Sassafras Samplers Monitoring Program

Standard Operating Procedures

1.0 **Introduction**

The Standard Operating Procedures (SOP) outlined in this manual are designed to help guide and sustain a high quality water monitoring program. The procedures are utilized by the Science Committee, RIVERKEEPER®, Sassafras River Association employees and interns, and volunteers to assure that each individual or sampling crew follow the same protocols. Quality assurance in a monitoring program is essential for providing representative and accurate data for a water body, which is vital for the continuation of a monitoring program.

The SOP's are listed by section, with added instructions for safety and tips on keeping up proper maintenance of testing equipment. All volunteers are to follow these guidelines and procedures to ensure reliable, high quality data. The Science Committee is to use the SOP as a tool for training new volunteers during an initial training class and during coordinated periodic training sessions.

2.0 **Safety**

Safety to staff and volunteers is of the upmost importance to the Sassafras River Association. There are hazards in both the field and the lab, so please use caution. For instance, during inclement weather conditions, the sampling site may become a hazard due to wet and/or slippery conditions, high winds, or torrential water that can be dangerous to the individuals sampling. It is also recommended that more than one person be on site in case of an emergency. If at any time a volunteer feels that unsafe conditions exist, they are advised to terminate that activity immediately.

The tests that are performed on water samples require the use of reagents that can become hazardous if handled incorrectly. Follow basic handling procedures such as washing hands before and after use, not eating or drinking while handling reagents, using appropriate cleaning materials for spills, disposing of wastes properly and supervising young children that may come in close contact with reagents or their containers.

3.0 **Testing Time Frame**

The time frame for collecting water samples and performing tests is important for maintaining a quality monitoring program. When samples are collected from all sites during the same time period, it allows for the comparability of data across the watershed. Schedules are also crucial in maintaining coordination between the Science Committee and volunteers.

3.1 **Non-Tidal Sampling**

In non-tidal monitoring sites, it is preferable to sample between 10:00 AM and 2:00 PM. This is the time period of greatest activity of aquatic species and will also provide coordination to allow for comparisons to be made from site to site.

3.2 Sample Period

SRA understands that volunteers are not paid employees and may have prior or more urgent commitments. As a result, SRA has established a testing window. The testing window is from Friday through Monday on the second full weekend of every month (defining weekend as Friday through Monday).

Site Number	Site Description
NT01	Lloyd's Creek, Bloomfield Road
NT05	Woodland ~~Island~~ Creek, Route 213
NT06	Mill Creek, Route 290
NT07	Swantown Creek, Route 290
NT11	Jacob's Creek, Route 290
NT13	Sassafras River, Route 299
NT18	Hall Creek, Sandy Bottom Road
NT19	Dowdel Creek, Entrance of Indian Acres
NT23	Duffy Creek, Wards Hill Road
NT24	Unnamed Branch, Route 301
NT28	Sassafras River, Maryland Line Road

4.0 Field Sampling

The Sassafras Samplers Monitoring program is divided into two types of activities: field collection and lab testing. This section will cover procedures that are necessary to provide accurate, high quality data that represents the body of water being sampled.

There are some basic techniques for collecting water samples that are outlined in the following sections of this manual. Training will be provided periodically ~~prior to the April sampling weekend~~ with the Science Committee or qualified trainers~~, and then periodically thereafter~~. Volunteers may request further training at any time.

4.1 Prior to First Sampling

Label all necessary dissolved oxygen, plastic and polyethylene sample bottles. One dissolved oxygen, one large (~300 mL) plastic sample bottle and one small (30 mL) polyethylene sample bottle will be needed per sampling site.

4.2 On-Site

The water samples collected will be used to quantify the level of contamination or loading of pollutants (e.g., nutrients), to the Sassafras River and its tributaries. Therefore, it is imperative that samples are collected following protocols to accurately represent the body of water being sampled. Prior thought has already been used in locating each monitoring site. Sites have been located at bridge crossings or areas that have access to the stream. At each stream crossing, the water flowing past the sampling point is

confined, allowing a representative sample from upstream areas to be collected. When locating the proper position or placement of the sampling container and during sample collection, follow these general rules:

- Safety comes first - if it looks unsafe, do not attempt collecting a sample.
- If possible, sample upstream of road crossing.
- If possible, look for a part of the stream that is flowing.
- If the entire width of the stream is flowing at the same rate, then sample anywhere within that span of the stream.
- Avoid sampling behind an obstruction in the water column.
- Avoid disturbance of the stream bed, which could lead to inaccurate readings.
- Avoid sampling in non-flowing pooled or stagnant areas of the stream.
- Avoid disturbance of the area that you are standing on and depositing any materials that may influence results.

