

Field collection of pH benchmark samples

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Overview/Background: This guild is intended to direct collectors of water samples that will be analyzed for pH, for results to be used to “benchmark” data collected by autonomous pH sensors. The audience may be a non-scientist or technical novice, e.g., a local citizen.

Three basic tasks are covered here: preparation for water sampling with SCUBA and Niskin bottle (e.g., label sample containers and cock the Niskin); underwater collection with the Niskin; transferring and preserving the sample.

Methods:

See photos on following pages for detailed instructions

References:

See datasets for other related protocols.

San Miguel North

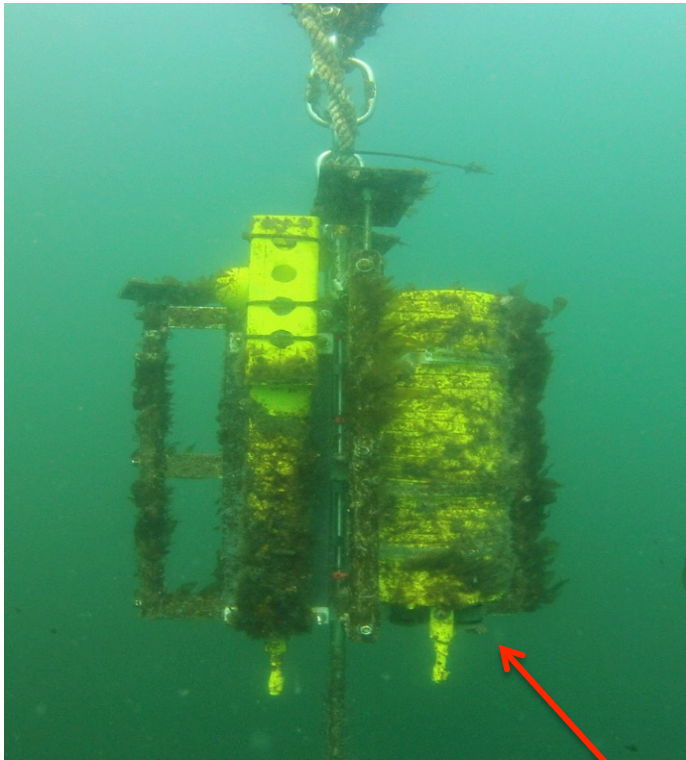
(subtidal PISCO buoy)

GPS coordinates:

N 34 03.417'

W 120 20.731'

