

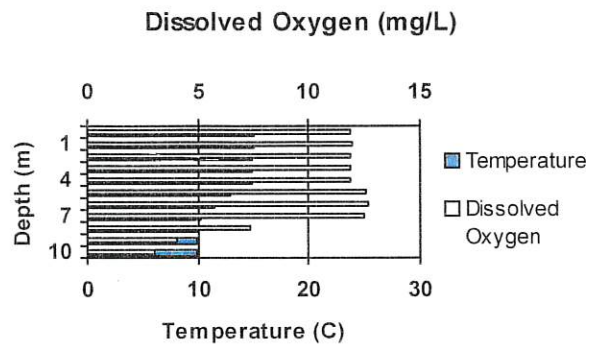
LAKE CHECK Water Quality Monitoring Report

2017142

Customer	Waterbody	Sample Information
West Lake (Muskegon)	West Lake	Date: 4/26/2017
		Site: Deep Hole

On-Site Results

Depth (m)	Temperature (degrees C)	Dissolved Oxygen	
		mg/L	%
0	15.1	11.9	118
1	15.0	11.9	118
2	15.0	11.9	118
3	14.9	11.9	118
4	14.9	11.9	117
5	13.0	12.5	119
6	11.5	12.7	116
7	10.3	12.5	111
8	9.9	7.4	71
9	9.9	4.1	39
10	9.9	3.0	27



Secchi Disk Depth 4.3 meters

Thermocline Depth 4.5 meters

Analytical Results

Parameter	Result	Units	Interpretation
Fecal Bacteria (E. coli)		CFU/100 mL	N/A
Conductivity	121	uS/cm	
Total Dissolved Solids	78	mg/L	Low concentration of dissolved salts
pH	8.2	S.U.	Water is slightly alkaline
Alkalinity	79	mg CaCO ₃ /L	Water is soft
Total Phosphorus	8	ug/L	Slightly phosphorus enriched
Nitrates	200	ug/L	Not nitrogen enriched
Chlorophyll		N/A	

Trophic State Evaluation

	TSI	Trophic Status
Based on Secchi Disk Depth	39	mesotrophic
Based on Total Phosphorus	30	oligotrophic
Based on Chlorophyll	N/A	

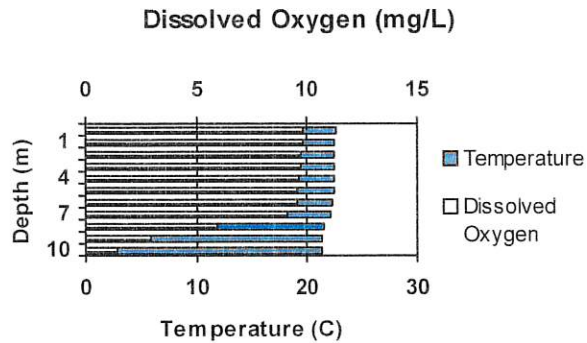


Water Quality Monitoring Report

Customer	Waterbody	Sample Information
West Lake (Muskegon)	West Lake	Date: 8/30/2017
		Site: Deep Hole

On-Site Results

Depth (m)	Temperature (degrees C)	Dissolved Oxygen	
		mg/L	%
0	22.6	9.8	114
1	22.5	9.8	113
2	22.5	9.7	112
3	22.4	9.7	112
4	22.4	9.6	111
5	22.4	9.6	110
6	22.3	9.5	110
7	22.1	9.1	105
8	21.5	5.9	72
9	21.3	3.0	34
10	21.3	1.4	18



Secchi Disk Depth 5.5 meters
 Thermocline Depth meters

Analytical Results

Parameter	Result	Units	Interpretation
Fecal Bacteria (E. coli)		CFU/100 mL	N/A
Conductivity	131	uS/cm	
Total Dissolved Solids	85	mg/L	Low concentration of dissolved salts
pH	8.1	S.U.	Water is slightly alkaline
Alkalinity	44	mg CaCO3/L	Water is very soft
Total Phosphorus	13	ug/L	Moderately phosphorus enriched
Nitrates	200	ug/L	Not nitrogen enriched
Chlorophyll		N/A	

Trophic State Evaluation

	TSI	Trophic Status
Based on Secchi Disk Depth	35	meso-oligotrophic
Based on Total Phosphorus	37	meso-oligotrophic
Based on Chlorophyll	N/A	



Bacteria Sampling Report

Waterbody:
West Lake

West Lake (Muskegon)

Date Sampled:
7/27/2017

Location	E. coli	Total Coliforms	Interpretation
#1	4.0	160	● Water meets bacteriological standards for safe swimming.
#2	4.0	220	● Water meets bacteriological standards for safe swimming.
#3	4.0	460	● Water meets bacteriological standards for safe swimming.

