QAM-A-103

Data Reporting by the Laboratory Manager

Revision 11

Approval:

_____ 2.14.24
Laboratory Manager Date

_____ 02-14-2024
Concurrence Date

Effective date: 2.27.24

Renewal date: _____ Initials: _____

Texas Institute for Applied Environmental Research

1.0 Applicability and Purpose

This procedure applies to all laboratory data collected for projects for which the *Laboratory Manager* (LM) at the Texas Institute for Applied Environmental Research (TIAER), Tarleton State University, Stephenville, Texas *is also the TIAER Project Manager or reports to the Project Manager*. It does not apply to electronic data submission by the Project Quality Assurance Officer required in certain formats specified in project QAPPs or to data submitted by other TIAER Project Managers and staff as part of project deliverables. The purpose of this procedure is to establish guidelines for the preparation of general data reports sent to clients of TIAER, responses to client questions and concerns, revisions to reports, and data qualification for TIAER projects managed *by the Laboratory Manager.*

2.0 Definitions

No special definitions- refer to QAM-Q-100, "Quality Assurance Manual," and Q-101, "Laboratory Quality Control."

3.0 Equipment, Reagents and Standards

3.1 ESDMS (Environmental Sample Data Management System) Laboratory Information Management System software developed by TIAER

3.2 Microsoft Excel and Word programs

4.0 Procedure

4.1 Data are reported to the client in an unambiguous, clear and complete manner. Analytical reports contain all information necessary for a client to use with assurance that the data is accurate and compliant with project requirements.

4.2 All data are generated, reviewed and approved in accordance with TIAER SOPs and project QAPPs or requirements prior to reporting to the client. Data in ESDMS is compared to the COC, database comments, logbook pages and/or CARs to discern which data flag, if any, should be used on the data report.

4.3 The LM is responsible for ensuring the quality and validity of all data generated by the TIAER laboratory prior to reporting to the client. The Project QAO, Laboratory QAO, or TIAER PMs may submit database information and quality control reports to clients in electronic or other form, but the LM or designee is the only staff member to submit official laboratory data reports to the client, or to create original, revised, amended or supplemental analytical reports.

4.4 Analytical data is normally reported to three significant figures unless otherwise delineated in the project or program requirements or method. Data are reported with units of measure and matrix type. All bacteria measurements include the report for uncertainty of each quantitative result, normally as ± standard deviations or confidence level in accordance with QAM-Q-101, "Laboratory Quality Control".

4.5 Report generation

4.5.1 The LM obtains reviewed and approved data from the ESDMS database, raw data, or logbooks. The LM puts it into an easily readable format that includes all information about the sample that the client requests and is supplied to or by the TIAER laboratory. *Typical information includes:*

4.5.1.1 Name, address, telephone, fax and email of the client and *the TIAER laboratory.*

4.5.1.2 Date of Analytical Report

4.5.1.3 Report identification number and numbered pages with total number of pages

4.5.1.4 Date, time, matrix and location or client ID for the sample

4.5.1.5 TIAER sample number

4.5.1.6 Analytical value with method used to produce it and units of measure. This includes any modifications to the approved method, non-detected (less-than values), estimated values, or other data for the client

4.5.1.7 Any data qualifiers, problems or corrective actions

4.5.1.8 Quality control data from Analyte QC Tables (if requested)

4.5.1.9 *Unequivocal, original signature of the LM and review initials of a second party who understands the data. These may be in electronic format of a jpg file secured on the LM's computer for generation of a pdf electronic report, but the original report is signed and reviewed in pen and kept by the LM to back up any electronic report.*

4.5.1.10 For data collected under a project QAPP, all information specified in the QAPP

4.5.1.11 Any other information available requested by the client

4.5.1.12 NELAP-compliant reports should also contain analysis dates, analysis times (if <72 hr holding time) and NELAC certification number of any lab used, if applicable.

4.5.2 Data may be transferred into an Excel spreadsheet for manipulation of significant figures, order of analyses and other items that do not affect the analytical values.

4.5.3 Data may be transferred to MS Word in table or text format to provide better appearance.

4.5.4 If ESDMS is capable, reports are preferably generated directly through an automated, database interface module.

4.5.5 Any deviations from approved SOPs, problems or corrective actions that affect the reported data, or errors in initial reports are clearly defined through the use of a narrative and/or data qualifiers. Typical data qualifiers are listed and described in Attachment 2.

4.5.6 All data generated by a subcontract laboratory or non-NELAC accredited data from TIAER are clearly identified on the report. Subcontracting of lab work is approved by the client and documented. Subcontractors will be identified by name or NELAC ID number.

4.6 Report review

4.6.1 Once the analytical report is generated by the LM, but before signing, the report is reviewed by another person who is knowledgeable about the analytical data present in the report. This person may be an analyst, Quality Assurance Officer, consultant or other individual.

