* **Validation/Verification**
  + **Objective:** ensure that all the expected data is present and in a standardized format. This is step occurs prior to check the quality of the data.
  + **Check**:
    - All sampling events are present
      * This will require SMAS and LMAS to provide a list of sampling events. This could happen prior to sampling or immediately after sampling.
        + This information could be pulled from Survey123 submissions to check data returned from the lab. However, this provides no check that all the expected sampling events Survey123 surveys have been submitted.
    - All the column headers are named and ordered correctly
    - All columns have expected data types and format
      * Date columns should meet a standard date format
        + For example: 2020-04-30
      * Time columns should meet a standard time format
        + For example: 4:00 PM or 16:00 or 16:00 EST
      * The parameters reported should match a master list of parameters
      * Parameters that require one or more parameters to perform a correction or establish the appropriate WQS threshold
        + For example:

The lead WQS is dependent on hardness. Therefore, if lead is reported, hardness must also be reported.

* + - * Only numeric values in the reported value column
        + Qualifiers, such as <, <=, >, and >=, should be in a separate column
      * A master list of expected inputs should be created for many of the columns to check the inputs
        + Examples:

Fraction: total or dissolved

Units: ug/L, mg/L, etc.

validation\_levels:

detected not quantified

not detected

* **QA/QC**
  + **Objective**: ensure that the data meets the projects defined QA/QC measures. This is a secondary check after the data validation/checks have occurred.
  + **Check**:
    - Some of these values are reported by the lab
    - Reported value within expected range
    - Accuracy checks
    - Precision checks
    - Field blank checks
    - Duplicate checks