

# WATER QUALITY MONITORING

## INDICATORS LAKE WATER QUALITY

2016

### THE INDICATORS OF LAKE WATER QUALITY:

#### 1. PHOSPHORUS

- Phosphorus is an essential nutrient that stimulates the growth of algae and aquatic plants in lakes.
- **The more phosphorus in the lake, the more algae and aquatic plants.**

#### 2. CHLOROPHYLL *a*

- Chlorophyll is the green pigment found in the cells of all plants and algae.
- The amount of algae in a lake can be estimated by measuring the chlorophyll concentration in the water.

#### 3. TRANSPARENCY (SECCHI DISK)

- A measure of water clarity and indirectly of algae density.
- A reduction in transparency or water clarity occurs as the algae increases.
- It is important to note that water clarity can be influenced by sun, waves, and the person checking.
- It can also be strongly influenced by the color of the water.

#### 4. DISSOLVED ORGANIC CARBON (THE COLOR MEASUREMENT)

- Dissolved Organic Carbon is responsible for the yellowish brown discoloration of the water “tea stained lakes”.
- The concentration of dissolved organic carbon is used to assess the color of the water caused by the presence of substances such as humic acid coming from decomposition in the wetlands.
- The transparency of the water decreases with increasing amounts of dissolved organic carbon.

**Lake Hughes water samples indicate that there is a moderate, almost high amount of Dissolved Organic Carbon in the water causing the significant brownish discoloration of the water.**

#### 5. DISSOLVED OXYGEN

- The amount of dissolved oxygen in the water is an important indicator of overall lake health.
- Many experts consider dissolved oxygen to be the most important indicator used to characterize lake water quality.
- Oxygen is essential for aquatic life. Without oxygen, a lake would be devoid of fish, plants, etc.
- Dissolved oxygen is also required in the decomposition of organic matter (algae and aquatic plants). A low concentration of dissolved oxygen is linked to the decomposition of large amounts of algae and plants.
- **Trout need consistently high concentrations of dissolved oxygen to survive. If a lake's dissolved oxygen content decreases significantly, fish species will shift to those with lower oxygen needs.**

**In 2011 Dissolved Oxygen was measured at 14 different levels at the deepest part of Lake Hughes (starting at 1 meter and ending at 25 meters).  
THERE WERE NO OXYGEN DEFICITS AT ANY LEVEL**

SIGNS CAN APPEAR IN THE SHALLOW WATERS AT THE SHORELINE BEFORE THE WATER QUALITY IN DEEP ZONES IS AFFECTED  
A COMPLETE EVALUATION OF THE STAGE OF EUTROPHICATION OF A LAKE INCLUDES AN EVALUATION OF THE FOLLOWING:

- 6. AQUATIC PLANTS** The increasing amount of aquatic plants indicates more phosphorus in the water.
- 7. ALGAE (PERIPHYTON)** The amount of algae on submerged objects is also indicative of phosphorus levels.
- 8. EROSION → SEDIMENTS** Exposed soil on the shoreline and in ditches near a lake should be avoided.

**WHAT WE SEE ON THE SHORELINE AND IN THE SHALLOW WATERS CAN BE VERY SIGNIFICANT –  
KEEP A WATCHFUL EYE ON THIS AREA OF THE LAKE.**