Sensor depth = 20 ft



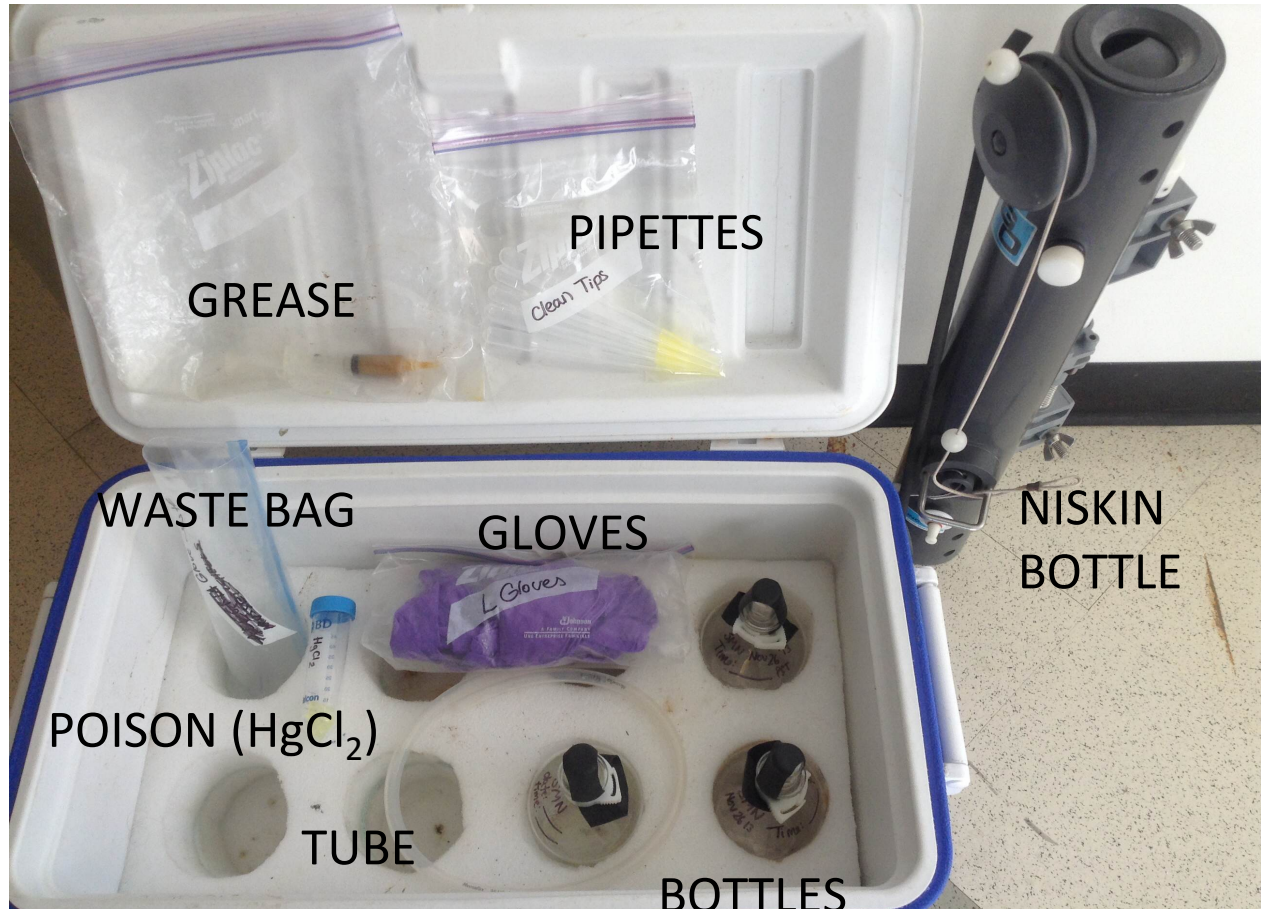
SeaFET pH sensor

SCUBA pH Water Sampling

- Samples should to be taken directly next to the SeaFET Sensor at **EXACTLY** xx:00, xx:20, or xx:40.
- Sampling should take ~5 min TOTAL (starting at closing the Niskin and ending with fixing the sample)

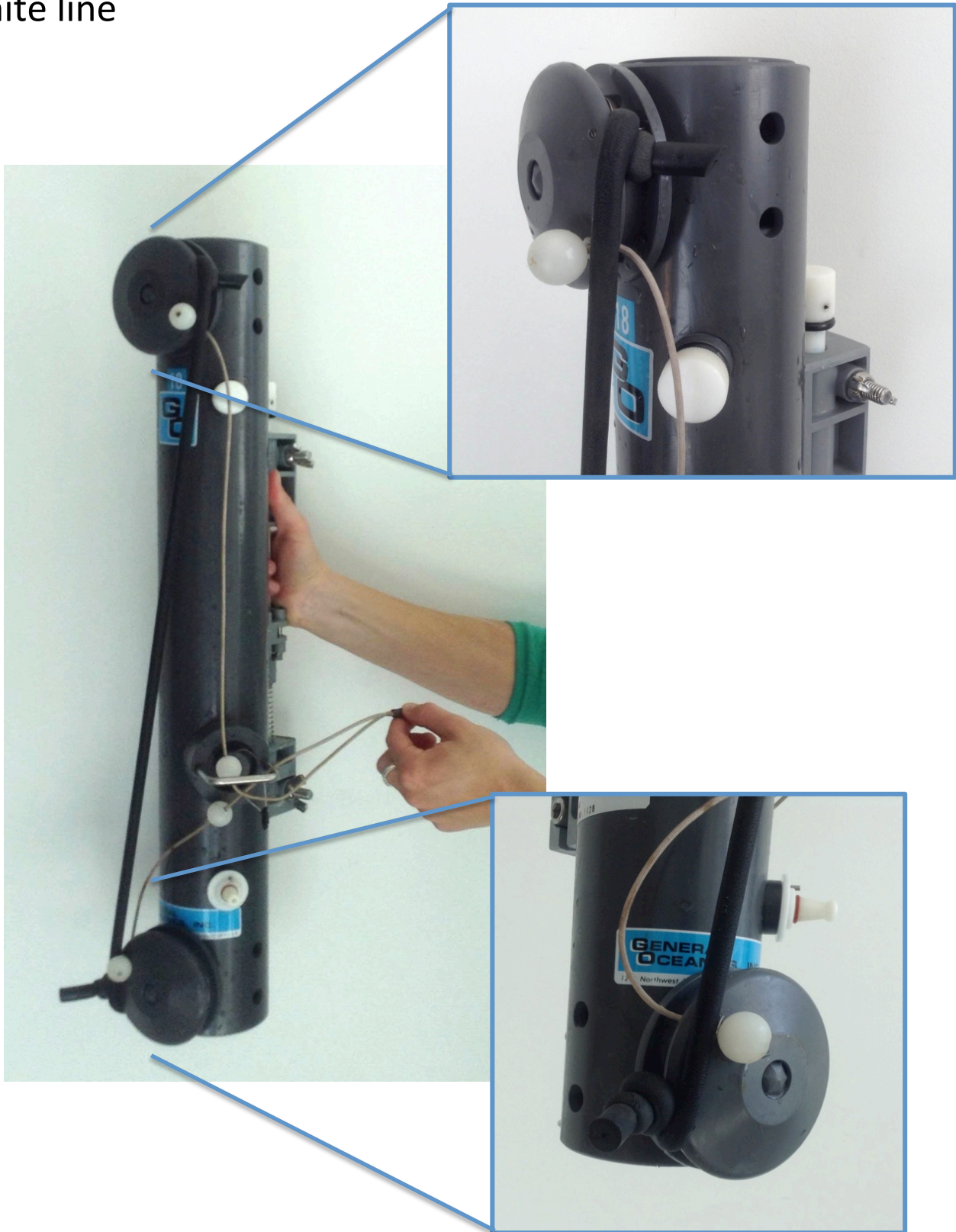
With a Sharpie, write the **SITE CODE, DATE** and **LOCAL TIME** of the sample collection on the glass sample bottle *before* collecting the sample

