

Standard Operating Procedure (SOP) 2.3.1.1

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Assembling a Field Kit for water quality monitoring

1.0 Intent and Scope

The purpose of this SOP is to supply advice on preparing and maintaining a field kit that contains useful equipment for field work near creeks, lakes, and other water bodies. It also provides general practical advice based on The Clean Water Team's experience in using these methods. This SOP is linked to the new Data Quality Management (DQM) system implemented by the CWT, and the reader is encouraged to seek complementary DQM guidance for further information.

2.0 Content of the WQ Kit Box

This checklist presents the items one would want to have in a kit box when heading out to measure the five WQ “vital signs” – dissolved oxygen, temperature, conductivity, pH, and turbidity – and also measure the concentrations of selected nutrients.

Binder with

- Ample supply of blank field data sheets
- Sheets for calibration records
- Copies of previous field data sheets
- SOPs for all Instruments and wet chemistry kits present in the box
- Any other stuff that the group wants to have

Field Gear

- Sampling apparatus
- Weight for apparatus
- Pole, beaker, bucket, rope
- Yardstick
- Measurement Instruments and kits - pH, DO, EC, Temperature, turbidity or transparency, and other kit/instruments for nutrients, etc.
- Plastic tray
- Paper towels
- A jug of distilled or deionized water - DI - (available at supermarkets) for rinsing equipment
- A spritz (squirt) bottle for DI
- Plastic cups (e.g., solo 9oz clear plastic) for temporary sample containers or for dilutions

- Buffer plastic cups (e.g., solo 1 oz)
- Two 60 ml syringes for dilutions of samples with DI
- One 500-1000 ml container with WIDE MOUTH and tight cap (for garbage liquid that needs to be flushed into the sanitary sewer when you get home)
- Plastic bags for solid garbage
- Goggles
- Gloves
- Permanent marker
- Spare batteries for pocket meters (EC, pH)
- First Aid Kit

The "distilled water" referred to in the instruction is sold in supermarkets as "distilled water", "deionized water", "purified water", or "drinking water", and these are normally prepared by ion-exchange resins or reverse osmosis. The essential feature is zero conductivity and lack of contaminants, however most products still contain trace amounts of chemicals.

3.0 Field work: DOs and DON'Ts

3.1 Liquids you can pour on the ground at your station:

- Creek water
- Creek water diluted with DI
- Clean DI and tap water from your canteen

3.2 Liquids you have to put in the garbage liquid container - everything else! -:

- Anything with kit reagents - sample, washwater, etc.
- Buffers for calibration/reality checks of pH measurement electrodes and strips
- Standards for calibration of conductivity meters
- Turbidity standards from the dual cylinder kit

3.3 The Concept of Dedicated Utensils

Contamination is one of the major sources of error in field work that involves reagents and calibration solutions, because washing up is not as easy as in the lab. Contamination risks can and should be greatly reduced by using utensils (test tubes, syringes, cups, etc.) ONLY for their essential role in their OWN kit. The practice of "sharing" test tubes between kits - for example the identical tubes of the ammonia and the nitrate kits that are often used at the same time - spells problems. Dedicating utensils for one use can be done by marking them with a permanent marker. After use, each utensil is rinsed with DI and put away.

Dedicate one 60 ml syringe only for DI, and the other only for samples. Dedicate one small 1-oz plastic cup for the pH 7 buffer solution, and another for the pH 10 buffer.

3.4 The Use of a Telescopic Pole

The telescopic pole is a very useful companion to any sampling efforts: as a handle for a sampling device, as a rigid length measurement device, as a probe holder, and as a third leg to support operators climbing steep and slippery banks! Please refer to DQM Information Paper 2.1.1, Collection of Water Samples, Section 4.2 “Never get separated from your pole”

3.5 The Concepts of Station ID, Sample ID, Instrument ID, and Project ID.

Because your data will be used by decision makers, they need to be in a "database friendly" form. A unique ID allows for tracking an entity within the data management system, and for linkages between different aspects of data related to that entity. Your field datasheet should contain placeholders for the Station IDs, Sample IDs, Instrument IDs, and Project ID, and your instruments should be labeled, each with its own unique ID. Please refer to the Data Quality Management (DQM) materials and guidance for further information on how the unique IDs can be derived.

4.0 Sources and Resources

(This section is common to all DQM-SOPs, except for the title and SOP number in the citation) This SOP is an integral part of the Data Quality Management (DQM) System implemented by the Clean Water Team, the Citizen Monitoring Program of the California State Water Resources Control Board.

For an electronic copy, to find many more CWT guidance documents, or to find the contact information for your Regional CWT Coordinator, visit our website at www.swrcb.ca.gov/nps/volunteer.html

If you wish to cite this SOP in other texts you can use “CWT 2004” and reference it as follows:

“Clean Water Team (CWT) 2004. Assembling a Field Kit for water quality monitoring, SOP-2.3.1.1 in: The Clean Water Team Guidance Compendium for Watershed Monitoring and Assessment, Version 2.0. Division of Water Quality, California State Water Resources Control Board (SWRCB), Sacramento, CA.”