Lead and Copper Sample Collection, Analysis, and Data Reporting under the Lead and Copper Rule

Addendum 2

(Revision 4)

to the

Quality Assurance Project Plan for the Texas Commission on Environmental Quality Public Water System Supervision Program Relating to the Safe Drinking Water Act

Effective

November 10, 2022

List of Acronyms

CFR	Code of Federal Regulations
COC	chain of custody
DQI	data quality indicator
DQO	data quality objective
DWW	Texas Drinking Water Watch
EDD	electronic data deliverable
ID	identification
L	liter
LCR	Lead and Copper Rule
LCRMF	Lead and Copper Rule Monitoring Form
MB	method blank
MDL	method detection limit
MRL	method reporting limit
NTU	nephelometric turbidity units
TNI	The NELAC Institute
OW	Office of Water
PWSS	Public Water System Supervision
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SOP	Standard Operating Procedure
TAC	Texas Administrative Code
WSD	Water Supply Division

(A) Project Management

A1 Approval

A1.1 TCEQ

The following individuals are signatories to this Addendum because they are responsible for the management and assurance of quality of the work described.

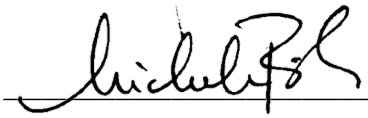
Laura Higgins, Team Leader

TCEQ/OW/WSD/DWSS/Lead and Copper Monitoring Team (LCMT)

Signature:  Date: 09/16/2022

Michele Risko, Section Manager

TCEQ/OW/WSD/Drinking Water Standards Section (DWSS)

Signature:  Date: 09/16/2022

Jessica Hoch, Program Lead Quality Assurance Specialist

TCEQ/Office of Water (OW)/Water Supply Division (WSD)

Signature:  Date: 09/16/2022

A1.2 Laboratory Acknowledgment and Agreement

All laboratories participating in the Public Water System Supervision (PWSS) Program must submit Laboratory Acknowledgement and Agreement documentation. The current version can be obtained on the TCEQ PWSS Program[1] webpage or directly by request to PWSQA@tecq.texas.gov.

[1] www.tceq.texas.gov/drinkingwater/pwss.html

A2 Table of Contents

A3 Distribution

The PWSS Program Lead Quality Assurance Specialist (QAS) ensures the individuals on the distribution list in Section A3 of the Programmatic QAPP document receive a copy of the Programmatic QAPP and Addenda. Redistribution occurs when amendments or revisions are approved and published.

The Team Leader of the Lead and Copper Monitoring (LCM) Team ensures the QAPP is distributed to the participants specified in Section A4 of this Addendum and others, as applicable.

The current, approved version of the PWSS Program QAPP is maintained on the TCEQ PWSS Program[2] webpage.

Note: References to the PWSS Program QAPP include all addenda as a whole document. References to the Programmatic QAPP, for the purposes of the addenda, is a reference to the main QAPP document.

A4 Project Organization

The TCEQ LCM Team oversees activities related to the Lead and Copper Rule (LCR). This team is organized within the Drinking Water Standards Section (DWSS) of the Water Supply Division (WSD). Section A4 of the Programmatic QAPP document for roles and responsibilities of key individuals in TCEQ WSD.

The individuals/groups listed below administer, oversee, and/or participate directly in the stated activities related to LCR tap sample collection, analysis, and reporting.

A4.1 Lead and Copper Monitoring Team

- Maintains a working knowledge of LCR rules and regulations.
- Issues and maintains standardized requirement documents, procedures, instructions, TCEQ webpages, and forms, related to site selection, LCR sample collection, analysis, and data reporting.
- Coordinates sample site selection and priorities with Public Water Systems (PWS).
- Provides support and oversees PWS and participating laboratories to ensure adherence to this Addendum.
- Coordinates with TCEQ data staff (data support group) for receipt, QC, and migration of data reported by laboratories. Works with accredited laboratories for oversight of activities to ensure data is of known and defensible quality.
- Notifies Team Leader if there are deviations from required protocols specified in this Addendum and/or referenced documents, and initiates corrective action, as required.
- Performs applicable personnel responsibilities per the TCEQ Quality Management

[2] www.tceq.texas.gov/drinkingwater/pwss.html

Plan[3] (QMP), Appendix C.

In addition to the activities described above, the LCM Team Leader is responsible for maintaining lines of communication with WSD Management, related to activities specified in this Addendum, and elevating issues when identified.

Contact information for the Lead and Copper Monitoring Team is located on the TCEQ Lead and Copper Program[4] webpage. A proxy email box is available for all LCR questions at PWSLCR@tceq.texas.gov.

A4.2 Public Water Systems (PWS)

- Maintains knowledge and adheres to applicable rules and requirements described in this Addendum.
- Coordinates with the analytical laboratory to ensure it adheres to applicable requirements in this Addendum.
- Ensures proper sample containers and applicable forms and labels from laboratory are provided to homeowners or other sampling personnel.
- Provides procedures and sample containers to homeowners/residents and coordinates sample collection events.
- Arranges for sample pick-up.
- Reviews and verifies documentation after sample collection to ensure forms and labels are filled out accurately and completely, and samples were collected correctly.
- Ensures the laboratory reports results to the TCEQ in the formats, and within required timeframes, defined in this Addendum.
- Immediately reports deviations in sampling or analysis to the TCEQ. Works with the TCEQ to address, as applicable.
- Maintains records per Section A9 of this Addendum.