Sampling Kit Contents

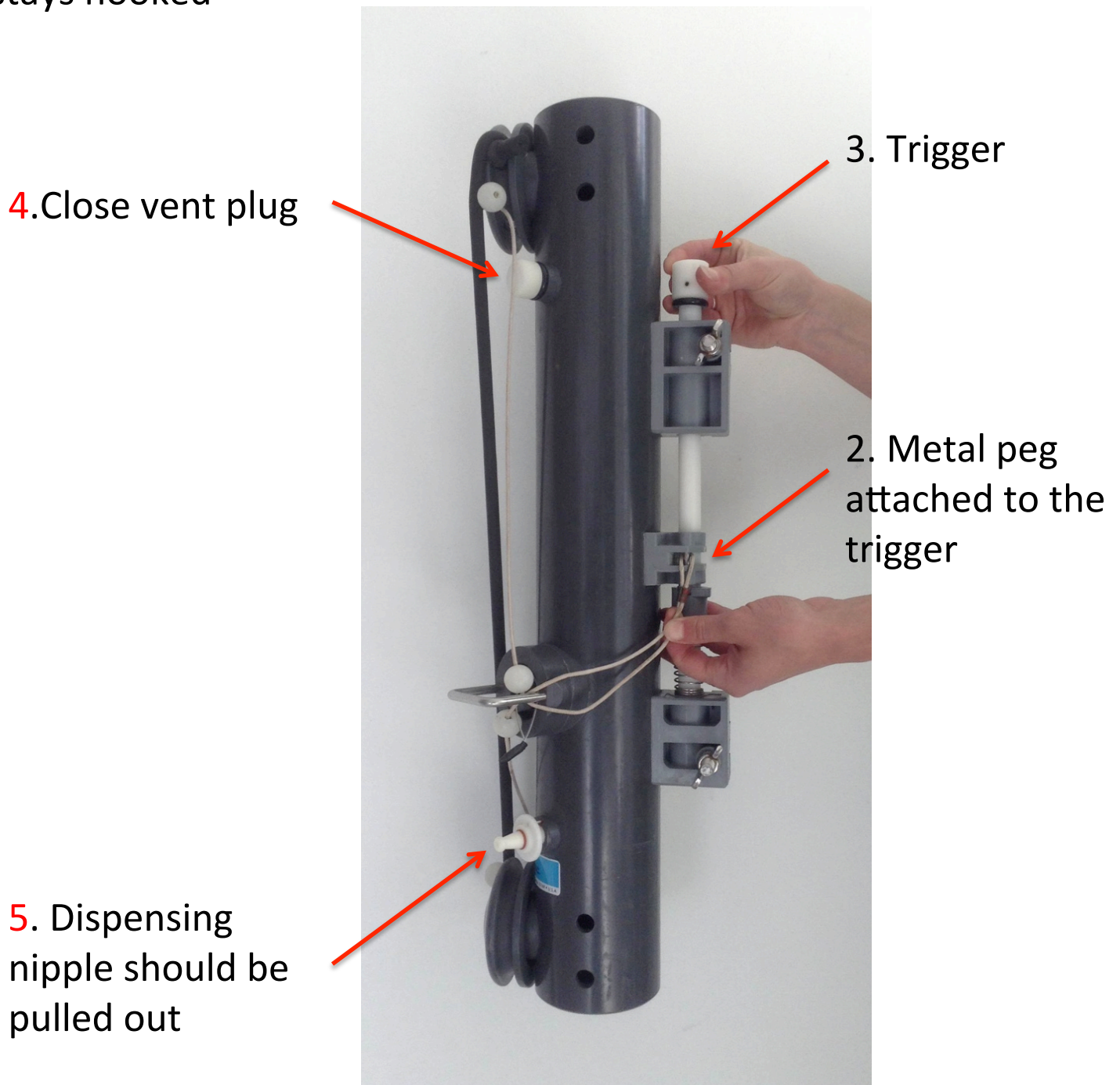


Prepare the Niskin

1. Before getting in the water: Pull black elastic clockwise around the top and bottom pulleys to put slack in the white line



2. Hook loop from the white line into the peg on the trigger
