

**SUPERIOR RIVERS WATERSHED ASSOCIATION  
WATER CHEMISTRY FIELD ANALYSIS INSTRUCTIONS**

**SAMPLE ON THE FIRST SATURDAY OF EACH MONTH, AND AT LEAST ONCE PER YEAR WITHIN 24 HOURS OF A MAJOR RAIN EVENT. IF YOU CAN'T GO OUT THAT DAY, LET US KNOW AND SOMEONE ELSE CAN FILL IN. THANKS!**

**Safety Check**

When you arrive at your monitoring site, check water and bank conditions to make sure it is safe to get down to the water. Please wear rubber gloves and eye protection – we can provide these for you.

**POISON CONTROL: 1 (800) 222-1222**

**Getting Started**

- If you are sampling at a road/stream crossing, make sure you access the stream by staying within the road right-of-way (30 feet from the center of the road). Beyond that area, try to “keep your feet wet,” or be within the high water mark of the stream, out of consideration for any adjacent landowners.
- Fill in the time and date on your data sheet. You can start on the qualitative questions on the data sheet now, or after you perform the tests.
- Take the ambient air temperature with your thermometer, by holding or placing it out of direct sunlight for at least 2 minutes.
- Take stream temperature. Make sure whole thermometer is submerged in the stream for at least 2 minutes. Then fill up general sample bottle (large, plastic) and dissolved oxygen bottle (small, glass). Rinse each bottle twice before filling. Glass dissolved oxygen bottle must be capped underwater, and be completely full and free of bubbles.
  - If it is safe/possible to do so, get the temperature and water samples from the middle of the stream, and halfway down through water column, and in an area where the sediment is not stirred up from walking. If it is not possible, the edge of the stream is OK.

**Dissolved Oxygen (D.O.)**

1. Add 8 drops of Manganous sulfate solution (4167) to glass dissolved oxygen bottle. **Hold the solution upside down and completely vertical when adding drops – for this and all other reagents.**
2. Add 8 drops of Alkaline Potassium Iodide Azide (7166) to glass dissolved oxygen bottle.
3. Cap and mix (turning upside down and right side up works well).
4. Allow precipitate to settle below the shoulder of the bottle.
5. Add 8 drops of Sulfuric Acid, 1:1 (6141WT).
6. Cap and mix until reagent and precipitate dissolve. *(Sample is now “fixed.” At this point, and after doing pH test, you can finish the other tests at home within 2 hours. This is helpful if the mosquitos or weather are making the testing difficult.)*
7. Fill titration tube (0608) to the 20 mL line with solution from your glass dissolved oxygen bottle.
8. Add 8 drops of Starch Indicator (4170WT) to titration tube, then put cap on tube and mix.
9. Insert titrator (0377) into hole in the top of Sodium Thiosulfate, 0.025N (4169). Turn the Sodium Thiosulfate upside down, and draw plunger of titrator back to fill it to the “0” line (measure from where liquid stops in titrator). If there are bubbles in the titrator, depress plunger and draw back again until bubble disappears.
10. Insert titrator into hole in cap of the titration tube (0608). Add one to several drops at a time, then shake the titration tube to mix. Do this until the solution in the titration tube turns clear. Hold up to a white background if you are unsure if it is perfectly colorless.  
*Tip: hold a finger on the side of the titrator plunger to help slow/control the drops you add. As the titrator gets close to being empty, it can all shoot out at once. If you overshoot, you would need to redo this test from step 7.*
11. Once solution is colorless, read the result from the titrator (volume of titrant used). This is your answer for the D.O. on your data sheet. *You may need more slightly more than one full titrator to get to this point. Just keep track of the volume of Sodium Thiosulfate (titrant) you have used to get your answer.*

**Clean Up:** Empty titrator, glass dissolved oxygen bottle, and titration tube into your waste chemical container. Rinse the glassware and their caps with distilled water over the waste chemical container, then place back in kit upside down and uncapped to drip dry. Follow these clean-up instructions for other tests as well. Sample water untouched by chemicals doesn't need to be put in waste container.

**pH** Follow instructions on pH comparator in pH kit.

## Chloride

1. Fill titration tube (0778) to 15 mL line with sample water from plastic sample bottle.
2. Add one drop Phenolphthalein Indicator, 1% (2246) to the test tube. If solution turns pink, note this on your data sheet.
3. Add 3 drops Chloride Reagent #1 (4504) to titration tube, cap and swirl to mix. Solution will turn yellow.
4. Fill Direct Reading Titrator (0382) with Chloride Reagent #2 (4505DR) with the plunger ring at the desired starting volume (100 usually works). Insert Titrator in center hole of test tube cap.
5. While gently swirling tube, slowly press plunger to add Chloride Reagent #2 one drop at a time until yellow color changes to an orange-yellow (**DO NOT OVERSHOOT- COLOR SHOULD GO FROM YELLOW TO NOT YELLOW- IF IT'S ORANGE-BROWN, YOU WENT TOO FAR**).
6. Read test result where the ring of the plunger meets Titrator scale. Record as ppm Chloride. (Remember that each mark on titrator equals 4 ppm).

## Transparency (secchi tube depth)

1. Fill up tube with water either by submerging tube or pouring it in with another container. Be sure the water you're using hasn't had sediment disturbed during your sampling activities.

Fill to top measuring line. Looking into top opening of tube, look for black and white secchi disc at bottom of the tube. If you can clearly see the black and white disc, then your answer for Transparency is ">120 cm".

If you can't yet see the disc, release water slowly via the hose/clamp at the bottom while looking through the top opening. Stop releasing water as soon as you can see the black and white disc at the bottom. Your answer for Transparency will be the depth of the remaining water in the tube, in cm.

SEND DATA SHEETS TO (as soon as possible after sampling):

**SRWA DATA**  
**P.O. Box 875**  
**Ashland, WI 54806**

**OR** email PDF of scanned data sheet to [emma@superiorrivers.org](mailto:emma@superiorrivers.org)

**CONTACT US WITH ANY QUESTIONS OR SITE PROBLEMS:**

**Emma Holtan, Water Quality Program Coordinator**  
**(715) 682-2003 (office)**  
[emma@superiorrivers.org](mailto:emma@superiorrivers.org)

**GOOD LUCK!**