A4.3 Laboratories

A laboratory performing work under this addendum is responsible for implementing the following requirements.

- Maintain TNI accreditation for relevant method(s) in the drinking water matrix described in this Addendum to analyze samples.
- Adhere to laboratory requirements described in the approved methods, 5th Edition EPA *Manual for the Certification of Laboratories Analyzing Drinking Water* (MCLADW), and this Addendum.
- Sign and submit adherence documentation to PWSQA@tecq.texas.gov.
- Receive, analyze, and report lead and copper sample results per this Addendum.
- Report deviations from this Addendum to TCEQ immediately and initiate corrective action(s) as required.

[3] www.tceq.texas.gov/agency/qa
[4] www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html

- Maintain lead and copper testing records per Section A9 of this Addendum.

A4.4 Homeowners or Residents

Homeowners or residents coordinate with PWS representatives to collect and submit lead and copper samples per the instructions and procedures provided to them by the PWS.

PWS sampling staff are allowed by rule to collect lead and copper samples on behalf of homeowners or residents. If this occurs, the PWS sampling staff follow the same instructions and sample collection procedures provided to homeowners.

A5 Problem Definition/Background

Congress passed the Safe Drinking Water Act (SDWA) in 1974 to protect public health by regulating the nation's public drinking water supplies. The SDWA authorizes the EPA to set national health-based water quality standards for drinking water to protect against both naturally-occurring and man-made contaminants. The EPA issued the LCR in 1991 and most recently published the LCR Revisions (LCRR) in 2021 with an initial compliance date of 2024. Lead and copper tap monitoring is focused on sampling from approved sample sites that represent the largest risk for corrosion based on sample site materials. Additionally, required stagnation periods associated with sampling are designed to represent the highest risk situation when water is left in contact with a residence's plumbing. The LCR and subsequent LCRR, protects public health by minimizing lead and copper levels in drinking water, primarily by reducing corrosion of plumbing materials. The TCEQ implements the SDWA via a primacy agreement with the EPA to maintain a PWSS Program consistent with federal regulations.

The LCR sets action levels for lead of 0.015 mg/L and copper of 1.3 mg/L in public drinking water at the consumer's tap. Evaluations of the action level exceedances are based on 90th percentile level of first-draw, tap water samples. An exceedance of the action level is not a violation but does trigger certain requirements as described in the next paragraph.

If a PWS exceeds either of the action levels, it is required to conduct entry point lead and copper sampling, additional tap water lead and copper sampling, as well as water quality parameter sampling. The PWS uses the sample results to develop and submit a source water treatment recommendation, an optimal corrosion control treatment designation, and a corrosion control study. Lead action level exceedances also require delivery and posting of Lead Public Education. Forms and guidance documents related to action level exceedances are located on the TCEQ Lead and Copper Program[5] webpage.

As one part of its primacy agreement, the TCEQ WSD is responsible for determining PWS compliance with requirements related to drinking water standards contained in 30 TAC §290 Subchapter F: Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems. This Addendum describes the technical and quality related activities related to the sample collection, analysis, and reporting of

[5] www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html

lead and copper compliance data.

A6 Project/ Task Description

Under this Addendum, lead and copper compliance tap samples are collected, analyzed, and data is reported to the TCEQ's WSD to determine whether lead or copper contaminants are present in water supplies above the limits set by regulation. TCEQ implements the LCR in accordance with 30 TAC §290.117: Regulation of Lead and Copper.

TCEQ regulates lead and copper based on levels detected in samples collected at taps within the distribution system. The LCR requires first-draw samples to be collected from cold water taps that have sat unused for at least six hours. Typically, sample collection is done by residents; however, the LCR does allow for PWS sample collection.

PWS representatives acquire the samples from homeowners/residents after collection and deliver them to TCEQ accredited laboratories who have agreed to adhere to the requirements of this QAPP (Section A4.3). The laboratories analyze the samples for lead and copper according to approved methods and report the results to TCEQ. TCEQ staff manage data reported, make compliance determinations, and communicate requirements that must be taken after any exceedance of the action level has occurred.

This Addendum specifies requirements for lead and copper sample collection (distribution system and entry point), sample analysis, and data reporting by project participants described in Section A4 of this Addendum. To use lead and copper data collected under the LCR, all participants must comply with the requirements and specifications described.

A7 Quality Objectives and Criteria for Measurement Data

The TCEQ's objective for implementation of the Lead and Copper Rule is consistent with the overall objective of the SDWA to protect drinking water and public health. Consequently, as the state's environmental agency, TCEQ can provide better protection of the health of all Texas citizens currently served by PWS and all those who consume water from the systems. The specific objectives related to lead and copper tap sample data as described below reflect the objectives specified in the Programmatic QAPP.

Objectives and Project Decisions

The following data quality objectives apply to the sample collection, analysis, reporting, and use of lead and copper tap sample data. A combination of management oversight, peer review, staff training, experience, staff coordination, standardized review processes, data and documentation quality control checks, and strict adherence to monitoring timeframes ensure the data quality indicators (DQI) described below are met.

