



Virginia Save Our Streams

Information needed to start a Virginia Save Our Streams monitoring program.

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- VA SOS Monitoring
- VA SOS Volunteer Job Descriptions
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Other Documents (can be found at the VA SOS website)

- VA SOS Volunteer Orientation Manual
- VA SOS Field Data Sheets (Modified, Rocky Bottom Method; Eastern Muddy Bottom Method; Annual Habitat Assessment Sheets)
- VA SOS Standard Operating Procedures (how to collect the critters)
- VA SOS Macroinvertebrate ID Sheets
- VA SOS Quality Assurance Program Plan



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Monitoring Program

Starting a Volunteer Water Quality Monitoring Program

To Start a Volunteer Water Quality Monitoring Program in your community, at a minimum you need the following:

- 1) VA SOS Training Session
- 2) VA SOS Certification Session
- 3) Equipment to outfit your monitors –Generally, people budget \$125.00 per water quality monitoring kit for Rocky-Bottom sampling and \$250.00 per water quality monitoring kit for Muddy Bottom sampling. This is a one-time price (not annual) – which means that as long as the equipment is well cared for, you shouldn't have to buy more!
- 4) Monitoring locations – VA SOS can help you identify potential sites. It is good to have some sites in mind before the first training session, so that you can begin to assign sites with your interested trainees! If you need VA SOS to do field reconnaissance to select sites (make sure there is access and a "riffle") can assist with this. In most cases, organizations are able to think about their community to determine appropriate sites.

VA SOS Training Session

Purpose: First initial training session that is required before a volunteer can become a certified VA SOS water quality monitor. Certified VA SOS monitors collect data that can be used by DEQ in their water quality assessment reports. The training session is 1/3 lecture and 2/3 field training. The lecture portion provides information on watersheds, water pollution (point source and nonpoint source and types of pollution), measures of water quality, and the VA SOS method. The field portion involves a demonstration of the correct collection technique, field side identification procedure, and conducting the metric calculations.

Audience: Anyone interested in getting their feet wet. They do not need to have any background in science - just an interest in streams and rivers.

Time: 4 - 6 hours

Capacity: Up to 12 people. Usually 6-10 is a good number

Location: Generally stream side is good. Need a stream with good access and hopefully vibrant aquatic community!

VA SOS Certification Session

Purpose: To test potential volunteer water quality monitors in the VA SOS method. Must show proficiency in field techniques as well as macroinvertebrate ID techniques. The "test" is open book! Usually we hold a certification 2-4 months after the training session to give folks time to practice

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Audience: Anyone who has attended a VA SOS Training Session and is interested in monitoring a stream

Time: 2-4 hours

Capacity: Up to 12 people. Usually 6-10 is a good number

Location: Generally stream side is good. Need a stream with good access and hopefully vibrant aquatic community!

VA SOS Habitat Assessment

Purpose: To provide volunteer water quality monitors training with a habitat assessment form that complements biological water quality monitoring.

Audience: Anyone who is interested in monitoring a stream. Certified monitors or those on their way to becoming certified monitors are preferred

Time: 3 - 4 hours

Capacity: Up to 16 people.

Location: Generally streamside is best. Need a stream with good access

VA SOS Physical Assessment

Purpose: To provide volunteer water quality monitors training in a physical monitoring method called the Riffle Stability Index. This index helps to evaluate sedimentation within a stream system.

Audience: Anyone who is interested in monitoring a stream. Certified monitors or those on their way to becoming certified monitors are preferred

Time: 4 - 6 hours

Capacity: Up to 12 people.

Location: Need a stream with good access

Stream Schools

Purpose: The purpose of Stream School is to improve the knowledge of interested citizens and agency personnel about how the Clean Water Act is implemented in Virginia and the roles and authorities of the state agencies that are charged with this mission. This curriculum is an initiative of the Virginia Izaak Walton League Save Our Streams Program in cooperation with the Va. Dept. of Environmental Quality and the Division of Soil and Water at the Va. Dept of Conservation and Recreation. Our intention is to improve the effectiveness of the agencies and the citizens who need to interact with them.

Audience: The audience for a stream school should include decision makers, planners, grass roots activists, agency personnel, developers, representatives of agriculture, business, media, and Soil and Water Conservation District directors and employees.

