

Level 1 Sampling Procedures

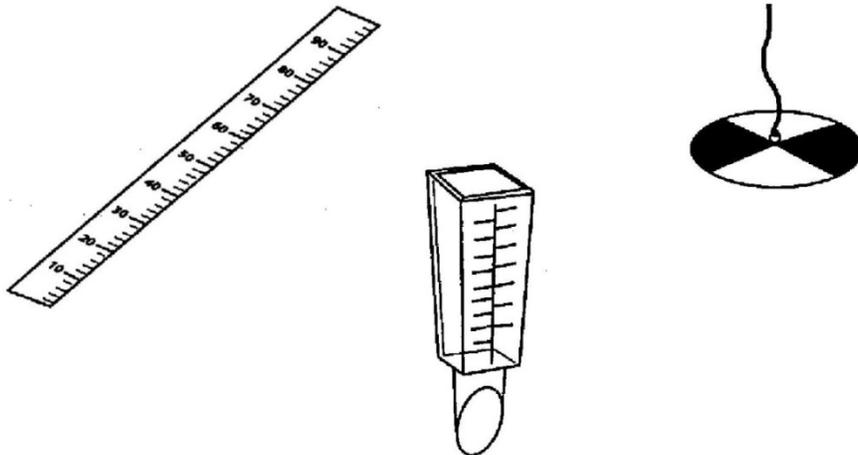
Monitoring Equipment and Materials

Volunteers Provide:

- Daily access to the lake you wish to monitor. Living on the lake you monitor is ideal, but not necessary if you have an access point.
- Access to a boat and a place to launch it.
- Life jacket.
- Dock or fixed post for lake level gauge.
- Pencil (pens do not work on “rite-in-the-rain” data sheets) and a hard surface to write on (e.g., a clipboard or notebook).

King County Provides:

- Training
- Data sheets
- Lake level gauge
- Rain gauge
- Secchi disk
- Thermometer with line and float



Lake level gauge, rain gauge, and Secchi disk.

Monitoring Procedures

The following instructions are provided to ensure that all Level 1 monitors collect data in the same manner. Please read the instructions thoroughly, and contact Lake Stewardship staff if you have any questions. Proper data collection and entry will help to eliminate discrepancies and ambiguities in your data and allows for simplified data entry and analysis. Furthermore, if all volunteers collect and record data according to these protocols, data from different lakes can more easily be compared and contrasted.

Sampling Days and Times

Conduct your daily measurements at the same time each day, if possible. For weekly measurements, it is ideal to collect measurements on the same day each week, at the same time of day. It is important to be as consistent as possible from day to day and week to week. Of course, some changes are likely to be necessary because of everyone's busy lives. It is much better to change the date or time than to miss a sample event.

Filling Out the Data Sheet

Please make sure that your name and date are on the data sheet (very important!). If you are unable to take any measurements, leave the space blank or write "No Data." We cannot equate a blank with a zero because they actually mean two different things. This is especially important with precipitation measurements. If you are going to be away for more than a few days, try to arrange for a substitute, but if you cannot, please note your absence on the sheet. Additional notes are ALWAYS appreciated.

Data sheets are available in both paper (waterproof, "rite-in-the-rain") and electronic (Excel) formats, and may be submitted either through the mail or by email.

Daily Tasks

Precipitation Measurements

- Install the rain gauge in an area open to the sky and away from overhanging objects such as trees or buildings. If you need assistance we can help with the location and installation.
- Please record rainfall measurements in millimeters (mm). Once you record the precipitation value on your data sheet, empty the rain gauge.
- Snow: If snow collects in the rain gauge, bring it inside and allow the snow to melt. Then take a normal reading of the amount of water in gauge, writing "snowmelt" on your data sheet.
- Freezing: If extended freezing occurs, make sure your rain gauge is empty or bring it inside until temperatures rise above freezing, otherwise the gauge may crack. Also, make sure to write "frozen" on your data sheet.
- Missing days: If you are unable to take a precipitation measurement daily and rainfall has accumulated in the gauge over numerous days, record the total measurement on your data sheet, writing "cumulative," and indicating how many days the precipitation was collected over.

Lake Level Measurements

- Lake Stewardship staff will assist you in identifying a location on your dock or other permanent fixture in the lake on which to place your lake level gauge. Complete installation instructions can be found in the **Equipment Installation, Maintenance, and Repair** section of the Volunteer Guide.
- Please record lake level in centimeters (cm). Lake stewardship staff can also assist in the installation of your lake level gauge.
- On windy days, you will have to estimate the approximate lake level by taking an average of the high and low marks created by waves.