4.6.2 The reviewer inspects the report for errors and reasonableness of data present. The reviewer may look at raw data, QC tables, COC, logbooks or ESDMS to determine accuracy and data acceptance criteria.

4.6.3 The reviewer initials the signature page of the report. Drinking water reports are initialed by the reviewer on the Microbial Monitoring Form.

4.7 Report conveyance

4.7.1 Analytical reports are typically emailed, but will be sent in another format if requested by the client. An original, signed report is kept on file.

4.7.2 An attempt should be made by the LM to assure that the client has received the report.

4.7.3 TIAER enters drinking water analysis results from certain regulated water systems into the State of Texas Environmental Electronic Reports System (STEERS). After data is reviewed and reported to the client, the data is entered into an Excel spreadsheet and saved as a CSV file. After logging in, the file is uploaded to the STEERS website. The file can be tested to ensure it is in the correct format before submission. After submission the submitter should receive a confirmation email.

4.8 Revised, Supplemental and Amended Reports

4.8.1 Revised, supplemental and amended analytical reports may be generated by the LM, if the need arises.

4.8.2 Revised reports are generally related to data reporting errors where data is corrected. Any changes made to the data are clearly indicated for revised reports. An explanation of why the data was changed should be included as a footnote or qualifier.

4.8.3 Supplemental reports include additional information that was left off or not put into the original report. An example would be that the client requests further analytical tests after a sample is completed.

4.8.4 Amended reports are for typographical and other errors not associated with the data.

4.8.5 Any such secondary reports are clearly marked as "REVISED", "SUPPLEMENTAL", or "AMENDED" as appropriate. Any changes made are clearly indicated for revised reports. All secondary reports are generated, reviewed and conveyed in the same manner as an original. All revised, supplemental and amended reports are numbered sequentially (i.e. REVISED-1) and reference the report they replace.

4.8.6 In any case, the original report is kept on file and not discarded or changed.

4.9 Client complaints, concerns or questions

4.9.1 All client contacts, complaints, concerns or questions about the TIAER laboratory data are forwarded immediately to the LM.

4.9.2 Client contact may result in the generation of a secondary report.

4.9.3 The LM should be expeditious in addressing the needs of the client and respond in a timely manner. The LM researches logbooks, raw data and other records to satisfy the wishes of the client within ethical limits.

4.9.4 All reasonable efforts should be made to resolve client complaints, concerns or questions, but the data generated are never compromised or changed unless an obvious error is discovered that can be corrected.

6.0 Quality Control and Safety Aspects

6.1 All analytical reports are to be signed and dated on the signature page by the Laboratory Manager. An example format for a routine report is shown in Attachment 1. Certain clients or projects may request or require different formats, which will be provided.

6.2 Preliminary data may be provided to the client without a formal report as long as the data is designated “preliminary”. It is made clear to the client that final data may change after review on a report when official data comes later.

6.3 All analytical reports are reviewed and initialed by a second person, preferably an analyst who understands the data and reasonableness between the analytes described for the sample.

6.4 Data qualification flags are clearly denoted on the report with unequivocal descriptions of effects on values reported.

6.5 All original and revised analytical reports are maintained electronically by the Laboratory Manager. Reports are coded and stored with unique numbers.

6.6 No changes to reports are made once the client has received it. Corrections and revisions are made on a separate report and sent to the client, clearly described as “revised” or “amended”.

6.7 All analytical reports contain unique identification numbers, and each page of a multi-page report contains this number. All pages of a report are numbered with current page and total pages in the report.

6.8 For the purposes of the TIAER QAO, Data or Field Operations Supervisor, or other internal TIAER personnel using data generated by the laboratory, these employees are considered internal clients, and written report formats are not normally required. The LM is not responsible for how the data is used

once it leaves the laboratory, but provides quality control statistics to the client upon request and correcting data as requested.

6.9 Any portion of the data qualifying code table in Attachment 2 may be attached to an analytical report, if applicable.

6.10 Data are reported to project required levels. For projects without an LOQ standard level of reporting, data may be reported to the Limit of Detection (LOD) only if the LOD is equal to or greater than one-third the lowest standard used for the batch analyzed on that day.

6.11 The Laboratory Manager, or designee, is a member of TNI and monitors the TNI website and standard periodically, and at least annually, for changes in requirements such as the approved logo of accredited laboratories. This check is documented at least annually by approval or revision of the QAM.

7.0 References

7.1 Good Laboratory Practice Standards, ed. by Willa Y. Garner, et al., American Chemical Society, Washington, D.C., 1992

7.2 Standard Methods for the Examination of Water and Wastewater, latest online edition (EPA approved), ed. by Arnold E. Greenberg, et al., APHA, AWWA, Washington, D.C.