1. Rinse water sampling body with sample water prior to collecting the dissolved oxygen samples.
2. Collect and fix the one dissolved oxygen sample. [Refer to Sections 4.6.1 and 4.6.3 of this document for instructions on collecting and fixing the dissolved oxygen samples.]
3. Collect the sample to be used for subsequent pH and turbidity testing in the large (~300 mL) plastic sample bottle. [Refer to Sections 4.6.1 and 4.6.2 of this document for instructions on collecting the samples.]
4. Collect the sample to be used for subsequent laboratory (Total Nitrogen/Total Phosphate, TN/TP) testing in the small (30 mL) polyethylene sample bottle. [Refer to Sections 4.6.1 and 4.6.2 of this document for instructions on collecting the laboratory samples.]
5. Record the air temperature at the sampling site and water temperature from the sample. Measure the water sample temperature quickly upon collection as this temperature can change rapidly in the bottle.
6. At designated sites (NT01, NT06, NT11, NT24 and NT28), record the stream depth from the staff gauge. [Refer to Section 4.6.5 and Appendix C of this document for instructions on reading the staff gauge.]

4.2.1 First Sampling

1. During the first sampling, evaluate the sampling site and determine the sampling depth. Collect samples from 8 inches below the water surface, if possible, by lowering the water sampler to a depth with the water just above the highest knot.
2. If visiting a new site that has not been sampled in previous years, record GPS coordinates in latitude and longitude using hand-held GPS unit provided by SRA.

4.3 Sample Preparation for Transport

To acquire accurate readings for each water quality parameter, proper handling preparation of the water sample is critical. The chemistry of water is primarily influenced by temperature. Temperature increases or decreases the reactions of chemical compounds that are commonly found in natural waters. Dissolved oxygen is a priority parameter and directly relates to changes in temperature. If temperature increases, then the ability of the water to hold oxygen is reduced and therefore invalid results will occur. That is why this sample must be fixed on site. Other parameters that are being tested, such as pH, require temperatures to remain cool and testing to occur within six hours of collection. The laboratory samples

should be frozen on the day of collection. In order to maintain the quality of the sample, keep the sample container on ice.

4.4 Sampling Kit Contents

4.4.1 Field Kit

- Water Sampler Body, orange cap, and weight
- Rope with clip
- Plastic sample bottle (~300 mL, for pH and turbidity tests)
- One glass sample bottle (for dissolved oxygen (D.O.) test)
- Polyethylene sample bottle (30 mL, for laboratory tests; (these bottles are acid washed and should not be opened prior to collecting samples or used for any other purpose but TN/TP samples)
- Blank labels for TN/TP samples
- Armored thermometer

4.4.2 Smart or Smart II Colorimeter lab box

- SMART Colorimeter and power plug
- At least 2 Colorimeter vials per site (10 mL mark)
- One Colorimeter vial filled with distilled water as the control sample for turbidity testing

4.4.3 Lab Chemicals and Equipment

- D.O. fixing chemicals
    - Manganous Sulfate (white cap, pink fluid)
    - Alk. Pot. Iodide Azide (white cap, blue wrapper, clear fluid)
    - Sulfuric Acid (red cap)
- D.O. Titration
    - Sodium Thiosulfate
    - Starch Indicator
    - Titrator ((0377) looks like a syringe)
    - Titration Tube (25 mL – 0608)
- Phenol Red pH bottle with 0.5 mL dropper
- Squeeze bottle for distilled water

4.4.4. Other

- D.O. titrating instructions
- Laminated Field/lab instructions
- Owners manual and test procedures
- Data Sheets/Log Sheets [for example, see Appendix B; printable versions available on the Sassafras River Association website]
- Additional plastic and polyethylene sample bottles as needed
- Additional D.O. glass bottles
- Distilled water (can be purchased at grocery or drugstores)