3. Pull up on the trigger to put metal peg into place so the loop stays hooked



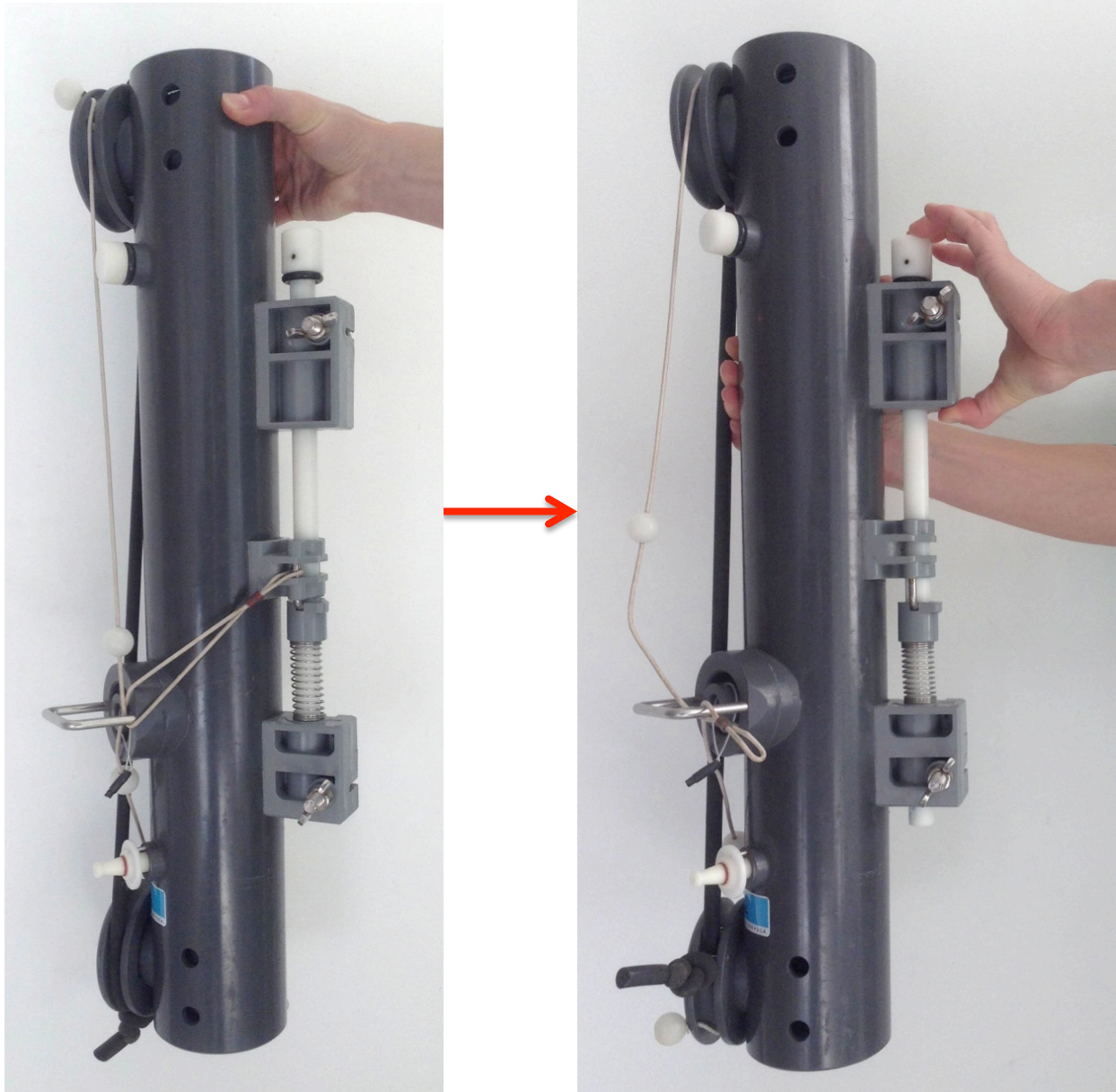
6. Pull elastic counter clockwise around the top and bottom pulleys to put tension in the white line

