



WATER QUALITY OUTDOOR LAB

Team Members:

Materials: Get the following materials from your instructor before you get on the pontoon boat and return in good order when the lab is completed:

- Proper fitting life preserver.
- This lab manual/pencil/clip board/camera.
- Thermometer and chemette set.
- Secchi disc.
- pH paper.
- Vial to collect water sample.
- Aquatic Chemical Factors Sheet.

Directions: *Keep the life preserver on at all times when aboard the boat/canoe and keep close to your partner! Stay seated anytime the boat is moving and always in the canoe!* Use the above equipment to gather data as directed by your instructor and as you learned during the indoor session.

Oxygen

Use the chemette set to determine surface oxygen only _____ (10 pts)_____

Temperature: Use the meter to get the water temperature at the following depths:

	Surface	10 feet	20 feet	30 feet	40 feet
Temperature					

(10 pts)_____

Acidity/Alkalinity: take a small sample of water in your cup and test with pH paper

What was the pH? _____ (5 pts)_____

Is it acidic/alkaline/neutral? _____ (5 pts)_____

Turbidity/clarity: Use the Secchi disc to determine turbidity/clarity (how clear the water is):

Holding on to the cord, drop the disc into the water on the shady side of the boat until you cannot see the disc. Retrieve the disc and determine how many feet down it was.

What was the water clarity in feet? _____ (10 pts)_____

Summary: Provided other factors are okay, what do you think of the water quality of this lake?

TOTAL WATER QUALITY POINTS (40 pts)_____

WATER QUALITY RESOURCE TABLE

Factor	Indicates	Affected by	Effects on lake	Method	Acceptable Range
Turbidity	Water clarity	sediment, algae, tannins	Temperature, photosynthesis, clogs gills, spawning	Secchi disc	Clearer is better
Dissolved Oxygen	Oxygen available in water	Higher in cold water, wind, storms, shade, running water, springs	Respiration: breathing for fish, insects, bacteria	Chemettes	Greater than 5, but less than 15 mg/L
Temperature	Warm/cold	Air temperature, season, sun, wind, depth of lake	Algae growth increases, Dissolved oxygen decreases	Thermometer	35-65 F (most fish prefer)
pH	Acidity	Sediment, type of substrate and rock, pollution	Which species can live in that lake	pH paper	5-9 (7 is neutral)
Phosphates	Possible pollution	Fertilizer or animal waste	Increased plant/algae growth, killing fish	Lab test	< 0.1 mg/L
Nitrates	Possible pollution	Fertilizer, septic systems	Increased plant/algae growth, killing fish	Lab test	<1 mg/L

pH Color Codes

EFFECTS OF ACIDITY ON FISH SPECIES (Olszyk 1980)	
pH	Effects
6.5	Walleye spawning inhibited
5.8	Lake trout spawning inhibited
5.5	Smallmouth bass disappear
5.2	Walleye, burbot, lake trout disappear
5.0	Spawning inhibited in many fish
4.7	Northern pike, white sucker, brown bullhead, pumpkinseed, sunfish and rock bass disappear
4.5	Perch spawning inhibited
3.5	Perch disappear
3.0	Toxic to all fish