Time: 2 days – 12 hours

Capacity: 25 people

Location: Meeting room to accommodate 25 people with place to serve lunch and AV set up.



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Volunteer Job Descriptions

VA SOS Regional Coordinator

Refers the public to training opportunities and VA SOS workshops in the area. Collects VA SOS survey sheets from the region (unless submitted online) and keeps track of volunteer monitoring locations, making sure that there are no more than three to four volunteer monitoring stations per river mile and that volunteers work only in the area they have adopted. Reviews data sent in by volunteers quarterly and makes sure that the data are properly recorded. The coordinator serves as the liaison between Virginia Save Our Streams staff and the volunteer water quality monitors within their region. The coordinator fields requests for training from the public and contacts trainers to fill training needs. The amount of time spent by the coordinator depends upon the size of the area being coordinated and the number of volunteers. The coordinator can determine how great a number of volunteers they wish to help coordinate.

VA SOS Regional Trainer

The VA SOS Regional Trainer is a VA SOS volunteer who has successfully completed the certification test for field collection and macroinvertebrate identification. The trainer should have six months of experience monitoring streams. The trainer should be available to meet volunteers and teach them techniques for VA SOS monitoring. Trainers can schedule workshops to train volunteers, or can provide training to the public on request. It is up to the individual trainer how much time they dedicate per year to training the public. However, trainers should be willing to spend a minimum of one year as a trainer and dedicate 20 hours per year training others.

VA SOS Volunteer Water Quality Monitor

The VA SOS volunteer is any concerned member of the public who wants to adopt and monitor a stream for a year or more. Monitoring takes place a minimum of three times a year, once each season: winter, spring, summer, and fall. Monitoring should be conducted during the same two to three week period each year. For instance, if a volunteer takes their spring sample in the first few weeks of May, in the subsequent year they should take their spring sample in the first few weeks of May. Each monitoring event should take the volunteer no more than a few hours to complete. Volunteers record their sampling location, before beginning to monitor, with their trainer or regional coordinator. Once their location is accepted, the volunteers order their equipment and begin to monitor. Survey results are recorded at the time monitoring is conducted and either sent to the regional coordinator or entered into the online database.



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Equipment List

Monitor's Checklist for Benthic Sampling

Mandatory

- waders, wellingtons, or water shoes
- kick net (can be purchased through VA SOS) Mesh size 1/16"
- white porous cloth or sheet, to cover table
- ice cube trays
- forceps
- spray bottle
- magnifying lens
- thermometer
- clipboard
- instructions for family-level collection and recording
- macroinvertebrate ID sheet
- data entry sheets
- pencil
- field guide

Safety Needs

- disinfectant hand cleaner or wipes
- sunscreen
- sunglasses
- hat
- water
- food
- first aid kit

Optional

- tough gloves
- lightweight folding table, approximately 5' x 2'
- chair(s)
- change of clothes
- alcohol-filled collecting vials
- labels for vials



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Safety and Fun in the River

We are pleased that you have decided to become a volunteer water quality monitor. However, there are several important things to remember when you are working outside. If you follow these “rules of the river”, you will have a fun, enjoyable, and accident-free experience!

Before monitoring:

1. Make sure that someone knows the date, time, and location that you will be monitoring so that if you are injured, someone will know that you are missing or late in returning. You should always monitor with a partner so that if you are injured, someone can go for help.
2. Find out the telephone number and location of the nearest medical center to your monitoring site and the location of a pay phone should you need to call for help.

Rules to monitor by:

1. Never monitor your river when the water is at flood stage or is flowing much swifter than normal. It is better to delay your monitoring event than to risk drowning or broken bones.
2. During monitoring, keep your hands away from eye and mouth areas. Always wash your hands thoroughly with soap and water after monitoring. Never eat after monitoring without first washing your hands.
3. If the water appears to be severely polluted or is posted as unsafe for human contact, (strong smell of sewage or chemicals, unusual colors, lots of dead fish) you may decide not to monitor, or you should at least take the following precautions:
 - Wear boots high enough to avoid water coming in contact with your skin
 - Wear rubber gloves such as dishwashing gloves or rubber gloves that go up to your shoulders (available at most automotive supply stores). Surgical gloves will not work. They can be easily punctured by snags or sharp objects, and they are not long enough to protect your arms.
 - Wear a protective covering for your mouth area such as a painter's mask that you can purchase at most drugstores or hardware stores. You can get sick if you breathe in vapors from sewage-contaminated water.
 - Report any problems or suspicious activities to the Department of Emergency Management at (800) 468-8892.
4. If a large oil spill or other toxic spill occurs, it is probably best not to monitor at all. Report any spills to the Virginia Department of Environmental Quality (800 -592-5482) or the Department of Emergency Management.