The Niskin is now 'charged' and the end caps are spring loaded. NEVER PUT YOUR FINGERS (or anything else) IN THE OPEN END CAPS

Sampling underwater

7. With SCUBA, take the charged Niskin to the sensor on the mooring. At the top of the hour or at XX:30, push the trigger button.

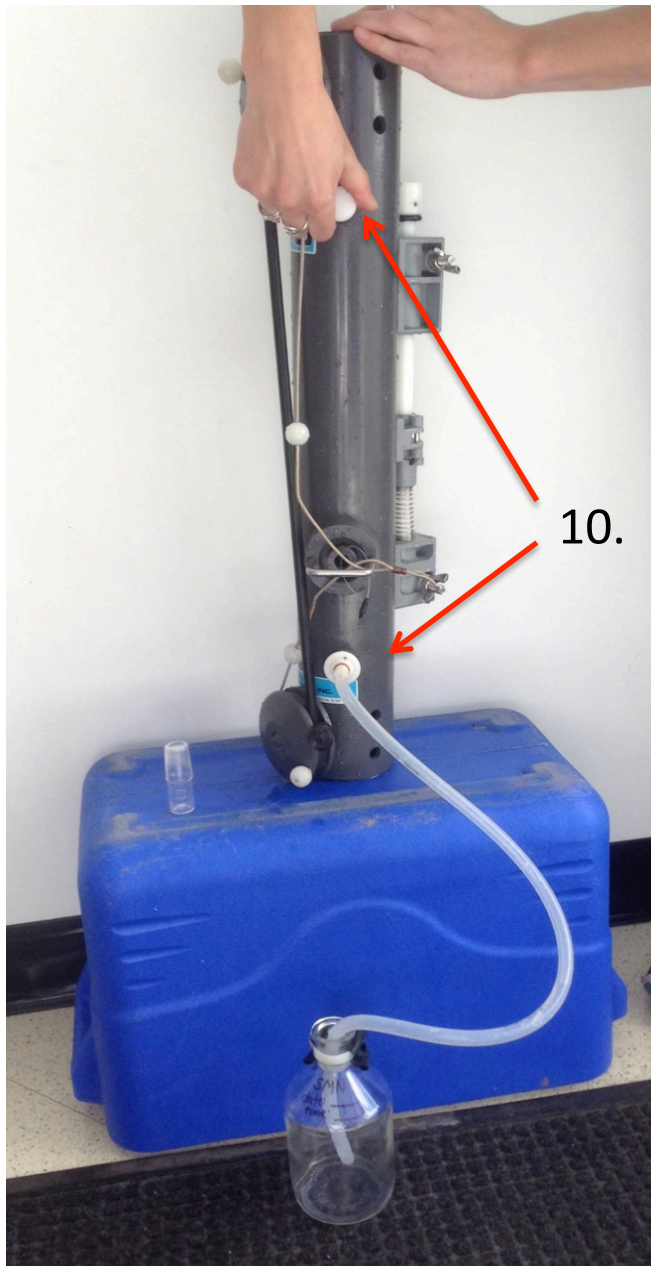
This releases the white line and closes the end caps.