4.5 General Field Sampling Method

1. Record basic site information on the data sheet prior to sampling (e.g., samplers, site, time and date).

2. Collect water sample from eight inches below the surface. Be careful not to disturb the bottom if in shallow water.
3. The Rule of Three: The rule of three is simply a process that one should use in the field, in the lab, during clean-up, and when preparing a sample for testing. In the field, always rinse out the water sampler body as well as the D.O. bottle and large plastic sample bottle with water from the site. The small polyethylene sample bottles have been acid rinsed and do not need further rinsing. Using the sampler, collect water from the site, shake and dump to be sure there are no remnants from the previous site. Take another sample, and using this water add a small amount to the D.O. bottle and the plastic bottle, shake and discard water downstream of the site. Add some more water from the sampler to the D.O. bottle and plastic bottle and repeat twice. There is no need to dip the sampler two more times, just make sure each bottle has been rinsed out three times using the water from the sampler's second dip. This process will ensure that carry over from the previous sample will have no effect on the new sample.
4. Suspend a dry thermometer in shade to record air temperature.
5. Now collect a sample using the sampler and fix the D.O. sample according to specific kit instructions.
6. Pour excess sample water from the sampler body into the large plastic (~300 mL) and the small polyethylene (30 mL) sample bottle.
7. Collect another sample if insufficient to fill sample bottles.
8. Record air temperature; then place thermometer in large (~300 mL) plastic sample bottle or sampler body with sample water; record water temperature.
9. Make any general observations such as algae, submerged aquatic vegetation, water level, animal activity, surface phenomena, recent rain activity, weather condition, change in land use.
10. Look for life and signs of changes: e.g. ducks, geese, sea nettles, crabs, minnows. Give numbers or estimates when possible.

4.6 Specific Sampling Procedures

4.6.1 Water Sample Collector

This device is designed for use in the field and is a simplified water sampler. The sample is collected in a removable inner bottle which is overflowed 5 times to insure a representative sample. Samples may be taken at a controlled depth by using a calibrated line. Attaching weight to the bottom of the sampling device insures rapid descent and minimizes the amount of drift due to currents. More weight should be attached to the sampling device in strong currents.

It is necessary to maintain a position directly over the water sampling body when lowering it so that it remains in an upright position. This permits the displacement of all of the air in the sampler so that it will fill completely. As it fills, bubbles of air displaced from the sampler will be observed downstream.

1. Remove the plastic center plug with inlet tubing attached.
2. Insert the collecting bottle with the cap removed, into the inner chamber of the cylinder.
3. Replace the plastic center plug and make sure the inlet tubing is in the collecting bottle.
4. Attach a weight to the bottom bridle of the sampler, if a permanent weight is not attached.
5. Attach the snap clamp on the calibrated line to the bridle on top of the sampler if a permanent line is not attached.

6. Quickly lower the water sampler to the desired depth and leave until full. This can be determined when the bubbles from the displaced air in the sampler cease to appear. This usually takes from 3-5 minutes.
7. Carefully retrieve the water sampler.
8. Remove the plastic center plug to expose the collecting bottle in the inner chamber.
9. Remove D.O. bottle and proceed to fixing instructions. [Refer to Section 4.6.3 of this document for instructions on fixing the dissolved oxygen samples.]

4.6.2 Bottled samples for testing

1. Pour excess water from the sampler into the large (~300 mL) plastic sample bottle. Cap and place in cooler.
2. Pour additional excess water from the sampler into a small (30 mL) polyethylene bottle. Fill the bottle only to the shoulder to allow for expansion of the water when frozen. Immediately cap and place in cooler. Be sure not to touch the mouth of the bottle or the inside of the lid.
   [Note: The lid of the bottle should not be immersed under ice, in case ice water leaks into the sample bottle, diluting the concentration of the sample. It is good procedure to put the samples in clean plastic bags that can be sealed while they are in the cooler. This prevents any contamination from the ice/water/slush in the cooler and/or other samples.]
3. Label each polyethylene sample bottle with the site number and date of collection (i.e. NT 1, 14Feb-2014).
4. Deliver samples to SRA office as soon as possible, but no later than one week after collection. If you are unable to deliver samples to SRA the same day of collection, place your samples in your freezer for storage.

