Protocol for taking a water sample from a lysimeter

1. If lysimeter finger clamp is unclamped or the stopper has come out, purge the lysimeter with ~ 25 mL water. Pour the water down the lysimeter, tightly secure the stopper and pull the water out through the black tubing line with a syringe. Make sure all of the water is out of the lysimeter before you set it. Some lysimeters may have standing water in them that needs to be purged as well.
2. Place the white nozzle on a hand pump in the black tubing and pump until the gauge reads ~70 psi. If you are using the Geopump, you can use that instead to set the pressure for this step.
3. Reclamp the finger clamp to the second to last stop. (So the clamp is tight but without breaking it)
4. Allow lysimeters to collect water overnight.
5. Come back the next day, unclamp lysimeters and collect water sample with syringe. If you collect more than 50 mL of sample, put overflow sample into a second 50 mL centrifuge tube that has been acid or base washed in the lab.
6. Reclamp the finger clamp to the second to last stop. (So the clamp is tight but without breaking it)
7. Put all water samples on ice in coolers. When you return from the field, place the coolers in the cold room overnight.
8. The next day, take inventory of all water samples and record data on a sample inventory sheet.
9. Filter the water samples into clean and labelled scintillation vials with the Swinnex filters and 1 ∝m glass fiber filter papers. Leave about 10% of the volume of the scint vial as headspace as the sample will expand when it is frozen. If you have less than 20mL of sample, place it all in the “no HCl” scint vial for that sample. If you have 20-50 mL, allocate 10 mL of it to the “+ HCl scint vial and the rest to the “no HCl scint vial(s). You may need to use more than 1 scint vial for the same sample. If you have more than 50 mL of sample, allocate ~40 mL to the “no HCl” scint vials and the rest to the “+ HCl” scint vial(s).
10. You will need at least 25 mL of “no HCl” sample and 10 mL of “+ HCl” sample for all of the analyses. If you have less than this, dilute samples as appropriate and record the dilution ratio on your sheet. Avoid diluting samples more than 1:3 (sample volume to total volume) as this introduces error.
11. Use a pipette to acidify “+ HCl” samples to a pH of ~2 with 10% hydrochloric acid solution. You will use approximately 0.05 mL for every 5 mL of sample.
12. Place all samples in freezer until analysis.

- Note: On the next trip to the field, we will be correcting the labels on the lysimeters that are labeled incorrectly.