



URI WATERSHED WATCH

Wadable Stream Monitoring Manual



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Welcome to the University of Rhode Island Watershed Watch program!

The University of Rhode Island (URI) Watershed Watch program is a statewide volunteer water quality monitoring program. The focus is on educating the public and providing current information on the water quality of lakes, ponds, reservoirs, rivers, streams and estuaries throughout Rhode Island. The heart of the program consists of weekly or biweekly monitoring at designated sites on these waterbodies by trained volunteer monitors. Water quality is a reflection of the activities in the water itself as well as in the lands and waters that surround and lie upstream. It is our hope that this program will encourage communities, shoreside homeowners, recreational users, and local residents to understand the need to cooperatively manage and improve the water quality of all the water bodies within a watershed. In this way we all will ensure that Rhode Island's fresh water resources remain one of the state's great assets.

URI Watershed Watch one of four Cooperative Extension Water Quality Programs and is in the Department of Natural Resources Science in the College of the Environment and Life Sciences at the University of Rhode Island. URI Cooperative Extension, and through grant support the Rhode Island Department of Environmental Management (RIDEM), provide much of the staff support and laboratory facilities. The program also relies on the time and financial support of many organizations throughout the state.

URI Watershed Watch works with municipalities, watershed organizations, land trusts, and the RIDEM to determine which water bodies should be monitored. This program began in May 1988 as a cooperative effort between the URI's Natural Resources Science Department and the Wood-Pawcatuck Watershed Association. By 2002 more than thirty organizations throughout Rhode Island and northern Connecticut have co-sponsored water quality monitoring efforts by more than 250 volunteers. Each sponsoring organization pays to participate in the program. URI Watershed Watch provides all monitoring equipment, supplies, and training, as well as conducts all laboratory analyses, data analysis, and results reporting.

In 1992 the Water Resources Division of the Rhode Island Department of Environmental Management (RIDEM) confirmed the value of the quality data collected by the volunteers in the URI Watershed Watch program. URI Watershed Watch data is the sole source of almost all of Rhode Island's lake and pond data, as well as providing data on a broad range of aquatic ecosystems. It is valued as "monitored data" in the "State of the State's Waters" report. RIDEM's enthusiastic support has had a significant impact on the scope of the URI Watershed Watch program.

This manual provides the step-by-step instructions for wadable stream water quality monitoring. Coupled with field training and proper equipment, our dedicated volunteers are significantly expanding the information available on our streams, a critical first step to their protection, management and enhancement. *Without a doubt, it is the dedication of the volunteers that makes this program a success.*

WADABLE STREAMS: BIWEEKLY MONITORING

This section summarizes the monitoring procedures used for the wadable river locations. Detailed descriptions of each procedure can be found in later in this manual. Before going out on the water make sure you have everything you need. Have all testing items set out and ready to test your samples as soon as you come off the water.

Remember that some of the chemicals reagents in your kits can be dangerous. All of your supplies must be kept away from children. Use protective eyewear and gloves when performing the dissolved oxygen tests. Keep a supply of dry paper towels on hand to put under your bottles and wet paper towels to mop up spills. After you complete your monitoring tests the chemicals can be disposed of on the ground or down your drain without causing harm.

1. **Check your stream for safety.** Is the water running too fast or is the level too high? Is the stream bank stable? Remember that your safety is more important than any water sample!
2. **Read the staff gauge,** if your site has one. Record the stream height on your postcard.
3. **Go to your monitoring site!** When you wade into the water, make sure you are downstream of where you wish to sample so that what you stir up doesn't get into your bottles.
4. **Rinse your small white plastic water temperature bottle** with surface water. Toss the rinse water downstream.
5. Role up your sleeve. **Facing upstream, hold the bottle upside down (inverted), lower it half way to the bottom or arm's length, whichever is less.** Be sure not to stir up bottom sediments into your water sample.
6. **Turn the bottle upstream** to fill it and then quickly raise it to the surface. Pour out water to shoulder of bottle. Cap it and put it out of direct sunlight.
7. Using your clear glass **dissolved oxygen bottles, collect two water samples,** as in steps 3-5, taking care to completely fill the bottles, leaving no air bubbles. Cap them immediately.
8. **Start your dissolved oxygen test,** following the instructions in the order written. They are on the lid of the kit. Do not pour out any water before you start the test. The instructions are also in this manual.
9. Put a **thermometer** into the white plastic bottle. Keep it out of direct sunlight. Measure the water temperature after 2-3 minutes, reading it while the thermometer bulb is still in the water. Record the temperature on your monitoring postcard.
11. **Finish the dissolved oxygen tests.** Run the tests twice on the water from each bottle, for a total of 4 tests. Record all results on your monitoring postcard.
12. Rinse your monitoring equipment with tap water, no detergent, let air dry. Reassemble loosely.
13. **Fill out the monitoring postcard with all your results. Remember to include the location, date and your name(s). Mail the monitoring postcard to us right away!**

