APPENDIX E. Lab Data Qualifiers

(Arizona Department of Health Services) (Revised by ADHS 11/26/2003)

Lab Qualifier Code	Category	Description
A1	MICROBIOLOGY	TOO NUMEROUS TO COUNT.
A2	MICROBIOLOGY	SAMPLE INCUBATION PERIOD EXCEEDED METHOD REQUIREMENT.
A3	MICROBIOLOGY	SAMPLE INCUBATION PERIOD WAS SHORTER THAN METHOD REQUIREMENT.
A4	MICROBIOLOGY	TARGET ORGANISM DETECTED IN ASSOCIATED METHOD BLANK.
A5	MICROBIOLOGY	INCUBATOR/WATER BATH TEMPERATURE WAS OUTSIDE METHOD REQUIREMENTS.
A6	MICROBIOLOGY	TARGET ORGANISM NOT DETECTED IN ASSOCIATED POSITIVE CONTROL.
A7	MICROBIOLOGY	MICRO SAMPLE RECEIVED WITHOUT ADEQUATE HEADSPACE.
B1	METHOD BLANK	TARGET ANALYTE DETECTED IN METHOD BLANK AT OR ABOVE THE METHOD REPORTING LIMIT.
B2	METHOD BLANK	NON-TARGET ANALYTE DETECTED IN METHOD BLANK AND SAMPLE, PRODUCING INTERFERENCE.
B3	METHOD BLANK	TARGET ANALYTE DETECTED IN CALIBRATION BLANK AT OR ABOVE THE METHOD REPORTING LIMIT.
B4	METHOD BLANK	TARGET ANALYTE DETECTED IN BLANK AT OR ABOVE METHOD ACCEPTANCE CRITERIA.
B5	METHOD BLANK	TARGET ANALYTE DETECTED IN METHOD BLANK AT OR ABOVE THE METHOD REPORTING LIMIT, BUT BELOW TRIGGER LEVEL OR MCL.
B6	METHOD BLANK	TARGET ANALYTE DETECTED IN CALIBRATION BLANK AT OR ABOVE THE METHOD REPORTING LIMIT, BUT BELOW TRIGGER LEVEL OR MCL.
B7	METHOD BLANK	TARGET ANALYTE DETECTED IN METHOD BLANK AT OR ABOVE METHOD REPORTING LIMIT.CONCENTRATION FOUND IN THE SMP WAS 10 TIMES ABOVE THE CONCENTRATION FOUND IN THE METHOD BLANK.
C1	CONFIRMATION	CONFIRMATORY ANALYSIS NOT PERFORMED AS REQUIRED BY THE METHOD.
C2		(deleted)
C3	CONFIRMATION	QUALITATIVE CONFIRMATION PERFORMED.
C4	CONFIRMATION	CONFIRMATORY ANALYSIS WAS PAST HOLDING TIME.
C5	CONFIRMATION	CONFIRMATORY ANALYSIS WAS PAST HOLDING TIME. ORIGINAL RESULT NOT CONFIRMED.
