

QA/QC Guidelines

For each analytical batch or for every 20 samples (which ever comes first), the following must be added during digestion:

- **Method Blank**- pure lab water to which all digestion chemicals are added and then digested with samples. Instrument readings should show below detection limit results for each analyte.
- **LCS (Laboratory Control Sample) or LFB (Laboratory Fortified Blank)**- a method blank that has had a known concentration of the analytes of interest added to it and then digested with samples. Set the concentrations to be in the same range as that of your calibration curve and your best estimate of sample concentrations. Calculate % recovery from the instrument reading as
%Recovery= (instrument reading / true value) 100%
- **Duplicate Sample**- Choose a sample to digest and analyze twice. Calculate precision between readings by
Relative % difference (RPD)= $\frac{|(\text{sample result} - \text{duplicate result})|}{(\text{Sample result} + \text{duplicate result})/2} \times 100\%$
- **Matrix Spike or LFM (Laboratory Fortified Matrix)**- Another portion of the same sample that was duplicated should also be digested with a known concentration of each analyte added as with the LCS. This shows your % recovery in true sample matrix which may be different than the recovery in lab water. Calculate % recovery from the instrument reading by:
%Recovery = $\frac{|(\text{spiked sample result} - \text{avg. of sample and dup})|}{(\text{known spike concentration added})} \times 100\%$

From these techniques, you will know the precision (from duplicates) and the accuracy (from LCS and spikes) of your analysis. QA/QC makes your data defensible and is mandatory at ERTL. Please ask for further explanation and assistance with calculations if needed.