EMERGENCY CONTACTS

IN CASE OF A TRUE EMERGENCY, IMMEDIATELY CALL 911.

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Please upload all data and images within 2 weeks of sampling!

Data Collection Protocol for Darby and Cobbs Creek Volunteers

First and foremost: practice safe field techniques! Do not go into the water if there is flooding or if you cannot see the bottom of the stream bed. Water is incredibly powerful, so be cautious whenever you are in the field. Your safety is far more important than the data!

1) Log date, time, air temperature, weather conditions upon arrival at your sample site.
   a) *Air temperature* can be recorded using the weather app on your phone. Note if you record temperature in degrees Celsius or Fahrenheit.
   b) *Weather conditions* should include cloud cover percentage, wind conditions, and any other conditions that may not be found in a weather report.
   c) For *precipitation in the last 24 hours*, use wunderground.com and choose a location nearest your sample site. If you are unsure, note if it did or did not rain.
2) Quantitative Water Quality
   a) **Calibrate your conductivity meter at home prior to sampling**. Dispose of calibration solution in the drain while running water. **Do not calibrate in stream or dispose of calibration solution at the sample site.**
   b) At the sample site, record *water temperature* and *conductivity* using the conductivity meter.
      i) Remove the meter from its protective case and take the cap off the bottom. Turn it on and place the bottom inch into the middle of the stream. Hold the meter in place until the reading stabilizes, usually about 30 seconds.
      ii) Record water temperature and conductivity on the data sheet **while the meter is in the water.**
      iii) Turn the meter off, replace the cap, and return to its case.
   c) Measure *pH* using a pH strip.
      i) Rinse your sampling cup 3 times with stream water. Collect water facing upstream and dump water out facing downstream. After rinsing, fill the cup with water from the middle of the stream. Avoid filling the container with cloudy or muddy water.
      ii) Dip the entire colored part of the pH strip in the water. Compare the strip to the color chart and log the reading on the data sheet. Take a photo of the strip **against the color chart**. Tape the used strip to the data sheet.
   d) Measure *chloride concentration* using a Quantab chloride strip.
      i) Triple rinse the sampling cup and fill with about 1 inch of stream water, following the same steps as the pH strip. Do not put the pH strip and the Quantab strip into the sampling cup at the same time! Use two different containers or rinse and refill the same cup between strips.
      ii) Place the Quantab strip in the cup. Make sure the water is not higher than the orange indicator band. Let the strip sit in the cup until the orange indicator band turns completely back. **Do not take a reading before the strip turns black.**
      iii) The top of the white peak represents the Quantab value. Use the conversion chart to determine % NaCl and Cl^- ppm. Record *Quantab*

value, % NaCl, Cl^- ppm, and the lot number. Take a photo of the strip **against the conversion chart** and tape used strip to the data sheet.

iv) The photos below show examples of good photos and properly run strips.

e) A few notes:

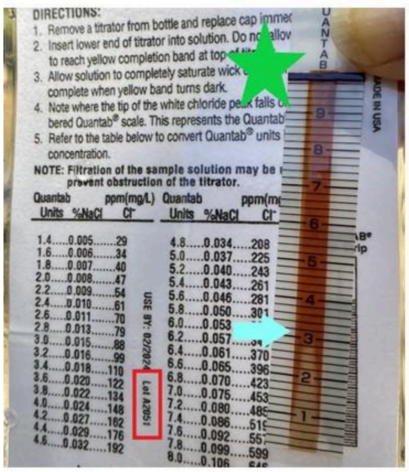
i) Conductivity readings should be greater than 100 μS/cm. If your readings are lower, check that the meter is measuring conductivity, not TDS or salinity.

ii) pH readings should be between 6 - 9. If your readings are outside the range, make sure you compare your strip to all possible options on the color chart. The top and bottom sections of the chart are not the same!