4.6.3 “Fixing” Dissolved Oxygen Sample

1. Tap the sides of the submerged bottle to dislodge any air bubbles clinging to the inside.
2. Once a satisfactory sample has been collected, proceed immediately with the next steps, to "fix" the sample.
3. Be careful not to introduce air into the sample while adding the reagents. Simply drop the reagents into sample, holding the reagent bottles vertically.
4. Add 8 drops of Manganous Sulfate Solution (4167) and 8 drops of Alkaline Potassium Iodide Azide (7166).
5. Cap and mix by inverting several times. A precipitate will form. Allow the precipitate to settle below the shoulder of the bottle before proceeding.
6. Add 8 drops of Sulfuric Acid.
7. Cap and gently shake until the reagent and the precipitate have dissolved. A clear-yellow to brown-orange color will develop, depending on the oxygen content of the sample.

Following the completion of Step 7, contact between the water sample and the atmosphere will not affect the test result. Once the sample has been "fixed" in this manner, it is not necessary to perform the actual test procedure immediately. Thus, several samples can be collected and "fixed" in the field, and then carried back to a testing station or laboratory where the titration procedure is to be performed within 6 hours.

4.6.4 Temperature Readings

1. Read temperatures to the nearest one-tenth degree. Correct measured temperatures by adding or subtracting the indicated degrees written on the thermometer. These corrections are updated periodically when the thermometers are calibrated.
2. Measure air temperature in an area that is out of direct sunlight or in the vicinity of any external heat.
3. Allow 2 minutes before reading thermometer.
4. Measure water temperature either in the large plastic sample bottle, the dissolved oxygen sampler or in the water source it self immediately following sample collection.
5. Record data on data sheet.

4.6.5 Staff Gauge Readings

1. Read the stream depth off the staff gauge according to the illustration provided in Appendix C.
2. Record data on data sheet.

5.0 Lab Testing Procedures

The lab testing procedures that are outlined in this document and referenced in Appendix A are to be followed with no deviations. Collecting quality data requires careful practice of good lab techniques and following all specific directions when mixing reagents. The directions for each test have been developed by LaMotte and guarantee accurate results. A laminated Water Testing Procedures card book has been developed for the Sassafras Samplers. Please double check that the test number is the same as on the laminated cards.

The use of the Smart Colorimeter is an upgrade from the program's past experience with color cards. The Smart Colorimeter utilizes a light wavelength technology that detects minute color changes in a sample after specific reagents are combined and allowed to react. Using glass meter vials, the Colorimeter selects a filter that will analyze color development and targets a beam of light through the water sample matrix. Because of this process, it is extremely important that all glassware is free of water drops, finger smudges and solid residue on the surface of the glass. If at anytime the glassware becomes worn and excessive scratches show, contact the RIVERKEEPER® and have the equipment replaced. Keep track of this on your log sheet. For a description of how the Smart Colorimeter works, see the manual that is provided for each kit.

5.1 General Lab Testing Procedure and Basic Techniques

1. Indicate on the Kit Log Sheet the date, the samplers and any activity (for example, sample analysis, new or replaced reagents).
2. Make sure all lab wear is clean, unstained and dry from prior testing cycles.
3. Make sure work surface is clean and free of clutter.
4. Make sure all reagents are unexpired and free from contamination. Liquid reagents should not have precipitates or particulates. Solid reagents should be dry and free flowing.
5. The Rule of Three: This rule also applies in the lab prior to testing. During clean-up and in between samples, use the rule of three for washing and for rinsing the graduated cylinders, test tubes, Colorimeter vials, pipettes and spoons.
6. Shake sample bottle before dispensing into graduated cylinder, test tube or Colorimeter vial.

