, access to University files needed to update this image, the 2018 map was used. The sampling locations, average depth, maximum depth and surface area are accurately depicted. However, the year and seasonal average water transparency have not been updated. Once full University resources become available this map will be updated.

The information in the first two pages of this report reflects the 2019 conditions and is final.

1 North
Secchi Disk Transparency = 23.3 feet

2 South
Secchi Disk Transparency = 26.6 feet