TCEQ uses the data generated under this Addendum to determine PWS compliance with the LCR, and, if warranted, requires treatment technique actions and public notification in order to safeguard public health. To meet this objective, the requirements (i.e., methods, procedures, specifications, etc.) in this Addendum are followed to ensure the lead and copper data produced for this project possess the attributes (i.e., DQIs) listed below. These terms are defined in Section A7.1 of the Programmatic QAPP document.

- sensitivity
- bias
- precision
- comparability
- completeness
- representativeness
- data integrity
- compliance

In order for the TCEQ to accurately evaluate the action levels for lead and copper, data must be of known and verifiable quality as determined by the DQIs listed here. Measurement performance quality control criteria is addressed in Section B5 of this Addendum.

A8 Special Training Requirements/Certification

A8.1 Personnel Training/Certification

Staff on the TCEQ Lead and Copper Monitoring Team possess the experience and training necessary to perform the tasks listed in Section A4 of this Addendum. The TCEQ maintains staff training documentation as specified in Section A8 of the Programmatic QAPP document.

The TCEQ provides training to PWS and laboratories on various aspects of lead and copper compliance and sample collection, analysis, and data reporting at training events throughout the year including the TCEQ Public Drinking Water Conference[6]. Following these events, the TCEQ makes the training materials/presentations available on the TCEQ Lead and Copper Program[7] webpage.

Additional training resources can be found through the TCEQ's YouTube channel and the Drinking Water Advisory Workgroup (DWAWG)[8] webpage.

A8.2 Laboratory Accreditation

All laboratories that analyze lead and copper for LCR compliance determinations are accredited for the methods they use in accordance with 30 TAC §25: Environmental Laboratory Accreditation and Certification. PWS ensure the analytical laboratories/facilities they use meet these criteria.

Information on laboratory accreditation is provided in Section A8 of the Programmatic QAPP document and on the TCEQ Laboratory Accreditation[9] webpage.

Procedures related to laboratory accreditation are not addressed within the PWSS Program

[6] www.tceq.texas.gov/drinkingwater/conference.html
[7] www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html
[8] www.tceq.texas.gov/drinkingwater/dwawg
[9] www.tceq.texas.gov/agency/qa/env_lab_accreditation.html

QAPP.

A9 Documents and Records

Documents that specify quality-related instructions and requirements of the PWSS Program are consistent with regulatory requirements and are designed to serve their intended use per the TCEQ QMP, Chapter 5. Records also fulfill regulatory requirements and are prepared and maintained to reflect the required quality described in Section A7 of the Programmatic QAPP.

Section A9 of the Programmatic QAPP describes the TCEQ quality-related documents and records, by environmental data operation and in general, related to the PWSS Program QAPP.

A9.1 QA Project Plan Distribution

The process for distributing the QAPP is described in Section A3 of this Addendum.

A9.2 PWS Documents and Records

PWS documents and records associated with LCR lead and copper sampling may include, but are not limited to, the items below.

- Monitoring Plan (Sample Site Selection Form 20467a or Form 20467b)
- PWS Homeowner Instructions
- Sample Label
- LCR Monitoring Form, TCEQ Form 20683 (LCRMF)

Homeowners and PWS complete the applicable labels and forms listed above as part of the lead and copper sample collection process and submit them with the samples when relinquishing to the laboratory. These processes are described in Section B3 of this Addendum.

PWS maintain records associated with lead and copper monitoring. PWS maintain copies of documents and completed records, as well as results/reports per 30 TAC §290.46(f).

Sample Invalidation

If a PWS requests invalidation of lead and copper results, the TCEQ may approve the request under specific circumstances (30 TAC §290.117(h)(3)).

To request an invalidation, the PWS must submit the request in writing to PWSLCR@tceq.texas.gov, provide detailed supporting objective evidence, and maintain all documentation associated with any invalidated sample result. The TCEQ documents all decisions to invalidate samples in writing.

A9.3 Laboratory Documents and Records

Laboratory documents and records specific to lead and copper analysis include, but are

not limited to, the items listed below.

- Laboratory QA manuals and SOPs.
- Sample receipt documentation and records, (including those listed in Section B3).
- Sample preparation and analysis bench sheets.
- Data review and verification records.
- Analytical test reports.

Accredited laboratories maintain laboratory documentation and records per the TNI Standard and other internal procedures. At a minimum, the laboratory maintains related accessible records for a minimum of five years from generation of the last entry in the record. Adequate information is available to reconstruct the final results for compliance purposes. Changes in ownership, mergers, or closures of laboratories do not eliminate these requirements.

The laboratory will notify the PWS before disposing of records which are less than five years old so they may request copies, if needed. This includes all records pertaining to data produced and reported. If the laboratory changes its computer hardware or software, it must make provisions as required by the TNI standard, for ensuring prior data is retrievable.

(B) Data Generation and Acquisition

B1 Sampling Design

The LCR requires that all community and nontransient, noncommunity PWS collect lead and copper tap water samples from sites within the distribution system, as specified in 30 TAC §290.117. The sites are selected from a pool of targeted sampling sites identified through the materials survey and approved by TCEQ prior to sampling.

