



2013 Island Lake Water Quality Summary

The goal of this testing protocol was to monitor various water quality parameters of the lake, compare results to historical data, and identify any potential risks to the health of Island Lake. Water samples were taken at two different locations and tested for 14 different parameters. Tests were conducted on a monthly basis from April through August. This report describes conditions at the times the samples were taken. The quality of the water was tested only to the parameters listed below. For more information, please see the full Water Quality Report.

Parameter	Change from 2012	2013 Season Average	Target Range	Status
Temperature	↑ Decline	71.8 °F	Less Than 75 °F	● Healthy
Dissolved Oxygen	↓ Decline	7.5 mg/L	4.0 – 12.0 mg/L	● Healthy
Total Phosphorus	↓ Improvement	38 ppb	0 – 100 ppb	● Healthy
Phosphate	↓ Improvement	19 ppb	0 – 100 ppb	● Healthy
Nitrate	↑ Decline	211 ppb	0 – 1,000 ppb	● Healthy
Chlorophyll-a	↓ Improvement	3.1 ppb	0 – 7.3 ppb	● Healthy
Transparency	↑ Improvement	8.9 feet	More than 6.5 ft.	● Healthy
pH	↓ Improvement	8.6 S.U.	7.0 – 9.0 S.U.	● Healthy
Total Dissolved Solids	↓ Improvement	359 ppm	0 – 1,000 ppm	● Healthy
Conductivity	↓ Improvement	717 ppm	0 – 1,500 ppm	● Healthy
Alkalinity	↔ No Change	120 ppm	100 – 250 ppm	● Acceptable
Sulfate	↔ No Change	15.2 ppm	3 – 30 ppm	● Healthy
Fluoride	↓ Improvement	0.10 ppm	0.01 – 0.30 ppm	● Healthy
Chloride	↓ Improvement	144 ppm	0 – 230 ppm	● Healthy
Trophic State Index – Transparency	↓ Improvement	48		Mesotrophic
Trophic State Index – Total Phosphorus	↓ Improvement	56		Eutrophic
Trophic State Index – Chlorophyll-a	↓ Improvement	41		Mesotrophic

Discussion:

The Temperature increased slightly from 2012. The higher temperature decreased the oxygen solubility of the lake, so the dissolved oxygen decreased. The Total Phosphorus and Phosphate concentrations decreased, but the Nitrate concentrations were up slightly. The Chlorophyll concentration decreased, showing a response to the lesser phosphorus. Less Chlorophyll indicated less phytoplankton in the water and, correspondingly, the Transparency increased. The water chemistry parameters showed no increases from 2012, suggesting abundant rainfall flushed excess molecules from the lake. The decreases were all positive trends for the lake except Alkalinity, which is close to the lower limit. As the rainwater infiltrates the ground, it will pick up carbonates from the bedrock and replenish the Alkalinity.

The Trophic State Indices generalize the most useful parameters for an easy comparison to other lakes and expected values. All three TSI's decreased from 2012, showing that less Phosphorus led to less algae growth. Also, less algae growth resulted in clearer water and increased transparency.