C6	CONFIRMATIONS	SAMPLE RPD BETWEEN THE PRIMARY AND CONFIRMATORY ANALYSIS EXCEEDED 40%. PER EPA METHOD 8000B, THE HIGHER VALUE WAS REPORTED AS THERE WAS NO OBVIOUS CHROMATOGRAPHIC INTERFERENCE.
C7	CONFIRMATIONS	SAMPLE RPD BETWEEN THE PRIMARY AND CONFIRMATORY ANALYSIS EXCEEDED 40%. PER EPA METHOD 8000B, THE LOWER VALUE WAS REPORTED DUE TO APPARENT CHROMATOGRAPHIC INTERFERENCE.
D1	DILUTION	SAMPLE REQUIRED DILUTION DUE TO MATRIX.
D2	DILUTION	SAMPLE REQUIRED DILUTION DUE TO HIGH CONCENTRATION OF TARGET ANALYTE. SEE CASE NARRATIVE.
D3	DILUTION	SAMPLE DILUTION REQUIRED DUE TO INSUFFICIENT SAMPLE.
D4	DILUTION	MINIMUM REPORTING LEVEL (MRL) ADJUSTED TO REFLECT SAMPLE AMOUNT RECEIVED AND ANALYZED.
E1	ESTIMATED CONCENTRATION	ANALYTE EXCEEDED CALIBRATION RANGE. REANALYSIS NOT POSSIBLE DUE TO INSUFFICIENT SAMPLE.
E2	ESTIMATED CONCENTRATION	ANALYTE EXCEEDED CALIBRATION RANGE. REANALYSIS NOT PERFORMED DUE TO SAMPLE MATRIX.
E3	ESTIMATED CONCENTRATION	ANALYTE EXCEEDED CALIBRATION RANGE. REANALYSIS NOT PERFORMED DUE TO SAMPLE MATRIX.
E4	ESTIMATED CONCENTRATION	ANALYTE WAS DETECTED BELOW LABORATORY MINIMUM REPORTING LEVEL (MRL).
E5	ESTIMATED CONCENTRATION	ANALYTE WAS DETECTED BELOW LABORATORY MINIMUM REPORTING LEVEL (MRL), BUT NOT CONFIRMED BY ALTERNATE ANALYSIS.
E6	ESTIMATED CONCENTRATION	INTERNAL STANDARD RECOVERIES DID NOT MEET METHOD ACCEPTANCE CRITERIA.
E7	ESTIMATED CONCENTRATION	INTERNAL STANDARD RECOVERIES DID NOT MEET LABORATORY ACCEPTANCE CRITERIA.
E8	ESTIMATED CONCENTRATIONS	ANALYTE REPORTED TO MDL PER PROJECT SPECIFICAITON. TARGET ANALYTE WAS NOT DETECTED IN THE SAMPLE.
H1	HOLDING TIME	SAMPLE ANALYSIS PERFORMED PAST HOLDING TIME..
H2	HOLDING TIME	INITIAL ANALYSIS WITHIN HOLDING TIME. REANALYSIS FOR THE REQUIRED DILUTION WAS PAST HOLDING TIME.
H3	HOLDING TIME	SAMPLE WAS RECEIVED AND ANALYZED PAST HOLDING TIME.