7.3 National Environmental Laboratory Accreditation Conference (NELAC) TNI Standard, 2016, The NELAC Institute.

7.4 TCEQ TRACS Remark Codes, TCEQ-20061 (Rev. 12-09-2005)

8.0 Attachments

8.1 Example Analytical Report Format

8.2 Laboratory Data Qualifier Codes for Client Reports

TARLETON STATE UNIVERSITY
Member of The Texas A&M University System

Client
Email@email.com
Company
Address
Stephenville, TX 76401
Phone

February 1, 2018

Subject: Analytical Report (mam-18-001)

The following analytical report is for nonpotable water samples submitted January 30, 2018 at 15:00.

TIAER ID	Client ID	Collection Date	Collection Time	Analysis Start Date	Analysis Start Time	Total Coliforms MPN CFU/100 mL *SM9223 / Colilert*	E. coli MPN CFU/100 mL *SM 9223 / Colilert*
1000097728	NORTH SIDE	1/30/2018	14:30	1/30/2018	15:24	<1	<1

1. QC data are attached. Reported data are NELAP accredited. Holding time was met.
2. SM= Standard Methods (latest edition)
3. Uncertainty = 3.83 MPN CFU/100mL

If you have any questions, or if I may be of further assistance, please contact me.

Respectfully submitted,

James Hunter

TIAER Laboratory Manager

Review: ____

NELAP Cert. #T10470429, expires 1/31/2021

NELAP ACCREDITED TNI LABORATORY

Attachment 2
Laboratory Data Qualifier Codes
for Client Reports

Code	Definition	Description and Usage
AQ	Value above quantitation range	The analysis returned a value statistically unreliable based on the capability of the instrument.
BL	Blank did not meet QA acceptance criteria	A blank sample associated with this measurement did not meet project or method required criteria.
BQ	Analyte detected below quantitation limits	The analyte was detected at a level statistically unreliable based on the capability of the instrument.
D	Did Not Pass All Q.C. Criteria	This qualifier may aid in decisions regarding data usability, in combination with details that may be in the case narrative describing which criteria were not met.
E	Lab error	Several errors apply or a description of the specific error does not aid in data usability decisions.
ES	Estimated Value	Alert to the data user that this is not an analytically derived value.
F	No Preserved Sample	An unpreserved sample may still yield some useable data; this code qualifies the parameters within that sample that are negatively impacted by lack of proper preservatives.
H	Hold Time Exceeded	Maximum allowable holding time was exceeded according to the method or project requirements. Also as HTEL (Lab) and HTEF (Field)
I	Interference	Interference occurred during analysis; this result is questionable. Available details are found in the case narrative.
IO	Incomplete & Unofficial	This value is associated with a sample missing required information such as sample site or sample time. Available details are found in the case narrative.
J	All Samples Preserved	Analytes quantified from preserved samples, though they should have been unpreserved.
K	Statistically Unreliable	Collector or analyst review revealed this result to be unreliable or unreasonable.
L	Call Lab	Several errors may apply or the error requires more explanation than is practical to include in the analytical report. Information from the lab is necessary to make a decision about data usability for parameters with this qualifier.
LOQ	LOQ fails	Limit of Quantification check standard fails. Data may be questionable for this project at lower levels. Refer to QAPP.
M	Instrument Failure	Instrument failure occurred during analysis; this result is questionable. Available details are found in the case narrative.
ME	Method Used Was Changed from the Published Method Listed in the Project Requirement	The value was obtained using alternative, modified or experimental methods. This method may not be documented in the project QAPP. Available details are found in the case narrative.
N	Container Leaking	A sample container arrived at the lab leaking. Affect on the sample and the resulting data is unknown or unquantifiable. Available details are found in the case narrative.
ND	Material Specifically Analyzed For But Not Detected	This qualifier is a value-added remark, usually used when a result value of “less than the analytical limit is reported. It indicates that while the reported value is correct, the material was not detected at all.
NO	Data Not Collected Under Approved Agency QAPP	These data may be acquired from outside sources without the complete verification and validation against the SWQM QAPP. They may also be data associated with a TCEQ project collected outside its QAPP effective period.
Q	Quantity Not Sufficient	The amount of sample was not enough to perform the analysis per QA/QC requirements.
R	Improperly Collected Sample	The value is questionable due to a sample collection error. Available details are found in the case narrative.
RP	RPD outside accepted recovery limits	The precision of analysis is questionable due to a failed QA/QC duplicate sample that is required by the project or method.
S	Container Broken in Shipment or Laboratory	The analyses could not be performed or is questionable due to loss or contamination of the sample from a broken container.
SP	Split did not meet QA criteria	The split sample criteria documented in the QAPP or method requirements were not met for this parameter. Available details are found in the case narrative.
SR	Spike recovery outside accepted recovery limits	The accuracy of analysis may be questionable due to a suspected interference in analysis of a matrix spike sample that is required by the project or method.
U	Reported Values Less Than Detection Limit	The analysis returned a value statistically unreliable based on the capability of the instrument.
UR	Value deemed unreasonable by TIAER staff	Values clearly unreasonable but there is not sufficient documentation (or resources) to cite a more specific error.