7. Each test requires a BLANK to be scanned before inserting the prepared sample for measuring. If monitoring only one site: pour sample water into one Colorimeter vial and use as the BLANK for each test. Some kits will have yellow caps; these can be used for the blanks with sample water. Distilled water is used for the blank in the Turbidity test. This is the Colorimeter vial with the blue cap and should be used for the turbidity blank only.
8. The testing parameters for the Colorimeter tests are:
    - pH
    - Turbidity
9. Follow instructions for each test.
10. Record all data on the data sheet filled out during the field sampling process.
11. Dispose of chemicals properly. All waste can be poured down the sink with ample amounts of water.
12. After all waste is properly contained, wash all equipment, glassware and sample bottles with tap water and with distilled or de-ionized water using the "Rule of Three" method.
13. Limit Contamination: Good lab practices limit contamination of the testing equipment and the water sample that you are analyzing. Contaminated test reagents can not be used for the next test period and will jeopardize all data and quality assurance measures. Follow these basic rules:
    - Keep equipment clean (e.g., syringes, sample bottles and glass vials).
    - Make sure droppers only come into contact with the appropriate chemicals.
    - Keep track of Colorimeter vials when working with multiple sites.
    - Keep lab work area clean.

LaMotte Approved Analytical Methods

Clean glassware is a must for accurate results. Thoroughly Colorimeter vials before and after each use. Caps and stoppers should also be cleaned after each use.

- When adding sample to calibrated vials, be sure container is filled to the appropriate mark. The bottom of the liquid (meniscus) should be level with the desired mark (See Figure 1).
- When dispensing reagents from bottles fitted with dropper plug and cap, be sure to hold bottle vertically and gently squeeze to dispense the appropriate number of uniform drops (See Figure 2).
- For those reagents to be added with the enclosed screw cap pipette assemblies, remove polyseal cap on bottle and replace with the screw cap pipette.
- When dispensing reagents from pipettes, hold pipette vertically to assure uniform drop size (Figure 3).
- To fill pipettes, squeeze rubber bulb and immerse into reagent. Release bulb to fill (Figure 4).

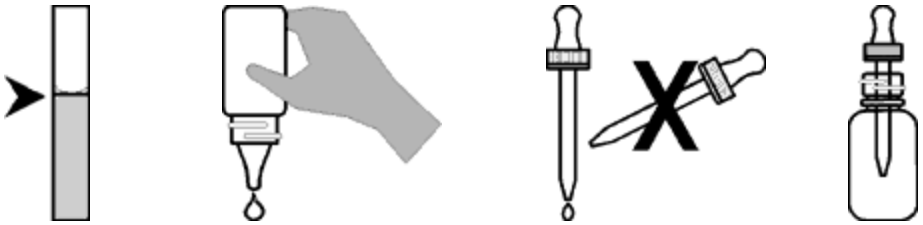

Figure 1 Figure 2 Figure 3 Figure 4

5.2 Specific Test Directions

5.2.1 Dissolved Oxygen Titration

The Titration method for analyzing dissolved oxygen content utilizes a chemical reaction between Sodium Thiosulfate and the prepared, or “fixed”, D.O. sample. The addition of Sodium Thiosulfate in small amounts chemically reacts with the fixed sample and results in a colorless mixture. The amount of D.O. in the water sample relates to the amount of Sodium Thiosulfate added. To determine the exact amount, a starch indicator is used to highlight the moment when all possible reactions are complete, and the mixture turns clear. Each kit is outfitted with instructions that depict the “fixing” and titration procedures.

Titration Procedure

1. Fill the titration tube to the 20 mL line with the "fixed" sample and cap.
2. Fill the Direct Reading Titrator with Sodium Thiosulfate.
3. Insert the Titrator into the center hole of the titration tube cap. While gently swirling the tube, slowly press the plunger to titrate until the yellow-brown color is reduced to a very faint yellow**.**
4. **NOTE**: This pale yellow endpoint is a bit vague (difficult to determine). It is suggested that you aim for a ‘post-it’ note yellow. It is better to add the starch indicator sooner (more yellow) than later.
5. Remove the Titrator and cap. Be careful not to disturb the Titrator plunger, as the titration begun in Step 12 will be continued in Step 14. Add 8 drops of Starch Indicator Solution (4170WT). Sample should turn blue.

