

## Collecting water samples

Surface water and hyporheic (sub-surface) water samples can be collected to determine the total and dissolved nutrients of the water through lab analysis. Depending on the purpose of the collection, it is important to follow a few guidelines to ensure that your measurements are accurate.

### Surface water samples

#### Materials

Nalgene bottle(s) - 60 mL (wide and narrow neck)

Cooler with ice

Syringe (50 mL) and syringe filter holders

Whatman GF/F filters (25mm to fit the syringe filter holders)

Forceps

250 mL (or any size >100 mL) Nalgene bottle

#### Methods

Glass or plastic bottles can be used depending on the parameter to be tested.

Be sure to use bottles that have been thoroughly cleaned and rinsed in an acid bath. (In the Winkenwerder lab these bottles can be found in the tan metal cupboard and the green plastic storage container beneath the table where the phone is located.)

Take the sample in a place where the water is believed to be well-mixed, preferably the thalweg of the stream, unless another stream location is of interest (e.g., outwelling of a gravel bar)

Rinse the bottle and cap of a 250ml bottle in the streamwater once or twice before the sample is collected.

Take the sample about 30cm below the surface of the stream water at a 45-degree angle to the direction of flow.



### *For total nutrients*

Shake the bottle to mix sample and pour a little into the wide-mouth bottle, shake to rinse and dump out. Pour sample into the bottle until it is half full.

Place the sample on ice.

Back at the lab, adjust the volume to 20 mL (exactly) and freeze until analysis.

### *For dissolved nutrients*

Place a filter on the holder and attach to the syringe.

Fill (~10 mL) with water, push some through the filter, shake the syringe to rinse, and dump out. Fill to 50 mL with the sample.

Filter some water into a narrow necked bottle, shake to rinse and dump out.

Filter more water into the bottle until full.

Transport bottles from the stream to the lab in a cooler with a cold icepack or, if the stream is nearby, with streamwater to ensure that the samples remain as close to their original temperature as possible.

Place samples in lab freezer until ready to analyze.

## **Hyporheic water samples**

### **Materials**

Nalgene bottle(s) - 60 mL (wide and narrow neck)

Cooler with ice

Drill with peristaltic pump head

Drill batteries (charged)

Sampling tube

Syringe (50 mL) and syringe filter holders

Whatman GF/F filters (25mm to fit the syringe filter holders)

Forceps

250 mL (or any size >100 mL) Nalgene bottle

## Methods

Attach sample tube to the pump head and place the other end down the well.

Using the drill, pump water out of the well and into the large plastic bottle.

Rinse once then fill again with well water.

### *For total nitrogen and phosphorus*

Shake bottle to mix sample and pour a little into the wide mouth bottle, shake to rinse and dump out. Pour sample into the bottle until ½ full. Place sample on ice.

Back at the lab, adjust the volume to 20 mL (exactly) and freeze until analysis.

### *For dissolved nitrogen and phosphorus*

Place a filter on the holder and attach to the syringe. Fill (~10 mL) with water, push some through the filter, shake the syringe to rinse, and dump out. Fill to 50 mL with sample.

Filter some water into a narrow necked bottle, shake to rinse and dump out. Filter more water into the bottle until half full.

Transport bottles from the stream to the lab in a cooler with a cold icepack or, if the stream is nearby, with streamwater to ensure that the samples remain as close to their original temperature as possible.

Place samples in lab freezer until ready to analyze.

## Notes

The amount of sample water collected using these methods is necessary for analysis by Kathy Krogslund in the analytical lab (School of Oceanography). Required volumes may change if samples are sent to a different lab or done by hand.

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When taking replicates, each water bottle should be filled individually (i.e., do not hold all three bottles in your hand and fill at the same time).

If sampling for dissolved organic carbon, the filters should be ashed in the muffle furnace to be cleaned of carbon (400° C for 4 hours)

When sampling for total and dissolved nutrients, it is important to keep the replicates together (i.e., 1 large bottle = 1 total + 1 dissolved sample).