A materials evaluation is required to classify sampling sites into tiered locations. The TCEQ uses the *Sample Site Selection and Materials Survey* Form 20467 for PWS to identify these tiers based on rule requirements. Sample schedules, including the number of samples required and timing of sampling, are always available on Drinking Water Watch (DWW)[10]. PWS are required to maintain records of approved sampling locations and frequency in their monitoring plans, per 30 TAC §290.121.

Following the review of data by the TCEQ, PWS may need to collect additional lead and copper samples if action levels are exceeded. This includes follow-up lead and copper monitoring and entry point monitoring to determine concentrations of lead and copper in the source water.

In the case of action level exceedances, TCEQ communicates directly with each water system to explain the additional monitoring requirements, in addition to other actions they must initiate.

[10] www.tceq.texas.gov/goto/DWW

B2 Sampling Methods

B2.1 Tap Sample Collection

The LCR allows PWS homeowners/residents to collect lead and copper tap samples. When a PWS opts to have homeowner/resident sampling, the PWS is required to provide them with sampling instructions such as the *PWS Homeowner Instructions* located on the TCEQ Lead and Copper Program[11] webpage.

The instructions contain information that homeowners/residents need to:

- properly collect a sample.
- fill out the required form (see below).
- coordinate with the PWS to get the sample picked up.

Each first-draw tap sample for lead and copper shall be:

- from an interior tap that has stood motionless for at least six hours
- one liter in volume
- collected in a single, wide-mouth container

Wide-mouth bottles are required for sample collection as they allow for a higher flow rate that is representative of the flow a consumer would use to fill a glass with water. [EPA Memorandum, *Clarification of Recommended Tap Sampling Procedures for Purposes of the Lead and Copper Rule*, Feb. 29, 2016]

B2.1.1 Homeowner Sample Form

The *Homeowner Sample Form* is attached to the end of the *PWS Homeowner Instructions*. Homeowners complete this form after collecting a sample and provide it to the PWS with the sample. The form contains information about sample location, date, and time of collection, etc.

B2.2 Entry Point Sample Collection

Entry point samples are full flush samples collected by the PWS from active entry points. PWS staff should collect entry point samples according to internal SOPs following action level exceedances.

PWS do not record a "Sample Faucet Last Used" date/time for this sample type on the LCRMF.

B3 Sample Handling and Custody

This section of the QAPP provides specific sample custody requirements related to lead and copper sample collection and includes information on standardized forms, signature

[11] www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html

requirements, sample labels, preservation, sample acceptance, rejection, etc.

B3.1 Sample Handling

Field preservation is not allowed for lead and copper sample collection (tap and entry point). Acid preservation must be performed in the laboratory within 14 days of sample collection.

The PWS must ensure the samples are delivered to the laboratory promptly after sample collection to ensure the laboratory performs acid preservation within 14 days of collection, as required by regulation and described in Section B4.

B3.1.1 Tap Sample

Following tap water sample collection, PWS representatives must pick up samples as soon as possible from the homeowner/resident, complete the required documentation as described in this section, and transport samples to the laboratory as soon as possible.

The PWS should provide sufficient time for the laboratory to acidify the sample within 14 days of collection as required by rule.

B3.1.2 Entry Point Sample

Following entry point and source water sample collection, PWS representatives complete the required documentation as described below and transport samples to the laboratory no later than 14 days after collection.

The PWS should provide sufficient time for the laboratory to acidify the sample within 14 days of collection as required by rule.

B3.2 Sample Custody

B3.2.1 Sample Label

Laboratories or PWS may design sample labels and provide them with the sample containers. Alternatively, the sample label provided with the *Homeowner Tap Sample Collection Procedures* can be used. The PWS may also write the sample label information directly on the bottle.

Tap sample labels contain the following information:

- Sample point ID and location address. (i.e., LCR###)
- Date and time water was last used.
- Date and time sample was collected.
- Which inside sink was used.

Entry Point sample labels contain the following information:

- PWS ID

- Facility ID and location (i.e., PBCU###) (NA for tap samples)
- Date and time sample was collected.
- Sampler signature (or initials)

After collection, the PWS ensures the required information is recorded with indelible ink on each sample prior to submission to the lab. representative must transcribe the information from the label onto the LCRMF after retrieving the sample from the homeowner.

B3.2.2 LCR Monitoring Form TCEQ Form 20683, (LCRMF)

The TCEQ LCRMF may replace the laboratory's COC Form, to avoid multiple forms. In this case, the receipt and relinquish information and the sample condition upon receipt must be completed on the LCRMF. If a laboratory utilizes a separate COC, they must submit both documents at the time of reporting as described in the Exhibit 1.

Prior to submitting the samples to the laboratory, PWS representatives must complete the LCRMF using information from the homeowner/resident. Original labels provided by the homeowner/resident should be maintained by the PWS along with all other LCR records. The *TCEQ LCR Monitoring Form* and instructions are located on the TCEQ Lead and Copper Program[12] webpage.