Lab Qualifier Code	Category	Description
H4	HOLDING TIME	SAMPLE WAS EXTRACTED PAST REQUIRED EXTRACTION HOLDING TIME, BUT ANALYZED WITHIN ANALYSIS HOLDING TIME.
K1	BOD	THE SAMLE DILUTIONS SET-UP FOR THE BOD ANALYSIS DID NOT MEET THE OXYGEN DEPLETION CRITERIA OF AT LEAST 2 MG/L. THE REPORTED RESULT IS AN ESTIMATED VALUE.
K2	BOD	THE SAMPLE DILUTIONS SET UP FOR THE BOD ANALYSIS FAILED TO MEET THE CRITERIA OF RESIDUAL DISSOLVED OXYGEN OF AT LEAST 1 MG/L. THE REPORTED RESULT IS AN ESTIMATED VALUE.
K3		(DELETED)
K4	BOD	THE SEED DEPLETION WAS OUTSIDE THE METHOD ACCEPTANCE LIMITS. THE REPORTED RESULT IS AN ESTIMATED VALUE.
K5	BOD	THE DILUTION WATER D.O. DEPLETION WAS > 0.2 MG/L.
K6	BOD	GLUCOSE / GLUTAMIC ACID BOD WAS BELOW METHOD ACCEPTANCE CRITERIA.
K7	BOD	A DISCREPANCY BETWEEN THE BOD AND COD RESULTS HAS BEEN VERIFIED BY REANALYSIS OF THE SAMPLE FOR COD.
K8	BOD	GLUCOSE / GLUTAMIC ACID BOD WAS ABOVE METHOD ACCEPTANCE LEVELS.
L1	LAB FORTIFIED BLANK / BLANK SPIKE	THE ASSOCIATED BLANK SPIKE RECOVERY WAS ABOVE LABORATORY ACCEPTANCE LIMITS.
L2	LAB FORTIFIED BLANK / BLANK SPIKE	THE ASSOCIATED BLANK SPIKE RECOVERY WAS BELOW LABORATORY ACCEPTANCE LIMITS.
L3	LAB FORTIFIED BLANK / BLANK SPIKE	THE ASSOCIATED BLANK SPIKE RECOVERY WAS ABOVE METHOD ACCEPTANCE LIMITS.
L4	LAB FORTIFIED BLANK / BLANK SPIKE	THE ASSOCIATED BLANK SPIKE RECOVERY WAS BELOW METHOD ACCEPTANCE LIMITS.
M1	MATRIX SPIKE	MATRIX SPIKE RECOVERY WAS HIGH. THE METHOD CONTROL SAMPLE RECOVERY WAS ACCEPTABLE.
M2	MATRIX SPIKE	MATRIX SPIKE RECOVERY WAS LOW. THE METHOD CONTROL SAMPLE RECOVERY WAS ACCEPTABLE.
M3	MATRIX SPIKE	THE ACCURACY OF THE SPIKE RECOVERY VALUE IS REDUCED SINCE THE ANALYTE CONCENTRATION IN THE SAMPLE IS DISPROPORTIONATE TO SPIKE LEVEL. THE METHOD CONTROL SAMPLE RECOVERY WAS ACCEPTABLE.