6. Replace the cap and Titrator. Continue titrating until the blue color just disappears. Read the D.O. concentration directly from the scale where the large ring on the Titrator meets the Titrator barrel.
7. Record as ppm D.O. on the data sheet.
    - Each minor division on the Titrator scale equals 0.2 ppm.
    - If the plunger tip reaches the bottom line on the Titrator scale (10 ppm) before the endpoint color change occurs, stop the titration and ~~refill the Titrator and continue the titration. Make sure to stop at exactly 10 before refilling. When~~ record~~ing~~ the test result as >10 ppm~~, be sure to include the value of the original amount of reagent dispensed (10 ppm)~~.
    - In "fixing" the sample, if the precipitate does not dissolve after adding sulfuric acid, agitate vigorously and, if needed, add additional drops of the acid to dissolve all of the precipitate. Precipitate should dissolve before adding Sodium Thiosulfate to the sample.
    - The sodium thiosulfate titrant will be replaced every 6 months to reduce inaccuracy due to contamination.

5.2.2 Colorimeter Test Procedures

The Colorimeter Test Procedures for each parameter that Sassafras Sampler Volunteers are testing can be found in the supplied manual with each Smart Colorimeter. The following parameters are currently measured with the Smart Colorimeter:

- pH
- Turbidity

A copy of the instructions for each parameter listed above is referenced in Appendix A. Also, a laminated set of instructions has been provided.

6.0 Data Recording

1. All Sassafras Sampler Volunteers are required to record data on the provided data sheets. These must be dropped off, mailed or scanned and e-mailed to the RIVERKEEPER® within a week after sampling.
2. Also note on the log sheet the date and your actions that day: Samples analyzed, new reagents obtained or reagents replaced.

7.0 Revision History

Date	Revision
28May2009	document created
30Mar2010	Removed references to tidal sites which were moved to a separate tidal sampling SOP; updated listing of non-tidal sites; changed requirement to record GPS coordinates to “first time at any new site.”
23Feb2011	Clarified the testing weekend; updated listing of non-tidal sites; added requirement to read the depth gauge at certain sites; added information/data recording specifications;
07Aug2012	Updated listing of non-tidal sites; switched from sampler testing for ammonium, nitrate, and phosphate to lab testing for Total N and Total P.

09Feb2014	Updated listing of non-tidal sites; removed obsolete information from former testing;
21Feb2016	Updated Dissolved Oxygen testing; updated training schedule.
12Mar2017	Updated listing of non-tidal sites.
27Sep2017	Updated identification on site NT05

Thank You

Thank you for volunteering as a Sassafras Sampler. We at SRA hope you enjoy your active role in monitoring the Sassafras and helping to provide a detailed record of water quality. You are helping a great deal by providing us with the tools to identify and track sources of nutrients and pollutants to the Sassafras River.

Appendix A – Colorimeter Instructions

Sassafras Samplers SMART Colorimeter testing

Using the SMART Colorimeter and samples collected in the large (~300 mL) plastic sample bottles, analyze samples for:

- pH
- Turbidity

SMART Colorimeter testing procedures

1) **pH test – Repeat for each test site**
   a) Select two clean test vials (#0290). Using the large plastic sample bottle of water collected at the test site, fill the test vials to 10 mL line.
   b) Cap one vial with a **YELLOW** cap or a cap clearly indicating "blank." This is your BLANK vial for the test site for pH.
   c) To the second vial, add **0.5 mL** of Phenol Red Indicator (#V-2304) using the pipet marked with "0.5 mL" (0369). Cap the second vial and mix. The SAMPLE is now ready for analysis using the Colorimeter. [Note: The Colorimeter uses a 9V battery or AC adaptor.]
   d) Colorimeter Analysis:
      1. Press the **ON** button for 2 seconds to turn meter on.
      2. Press the * button to select start.
      3. Press * button again to select Testing Menu.
      4. Select **Sequence 1** from test menu by using up or down arrows to direct * to Sequence 1. Press * button to start sequence 1.
      5. Select **075 PH PR** from test menu by using up or down arrows to direct * to **075 PH PR**. Press * button to begin pH test. The * will be on SCAN BLANK.
      6. Select the BLANK vial prepared in step b. Wipe vial with Kimwipe. Insert cleaned BLANK vial into light chamber. Close light chamber lid. PRESS * button. The BLANK has been analyzed and the * will be on SCAN SAMPLE.
      7. Select the SAMPLE vial prepared in step c. Wipe vial with Kimwipe. Insert cleaned SAMPLE vial into light chamber. Close light chamber lid. PRESS * button. The SAMPLE has been analyzed.
   e) Record pH result on data sheet.

