**Secchi Disk Water Testing Protocol**

**Overview**

The Secchi disk was created by Pietro Angelo Secchi to measure the relative turbidity of slow-moving rivers, lakes, ponds, and reservoirs. Turbidity is a measure of water quality by quantifying the amount of suspended solid matter in the water.

**Materials Needed**

* polycarbonate black-and-white quadrant Secchi disk (obtained from Fondriest Environmental, Inc.: Watermark Professional Secchi Disc) measuring 20 cm diameter and attached to a nylon rope and a 24-oz zinc sounding weight. to the nylon rope is attached a measuring tape calibrated in 0.1 meter increments.
* Notebook with waterproof paper (Spiral bound, Rite in Rain, Journal or Field type, purchased from Amazon)
* Waterproof Pen (Rite in Rain All-Weather #37 Black Ink Fine Point)
* Paddle boat
* GPS device (Lowrance HDS5 GPS Unit)
* 2 clothespins
* calculator

**Requirements Before Testing**

* inspect the Secchi Disc for damage:
  + borders between white and black quadrants are clear
  + no cracks in the disc that would interfere with color distinction
* measurement times must be between the hours of 10:00 AM and 2:00 PM
* Secchi disc is firmly attached to the measuring tape

**Procedure**

1. Arrive at desired site with the aid of the GPS device
   1. Record date, time, test site number, GPS location, water color (WC), and observer (who conducted the test) in your notebook
   2. Record the number for Physical Condition (PC) in your notebook:

1 = crystal clear

2 = not quite crystal clear – a few algae/weeds visible/present

3 = definite algae/weeds – green, brown, or yellow color present

4 = high algal/weed levels with limited clarity and/or mild odor apparent

5 = very high algal/weed levels with one or more of the following: massive floating scums/weeds/lily pads on the lake or washed up on shore; strong or foul odor; or fish kill

* 1. Water color: use your best judgment on color of water, two colors can be used to describe, light and dark as descriptors (examples include: light green, dark grey, light green/grey)

1. Position the boat so that the shaded side is at the location of testing
   1. If there is no shade, position your body so that your back is to the sun, shielding the testing spot from glare.
2. Remove sunglasses, but keep in contacts/on glasses.
3. Lower Secchi disc into the water slowly and to the depth at which you can no longer see the disk.
4. Mark the measuring tape with a clothespin at the line that coincides with the surface of the water.
5. Pulling the disc up slowly until you can see the disk again.
6. Mark the measuring tape with the second clothespin at the line that coincides with the surface of the water.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Time** | **Test Site #** | **WC** | **PC** | **Depth**  **(m)** | **Location** | **Observer** | **Value #1**  **(m)** | **Value #2**  **(m)** | **Average (m)** | **Overall Average**  **(m)** |
| 06/20/13 | 10:40 AM | 1 | blue | 2 | 5 m | latitude/ longitude | Hannah  Becker | 2.33 | 1.98 | 2.16 | 2.11 |
| 06/20/13 | 10:50  AM | 1 | blue | 2 | 5 m | latitude/ longitude | Hannah  Becker | 2.22 | 1.88 | 2.05 | NA |

1. Remove the Secchi disc from the water and record both depth values at which the clothespins are located. Average the two numbers and record the average value. Values should be estimated to the nearest hundredth of a meter. (these calculations can also be preformed later on Excel)
2. Repeat steps 4-8. Take the average values from both measurements and calculate the overall average. Record the overall average value in the notebook.

**Example of Data Table**