

TOWNHOUSE POND

2014 SAMPLING HIGHLIGHTS

Milton, NH



Blue = Excellent =
Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

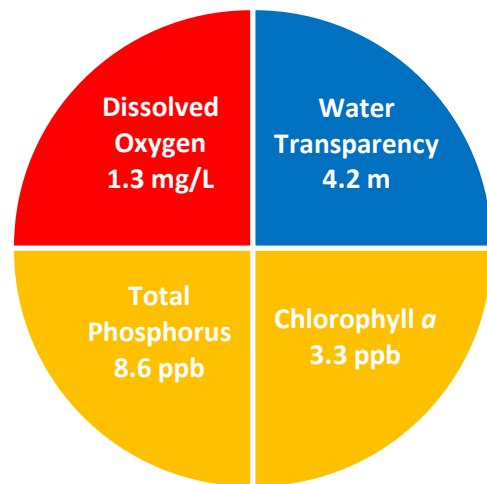


Figure 1. Townhouse Pond Water Quality (2014)

Please refer to the Milton Three Ponds Annual Report (2014) for additional information

Table 1. 2014 Townhouse Pond Seasonal Averages and NHDES Trophic Level Classification Criteria

| Parameter | Oligotrophic "Excellent" | Mesotrophic "Fair" | Eutrophic "Poor" | Townhouse Pond Average (range) | Townhouse Pond Classification |
|----------------------------|--------------------------|--------------------|------------------|--------------------------------|-------------------------------|
| Water Clarity (meters) | 4.0 – 7.0 | 2.5 - 4.0 | < 2.5 | 4.1 meters (3.4 – 4.9) | Oligotrophic |
| Chlorophyll <i>a</i> (ppb) | < 3.3 | > 3.3 – 5.0 | > 5.0 – 11.0 | 3.3 ppb (1.8 – 5.3) | Mesotrophic |
| Total Phosphorus (ppb) | < 8.0 | > 8.0 – 12.0 | > 12.0 – 28.0 | 8.6 ppb (7.9 – 9.3) | Mesotrophic |
| Dissolved Oxygen (mg/L) | 5.0 – 7.0 | 2.0 – 5.0 | <2.0 | 1.3 mg/L (0.7 – 2.9) | Eutrophic |

*Dissolved oxygen concentrations measured between 7.5 and 14.5 meters in the bottom water layer

Table 2. 2014 Townhouse Pond Seasonal Average Accessory Water Quality Measurements

| Parameter | Assessment Criteria | | | | | Townhouse Pond Average (range) | Townhouse Pond Classification |
|-------------------------------|-------------------------------|--------------------------------|-----------------------------------|-------------------------------|---|---------------------------------------|-------------------------------|
| | < 10 uncolored | 10 – 20 slightly colored | 20 – 40 lightly tea colored | 40 – 80 tea colored | > 80 highly colored | | |
| Color (color units) | < 10 uncolored | 10 – 20 slightly colored | 20 – 40 lightly tea colored | 40 – 80 tea colored | > 80 highly colored | 30.8 color units (range: 26.3 – 37.7) | Lightly tea colored |
| Alkalinity (mg/L) | < 0.0 acidified | 0.1 – 2.0 extremely vulnerable | 2.1 – 10 moderately vulnerable | 10.1 – 25.0 low vulnerability | > 25.0 not vulnerable | 8.9 mg/L (range: 7.5 – 9.7) | Moderately Vulnerable |
| Specific Conductivity (uS/cm) | < 50 uS/cm Minimally impacted | | 50-100 uS/cm Some human influence | | > 100 uS/cm Experiencing human disturbances | 96.0 uS/cm (range: 95.9 – 96.1) | Some human influence |

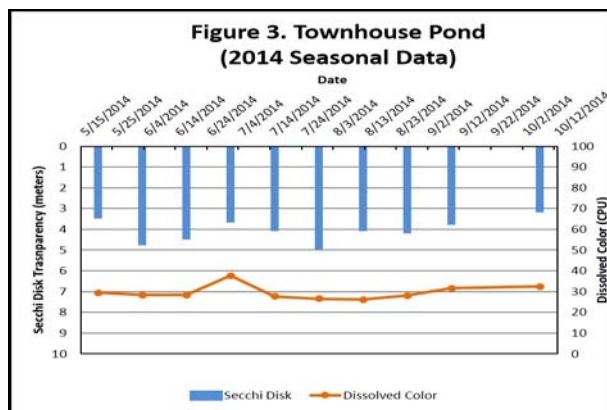
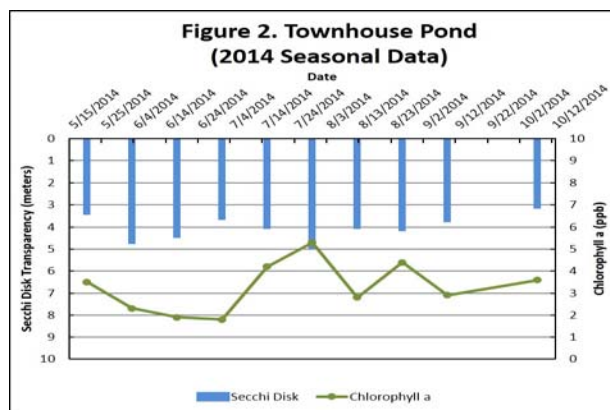


Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in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

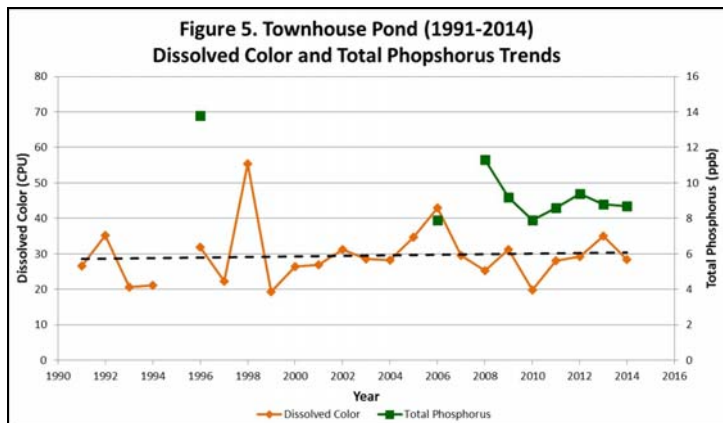
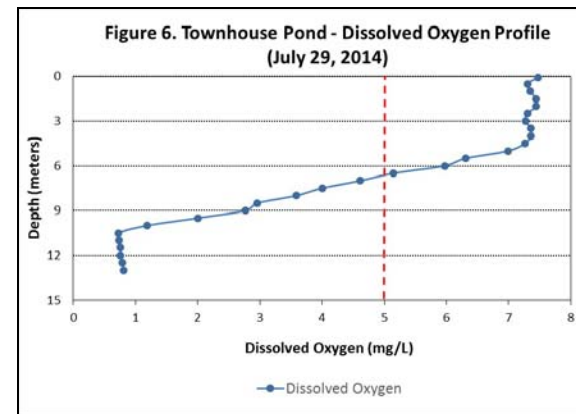
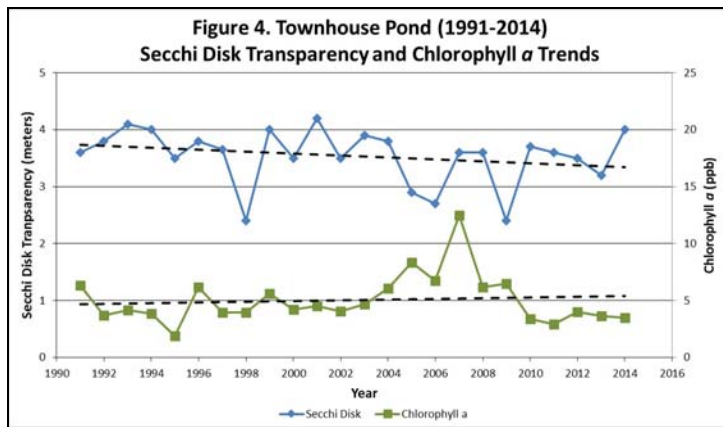
LONG TERM TRENDS

WATER CLARITY: The Townhouse Pond water clarity measurements, measured as Secchi Disk transparency, display a trend of decreasing water clarity over the past twenty-four years.

CHLOROPHYLL: The Townhouse Pond chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of increasing chlorophyll *a* concentrations over the past twenty-four years.

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. Due to limited total phosphorus data, including gaps among sampling years, a trend analysis was not performed. Once ten years of total phosphorus data have been collected, a trend analysis will be performed.

COLOR: The Townhouse Pond color data, the result of naturally occurring “tea” color substances from the breakdown of soils and plant materials, display a trend of increasing dissolved color concentrations over the past twenty-three years.



Figures 4 and 5. Changes in the Townhouse Pond water clarity (Secchi Disk depth), chlorophyll *a*, dissolved color and total phosphorus concentrations measured between 1991 and 2014. **These data illustrate the relationship between plant growth, natural water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Trendlines are displayed when ten or more years of data are available.

Figure 6. Townhouse Pond dissolved oxygen profile taken by the **Center for Freshwater Biology** on July 29, 2014. The vertical red line indicates the oxygen concentration commonly considered the threshold for successful growth and reproduction of cold water fish such as trout and salmon.

Recommendations:

Implement Best Management Practices within the Townhouse Pond watershed to minimize the adverse impacts of polluted runoff and erosion into 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 suggestions that can help reduce nutrient loading caused by overland run-off.

- http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

Figure 7. Townhouse Pond

Milton, NH

2014 Deep water sampling sites with average water clarity

N



0 0.045 0.09 0.18 0.27 0.36 Miles

Aerial Orthophoto Source: NH Grant
Site Locations GPS coordinates collected by the UNH Center for Freshwater Biology



University of New Hampshire
Cooperative Extension

