

# Eaton Water Quality Summary

- For the one (1) site tested at Long Pond Outlet, Eaton's water quality overall is good. All parameters tested fall within accepted NH and/or EPA standards for surface waters. However, we understand that we have a limited data set, with only one site in Eaton, to base this on.

Things that Eaton can do to help protect its water quality:

- 1) Encourage residents to get their septic systems checked
- 2) Continue to perform monitoring on lakes/ponds in Eaton
  - Either from LL program (UNH) or VLAP program (NHDES)
- 3) Reduce salt usage in roadways, especially those near or around bodies of water
- 4) Maintain riparian habitats around bodies of water
- 5) Use best management practices (BMPs) for any home/business on or near surface waters
- 6) Monitor the effectiveness of culverts in your town and replace those as needed

*Report respectfully submitted by J. Emerson and T. Millum, Water Quality Coordinator and Americorps Water Quality Assistant at GMCG*



# Water Quality Parameters: what are we testing for?

**Dissolved Oxygen:** The amount of oxygen contained in water is commonly expressed as a concentration in terms of milligrams per liter (mg/L), and/or as a percent (%) saturation. Accurate dissolved oxygen readings are dependent on temperature and atmospheric pressure. Gases, like oxygen, dissolve more easily in cooler water than in warmer water. Depletions in dissolved oxygen can cause major shifts in the kinds of aquatic organisms found in water bodies.

**Turbidity:** A measurement of the clarity of a fluid. The greater the turbidity, the murkier the water. High levels of suspended particles, which absorb heat from the sun, increases the water temperature. Suspended solids can clog fish gills, reduce growth rates, decrease resistance to disease and prevent egg and larval development of aquatic life.

**Temperature:** The metabolic rates of organisms increase with increasing water temperature. An increased metabolism increases the need for oxygen. Temperature also influences the amount of oxygen dissolved in water and the rate of photosynthesis by algae and larger aquatic plants.

**Conductivity:** a measure of the ability of water to pass an electrical current. Conductivity in water is determined by the presence of ions that carry a positive or negative charge. Conductivity in some areas, typically those near road, may have higher than average levels due to manmade issues such as road salting during the winter months. Conductivity is also influenced by temperature (warmer water has higher conductivity) and by flow volume.

**pH:** Water contains both hydrogen ions and hydroxyl ions. At a pH of 7.0 (neutral) the concentration of both hydrogen ions and hydroxyl ions is equal. When the pH is less than 7.0 (acidic) there are more hydrogen ions than hydroxyl ions. When the pH is greater than 7.0 (alkaline or basic) there are more hydroxyl ions than hydrogen ions. Generally speaking, the ability of aquatic organisms to complete a life cycle greatly diminishes as pH falls below 5.0 or exceeds 9.0.

**Total Phosphorus:** Of the two nutrients most important to the growth of aquatic plants, nitrogen and phosphorus, it is generally observed that phosphorus is more limiting to plant growth in freshwater systems. Phosphorus is primarily associated with human related activities within the watershed and is therefore important to monitor and control.

# Water Quality Parameters Guideline

Parameter	Acceptable Limits
Dissolved Oxygen	Above 75% saturation; between 6-12mg/L*
Temperature	No standard
Turbidity	10 NTUs or lower; preferably in the 1 NTU range*
Conductivity	Below 500uS/cm in rural areas; 1500uS/cm in urban areas**
Total Phosphorus	Below 30ug/L**
pH	Between 6.5-8; usually around 6.5 unless naturally lower*

\*NH Rev Stat § 485-A:8 (2016) Standards for Classification of Surface Waters of the State

\*\*EPA recommendations

# GEA-1 Long Pond Outlet

2015-2020 Snapshot  
Monitored since 2013

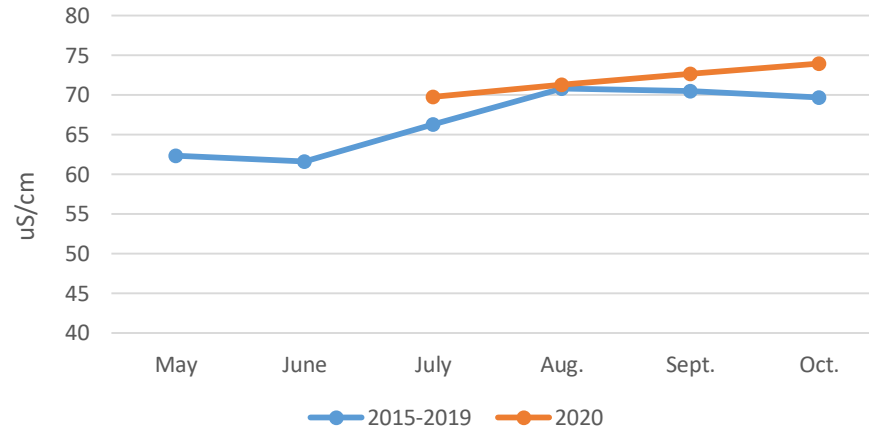
Collecting for: pH, turbidity, TP, temperature, conductivity, and dissolved O<sub>2</sub>

