**A. Data Quality Assessment**

Data Quality Assessment provides guidance as to the quality of data necessary to meet a desired purpose. Sampling events and specific projects must define the goals of data collection and interpretation. Table 1, below, specifies OWQ data quality assessments (DQA) for sampling, chain-of-custody, Contractor analyses, and reporting. The DWB’s samples are treated at a minimum Data Quality Assessment 3 (DQA3) and WAPB’s samples are treated at a minimum Data Quality Assessment 4 (DQA4), unless specified in a Task or authorized by the responsible IDEM contact person prior to analysis by the Contractor.

| **Table 1.: Data Quality Assessments** | | |
| --- | --- | --- |
| **DQA LEVEL** | **DATA TYPE** | **DESCRIPTION** |
| **1** | **Screening Data** | The results are usually generated onsite and have no QC checks. Analytical results, which have no QC checks or no precision or accuracy information or no detection limit calculations, but just numbers, are included in this category. Primarily, onsite data are used for pre-surveys and for preliminary rapid assessment. |
| **2** | **Field Analysis Data** | Data is recorded in the field or laboratory on calibrated or standardized equipment. Field duplicates are measured on a regular periodic basis. Calculations may be done in the field or later at the office. Analytical results, which have limited QC checks, are included in this category. Detection limits and ranges have been set for each analysis. The QC checks information for field or laboratory results is useable for estimating precision, accuracy, and completeness for the project. Data from this category are used independently for rapid assessment and preliminary decisions. |
| **3** | **Laboratory Analytical Data** | Analytical results include QC check samples for each batch of samples from which precision, accuracy, and completeness can be determined. Method detection limits (MDLs) have been determined using 40 CFR Part 136 **Appendix B**. Additionally, all reporting information required in the laboratory contract, and for WAPB data sets in the *IDEM Surface Water Quality Monitoring and TMDL QAPP,* especially **Table A9-1,** is included in the analytical data reports. Raw data, chromatograms, spectrograms, and bench sheets are not included as part of the analytical report, but are maintained by the contract laboratory for easy retrieval and review. Data can be elevated from DQA Level 3 to DQA Level 4 by the inclusion of this information in the data report and the QC data are reported using CLP forms or CLP format. Data falling under this category are considered as complete, legally defensible, and used for regulatory decisions. |
| **4** | Enforcement **Data** | *Analytical results mostly meet the USEPA required Contract Laboratory Program (CLP) data analysis, Contract Required Quantification Limits (CRQL), and validation procedures.* QC data are reported on CLP forms or CLP format. Raw data, chromatograms, spectrograms, and bench sheets are included as part of the analytical report*.* Additionally, all reporting information required in the laboratory contract, and for WAPB data sets in the *IDEM Surface Water Quality Monitoring and TMDL QAPP,* especially **Table A9-1,** is included in the analytical data reports. Data falling under this category are considered as complete, legally quantitative in value, and used for regulatory decisions. |

**B. Quality Assurance/Quality Control**

1. Overview

Quality control, in sampling and analysis, is a systematic approach to identifying, measuring, and minimizing errors introduced during sample acquisition and laboratory analysis. Quality control is a component of the overall process of quality assurance. Laboratories must not only look at completion of a method as satisfying the general requirements for quality control, but must also evaluate their overall processes and the quality of their performance over time. Only by maintaining an evaluation of an analytical methodology over time can a single sample result be validated.

2. Contractors

Contractors must have and maintain a formal, written quality assurance program. The minimum requirements to perform an analytical procedure consist of an initial demonstration of Contractor capability by analyzing sufficient standards under actual analytical conditions to establish accuracy and precision.

Contractors must maintain and document continual evaluation of the accuracy and precision of an analytical procedure and the ability of individual analysts to meet laboratory performance for a procedure.

3 QA/QC Criteria

a. Required Preservation and Holding Times

Bid Group samples must meet the preservation and holding times as specified in 40CFR, Part 136.3, Table II or the analytical method, whichever is greater. Sample holding time begins when the sample is collected and ends when the analysis begins. Preservatives and maximum holding times are listed in **Attachment D8 – *Methods and Analytical Parameters*, Table 1.**

b. Analytical QA/QC Criteria

1. **For WAPB Datasets:**
   1. **Attachment D9– *Method Quality Control Criteria*, Table 1** contains a listing of quality control (QC) parameters and frequency of analysis for the primary analytical methods covered under this RFP. QC parameters were extracted from the published methods. Method independent QC parameters were retroactively applied to methods not updated within the past five (5) years and to Standard Methods, 19th ed when QC criteria was not clearly specified in the method.

Contractors must perform and report all QC criteria specified in **Attachment D9– *Method Quality Control Criteria*, Table 1** and the analytical method. QC parameters, for analytical methods not detailed in **Attachment D9– *Method Quality Control Criteria*, Table 1** must meet the QC specifications detailed in Methods not Listed **Attachment D9-Table 1**, at a minimum. Contractors must meet and report QC criteria specified in each analytical method performed. If a QC requirement is suggested in a method and the QC requirement is specified in **Attachment D9– Method Quality Control Criteria, Table 1**, the requirement must be performed.

