**Filling the PVC Column Biosand Filters**

**Water-Testing the Column**

Before we fill the BSFs, it’s important to double check that they hold water properly. In order to do this, we will be following the steps below.

1. Fix the BSF columns on to the wooden frame using the large hose clamps and place them *exactly* where they will be operated (it’s going to get very heavy!)
2. Place a container under the outlet of the standpipe to capture the water that may come out
3. One person pours tap water into the top of the columns while a second person watches all the connections for leaks

a. If there is a leak, stop pouring water. Pour the water out of the column and begin to troubleshoot the problem.

b. Continue to pour water into the column until the water level reaches the height of the outlet and begins to flow out.

c. Check for leaks for a couple more minutes as the column holds water. If there are no leaks, use a siphon to take water out of the column (do not try to tilt the column).

d. Repeat for each column filter.

**Washing the Gravel and Sand**

Detailed instructions about the specifications for the gravel and sand can be found in the CAWST Biosand filter construction manual (<https://resources.cawst.org/construction-manual/a90b9f50/biosand-filter-construction-manual>)

1. Pour a portion of the sand or gravel media into a 5 gallon bucket
2. Add tap water to the bucket until it is about two times the height of the media
3. Swirl the media around in the bucket with your hand until the water is cloudy
4. Pour out the cloudy water, leaving the media in the bucket
5. Repeat steps 2 through 4 until the water is no longer cloudy
6. Store the media until you are ready to add it to the filters

Apply the steps above to all of the media (large and small gravel and sand). The sand will take many washes to get really clean!

**Filling the BSFs (see diagram below)**

1. Pour water into the BSF until it is about half full (this makes sure that there aren’t any gas bubbles in the media)

2. Put a bucket under the outlet of the BSF so it will collect the water that gets displaced by the media

3. Pour the coarse gravel into the column until it is approximately level with the top of the elbow

4. Pour the medium size gravel over the coarse gravel and level with a stick

a. Use your measuring tool to measure the depth of the medium gravel. It should be two inches deep. If it is not, adjust accordingly

b. After any required adjustments are made, measure the depth of the medium gravel (or the total depth minus the depth of the coarse gravel) with a tape measure and record it

5. Slowly pour the filter sand into the filter. After a while the water will start to come out of the outlet tube so double check that your collection bucket is positioned correctly.

a. Every minute or so stop pouring the sand and level it with your hand or stick

b. Periodically empty out the collection bucket if it gets too full

d. Add sand with this method until it is 16 inches above the gravel. This may change depending on the research question (For example if a different sand depth is investigated).

e. Make sure that the outlet tube is high enough so that the water is about two inches above the sand.

 