WADABLE STREAM LOCATIONS: WATER COLLECTION DAYS

This section summarizes the monitoring procedures used for water collection days in wadable river locations. Detailed descriptions of each procedure can be found in later in this manual. Before going out on the water make sure you have everything you need. Have all testing items set out and ready to test your samples as soon as you come off the water.

Remember that some of the chemicals reagents in your kits can be dangerous. All of your supplies must be kept away from children. Use protective eyewear and gloves when performing the dissolved oxygen tests. Keep a supply of dry paper towels on hand to put under your bottles and wet paper towels to mop up spills. After you complete your monitoring tests the chemicals can be disposed of on the ground or down your drain without causing harm.

Procedures printed with bold type are those that are performed *only* on the water collection days.

1. Check your stream for safety. Is the water running too fast or is the level too high? Is the stream bank stable? Remember that your safety is more important than any water sample!
2. Read the staff gauge, if your site has one. Record the stream height on your postcard.
3. Go to your monitoring site! When you wade into the water, make sure you are downstream of where you wish to sample so that what you stir up doesn't get into your bottles.
4. Rinse your small white plastic water temperature bottle with surface water. Toss the rinse water downstream.
5. Role up your sleeve. Facing upstream, hold the bottle upside down (inverted), lower it half way to the bottom or arm's length, whichever is less. Be sure not to stir up bottom sediments into your water sample.
6. Turn the bottle upstream to fill it and then quickly raise it to the surface. Pour out water to shoulder of bottle. Cap it and put it out of direct sunlight.
7. **Perform bacterial monitoring with the bottle with the "sterile" label, removing the label just before sampling. After you remove the label, hold the bottle upside down, lower it halfway to the bottom, turn it up and let it fill. It is critical that no bottom sediments get in the bottle!!**
 - a. Do not touch inside of bottle or cap.
 - b. Do not put cap face down on the ground.
 - c. Recap bottle immediately after sampling and place in cooler.
8. **Rinse your brown glass bottle. Then hold the bottle upside down (inverted), lower it half way to the bottom or arm's length, whichever is less.**
9. **Turn the bottle upstream to fill it and then quickly raise it to the surface. Pour off water to bottle shoulder.**
10. **Cap it and put it in your cooler.**

11. Using your clear glass dissolved oxygen bottles, collect two water samples, taking care to completely fill the bottles as in steps 5-6, leaving no air bubbles. Cap them immediately.
12. Start your dissolved oxygen test, following the instructions in the order written. They are on the lid of the kit. Do not pour out any water before you start the test. The instructions are also in this manual.
13. Put a thermometer into its bottle. Keep it out of direct sunlight. Measure the water temperature after 2-3 minutes.
14. Finish the dissolved oxygen tests. Run the tests twice on the water from each bottle, for a total of 4 tests. Record all results on your monitoring postcard.
15. Rinse your monitoring equipment with tap water, no detergent, let air dry. Reassemble loosely.
16. Fill out the monitoring postcard with all your results. Remember to include the location, date and your name(s). **Bring the monitoring postcard to the URI Watershed Watch laboratory along with your water samples in a cooler! Use ice or an ice pack to keep your water samples cold. We will give you clean replacement bottles.**

Monitoring Checklist

On shore

Collect and organize these items *before* you go out on the water.

- Pencil and notepad
- Monitoring postcard
- Goggles, gloves, paper towels
- Dissolved oxygen kit

Bring to the water:

- 1 plastic water temperature bottle
- thermometer
- clear glass dissolved oxygen bottles
- brown glass bottle (magenta or blue label)**
- sterile bacterial bottle, tape across lid**
- insulated cooler bag**

Assume that all chemical reagents in your kits are dangerous. All of your supplies must be kept away from children. Use protective eyewear and gloves when performing the dissolved oxygen and salinity tests. Keep a supply of dry paper towels on hand to put under your bottles and wet paper towels to mop up spills. After you complete your monitoring tests the chemicals can be disposed of in the river or down your drain without causing harm.