Note: Before completing the monitoring form, the PWS representative must ensure the samples were sampled appropriately (stagnation period, sample location, etc.). The PWS representative's signature on the LCRMF is an acknowledgement that the information on the form is true and correct and sites selected for sampling follow the approved TCEQ Form 20467 and the PWS Monitoring Plan. Thorough review of sample documentation is essential, as sample invalidation is not applicable for improper sample collection. For invalidation requirements see 290.117(h)(3).

Laboratories are encouraged to provide the instructions for the LCRMF that are found on page two of the form. The instructions guide the PWS and laboratory on the expected information in each field.

The TCEQ designed its LCR Monitoring Form to meet federal and state reporting requirements specific to the SDWA. It captures information required for compliance sampling that a laboratory might not routinely include on their own Chain of Custody (COC) forms. Laboratory-designed forms must resemble the TCEQ form's layout (for data validation purposes) and be approved by the TCEQ prior to use. The TCEQ can provide laboratories with the TCEQ form to use as a template.

Laboratory-modified forms are not official TCEQ forms; therefore, laboratories must remove the TCEQ form number from their own forms. Laboratories shall direct requests and questions about modifying forms to the PWSS Program Lead Quality Assurance Specialist.

[12] www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html

LCRMF Requirements:

PWS Information

- PWS name, PWS ID number, PWS Address, PWS contact name and phone number
- Sampling acknowledgement statement and check boxes indicating proper collection technique, and name/signature/date of authorized PWS representative
- Sample type indicator – Compliance or non-compliance
- Facility ID Number
  All active facility IDs are viewable in Texas Drinking Water Watch (DWW)[13]
  - DS01 for distribution system
  - PBCU### for entry point
- Sample point ID (See below for additional information)
  - LCR### for distribution system
  - ELCR for entry point
- Sample location - Address and location of inside sample faucet (123 Main St, bathroom sink) or entry point sample station
- Date (MMDDYY) sample faucet last used (for tap samples only)
- Time (24 hour – HHMM) sample faucet last used (for tap samples only)
- Date (MMDDYY) and time (24 hour – HHMM) of sample collection
- Replacement indicator (for previously rejected samples)
- Original sample ID Number (for previously rejected samples)
- Original sample collection date (for previously collected samples)
- Relinquish by signature line(s) – if form is used for documenting COC

Laboratory Information

- Laboratory name and address
- TCEQ Laboratory ID number
  - This is the nine-digit Laboratory Accreditation ID number, minus the last four digits.
  - Example: T123456789, see note below
- Laboratory contact name and phone number
- Sample condition records to document the following information.
  - Sample delivered unpreserved
  - Sample collected in a one liter labeled container
  - Sample filled to one liter
  - Actual sample temperature
  - Corrected sample temperature

[13] http://www.tceq.texas.gov/goto/dww

    - Thermometer ID number
- Rejection code
- Laboratory Sample ID of each sample
- Date (MMDDYY) of preservation and date (MMDDYY) of analysis of each sample
- Laboratory comments/Rejection Code (if applicable)
- Received by signature line(s) – if form is used for documenting COC

Note: The TCEQ Laboratory ID Number on the top right-hand corner of the LCRMF is a laboratory specific, ten-digit ID number associated with SDWIS. It is the same as the NELAP Accreditation Number, minus the last four digits. Use of this TCEQ Laboratory ID for reporting will be required starting January 2023.

Sample Point ID

Texas Drinking Water Watch (DWW)[14] has the PWS sample sites listed on "Sample Points" under the "Water System Detail" section.

Tap sample point IDs always begin with LCR followed by a three-digit number.

Entry point sample ID is always ELCR.

Examples:

BOTTLE 1 = LCR001 = 123 Main Street

BOTTLE 2 = LCR002 = 456 Sugar Street

BOTTLE 3 = ELCR = WTP on Rainbow Avenue

Note: Tap sample location addresses are not available on the DWW website. PWS must refer to their monitoring plan for documentation of approved sample locations. The PWS may contact the LCMT if they have any questions about their approved sample locations.

B3.3 Sample Acceptance

B3.3.1 Laboratory Sample Receipt

After completing the required monitoring form documentation, the PWS delivers the lead and copper sample(s) to the laboratory and relinquishes custody to a laboratory sample custodian or designee. The laboratory custodian carefully inspects the sample(s) and sample documentation at the time of receipt for any issues, which if unresolved, may necessitate sample rejection as described in the section below. After the sample custodian inspects and approves the sample and sample documentation, the PWS and the laboratory custodian sign and date the LCRMF with the date and time it was delivered.

If appropriate staff are not present to receive the samples, the PWS should follow laboratory business procedures for after-hours sample drop-off. These procedures may include sampling staff making a log entry identifying the samples that were delivered, the

[14] http://www.tceq.texas.gov/goto/dww

date and time of delivery, and where and how the samples were delivered and secured. If relinquishing samples after-hours, the PWS must ensure relinquishment by signature and date/time have been completed on the LCRMF.

B3.3.2 Sample Rejection at the Time of Receipt

Samples that are improperly collected, handled, and/or documented (if unresolved) are rejected by the laboratory. The reasons a laboratory rejects samples at the time of receipt include, but are not limited to, the following issues which correspond to rejection codes listed in Exhibit 1, Table 4.

