Checklist 2
LABORATORY REPORT GOAL: DATA VALIDATION

Experienced chemists will perform full data validation on a data package(s) selected by the contractor Project Manager at the beginning of the project. The package(s) should be a full sample batch (approximately 20 samples), and should be typical of the type of samples expected for the project decision-making. For long-term projects, each analytical method used during the life of the project should be initially validated prior to proceeding with performing data verification on the bulk of the laboratory results. Additionally, during each six-month period that the project is ongoing, the Project Manager will select additional data packages for validation that are representative of the matrix and analyses being performed.

Data validation will consist of a review of sample and QC results, and all accompanying raw data. The ADEQ Project Manager will identify the compounds of concern, and the data validation will include a review of 100% of the QC data and sample data for these compounds in the laboratory report for a sample delivery group. Compounds not identified as contaminants of interest will not be validated unless requested by ADEQ's Project Manager. Data validation will be conducted by the either the consultant's QA officer or an independent data validation contractor. The ADEQ QA Unit will validate a portion of that data previously validated at the ADEQ Project Manager's request to confirm the findings and conclusions regarding the usability of the data. Validation includes all of the following items listed as validation deliverables.

The percentage of data that undergoes full validation may be increased if substantial data quality issues are raised during the initial or subsequent assessments. ADEQ may also require that a larger percent of the data be fully validated for various reasons including, but not limited to, determining the extent of the issue and/or if the issue has been corrected in subsequent analyses, or that additional data be made available for review, besides the validation deliverables mentioned below.

Completed	Review Item
	1. Case Narrative Have any anomalies, deficiencies, and QC problems been identified in the case narrative? What corrective action, if any, was taken?
	2. Chain-of-Custody Documentation Are the original Chain-of-Custody forms with ID numbers and laboratory receipt signatures present?
	Are there copies of internal tracking documents, as

Completed	Review Item
	applicable?
	3. Sample Analysis Results Are sample analysis results included for environmental samples, with quantitation limits (include dilutions and reanalyses)?
	4. QC Summary Is the following information included? Initial and continuing calibrations
	Method blanks, continuing calibration blanks, and preparation blanks
	Surrogate percent recoveries
	Internal standard percent recoveries
	Matrix spike percent recoveries
	Laboratory duplicate relative percent differences
	Laboratory QC check sample, laboratory control sample recoveries
	Field duplicates, if identified, reproducibility will be evaluated
	Acceptance criteria, if not already established by the method/DQO
	Definitions for any laboratory data qualifiers used
	Gas chromatograph breakdown products
	Retention times and acceptance windows (ORGANIC)
	ICP interference check sample (INORGANIC)
	Method of standard additions (INORGANIC)
	ICP serial dilution (INORGANIC)
	5. Raw data, chromatograms, and area quantitation reports (ORGANIC), sequential measurement readout records for ICP, graphite furnace atomic absorption (AA), flame AA, cold vapor mercury, cyanide, and/or other inorganic analyses (INORGANIC), including but not limited to the following: Environmental samples (include dilutions and reanalyses)
	Instrument tuning, for analyses of gas chromatography/mass spectrometry (GC/MS)

Completed	Review Item
	Initial calibration and continuing calibrations
	Method blanks, continuing calibration, and preparation blanks
	Surrogate recoveries and internal standard recoveries, where applicable
	Matrix spike (MS)
	Laboratory duplicate or matrix spike duplicate (MSD)
	Laboratory QC check sample, or laboratory control samples, as applicable
	Retention time windows
	Percent moisture for soil samples
	Sample extraction and cleanup logs (ORGANIC)
	Enhanced spectra of target analytes and tentatively identified compounds (TICs) with the associated best match spectra for MS data
	Sample digestion and/or sample preparation logs (INORGANIC)
	Instrument analysis log for each instrument used (INORGANIC)
	Postdigest spikes (INORGANIC)
	Method of standard additions when applicable (INORGANIC)
	ICP serial dilution (INORGANIC)
	Instrument tuning for ICP/MS, when applicable (INORGANIC)
	6. Specifically review the following: Was a check for timeliness and errors conducted, including requested deliverables, preservation, holding times, and Chain-of-Custody?
	Was a duplicate sample/matrix spike/matrix spike duplicate/post-digest spike reviewed against precision and accuracy criteria specified by the method or by project DQOs?
	Was compound quantitation and reported detection limits reviewed, checking reporting limits against contract required

Completed	Review Item
	limits, verifying dry weights, calculations, and dilutions?
	Was target list compounds identified, indicating proper identification of analytes?
	Was sample result verification conducted, in which the final reports are reviewed against all raw instrumental data and logs and all applicable worksheets to check anomalies, data reduction/calculations, transcription, linear ranges, and dilutions?
	7. OPTIONAL (as requested by ADEQ for data validation on a case-by-case basis) Method detection limits (MDLs)
	Instrument detection limits (IDLs)
	ICP linear range (INORGANIC)
	8. Does the Validation Report include the following information?: Case narrative including, but not limited to, an overall summary of data acceptability and comparison to DQOs (PARCC), a list of recommended changes, a summary of all laboratory contacts, in which communications with the laboratory, if any, would be identified, and any other problems associated with the actual analysis which might impact the sample integrity or data quality
	Marking of recommended changes directly on copies of the laboratory reports for the client's ease in performing data entry
	Tabulated summary of all data results supplied electronically by email or on 3.5-inch floppy disks in a commonly used software format