



**ANACOSTIA
RIVERKEEPER®**



Volunteer Standard Operating Procedures

NOTE: These procedures have been modified for Friends of Cabin John Creek

1 Before You Begin

1.1 Safety, Equipment List, and Volunteer Responsibilities

1.1.1 Safety – General Precautions

- a) Always perform water-monitoring activities under the guidance of an adult or with a partner when possible.
- b) Read all instructions to familiarize yourself with the test procedure before you begin. Note any precautions in the instructions.
- c) Use caution when collecting water samples from the shoreline to prevent slips, fall, or extended contact with water.

1.1.2 Field Equipment Maintenance and Cleanliness

- a) Keep your thermometer clean after each use and store in a protective case/location when not in use.
- b) Keep the pH test strip container as clean as possible. If test strips are discolored, DO NOT use.
- c) Do not leave cooler kits in a hot car, when bacteria bottles get too hot (like in the trunk of a hot



car) preservatives tend to crystallize.

1.2 Monitor Responsibilities

Maintain the monitoring schedule for your site(s). Sample collection must be performed every other Wednesday morning. If you are unable to collect a water sample from your site, find an alternate person and/or contact monitoring@cabinjohncreek.org. Samples must be transported to the Locust Grove Nature Center parking lot, and then a volunteer will drive them to the Anacostia Riverkeeper drop off at Pierce Mill within 4 hours of collection.

Properly mark your sample bottles before the site visit and update each bottle with the appropriate information and label.

Maintain a clean cooler that will be used to transport water samples stored on ice (or ice packs) from the field to the lab.

Record your test results: Record data on a data collection form provided. Always record the test results as you go along. Keep a copy (photo) of the data collected for your records to provide a backup copy should the original be lost.

Provide comments as necessary: The "Comments" section can be used to record general observations about the site, especially changes due to erosion, recent notable weather, and any problems you had with the sampling procedures.

Provide data sheets and chain of custody forms to Team Supervisors when you deliver your sampling cooler. Ensure that upon delivery of your samples the sampling cooler contains: necessary samples, chain of custody sheet, and sampling sheet.

Stay certified: Attend a recertification session each year to maintain your skills and learn new information and techniques. You can also attend any training session to refresh yourself of the concepts and procedures between re-certifications.

2 QA/QC Procedures

2.1 Certification and Recertification

2.1.1 Certification

Monitors can become certified at their initial training session by demonstrating a mastery of the sampling procedures and complete understanding of the quality assurance protocols used during data collection to be assessed by a Project Team member or Certified Trainer. Monitors must also pass a test that assesses the monitor's understanding of QA/QC procedures outlined in this SOP and the project QAPP with a 80% score.



Monitors that attend an initial training and are unable to pass the requirements to become certified at the end of the training will be encouraged to continue practicing their monitoring procedures. Un-certified monitors are encouraged to assist certified monitors in the field until they have become comfortable with the procedures and QA/QC protocols. Un-certified monitors are allowed to retake the certification test and demonstrate proper sampling and analysis technique up to three times in order to become a certified monitor.

When a monitor achieves certification, they may be assigned a site and begin to collect Tier II data and submit it to the project database.

2.1.2 Re-certification

The Project Team and Certified Monitors will host online recertification sessions annually for monitors that have passed the initial training and wish to maintain their certification. Recertification sessions are conducted in a fashion that is similar to an online module. Monitors are checked to assure that: they remain proficient in methodology and understanding of basic water quality parameters; their equipment is operational and properly calibrated/verified; and they have an adequate supply of viable chemicals, procedures, equipment verification/check, and updated information about monitoring. Monitors will be provided all pertinent information online and take a final recertification test to officially be recertified. Materials will include an informational video, program materials, and short quizzes.

2.2 Pre-monitoring checks

2.2.1 Equipment Check

Prior to going out into the field, monitors should check their equipment for cleanliness, breakage, discoloring or any other expiration. If a monitor finds that their equipment is damaged and will affect the quality of the data they collect, they should not collect data that day and mark the reason on their data sheet and then inform their Project Team Leader as soon as possible. The monitor should contact their Project Team member to get the equipment repaired or replaced prior to the next scheduled sample.

2.2.2 Calibration

Thermometers will be verified each year before the start of the sampling season (May-September).

2.3 Field QC

2.3.1 Duplicates

Monitors collecting samples for Tier II laboratory analysis will perform duplicate samples at least 10% of the time. Duplicates consist of immersing sample containers side by side in the water at the same time. This ensures that the samples are representative of the current water conditions and taken from identical locations.

3 Field Monitoring Procedures



3.1 Field Sampling Procedures

3.1.1 Best Practices

- a) Safety always comes first. All sampling should be conducted with the proper equipment and least amount of danger to field personnel
- b) Use of protective gloves. Gloves serve a dual purpose: 1) protecting the sample collector from potential exposure to sample constituents and 2) minimizing accidental contamination of samples by the collector. Wearing protective gloves at all times while sampling is recommended. Latex or nitrile gloves may be used for common sampling conditions.
- c) Permission must be obtained from landowners before entering private property.
- d) Care should be taken not to disturb the bottom when sampling. When nearing a stream, always sample in an upstream direction from the bank.
- e) Surface water should always be collected facing upstream and from a safe location on the bank to ensure volunteer safety.
- f) Samples should be collected in the main flow representative of the stream you are monitoring (for small streams, this is usually mid-channel) just below the water surface, about 0.3 meters (0.5 to 1 foot) deep.
- g) Whenever possible, collect field measurements directly from the sample site, not from a bucket. If the field parameters need to be measured in the bucket, collect water quality samples (bacteria and turbidity) first before measuring water temperature and testing for pH.
- h) When there are obvious standing pools of water during low or no flow conditions, do not collect samples or field measurements. Make a note of this on the data sheet.
- i) When collecting bacterial samples:
 - i. DO NOT rinse the bacteria sample bottle before collecting the sample (decanting to 100mL line is acceptable).
 - ii. Be careful not to insert fingers into the mouth of the container or on the interior of the cap.

