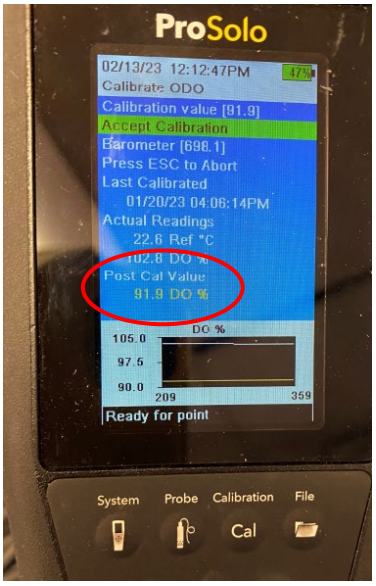
Level 3 Field Procedures

Please hold off going out if it is raining heavily (i.e., making it difficult to see the Secchi disk accurately), if there is abnormally high boat traffic, or if your safety would be at risk. A clear, calm day would be best.

STEP 1) Getting to Site

- Upon arrival, note any safety hazards or concerns and adjust plans as needed.
- It is important that the true deep station be sampled so that seasonal trends in the near bottom water quality can be determined (see **Map**). It is recommended to use a GPS or depth sounder.
- Before anchoring, check lake depth with calibrated rope/tape or depth sounder. Record depth to nearest 0.01 m or establish permanent buoy. This will allow "bottom-1 m" sample to be collected at correct depth relative to the bottom.
- If dropping an anchor, allow boat to swing away from the bottom sediment disturbance caused by dropping anchor. If very calm, anchoring may not be necessary.
- Record the date, time, volunteer names, weather, and water conditions (refer to **Field Sheet**).

STEP 2) Lake Profile



- Calibrate the YSI (Refer to "**How to Calibrate my YSI ProSolo ODO Meter**" for step-by-step instructions). To get accurate readings the meter depends on Barometric pressure, which varies daily, so the meter must be calibrated each time you sample.
- Record the "Post Cal Value" % DO reading at the end of calibration in the field sheet to help us determine whether the YSI probe needs servicing.
- Lower the YSI probe until the sensor is submerged just below the surface of the water (the "0 m" reading). Wait at least one minute before recording your results to allow the readings stabilize. Record:
  - Temperature (to the nearest 0.01°C)
  - Dissolved oxygen (to the nearest 0.01 **mg/L**) ← Not DO %
- Lower the probe to a depth of one metre and repeat, recording the values once they have stabilized.
- Continue to measure and record temperature and dissolved oxygen values at one metre intervals. The last measurement will be from a depth one metre above the measured lake bottom (to prevent sediments getting into the sensor) or until the probe cable has reached its maximum length.

STEP 3) Water Sampling

- For water collection from any depth: **(1)** set sampler, ensuring misfire will not occur; **(2)** lower to desired depth, sway rope to exchange water in sample; **(3)** drop messenger; and **(4)** retrieve sampler.
- Using valve/hose on sampler, carefully fill sample bottles allowing contents to overflow (forcing bubbles out). Try to avoid touching the mouth of the bottle with the sampler hose to prevent contamination. Refer to the chart below for more detailed instructions.

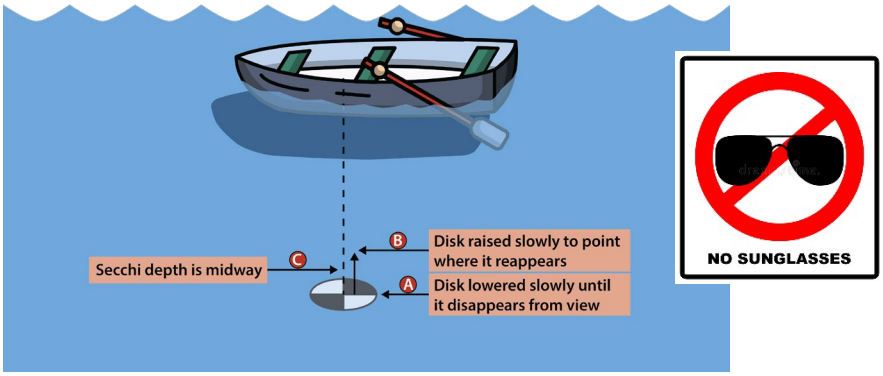
Order / Sample ID	**Bottles**	**Location**	**Instructions**
1 REG @ 0.5 m		**Taken 0.5 m from surface**	Lower the water sampler to the depth of 0.5 m and drop the weight to close the ends. Retrieve the water sampler and fill, seal, and **label** both 250 mL bottles in the photo to the left.
2 REP @ 0.5 m		**Taken 0.5 m from surface**	Use the remaining water in the water sampler (after filling the regular bottle) to fill your replicate sample. **Only one replicate sample is required per lake for each sampling visit.**
3 BLF (Blank Sample)		**N/A**	Fill, seal, and label the 250 mL plastic bottle in the photo to the left using DI water while still on the boat.
4 REG @ mid-depth		**Taken mid-depth**	Lower the water sampler to the mid-level depth for your site and drop the weight to close the ends. Retrieve the water sampler and fill, seal and label the bottles in the image to the left.
5 REG @ bottom		**Taken 1 m above bottom**	Lower the water sampler to the bottom depth and drop the weight to close the ends. The bottom depth is defined as being either 1 m above the measured lake bottom at sites 50 m or less in depth, or 50 m at sites greater than 50 m in depth. Retrieve the water sampler and fill, seal and label the bottles in the image to the left.