2.) TURBIDITY

a) Select one clean test vial (#0290). Using the large plastic sample bottle of water collected at the test site, fill the test vial to 10 mL line. This is your SAMPLE vial for the test site. [NOTE: The BLANK vial from the pH test may be used as the sample vial in the turbidity test.]
b) Identify the sealed vial with BLUE cap. This vial contains distilled water and is the BLANK for the turbidity test.
c) Colorimeter Analysis:
    1. Press the **ON** button for 2 seconds to turn meter on.
    2. Press the * button to select start.
    3. Press * button again to select Testing Menu.
    4. Select **Sequence 1** from test menu by using up or down arrows to direct * to Sequence 1. Press * button to start sequence 1.
    5. Select **098 TURBIDITY** from test menu by using up or down arrows to direct * to **098 TURBIDITY**. Press * button to begin turbidity test. The * will be on SCAN BLANK.
    6. Select the BLANK vial identified in step b. Wipe vial with Kimwipe. Insert cleaned BLANK vial into light chamber. Close light chamber lid. PRESS * button. The BLANK has been analyzed and the * will be on SCAN SAMPLE.
    7. Select the SAMPLE vial prepared in step a. Wipe vial with Kimwipe. Insert cleaned SAMPLE vial into light chamber. Close light chamber lid. PRESS * button. The SAMPLE has been analyzed.
d) Record turbidity result in FTU on data sheet.

TESTING with the meter is now complete.

Thank you for your assistance with monitoring the Sassafras River.

Appendix B
Water Quality Data Sheet and Sampling Kit Log Sheet
[for printable versions of the data sheet and log sheet, please refer to the Sassafras River Association website]

Sassafras Samplers - Data Collection Sheet (version 01 January 2015)							
Team:							
	Date:		**Date:**		**Date:**		**Date:**
	Time:		**Time:**		**Time:**		**Time:**
	Site:		**Site:**		**Site:**		**Site:**
Test	**Result**		**Result**		**Result**		**Result**
Air Temp		C		C		C	
*Thermometer (C *9/5+32 = F; 0=32, 5=41, 10=50, 15=59, 20=68, 25=77, 28=82).*							
Water Temp		C		C		C	
Water Temp above 32 C considered detrimental							
Dissolved Oxygen							
DO >5 ppm considered passing.							
pH							
Colorimeter #075; pH range <6.6 or >8.4 considered failing; >8.4 may indicate algal bloom							
Turbidity		FTU		FTU		FTU	
Colorimeter #008; ≥ 10 FTU considered failing.							
Stream Stage		cm		cm		cm	
Only placed at NT01, NT04, NT06, NT11, NT24, NT27, NT28. Read if possible.							
Conductivity		µS		µS		µS	
Only Teams 1 and 2							
Notes / Comments							
for example, algae present, SAV present; change in land use; wildlife or human activity; any other observations							
Cecil County Public Works, Roads Division: Dan Webber, Division Chief, dwebber@ccgov.org; 410-996-6270							
Kent County Public Works, Roads Division: Daniel T. Voshell, Division Chief, dvoshell@kentgov.org; Office 410-778-4252; Cell 443-282-4603							

Log for Sassafras Samplers Kit with Colorimeter Serial # _____

GPS Serial # _____

Date (mm-dd-yy)	Sampler (first and last name)	Activity (for example, conducted analyses, obtained new pH reagent, replaced PO4 reagent)

Appendix C

Stream Stage Measurement

Staff Gauges are one meter tall, divided into 100 centimeters. Record the water height at each NT site to the nearest centimeter. Note that each black marker is 1 cm tall.

- A black marker with a pointed top ( ) symbolizes 10 centimeters
- A black marker with a pointed bottom ( ) symbolizes 5 centimeters