Weekly Tasks

Sampling Equipment

- Boat
- Anchor
- Life jacket
- Secchi disk
- Thermometer
- Data sheet and pencil

Date, Time, Weather, and other Notes

- Record the date and time. Please enter the time using a 24-hour time format (e.g., 6 AM = 0600, Noon = 1200, 6 PM = 1800, and Midnight = 2400).
- Record observations for cloud cover and wind conditions.
- Fill out number of swimmers, fishers, and boats in the lake (include your boat in the count, so there should always be at least one boat!). Provide goose counts (optional).
- Make any additional notes about weather, water color, wildlife, etc., in the “Comments” section.

Secchi Depth

- To eliminate glare, always take Secchi readings on the shady side of the boat.
- Remove sunglasses while taking Secchi measurements – some types make it easier to see into the water and may interfere with readings.
- The Secchi disk line will be marked with either 0.1, 0.25, or 0.5 meter increments. You can put new marks on the line to help you, but please be sure they are in meters!
- To take a Secchi depth reading, lower the disk into the water until it just disappears from view. Watch the disk while carefully raising and lowering it a few times to make sure you have the most accurate reading.

- Place your finger on the line at the water's surface to mark the point where the disk just disappears.
- Raise the disk and, using the marks on the line, measure the Secchi depth. Report on your data sheet to the nearest 0.1 meters (or 0.25 meters if your line is marked as such).

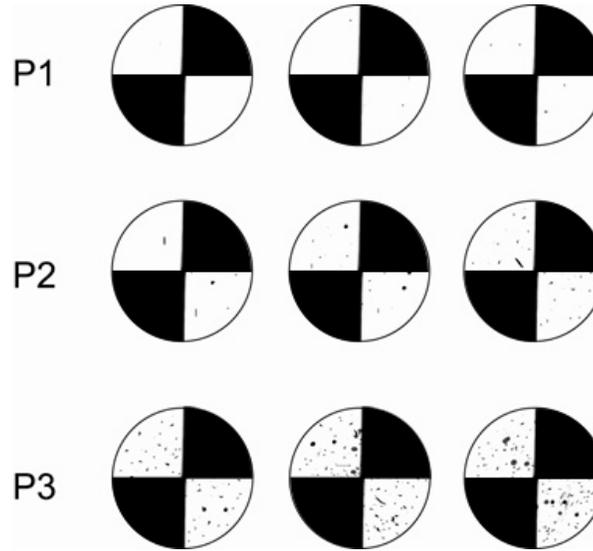
Water temperature

- Take your temperature measurements at the same location as the Secchi depth measurement.
- Measure lake temperature by lowering the thermometer to 1 meter below the surface, as marked on the line. There should be a fishing float on the line to mark the 1 m depth. If you do not have one, please contact us so we can update your equipment.
- Wait at least 2 minutes for the reading to stabilize.
- Remove the thermometer quickly from the water and read it immediately. Record temperature to the nearest 0.5 degrees Celsius (Centigrade).
- If the fluid in the thermometer separates, temperature readings will not be accurate. You can see the separation by looking closely at the colored fluid in the thermometer, which should be continuous from bottom to top. If you see clear spots, it has separated and is no longer accurate. For instructions on recombining the fluid, see the **Equipment Installation, Maintenance, and Repair** section of the Volunteer Monitoring Guide. If the fluid will not combine, contact a Lake Stewardship Program staff member for a replacement.

Algae and Particle Observations

- Algae and particles are counted at both the sample site and near the shoreline if possible.
- Lower your Secchi disk to 6 inches below the surface of the water. At this depth, the volume of water above the white portions of the disk is approximately two liters.
- Look at the amount of particles in the water above the white portions of the disk. Estimate the amount of particles above *both* white portions by using the table or picture below.
- Alternatively, you can pour two liters of water into a clean white bucket to make the assessment.
- Algae in the water can appear as nebulous clouds or as small floating particles, depending on the species. Please do not count particles smaller than the period at the end of this sentence.

Algae particle rating categories.



	<u>Description</u>	<u>Particle Count</u>
P1	Few algae particles visible above disk	0-10
P2	Moderate numbers of particles	10-100
P3	A lot of algae- bloom conditions	>100

Canada Goose Counts

Counting the number of geese you observe at your lake can give us a general idea of how many geese are present, as well as how often. This information can then be used to assess the possibility of geese contributing to water quality issues.

Recording goose counts is optional. If you do not see large numbers of geese on your lake, or do not perceive them to be a problem, it is unnecessary to record goose counts. If you do want to participate in the goose count, please choose **one** option below.

- **Daily goose count:** Record the greatest number of geese you see **at once** anywhere on the lake, at any time of day. For example, if you see 10 geese in the morning, eight at noon, and 14 in the evening, record "14."
- **Weekly goose count:** Every week, record the greatest number of geese you've seen **at once** anywhere on the lake over the past week. For example, if you see five geese on Monday morning, 15 on Tuesday morning, 12 Tuesday evening and 10 on Friday, you would record "15" on your data sheet.