8. Surface immediately to collect and preserve the sample

Collecting the sample

9. Slide the tube over the nipple on the Niskin, put the tube in a sample bottle
10. Open vent screw a little, and push the nipple down over the metal peg to dispense water. **Rinse the bottle three times** with small aliquots of sample water. Discard rinses, allow the bottle to **fill and overflow for ~ ½ volume** of the bottle.



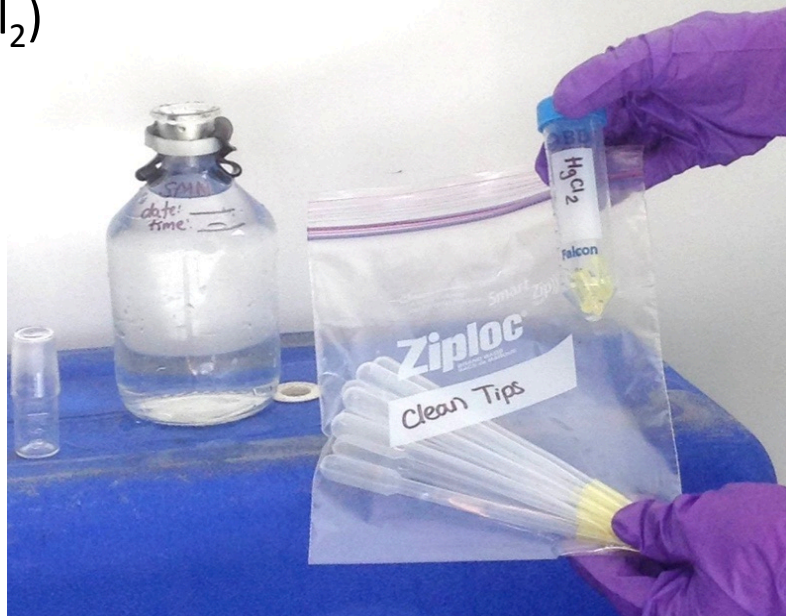
11. Pull tube out, pour a small amount of water out to leave a small head space in the bottle

Preserving the sample

Move efficiently to avoid prolonged gas exchange between the sample and the atmosphere

12. Put on gloves

13. Grab a pipette and one yellow tube of poison (saturated mercuric chloride – HgCl_2)



14. Use the pipette to transfer the entire aliquot of poison to the sample

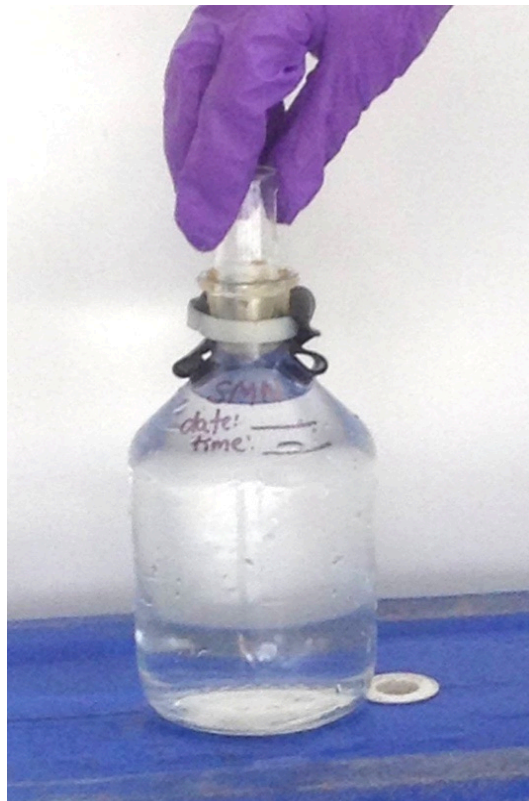


15. Place used pipette and poison tube into waste bag

16. Put 4 lines of grease on the bottle stopper. Grease lines should only go up half the length of the stopper



17. Place stopper in the bottle, push down and gently twist the stopper to ensure a complete seal with the grease.



18. TAKE GLOVES OFF and put them in the waste bag. Pull the rubber band over the glass stopper to secure the stopper.



19. Invert bottle a few times to mix the poison.



20. Store bottle in the cooler.

21. Empty Niskin by rotating the pulleys to open the end caps.