M4	MATRIX SPIKE	THE ANALYSIS OF THE SPIKED SAMPLE REQUIRED A DILUTION SUCH THAT THE SPIKE CONCENTRATION WAS DILUTED BELOW THE REPORTING LIMIT. THE METHOD CONTROL SAMPLE RECOVERY WAS ACCEPTABLE.
M5	MATRIX SPIKE	ANALYTE CONCENTRATION WAS DETERMINED BY THE METHOD OF STANDARD ADDITION (MSA).
M6	MATRIX SPIKE	MATRIX SPIKE RECOVERY WAS HIGH. DATA REPORTED PER ADEQ POLICY 0154.000.
M7	MATRIX SPIKE	MATRIX SPIKE RECOVERY WAS LOW. DATA REPORTED PER ADEQ POLICY 0154.000.
N1	CASE NARRATIVE	SEE CASE NARRATIVE.
N2	CORRECTIVE ACTION	SEE CORRECTIVE ACTION REPORT.
N3		THE ANALYSIS MEETS ALL METHOD REQUIREMENTS. SEE CASE NARRATIVE.
Q1	SAMPLE QUALITY	SAMPLE INTEGRITY WAS NOT MAINTAINED. SEE CASE NARRATIVE.
Q2	SAMPLE QUALITY	SAMPLE RECEIVED WITH HEAD SPACE.
Q3	SAMPLE QUALITY	SAMPLE RECEIVED WITH IMPROPER CHEMICAL PRESERVATION.
Q4	SAMPLE QUALITY	SAMPLE RECEIVED AND ANALYZED WITHOUT CHEMICAL PRESERVATION
Q5	SAMPLE QUALITY	SAMPLE RECEIVED WITHOUT CHEMICAL PRESERVATION, BUT PRESERVED BY THE LABORATORY.
Q6	SAMPLE QUALITY	SAMPLE WAS RECEIVED ABOVE RECOMMENDED TEMPERATURE.
Q7	SAMPLE QUALITY	SAMPLE INADEQUATELY DECHLORINATED.
Q8	SAMPLE QUALITY	INSUFFICIENT SAMPLE RECEIVED TO MEET METHOD QC REQUIREMENTS. BATCH QC REQUIREMENTS SATISFIES ADEQ POLICIES 0154 AND 0155.
Q9	SAMPLE QUALITY	INSUFFICIENT SAMPLE RECEIVED TO MEET METHOD QC REQUIREMENTS.
Q10	SAMPLE QUALITY	SAMPLE RECEIVED IN INAPPROPRIATE SAMPLE CONTAINER.
Q11	SAMPLE QUALITY	SAMPLE IS HETEROGENEOUS. SAMPLE HOMOGENEITY COULD NOT BE READILY ACHIEVED USING ROUTINE LABORATORY PRACTICES.
R1	DUPLICATES	DUPLICATES: RPD EXCEEDED THE METHOD CONTROL LIMIT. SEE CASE NARRATIVE.
R2	DUPLICATES	DUPLICATES: RPD EXCEEDED THE LABORATORY CONTROL LIMIT
R3		(DELETED)
R4	DUPLICATES	RPD EXCEEDED THE METHOD CONTROL LIMIT. RECOVERY MET ACCEPTANCE CRITERIA.
R5	DUPLICATES	RPD EXCEEDED THE LABORATORY CONTROL LIMIT. RECOVERY MET ACCEPTANCE CRITERIA.