3.1.2 Streambank and Instream Sampling

All water samples will be collected from a streambank as to limit the amount of sediment disturbance and for volunteer safety.



When sampling from the streambank, care should be taken to sample from an area that will most closely represent the entire stream. Typically, this will be the area of the greatest flow in the stream and away from stagnant pools or eddies.

	Bacteria Samples
	Walk upstream to the sample location. Be sure any sediment or debris disturbed from your movement in the streambed is not present where you will collect the sample.
	Submerge the container; neck first into the water. The mouth of the bottle should be completely below the water surface approximately 6-12 inches.
	Invert the bottle so the neck is upright and pointing into the water flow.
	Move the bottle forward away from the body for at least six inches.
	Return the filled container quickly to the surface. Pour any excess water and cap.

3.2 Air Temperature Measurement

Equipment: armored, digital thermistor

Temperature is reported in degrees Celsius (°C). Always measure air temperature before water temperature.

Method:

1. Standing on the streambank, hold the thermometer over the water to obtain the best measurement.
2. Wait 3-5 minutes to allow the thermometer to equilibrate.
3. Record air temperature to the nearest 0.5 °C for the armored thermometer on the Field Sampling Sheet in the designated location.



3.3 Recording General Observations

Record weather and general observations on the datasheet.

3.4 Water Temperature Measurement

Equipment: armored, digital thermistor, or probe

Method:

Surface Sampling:

1. Place your probe or thermometer 0.3 m beneath the surface of the water 2.

Wait for the probe or thermometer to stabilize

3. Record your reading

Sample with bucket:

1. Hang thermometer in the bucket

2. Wait for the probe or thermometer to stabilize

3. Record your reading

3.5 pH Test Strips

Method:

1. Remove one test strip from the container (close cap) and insert into the water at your sampling spot and allow water to react with the color strip (may take a few minutes)

2. Let color develop.

3. Compare color of test strip to the color chart on the pH test strip container. 4.

Record measurement on field sheet. Repeat if collecting a replicate.

4 Lab sample collection preparation and handling



4.1 Bacteria Samples

Collecting on stream bank:

1. Get as close to the stream bank as possible with minimal disturbance of bottom sediments;
2. Take a few steps upstream with care not to disturb the sediment;
3. Un-cap the pre-labeled bottle
4. Using a U motion dip the bottle into the water down and away from yourself allowing the bottle to fill to the shoulder
5. After samples are taken, immediately place the sample on ice (ice packs) up to the shoulders of the bottle. The lid should not be immersed under the ice, in case ice water leaks into the sample bottle, diluting the concentration of the sample.

4.2 Sample container handling and preservation

Proper sample containers and sample preservation are essential to sample integrity. Samples not preserved properly may be rejected by the laboratory.

- a) Sample containers should be inspected and any torn, punctured or cracked sample containers discarded.
- b) After collecting the sample, make sure the lids are secured tightly to prevent contamination from water seepage in or out of the container.
- c) Sample containers and coolers should be stored with the tops securely fastened. Containers with loose fasteners should be replaced or taped to prevent loss of sample containers during transport.
- d) In the field, unless specified otherwise, all samples should be placed in an ice filled cooler immediately after collection. To ensure samples do not exceed the 4°C holding temperature, sample containers shall be placed upright and if possible, covered with ice in such a manner that the container openings are above the level of ice.
- e) Glass sample containers should be packed in bubble wrap or other waterproof protective materials to minimize accidental breakage.

4.3 Sample Bottle Identification



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Each sample container must include a label with the following information.

- a) Station ID or description
- b) Date and time of sample collection
- c) Analyte sampled for “BAC”
- d) Collector’s initials

Samples will not be analyzed if this information is missing. If more than one container is needed for a parameter (such as a duplicate sample), each container collected for that parameter must have a label with identical information in addition to an indication of 1 of 3, 2 of 3, 3 of 3, etc., as required. Duplicate samples should be designated as “Station ID – Dup”.

Please remember to fill out the labels on the bottle with a waterproof pen before taking the samples.

It is essential that the actual sampling site matches the labeling information. Always check the labeling information against the actual site. Samples not labeled properly may be rejected by the laboratory.

4.4 Transport of Samples

After collecting the samples at the site:

1. Place the bottles in the cooler filled with ice or ice packs. Coolers should have enough ice to come up to the necks of the sample bottles.
2. Place any chain of custody forms in the Ziploc bag taped to the inner lid of the cooler.
3. Transport the cooler with samples to the designated drop off point or laboratory within 4 hours of collection.

5 Cleanup and Storage of Water Monitoring Equipment

- a) Rinse the thermometer in tap water, wipe dry with a paper or cloth towel, and store upright.
- b) Ensure pH test strips are secure in the container and are kept in a clean, dry place between sampling events.