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First aid kits: It is important to take first aid supplies into the field. If you or your partner suffer from minor cuts or abrasions, you will be able to clean the wounds. Suggested first aid kit supplies include:

- Adhesive and cloth bandage to cover wounds
- Surgical tape to hold bandages in place
- Hydrogen peroxide to clean wounds
- Antiseptic sprays or ointments to disinfect wounds
- Tweezers or forceps to remove splinters or glass
- Cotton balls to apply hydrogen peroxide or other medicines

Be sure to store supplies in clean, waterproof containers and have supplies readily available to each monitoring team.

Ticks and insect bites: If you or any of your monitoring team members are allergic to any type of insects, bees, or spiders, bring along any antidotes or medicines that will subdue or stop an allergic reaction. If a volunteer gets an insect bites that swells up to an unusual size or has severe redness, seek medical attention.

Ticks are prevalent in grassy and wooded areas. It is important that volunteers check their bodies for ticks. If you find a tick, do not pull or yank it out. Instead, grasp the tick with a pair of forceps or tweezers and gently twist the tick counter-clockwise for several rotations until the tick is free. Swab the area of skin with hydrogen peroxide after removing the tick to clean the area. If you can, preserve the tick in case the area of the tick bite becomes infected or you become sick.



Virginia Save Our Streams

Collecting High Quality Data Quality Assurance

Quality Assurance Quality Control Procedures

One of the priorities of the Virginia Save Our Stream program is to provide data that can be used by federal, state, and local governments, as well as interested citizens, colleges and universities, and other organizations. Data users will not use data unless it has been collected in a certain manner – with specific quality controls in place. This “certain manner” is known in scientific terms as a quality assurance project plan (QAPP sometimes referred to as the QA/QC Plan). Quality Assurance generally refers to a broad plan for maintaining quality in all aspects of a program. This plan describes how VA SOS will operate its monitoring program: proper documentation of all procedures, training of volunteers, study design, data management and analysis, and specific quality control measures. Quality Control consists of the steps you will take to determine the validity of specific sampling and analytical procedures.

Our Quality Assurance Program Plan outlines two processes to ensure our certified monitors are collecting quality data. A quality assurance auditor conducts the field check and laboratory audits once every two years. The audits may be performed on a regional basis to facilitate implementation of our quality assurance plan.

Field Audits

A quality assurance auditor will accompany a certified monitor on a regular sampling event to check the following:

1. Check that the proper equipment is used and is functioning properly
2. Watches the volunteers collect and process their sample to assure the volunteers are correctly completing their sampling event.
3. Should the volunteers fail their audit, the VA SOS staff will work with the volunteer to update his or her equipment and/or collection and processing methods

Laboratory Audits

At the time the auditor reviews the volunteers' field methods and equipment, the volunteers will also preserve their entire sample. The samples will be sent to the VA SOS to check the volunteers' identification skills. Should the volunteer fail to correctly identify a significant portion of the sample (over 10%), his or her certified status will go on hiatus. The VA SOS staff will work closely with the volunteer to help him or her learn troublesome organisms.



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Mapping Stream Monitoring Locations

Mapping stations allows you to safeguard against monitors unknowingly surveying the same station and lets you know the exact area that is being monitoring. After you have located a station, you should have the following information about the station:

- Monitoring location that can be mapped
- Latitude (north-south location) In the northern hemisphere, latitude increases as you move from the Equator to the North Pole. Latitude is measured in degrees (like temperature), and degrees are divided into minutes and seconds, just like time. Each degree of latitude can be divided into 60 minutes, and each minute can be divided into 60 seconds.
- Longitude (east-west location). In North America, longitude increases as you move from the Atlantic coast to the Pacific coast. Longitude is measured like latitude.
- Station Number – the number you assign to the monitoring station (this usually done by the regional coordinator or by VA SOS staff).

