

Soil Media Sampling Guidelines for Infiltration BMPs/SCMs

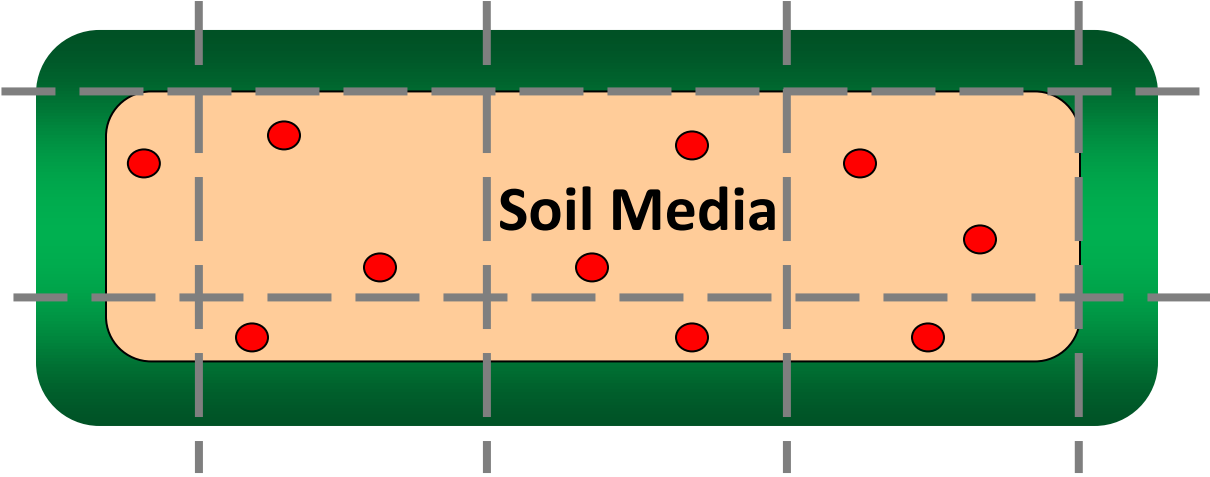
Purpose: The purpose of this sampling guideline is to standardize a sample collection method for sampling BMP/SCM soil media for Total Phosphorus. Infiltration BMP/SCM includes Bioretention Gardens, Sand Filters, Enhanced Grass Swale, and possibly a proprietary/innovative BMP/SCM. The Total Phosphorus measurements will determine when the soil media becomes saturated with Total Phosphorus and requires replacement. Sampling is required before the maintenance bond is released and then at least once every three (3) years thereafter. Additional and/or more frequent sampling may be required prior to a bond being released, prior to a request for BMP maintenance transfer to jurisdiction, and at other times at the discretion of jurisdiction or the City / County Inspector.

Step 1: Establish the Soil Media Area of the Infiltration BMP/SCM.

This can be accomplished by physically measuring the horizontal dimensions of the soil media or by reviewing the approved construction drawing (as-built survey) for the BMP/SCM. Ensure that the area measured is only the area of the soil media. Most rain gardens and BMP/SCM will have soil media in the bottom of the BMP/SCM; however, in some rain garden designs, the soil media area may extend up the side slopes, in which case the measured area would include the side slopes. For a rectangular BMP/SCM, the Soil Media Area is determined by multiplying the length by the width, measured in feet [Length (ft) x Width (ft) = Soil Media Area (ft²)].

Step 2: Mark the sampling locations.

To collect a representative sample, the soil media area should be sub-divided into 30-ft by 30-ft grids. Within each grid, mark two random points for borehole locations. Soil media samples will be collected from each of these two (2) boreholes within each sub-divided grid. Since Phosphorus has been shown to concentrate within the top 12 inches of the soil media, two (2) samples per 1,000 ft², collected to a depth of 12 inches equates to approximately one (1) sample per 500 ft³ of sampled media. A minimum of two (2) borehole samples is required for all raingardens, even if an individual raingarden is smaller than 1,000 ft². BMPs/SCMs should never be fertilized as nutrients are provided by runoff from areas draining to the BMP/SCM. However, if the site areas draining to the BMP/SCM are fertilized, a non-phosphorus fertilizer should be used and sampling should be conducted one (1) month (or more) after site fertilization.



Step 3: Collect and Composite the Soil Media Samples.

Using a clean soil auger (or equivalent), mark the auger handle at a depth of 12 inches from the bottom. The auger may be cleaned with tap water alone, but if using a detergent, ensure only phosphate-free detergents are used. Push the mulch layer back in the marked locations to expose the soil media and advance the soil auger until the bucket is full then remove the auger and place the collected soil in a clean container or a plastic bag. Continue to advance the auger and collect the soil until a depth of 12 inches is reached. Do the same for the second marked location and mix the collected soil from each marked location together thoroughly.

Repeat the above procedure for each sub-divided grid and thoroughly mix all collected soil together. Do not mix soil samples from different BMPs/SCMs together. Each BMP/SCM should have one independent sample to be analyzed by the laboratory.

Step 4: Prepare Samples for Laboratory Analysis.

Place the composited soil sample in a container provided by the laboratory, complete the appropriate shipping paperwork (oftentimes referred to as Sample Information Sheet or Chain-of-Custody), and ship according to laboratory direction. Ensure the laboratory is capable of testing for Phosphorus Index using Mehlich 3 extraction techniques and will report results on a dry basis. The name of the project, test method, and BMP/SCM name must appear on the laboratory results.

Step 5: Submission of Laboratory Results.

Laboratory results should be submitted to the appropriate person depending upon which jurisdiction the sample was collected:

- City of Charlotte, email Jordan Miller at Jordan.Miller@charlottenc.gov
- Town of Huntersville, email Mike MacIntyre at mmacintyre@huntersville.org
- Towns of Cornelius, Davidson, Matthews, Mint Hill or Pineville: email Corey Priddy at corey.priddy@mecklenburgcountync.gov

Step 6: Review of Laboratory Results.

Soils with a Phosphorus Index equal to or greater than 50 ($P-I \geq 50$) have lost the capacity to remove phosphorus. The appropriate City or County inspector will contact you regarding the need to perform soil media replacement.