Parameter	Trend	Explanation
pH	Stable	No significant trends; data show low variability
Turbidity	Stable	No significant trends; data show low variability
TP	Stable	No significant trends; data show low variability

\*TP Data available only through 2019

\*Summer field sampling began in July 2020 due to complications with COVID-19

### Conductivity by Month

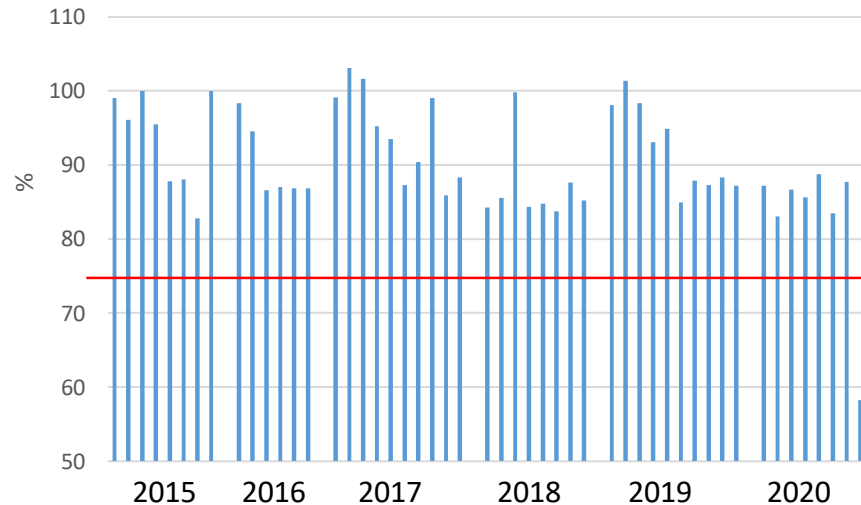


### Site location



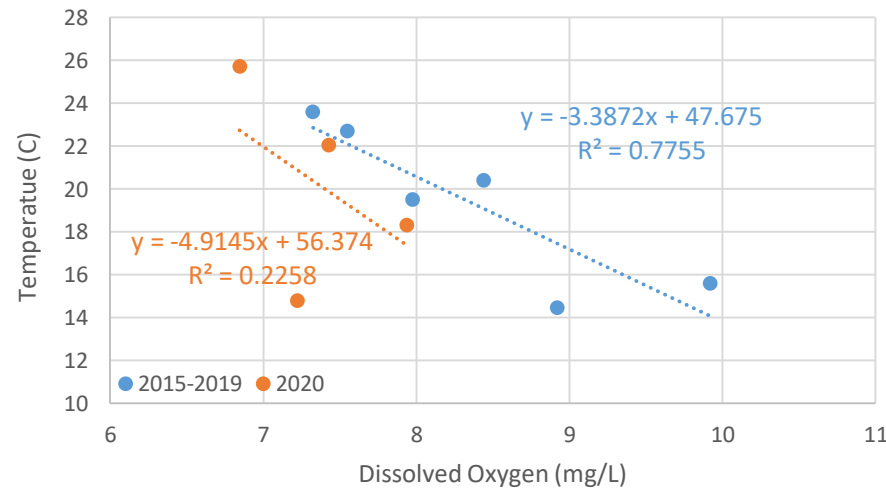
Conductivity at GEA-1 has shown low variability and stable numbers in both 2020 and combined 2015-2019 numbers indicating good water quality with respect to conductivity levels.

### Dissolved O<sub>2</sub> % Saturation



New Hampshire State DO standard for Class A waters is **above 75%** during the months GMCG tests.

### Dissolved O<sub>2</sub> vs. Temperature



Dissolved Oxygen (DO) has an inverse relationship with temperature: as temperature increases DO decreases. The R<sup>2</sup> value from 2015-2019 (blue) shows a fairly strong correlation compared to 2020 (orange) which shows almost no correlation. T is fairly stable in 2020 while DO decreases slightly compared to 2015-2019. Changes in T in 2020 are not correlated with changes in T.