- sample issues
- exceeds holding time. See section B3.3.4
- excessive or insufficient sample volume. See section B3.3.5
- invalid container
- frozen sample
- broken container
- leaked in transit
- documentation issues
- insufficient information (missing or incomplete fields)
- PWS representative signature (missing)
- invalid date/time
- discrepancies between the completed LCRMF and sample label
- illegible

Laboratories reject samples because of the sample issues listed above. However, PWS and laboratories should try to resolve documentation issues at the time of receipt, if possible, to avoid the unnecessary recollection of samples or PWS monitoring or reporting violations. If documentation issues cannot be resolved, as described, laboratories will reject the samples.

If laboratories request that PWS correct documentation issues at the time of sample receipt, the laboratory ensures that the PWS initials and dates the correction. Laboratories do not correct or complete PWS portions of documentation. It is the PWS' responsibility to complete each form, make corrections (as applicable), and sign and date the form. The form cannot be modified without TCEQ approval, after it has been received, signed, and dated by the laboratory. See section on LCRMF corrections below.

If a laboratory rejects a sample outright at the time of receipt, the laboratory custodian records the reason on the *LCRMF* and requests a replacement sample from the PWS.

Laboratories must assign laboratory sample ID numbers to rejected samples and report them to TCEQ with rejection codes as described in Exhibit 1. This enables replacement samples to be tied back to the original sample. Replacement samples must be collected before the end of the assigned monitoring period.

Corrections to LCRMF (Compliance Documentation)

Correction of documentation errors that are not identified at sample receipt must be approved by the TCEQ prior to making updates to the LCRMF.

LCRMF errors identified by TCEQ during data review will result in sample rejections using the Agency Rejected (AR) rejection code. TCEQ may contact the PWS with instructions on how to correct the LCRMF if the correction is allowed. TCEQ data review and corrections are performed in accordance with the *Monitoring Form Corrections* SOP for the Drinking Water Standards Section of the TCEQ Water Supply Division.

If instructed by TCEQ, the PWS representative will line out the incorrect information, initial and date the correction and write "corrected" at the top of the form. The corrected form will be resubmitted to the laboratory by the PWS. The laboratory will submit the corrected EDD and Analytical Report to TCEQ as soon as possible.

LCRMF errors and documentation issues identified by the laboratory after sample receipt should be rejected and reported to TCEQ in accordance with this section, B3.3.2, and Exhibit 1, Table 4.

The laboratory should notify the PWS as soon as possible if samples are rejected and recollection is required. Timely notification allows for successful recollection and reporting. Samples with LCRMF errors identified by the laboratory or TCEQ may be rejected with no opportunity to correct the LCRMF.

Some LCRMF corrections are not permitted after receipt. They include, but are not limited to:

- Missing Date/Time
- Missing Sample Location
- Missing PWS ID # and PWS Name
- Missing sample type
- Changes in sample type (compliance to noncompliance and vice versa)

B3.3.3 Sample Preservation

Sample preservation must be performed by the laboratory within 14 days of collection. Preservation may occur during sample receipt or as a part of the analysis, as long as hold time requirements are made. Procedures are described in Section B4.

B3.3.4 Sample Holding Time

Holding time refers to the maximum time that samples may be held after sample collection until they are preserved and analyzed. The holding time is 14 days from time of collection to acid preservation performed by the laboratory. The method holding time for *preserved* lead and copper samples is six months.

To facilitate maintaining PWS compliance, samples must be analyzed as soon as possible and no later than 28 days from the time of collection.

Tap sample monitoring periods end on June 30, September 30, and December 31. Labs should be aware the monitoring period ending September 30 overlaps the other two monitoring periods. For this reason, laboratories should analyze samples and report data as soon as possible after receipt (see Exhibit 1, Table 1).

Entry point sample monitoring periods end each year on March 31, June 30, and December 31.

Federal and state rules require that all data be received no later than 10 days after the end of the monitoring period. If samples are submitted to the laboratory late in the monitoring period, the available time for reporting within the monitoring period is minimized.

To avoid this situation, the TCEQ encourages PWS to ensure samples are submitted early in the monitoring period to facilitate laboratory analysis and timely reporting in accordance with rule requirements. The TCEQ encourages laboratories to adequately communicate analysis and reporting timelines to PWS clients who submit samples, especially those submitted late in the monitoring period.

B3.3.5 Sample Volume

Sample volume is a critical component of lead and copper tap water sampling. A volume of one liter for the first-draw sample is reflective of lead and copper levels within premise plumbing and the exposure to lead and copper for the consumer within the structure.

Laboratories should have sample acceptance policies in place to ensure a volume of one liter is received for compliance samples. Some laboratories may elect to utilize sample bottles which have a fill-line included. Alternatively, laboratories may provide sampling fill-line guidance in the form of a line marked on the sample bottle. Tap samples that are excessively overfilled or under-filled must be rejected using rejection codes described in Section B3.3.2 and listed in Exhibit 1 and Table 4.

Note: Entry point samples are not first-draw samples, they are fully flushed samples. Laboratories are not required to reject entry point samples if they are not filled to one liter.

