

ATTACHMENT "A"

PROCESS OF RESIDENT SAMPLE OF SOILS

Laboratory Directions:

The analysis of soil samples should include the following steps:

Analytes

Several metals are known to occur at elevated levels in Vashon-Maury Island and mainland soils. Their concentrations in soils are reasonably (but not perfectly) correlated. From the basic protocol, lab analysis for only one analyte - total arsenic - is recommended. Concerns over possible human exposures and health risk have focused primarily on arsenic in soils, and arsenic can serve as an initial indicator for the inter-correlated set of metals in soils. Limiting analyses to arsenic allows a greater number of soil samples to be collected and tested for a fixed price. This provides more information on soil contamination levels across a property.

Sample Preparation

The concentration of arsenic in soils typically varies with the size of the soil particles; smaller particles have much greater surface area in proportion to their mass, providing more locations for arsenic attachment. The lab should screen or sieve the bulk soil samples it receives to retain those particles less than 2 mm in size for testing. These smaller particles better represent potential human exposures. The less-than-2 mm size fraction is also the basis for state regulations and cleanup standards. The lab should homogenize (thoroughly mix) each soil sample before testing.

Results on Dry Weight Basis

Bulk soil samples always contain some water. The lab should report all results on a dry weight basis. Therefore, a percent moisture analysis needs to be performed to adjust measured results to dry weight.

Analytical Methods and Detection Limits

The detection limit for total arsenic should be no greater than 10 parts per million (ppm), and is commonly 5 ppm or less. Any of several methods of analysis can be used, depending on available instruments at the selected lab. Those methods include ICP (inductively coupled plasma), graphite furnace atomic absorption (GFAA), or flame atomic absorption (flame AA). All of these methods involve first digesting a small amount of soil and then using an analysis instrument and detector to measure arsenic concentrations in the liquid digest.

Quality Assurance/Quality Control Analyses

In addition to reporting the arsenic concentration in each soil sample, the lab should also run and report the results of basic quality control analyses. These should include a blank analysis (results should be not detected), a duplicate analysis (to assess the precision, or replicability, of the results), and a spike analysis (to assess accuracy in results by measuring a known quantity added to a sample).