Bacterial counts are expressed as the number of Colony Forming Units per 100 milliliters (CFU/100mL).

For full body contact recreation (including swimming) counts of E. coli should not exceed 130 (CFU/100mL) as a monthly geometric mean of at least five samples per the State of Michigan standard, or single samples should not exceed 298 (CFU/100mL) [235 CFU/100mL in a designated bathing beach area] per Federal (EPA) guidelines.

Current recreational water quality standards do not rely on Total Coliform counts.

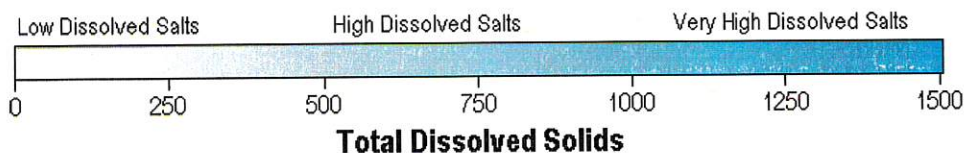
Approved by Jaimee Conroy Date 31-Jul-17
Mrs. Jaimee Conroy, Technical Services Manager



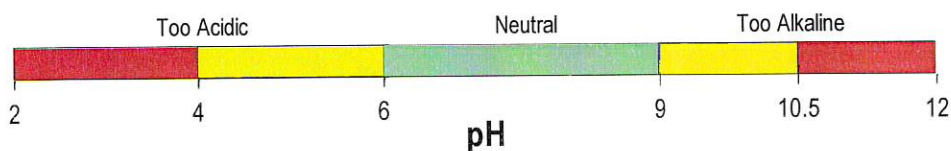
PLM Lake & Land Management Corp
P.O. Box 132
Caledonia MI 49316-
Phone: (616) 891-1294

LAKE CHECK WATER QUALITY MEASUREMENTS

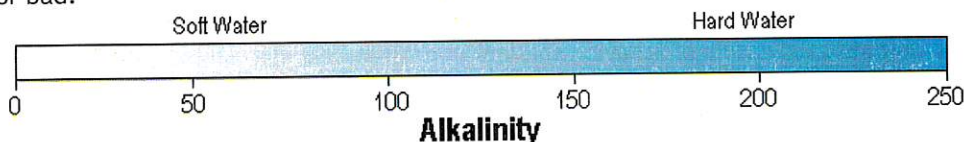
Conductivity and Total Dissolved Solids (TDS) measure the total amount of material dissolved in the water. Higher values indicate potentially richer, more productive water, whereas lower values indicate potentially cleaner, less productive water. Localized increases in conductivity and TDS may indicate inputs of groundwater or other nutrient-enriched water. [Note: Human activities that result in nutrient pollution (e.g., fertilizer runoff) can increase the productivity of algae and other organisms without raising conductivity/total dissolved solids very much. If nutrient pollution is occurring, the total phosphorus concentration is a much better indicator of potential productivity.]



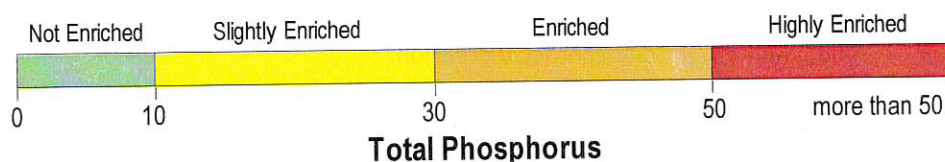
pH describes the balance between acids and bases in the water. Neutral values of pH (between 6 and 9) are desirable. Low pH values typically result either from the growth of bog vegetation (such as peat moss), acid precipitation ("acid rain"), or acid runoff (as in acid mine drainage). Excessive growth of certain plants and algae can raise pH values above 9.0 or 10.0.



Alkalinity measures the concentration of carbonates and bicarbonates in the water. These compounds and other ions associated with them make water "hard". High alkalinity lakes are hardwater lakes, while low alkalinity lakes are softwater lakes. Different kinds of plants, algae, and other aquatic organisms live in hardwater than in softwater. Alkalinity also influences the effectiveness of some herbicides and algicides. Alkalinity is a basic characteristic of water, but is neither inherently good nor bad.



Total Phosphorus measures the total (organic and inorganic, dissolved and particulate) amount of phosphorus in the water. Phosphorus is usually the plant nutrient (i.e., fertilizer) that controls the amount of algal growth in lakes and ponds. Most Midwestern lakes have more phosphorus and more algae than is desirable, so lower values are generally better, though very unproductive water bodies typically support little fish production.



Nitrate measures the total inorganic amount of nitrogen in the water. Nitrogen is the plant nutrient (i.e., fertilizer) most likely to control the amount of rooted plant growth in lakes and ponds. Most Midwestern lakes have more nitrogen and more rooted plant growth than is desirable, so lower values are generally considered better