For each regular sample, record any water odour or colour observations on the field sheet.

- **Odour**: smell water in sampler for odour. Example descriptors: nil (no odour), organic, sulphur (rotten eggs), metallic, etc.
- **Water colour**: observe water colour in sampler preferably against a white backdrop. Example descriptors: clear, green, brown, cloudy, etc. Can be a combination of descriptors. Example: brown & cloudy.

STEP 4) Secchi Depth

- Lower the Secchi disk over the ***shaded side*** of the boat.
- ***Slowly*** lower the disk until the black and white pattern is no longer visible. Note the measurement on the tape measure (in metres) at the surface of the water (estimate to the nearest 0.01 m). Record this as Distance A.
- Pull the disk up until the black and white pattern ***just*** appears again and note the measurement of the tape measure at surface of the water. Record this distance as Distance B.
- **Average the two measurements [(Distance A + Distance B)/2] = Secchi depth**.

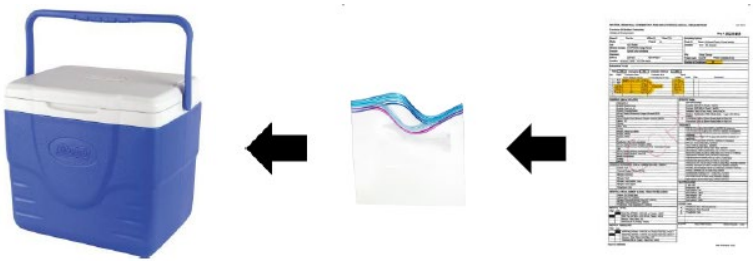


STEP 5) Check and Fill in the Remainder of the Form

Please fill in the entire form and note any observations while travelling to, or while sampling at the site. This may include algal blooms, surface slicks, debris, pollen, zooplankton, fish kills, recent storm or high wind events, fishing derby's, water skiing competitions, etc. The data form has space for one site on the same water body. If you need more, please use a separate copy of the data form.

STEP 6) Shipping

- Ensure water samples remain cool (**ideally 4°C**) until ready for shipping (use ice packs provided).
- **Take a photo** of the completed requisition form as a back-up.
- Place completed **requisition form only** in zip loc bag and put in cooler. **Do not** send field sheets to the lab, keep them to submit to your Ministry contact.
- Ship cooler containing bottles, ice, and requisition form **to the lab within 24 hrs of sampling**. The lab results can be affected by warm samples and time between collection and analysis.



STEP 7) Data Entry and End of Season Responsibilities

Following **each sampling event** and **within 30 days** of the season ending**:**

- Use the online **Field Data Submission Tool** to submit your data, available at http://www.gov.bc.ca/lakestewardshipmonitoring, **including a photo of your field sheet** and the lab requisition. This allows us to screen incoming data as it arrives to ensure quality and completeness.

  Alternatively, you could arrange to either text photos of your **1)** completed lab requisition, **2)** field form, and **3)** lake photos to your Ministry contact or email volunteerlakes@gov.bc.ca. If you choose not to submit online, we ask that data is submitted using the standardized Level 3 excel worksheet provided (Excel sheet) and sent in on a regular basis.

- Finally, please return sampling equipment to the Ministry for maintenance, storage, and to update clipboards within 30 days of the final sampling event for the season (on an annual basis), unless otherwise arranged.

  Purolator Account #: **8262063**

If you need assistance with any of the above steps, please email volunteerlakes@gov.bc.ca or contact your Ministry representative.

We would love to see your photos! Please send us any lake or volunteer themed photos you would be willing to share or have displayed on the BCLSMP website!

THANK-YOU FOR YOUR TIME AND COMMITMENT TO BC LAKES
HAPPY SAMPLING!

Updated Feb 2023