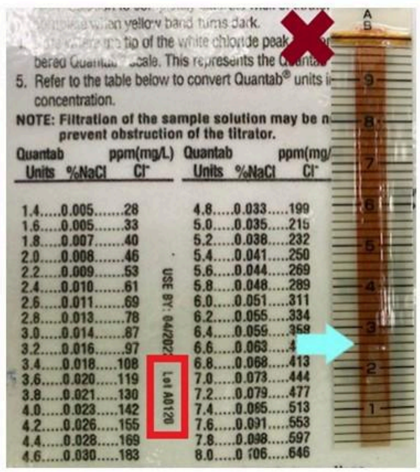
iii) If the indicator strip at the top of the Quantab strip does not turn black after 5 minutes, something is wrong with the strip. Try another one.

iv) Make sure photos of the pH and Quantab strip have the conversion charts in frame!

v) If you run into issues with the conductivity meter or the strips, please contact Lauren right away!



This is a good photo with the conversion chart in view. This strip was run properly. The indicator band, by the green star, is completely black. The blue arrow shows the white peak, which represents a Quantab value of 3.0. The red box shows the lot number.



This is a good photo with the conversion chart. This strip was NOT run to completion. The indicator band, next to the red X, is completely orange. The blue arrow shows the white peak at 2.6 Quantab units, but this value may be incorrect because the strip was not properly run.

This is a bad photo, as there is no conversion chart and the strip is was not run to completion. The orange X shows the indicator bar, which is not fully black. The blue arrow shows the peak at 2.6 Quantab units, but this value may be incorrect because the strip was not properly run.

3) Pictures

a) Stand in the same location at each visit and take photos looking upstream and downstream. If possible, include a reference point in the image to document consistently. Note where you take the images.

b) Again, take images of the pH and Quantab strips with their conversion charts!

c) If you see anything notable in or around the stream – piles of foam, lots of trash, strange colors, oily sheens, wildlife – take a photo of that as well!

d) When uploading photos to the Google Form, name each image with the Date, Site ID, and your initials. If possible, add a descriptive word (i.e. 28Jan23_DCWM1_AW_Upstream View).

4) Qualitative Water Quality
    a) Record the conditions of the stream each visit.
        i) *Water Appearance*: Select as many as are applicable.
            (1) Clear
            (2) Foam
            (3) Muddy
            (4) Milky
            (5) Scummy
            (6) Oily Sheen
            (7) Brownish
        ii) *Stream Substrate*: Select all the substrate types that are present, even if they are only present in a small section of stream.
            (1) Mud
            (2) Sand
            (3) Pebble - the smallest of stones, less than 1 inch across
            (4) Gravel- larger than pebble but not greater than 2 inches across
            (5) Cobble- larger than gravel, about 2-12 inches across
            (6) Boulder - larger than cobble, smaller than a car
            (7) Bedrock - continuous rock formations larger than a car
        iii) *Bank Vegetation*: Select all the vegetation types that are present.
            (1) Herbaceous - non-woody plants
            (2) Grass
            (3) Shrub - woody plants smaller than trees
            (4) Deciduous - trees that drop their leaves in the fall
            (5) Coniferous - trees with needles that do not drop in the fall
        iv) *Bank Stability*: Record the severity of erosion along the banks. Evidence of bank erosion includes undercutting, very steep or collapsed banks, toppled trees, exposed tree roots, or other signs of soil movement.
            (1) Some Erosion - the banks have some evidence of erosion but are mostly intact
            (2) Much Erosion - the banks are severely eroded
            (3) Intact - no evidence of erosion
        v) *Stream Odo*r: Note any odors coming from the stream.
            (1) None
            (2) Sewage - sewage discharge or wastewater detergent
            (3) Other - any notable smells that are not sewage

5) Notes
    a) Use this section to record any observations at your site. This can include wildlife, presence of litter, or any changes to the site due to storms or droughts.

6) Enter data and upload photos to the Google Survey, either in the field or at home.
    a) Do not throw away your data sheet! Take a picture of your completed data sheet and upload it with the photos on the Google Survey. Hold onto the sheet until you can arrange a time to drop it off with Lauren or Aurora.