* 1. **Discrepancies**

When a method and **Attachment D9– *Method Quality Control Criteria*, Table 1** are in direct conflict over QA/QC procedures or **Attachment D9– *Method Quality Control Criteria*, Table 1** lists QA/QC procedures not found in the method, **Attachment D9– *Method Quality Control Criteria*, Table 1** takes precedence. Offerors may utilize this judgment without penalty for a first occurrence of a direct conflict; however, Offerors must notify the responsible IDEM/OWQ gatekeeper after the first occurrence of a direct conflict. Failure to notify IDEM/OWQ after the first occurrence of a direct conflict may result in denial of future payments. No notification is required for QA/QC retroactively applied to pre-1991 methods as listed in **Attachment D9– *Method Quality Control Criteria*, Table 1**.

1. **For DWB Datasets:**

Contractors must follow the QA/QC criteria specified in the analytical method being performed. In the event that a method does not specify QA/QC criteria the following minimum criteria must be applied:

1. Initial calibration or linear calibration at least once per year.

2. Method detection limit determined in accordance with 40CFR, Part 136, Appendix B, at least once per year.

3. Continuing calibration check per sample batch. Typically a continuing calibration check should be run even with analytical procedures requiring a linear calibration.

4. Calibration blank per sample batch.

5. Laboratory fortified blank per sample batch.

6. Quality control standard on a quarterly basis.

IDEM DWB realizes that some analytical procedures will not require all of the minimum criteria listed above. pH or turbidity are a couple of examples.

c. Procedural calibration standards

Several methods use procedural calibration standards that do not require a separate LFB and CCC. If methods requiring an LFB and CCC do not state that the LFB and CCC are equivalent, a separate LFB and CCC must be analyzed, unless approved by the responsible IDEM contact.

4. Analytical Control

a. General Criteria

This section does not constitute all conditions under which an analysis would be deemed out‑of‑control or for remedies that a Contractor must employ to bring an analysis into control. The respective method and **Attachment D9– *Method Quality Control Criteria,* Table 1** must be consulted for these criteria; however, the conditions listed below supersede any method criteria, when in conflict with the method. Contractors are responsible for maintaining analytical controls necessary to meet the method QC specifications listed in **Attachment D9– *Method Quality Control Criteria*, Table 1**, and/or good judgment.

Good judgment is keeping consistent with the quality control necessary to justify a single sample result. For example, this is reflected in the retroactive application of method independent QA/QC criteria by IDEM/OWQ. There is no excuse for failure to monitor and address analytical control conditions by a Contractor.

IDEM/OWQ will be the sole judge of compliance with analytical control. Contractors found to not be employing and meeting the specifications outlined in the respective method, **Attachment D9– *Method Quality Control Criteria*, Table 1**, or employing good judgment, will be notified of the specific conditions and given the opportunity to correct any deficiency(s). Failure to correct the specified deficiency(s) may result in termination of the Contractor’s contract in part or whole.

b. Out-of-Control

1) Control Criteria

Analyses must be conducted in-control, as specified in the method and this Section. If an analysis or instrument is found to be out-of-control, the analyst must perform the corrective action measures necessary to bring the system back into control. All analytical and QA/QC samples analyzed since the last acceptable QC criteria must be reanalyzed after the analysis is brought into control. Contractors must document and report out-of-control operations, QC parameters, remedies, and re-analyses in the analytical report Narrative.

2) Holding Times

When samples are analyzed out of holding time, the analysis is deemed out-of-control, unless the analysis is approved by the IDEM/OWQ gatekeeper.

3) Laboratory Reagent Blank (LRB) and Calibration Blanks

The LRB or method blank and initial or continuing calibrations must be in control, prior to conducting an analytical run, otherwise the analysis is deemed out‑of‑control.

4) Internal Standards (IS) and Surrogate Standard (SS)

If a single IS or SS does not meet recovery criteria for a method during a batch run, the analysis will be considered in control; however, the analyst must take remedial measures to identify and correct the problem prior to future batches.

If the IS or SS retention window is not met per the analytical method, the analysis is deemed out‑of‑control. The IS retention time must be brought back into control and all samples reanalyzed since the last IS which met retention time criteria.

If two IS or SS, in a sample, do not meet recovery criteria, the analysis is deemed out‑of‑control.

If one or more IS or SS in consecutive samples do not meet recovery criteria, the analysis is deemed out‑of‑control.

If an analysis is out‑of‑control due to the failure of an IS or SS, a QC check sample must be analyzed following the last out‑of‑control sample. If the QC check sample meets recovery criteria, then the analysis is in control and the recovery failure may be due to matrix interferences. The Contractor should contact the responsible IDEM/OWQ contact person to see if reanalysis of the out‑of‑control sample(s) is required.

5) Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Whenever the analytical procedure is “out of control”, the problem must be found, corrected, and the analysis repeated. The flagging of data as being “out-of-control” without repeat analysis is not acceptable. Analytical results reported when the procedure is operating “out-of-control” will be refused and payment will be withheld unless approved in writing by IDEM. Written approval may be given only in those situations where the results are needed and the sample cannot be analyzed again due to insufficient amount of sample remaining or a proper justification can be made using precision and accuracy data obtained by the method. Written approval will be entirely at the discretion of IDEM.

6) Laboratory Fortified Matrix (LFM)

If the analyses of an LFM does not agree with the true value within: +/- 20% for inorganic, volatile, and metals analyses; and +/-30% for pesticide, semi-volatile and PCB analyses, and the LRB and CCC are in control, then the percent recovery failure is due to matrix interferences. Document the LFM matrix interference in the Narrative.

7) High Biased Samples

If a QC sample indicates a biased high result and the sample results are below detection limits for all target compounds, reanalysis is not required.