Describing the location of your monitoring station

Please do not use local landmarks to describe your monitoring location! For example, if a monitor says, "I am monitoring Babbling Brook by Dr. Johnson's barn", it is difficult to find the station unless you know where Dr. Johnson lives. We ask that you describe your station location using upstream or downstream distance from roads, train tracks, or other features of land that appear on topographic maps. Another useful strategy is to use distance upstream or downstream from tributary mouths. A good example is: Catfish Run, one mile upstream from the Route 8 bridge, or on the Owl River, three miles upstream from the mouth of Bobcat Creek. If you are using road/route numbers, you may want to have a detailed highway map on hand to supplement the detail found on a typical topographic map.

Finding the latitude and longitude

There are two primary ways to locate your station's latitude and longitude. You can use a handheld GPS unit or you can use an internet site like topozone.com to find these coordinates. If you do not have a handheld GPS unit or access to the internet, contact your regional coordinator or VA SOS staff.

Assigning a station number

There are many ways to assign a station number the most important thing is to be consistent! You may simply choose a number or you may utilize a combination of letters (that may symbolize the stream name) and numbers. Often, VA SOS staff will assign another unique station number that incorporates the major river basin, a stream code, and a station number.

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Submitting Water Quality Monitoring Data

Once you have completed your field data sheets, please submit the data to VA SOS for inclusion in our database. The data in the VA SOS monitoring database is available for anyone interested in viewing the data. It is also submitted annually to the Virginia Department of Environmental Quality for use in water quality assessments. *YOUR DATA IS IMPORTANT TO US!*

- 1) If you have a regional coordinator, please send your data sheets to the coordinator. If you do not have a regional coordinator, please send your data sheets to VA SOS, P.O. Box 8297, Richmond, Virginia 23226. Please ensure the data sheets are complete, specifically include: Your name; A telephone number or e-mail address where you can be reached if there are any problems; Any questions or comments you have about the monitoring method, your monitoring event, or the data sheet.
- 2) You may also use the excel worksheet available on our website at: www.vasos.org/newdatasheet for the modified method.
- 3) You may also submit your data online at: www.vasos.org/pages/dataentry.htm



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Becoming a VA SOS Regional Trainer

Becoming A VA SOS Trainer

Being a VA SOS Trainer does take more time commitment, but the rewards of sharing your knowledge are worth it!

The requirements for becoming a trainer:

1. Attend a VA SOS Training Session
2. Pass the VA SOS Certification Test
3. Practice – our quality assurance program plan currently requires 18 months of practice before becoming a trainer. THE TIME PERIOD CAN BE REDUCED UPON APPROVAL OF JAY GILLIAM. However, you do need significant practice before you can become a trainer, we suggest 6 monitoring events.
4. During the monitoring events the volunteer must have demonstrated his or her ability to follow the method by completely and accurately filling out the data forms for the monitoring events.
5. The potential trainer must also have observed at least two training sessions implemented by VA SOS staff or regional trainers.
6. In addition, the volunteer must feel comfortable talking in front of a group, and must remember that (s)he is representing the VA SOS program while training volunteers so must accurately and correctly represent the goals and opinions of the VA SOS program.

Training the trainer

1. The volunteer must then go through a trainer's session which includes a discussion of what is involved in a training session. A checklist of these items is attached. The training session will cover how to be an effective trainer, frequently asked questions, reference collections, and the certification process.
2. The potential trainer must complete the macroinvertebrate portion of the certification process again, but must receive a 100% in order to become a trainer.
3. VA SOS staff must observe the regional trainer's first training session – either in person or via video tape. A training observation report will be completed at that time and (s)he will then be considered a VA SOS Regional Trainer.

Requirements of VA SOS Regional Trainers

1. To remain active as a trainer, the VA SOS Regional Trainer must complete at least one training session a year and conduct at least one certification test.
2. The Trainer must also undergo an observation by VA SOS staff person in person or by video once every two years.
3. The Trainer needs to submit a list of names and addresses of individuals receiving training and certification to VA SOS for inclusion in the master database.