B4 Analytical Methods

Laboratory Analysis Methods

B4.1 Allowable Methods

All drinking water tap samples collected for LCR compliance must be analyzed using TCEQ-accredited methods which are approved by the EPA under the SDWA for LCR compliance. These methods are subject to change at any time as methodology and technology advance. Laboratories are responsible for maintaining accreditation under the drinking water matrix for the methods they use.

For current information on EPA approved methods for compliance with the LCR, refer to

the Code of Federal Regulations (CFR) Title 40, Part 141[15]. A summary of EPA approved analytical methods[16] is available on EPA's website.

Laboratory accreditation staff confirm the use of appropriate methodology when performing onsite assessments. Methods accepted for LCR compliance under this addendum meet the following criteria.

- Approved by EPA for analysis under the LCR per https://www.ecfr.gov.
- Included in current TCEQ Fields of Accreditation[17] for Drinking Water listed on the TCEQ Laboratory Accreditation webpage.
- Conform to the analytical sensitivity requirements.

For any questions related to method acceptability, please reach out to PWSQA@tceq.texas.gov.

B4.2 Analytical Requirements

Sample Preservation

For the determination of lead and copper, laboratories acidify samples with 1:1 nitric acid to pH<2. Typically, 3 mL of 1:1 nitric acid per liter of sample is sufficient for most drinking water samples. Following acidification, the sample is mixed, held for at least 16 hours, and then verified to be pH <2 prior to withdrawing an aliquot for processing or "direct analysis."

If, for some reason, such as high alkalinity, the sample pH is verified to be greater than 2, more acid must be added, and the sample held for an additional 16 hours until verified to be pH <2.

Analytical Sensitivity

Analytical sensitivity refers to the ability of an analytical instrument and/or method to detect and analyze small concentrations of analyte. This is numerically characterized by the determination of detection limits, reporting limits, and blanks. Laboratory quality control requirements are described in Section B5.

As applicable, laboratories report the results of analytical sensitivity determinations/checks (MDLs, blanks, and MRLs) to the TCEQ with their analytical test reports as specified in Exhibit 1.

B4.3 Rejecting Samples at or after Analysis:

The laboratory may encounter issues with samples at the time of analysis that do not allow it to begin or complete an analysis or report valid results. Results that are obtained and subsequently determined to require invalidation must be done in coordination with the TCEQ, as described in 30 TAC 290.117(H)(3).

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[15] www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141
[16] www.epa.gov/dwanalyticalmethods/approved-drinking-water-analytical-methods
[17] www.tceq.texas.gov/agency/qa/env_lab_accreditation.html

If the laboratory has determined a result must be invalidated, request approval of the invalidation through PWSLCR@tceq.texas.gov.

Possible issues include, but are not limited to, the following issues:

- Exceeds holding time
- Lab accident
- Lab error/Lab QC failure
- QA/QC issue
- Reporting limit not met

The laboratory must notify the PWS on the day it detects the issue and rejects the sample or sample result (or the next business day, if after hours) so the PWS can collect another sample as soon as possible within the monitoring period. The laboratory reports "rejections" to the TCEQ at least weekly as described Exhibit 1.

B5 Quality Control

Laboratory Analysis Quality Control Requirements

Laboratories run QC checks with lead and copper samples and conform to the frequency requirements and acceptance criteria defined in the approved analytical method, as well as other relevant standards and procedures. This includes the corrective actions for out-of-control data.

Method Detection Limit (MDL)

The MDL, which is also known as the Limit of Detection, is the minimum concentration of an analyte that can be identified, measured, and reported with confidence that the analyte concentration is greater than zero. MDLs are prepared and analyzed according to method requirements.

Minimum Reporting Limit (MRL) and MRL Verifications

The TCEQ PWSS Program does not use J-flagged (i.e., estimated) data to make compliance determinations; therefore, laboratories must comply with MRL requirements defined below and later in the document in Exhibit 1.

MRLs are equivalent to the lowest non-zero calibration standard in a multi-point calibration curve. Per federal rule, the MRLs for lead and copper are 0.005 mg/L and 0.050 mg/L, respectively (40 CFR §141.89); therefore, the laboratory MRL must be equal to or less than 0.005 mg/L for lead and 0.050 mg/L for copper. Laboratories must run a laboratory fortified blank with every preparation batch and not report lead and copper at levels less than the level at which they routinely analyze their lowest standard. For the Lead and Copper Program, this check is known as an MRL verification. An MRL verification consists of a sample of deionized water free from the analytes of interest spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes at the MRL. It is used to assess the performance of the measurement system at the lower limits of analysis. The acceptance criteria for MRL verification checks must

comply with internal laboratory criteria and be documented. The laboratory must locate and fix problems with the MRL verification before continuing if results are out of control.

Method Blank (MB)

A method blank (MB) is a sample of matrix similar to the batch of associated samples that is free from the analytes of interest and is processed simultaneously with the samples through all steps of the preparation and analytical procedures. MBs are analyzed at a rate of one per preparation batch. A preparation batch is composed of 1 to 20 environmental samples of the same quality systems matrix, meeting the above-mentioned criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. The MB is used to document contamination from the analytical process. Results of MB analyses must be less than the MDL, be less than or equal to 1/10th of the concentration measured in the sample or conform to method-specific requirements. For example, EPA Method 200.8 has a method blank requirement of <2.2 x MDL.