Lab Qualifier Code	Category	Description
R6	DUPLICATES	LFB/LFBD RPD EXCEEDED THE METHOD CONTROL LIMIT. RECOVERY MET ACCEPTANCE CRITERIA.
R7	DUPLICATES	LFB/LFBD RPD EXCEEDED THE LABORATORY CONTROL LIMIT. RECOVERY MET ACCEPTANCE CRITERIA.
R8	DUPLICATES	SAMPLE RPD EXCEEDED THE METHOD CONTROL LIMIT.
R9	DUPLICATES	SAMPLE RPD EXCEEDED THE LABORATORY CONTROL LIMIT.
R10	DUPLICATES	SAMPLE RPD BETWEEN THE PRIMARY AND CONFIRMATORY ANALYSIS EXCEEDED 40%. PER EPA METHOD 8000B, THE LOWER VALUE WAS REPORTED DUE TO APPARENT CHROMATOGRAPHIC PROBLEMS.
R11	DUPLICATES	THE RPD CALCULATION FOR MS/MSD DOES NOT PROVIDE USEFUL INFORMATION DUE TO THE VARYING SAMPLE WEIGHTS WHEN ENCORE SAMPLERS/METHANOL FIELD PRESERVED SAMPLES ARE USED.
S1	SURROGATE	SURROGATE RECOVERY WAS ABOVE LABORATORY ACCEPTANCE LIMITS, BUT WITHIN METHOD ACCEPTANCE LIMITS.
S2		(DELETED)
S3	SURROGATE	SURROGATE RECOVERY WAS ABOVE LABORATORY ACCEPTANCE LIMITS, BUT WITHIN METHOD ACCEPTANCE LIMITS. NO TARGET ANALYTES WERE DETECTED IN THE SAMPLE.
S4	SURROGATE	SURROGATE RECOVERY WAS ABOVE LABORATORY AND METHOD ACCEPTANCE LIMITS. NO TARGET ANALYTES WERE DETECTED IN THE SAMPLE.
S5	SURROGATE	SURROGATE RECOVERY WAS BELOW LABORATORY ACCEPTANCE LIMITS, BUT WITHIN METHOD ACCEPTANCE LIMITS.
S6	SURROGATE	SURROGATE RECOVERY WAS BELOW LABORATORY AND METHOD ACCEPTANCE LIMITS. REEXTRACTION AND/OR REANALYSIS CONFIRMS LOW RECOVERY CAUSED BY MATRIX EFFECT.
S7	SURROGATE	SURROGATE RECOVERY WAS BELOW LABORATORY AND METHOD ACCEPTANCE LIMITS. UNABLE TO CONFIRM MATRIX EFFECT.
S8	SURROGATE	THE ANALYSIS OF THE SAMPLE REQUIRED A DILUTION SUCH THAT THE SURROGATE RECOVERY CALCULATION DOES NOT PROVIDE ANY USEFUL INFORMATION. THE METHOD CONTROL SAMPLE RECOVERY WAS ACCEPTABLE.
S9		(DELETED)
S10	SURROGATE	SURROGATE RECOVERY WAS ABOVE LABORATORY AND METHOD ACCEPTANCE LIMITS. SEE CASE MARRATIVE (NI).
S11	SURROGATE	SURROGATE RECOVERY WAS HIGH. DATA REPORTED PER ADEQ POLICY 0154.000.
S12	SURROGATE	SURROGATE RECOVERY WAS LOW. DATA REPORTED PER ADEQ POLICY 0154.000.
T1	METHOD / ANALYTE DISCREPANCIES	METHOD APPROVED BY EPA, BUT NOT YET LICENCED BY ADHS.
T2	METHOD / ANALYTE DISCREPANCIES	CITED ADHS LICENSED METHOD DOES NOT CONTAIN THIS ANALYTE AS PART OF METHOD COUMPOUND LIST.
T3	METHOD / ANALYTE DISCREPANCIES	METHOD NOT PROMULGATED EITHER BY EPA OR ADHS.
T4	METHOD / ANALYTE DISCREPANCIES	TENTATIVELY IDENTIFIED COMPOUND. CONCENTRATION IS ESTIMATED AND BASED ON TEH CLOSEST INTERNAL STANDARD.
V1	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS ABOVE METHOD ACCEPTANCE LIMITS. THIS TARGET ANALYTE WAS NOT DETECTED IN THE SAMPLE.
V2	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS ABOVE METHOD ACCEPTANCE LIMITS. THIS TARGET ANALYRTE WAS DETECTED IN THE SAMPLE. THE SAMPLE COULD NOT BE REANALYZED DUE TO INSUFICIENT SAMPLE.
V3	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS ABOVE METHOD ACCEPTANCE LIMITS. THIS TARGET ANALYTE WAS DETECTED IN THE SAMPLE, BUT THE SAMPLE WAS NOT REANALYZED. SEE CASE NARRATIVE.
V4	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS BELOW METHOD ACCEPTANCE LIMITS. THE SAMPLE COULD NOT BE REANALYZED DUE TO INSUFFICIENT SAMPLE.
V5	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY AFTER A GROUP OF SAMPLES WAS ABOVE ACCEPTANCE LIMITS. THIS TARGET ANALYTE WAS NOT DETECTED IN THE SAMPLE. ACCEPTABLE PER PEA METHOD 8000B.
V6	CALIBRATION VERIFICATION	DATA REPORTED FROM ONE-POINT CALIBRATION CRITERIA PER ADEQ POLICY 0155.000.
V7	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS ABOVE THE METHOD CONTROL LIMIT FOR THIS ANALYTE, HOWEVER, AVERAG % DIFFERENCE OR % DRIFT FOR ALL THE ANALYTES MET METHOD CRITERIA.
V8	CALIBRATION VERIFICATION	CALIBRATION VERIFICATION RECOVERY WAS BELOW THE METHOD CONTROL LIMIT FOR THIS ANALYTE, HOWEVER, THE AVERAGE % DIFFERENCE OR % DRIFT FOR ALL THE ANALYTES MET METHOD CRITERIA.

Lab Qualifier Code	Category	Description
W1	CALIBRATION	THE % RSD FOR THIS COMPOUND WAS ABOVE 20%. THE AVERAGE % RSD FOR ALL COMPOUNDS IN THE CALIBRATION MET THE 20% CRITERIA AS SPECIFIED IN EPA METHOD 8000B.
W2	CALIBRATION	THE %RSD FOR THIS COMPOUND WAS ABOVE 15%. THE AVERAGE % RSD FOR ALL COMPOUNDS IN THE CALIBRATION MET THE 20% CRITERIA AS SPECIFIED IN EPA METHOD 8260B/2870C.

Guidance on the Usage of Data Qualifiers

These standardized data qualifiers are for use in qualifying analytical results for compliance samples in Arizona to represent events that occurred during analysis. The technical subcommittee has endeavored to develop qualifiers that are succinct and narrow in scope to eliminated broad or multiple interpretations when assessing the impact on data. It must also be noted that due to the specialized nature of the individual qualifiers, it is likely that more than one qualifier may be needed in order to accurately represent the data.

Note: Using the Arizona Data Qualifiers does not automatically denote acceptability to the Regulatory Agency.

Microbiology: none.

Method/calibration blank: Apply appropriate qualifier to affected analyte in the blank if target analyte is not detected at > RL in the samples. If analytes are detected, then all corresponding analytes for the associated samples should also be qualified.

Confirmation: For methods that require qualitative confirmation. C3 applies to methods that require quantitative confirmation.

Dilution: If all analytes are reported from the diluted sample, apply qualifier to the entire sample. Otherwise apply qualifier to each analyte that required dilution.

Estimated concentration: Appropriate qualifier must be used for any analyte result reported outside the calibration range. Affects data reported outside the calibration range or down to the MDL. E8 is only required if additional clarification is necessary.

Hold time: Qualify samples appropriately when method extraction and / or analysis holding time have been exceeded.

BOD: Qualifiers K4, K5, K6, and K8 indicate situations that may impact all results in an analytical run and should be used to qualify all affected samples as well as any affected quality control samples when reported. K3 was deleted because if the seed depletion was out, then the situation must be explained in the case narrative.

Laboratory fortified blank / blank spike: Appropriate qualifier must be applied to the affected analytes in the Laboratory fortified blank / blank spike and to all corresponding analytes in the associated samples.

Matrix spike: Appropriate qualifier must be applied to the affected analytes in the matrix spike and should also be added to all corresponding analytes in the associated spiked sample. If a batch spike recovery is outside of the acceptable range, it is permissible to only flag the sample that was spiked and not the other samples in the batch. As required in the Arizona Adopted Rules A.A.C. R9-17-617.F, clients must always be informated if the batch QC result is unacceptable whether one of their samples was spiked or not. The laboratory can choose how the unacceptable QC is reported to the client (e.g., cover

letter or flag). The ADEQ policy 0154.000 can be accessed at:
http://www.adeq.state.az.us/function/business/download/spike8.pdf.

General: Use for events that cannot be described by the approved data qualifiers.

Sample quality: Flag samples with appropriate qualifier when sample quality may be potentially impacted or when method requirements were not met. The ADEQ policy 0154.000 can be accessed at:
http://www.adeq.state.az.us/function/business/download/spike8.pdf.
The ADEQ policy 0155.000 can be accessed at:
http://www.adeq.state.az.us/function/business/download/one_pt3.pdf.

Duplicates: For use with sample, matrix spike, LFB, and LCS duplicates. Qualify all affected analytes. For MS/MSD or sample duplicates qualify only the original source sample.

Surrogate: Qualify surrogates appropriately when they do not meet criteria. Surrogate failures in qualify control samples will must likely require additional narration. S11 &S12 are used to qualify sample surrogates and only in cases where the Laboratory Fortified Blank / LCS has acceptable surrogate recoveries.

Method / analyte discrepancies: For use with methods or anlytes that are not currently approved under the Environmental Laboratory Licensure Rules.

Calibration verification: Appropriate qualifier must be applied to all affected analytes in any samples associated with the calibration verification. The ADEQ policy 0155.000 can be accessed at:
http://www.adeq.state.az.us/function/business/download/one_pt3.pdf.
V7 and V8 are applicable to 8000 series methods only.

Calibration: any anlytes reported utilizing a calibration per W1 and W2 data qualifiers must be qualified per method requirements.