B6 Instrument/Equipment Testing, Inspection, and Maintenance

Laboratories maintain their instruments and equipment according to the approved analytical method, as well as other relevant standards and procedures. Maintenance records are reviewed during laboratory accreditation assessments.

B7 Instrument/Equipment Calibration and Frequency

Laboratories calibrate their instruments and equipment according to the approved analytical method as well as other standards and procedures (i.e., TNI Standard, MCLADW, Laboratory quality manual, manufacturer instructions, etc.). Calibration records are reviewed during laboratory accreditation assessments.

B8 Inspection/Acceptance Requirements for Supplies and Consumables

Laboratories inspect and accept supplies and consumables according to the approved analytical method and other relevant standards and procedures.

Sample containers

For the collection of lead and copper samples, laboratories supply containers with the following attributes.

- preservative free
- lab grade plastic
- wide mouth
- One liter in volume
- free from the analytes of interest

Laboratories ensure sample containers are free from the analytes of interest by providing PWS with either pre-certified or lot-tested containers.

B9 Non-Direct Measurements

This Addendum does not include the acquisition of non-direct measurement data.

B10 Data Management

The management of lead and copper data from the time it is generated in the field until it is reported to the TCEQ is a shared responsibility of the PWS and the laboratory. The sections below summarize the record keeping, document control, and data review and entry requirements of these two parties. The data management protocols described in this section ensure data is reported accurately and in a timely manner and comply with regulatory and programmatic requirements.

TCEQ staff on the LCMT use the data after it is received from the laboratory to determine PWS compliance with LCR. The steps TCEQ staff perform to process and analyze the data following receipt are described in Section B10 of the Programmatic QAPP document.

B10.1 PWS

Following the collection of a sample at each site (tap or entry point), PWS staff record all required information (Section B3) on the sample label and the LCR Monitoring Form, including completion of laboratory COC (if applicable). A PWS representative must review all documentation to ensure all information is complete and accurately documented. The PWS signs the LCRMF acknowledging the form is true and correct and follows the PWS Monitoring Plan. PWS staff then deliver the sample(s) and documentation to the laboratory for analysis and relinquish them, per the required holding time described in Section B3 of this Addendum.

B10.2 Laboratory

Upon receipt at the laboratory, the laboratory inspects the sample(s) and reviews the sample label, and the LCRMF per Section B3 of this Addendum and any other relevant laboratory sample receipt procedures. After analyzing the samples and performing QC on the data, the laboratory provides results to both the TCEQ and the PWS.

The laboratory compiles and reports the following data and information to the TCEQ.

- EDDs
- sample and result rejections
- data resubmittals
- analytical report data packages

Laboratories must report data in a timely fashion to ensure compliance with the LCR. Samples must be analyzed as soon as possible after receipt and within 28 days of collection. The specifications and requirements for data reporting are included in Exhibit 1.

Sample and result files shall be submitted together to the TCEQ at least weekly.

Note: In anticipation of changes which may occur with the LCRR, laboratories are encouraged to develop reporting processes which include expedited notification and EDD reporting of lead or copper sample result exceedances of the action levels.

B10.3 TCEQ

Compliance lead and copper data reported to the TCEQ for LCR is managed within the Safe Drinking Water Information System (SDWIS) database. The database is used to determine compliance with monitoring requirements for each PWS required to monitor under the LCR.

All records associated with PWS compliance, including laboratory analysis reports, are submitted to the Central File Room in accordance with TCEQ Records Management and Retention policies described in the TCEQ QMP and Agency Operating Policies and Procedures.

B10.4 Falsification and Fraud

Falsification of the LCRMF or analytical results or tampering with water samples used for compliance with the SDWA, is a crime punishable under state and/or federal law. [Texas Penal Code, Title 8, Chapter 37.10] By signing the LCRMF, the water system acknowledges that the water samples were collected according to the PWS' established sample collection procedures, and that all information on the form is accurate. Evidence of falsification or fraud is turned over to the TCEQ Environmental Crimes Unit for investigation.

(C) Assessment and Oversight

C1 Assessments and Response Actions

Assessments and oversight associated with lead and copper compliance monitoring are discussed in Section C1 of the Programmatic QAPP. Types of TCEQ audits and oversight applicable to this Addendum include the following activities.

- project oversight
- peer review and coordination
- laboratory accreditation audits

C1.1 Corrective Actions (CA)

All project participants (i.e., laboratory, TCEQ) involved with work associated with this QAPP are responsible for identifying deficiencies when there are nonconformances with required procedures specified in it, including referenced documents. Deficiencies may be identified internally or externally during the performance of routine work or during audits and oversight, such as:

- Routine quality control procedures

- Observations
- Audits
- Management reviews
- Feedback from customers

Most nonconformances are not "deficiencies" as addressed in this section. Project participants routinely encounter, document, and correct technical or procedural nonconformances at the point of origin using established procedures. These nonconformances are documented at the point of origin and are maintained with the applicable project records.

However, the level of corrective action described in this section may be warranted if established procedures don't prevent a situation from recurring, if the error is a unique nonconformance, or if it is determined to be a significant deviation.

C1.1.1 Deficiencies Requiring a Corrective Action Plan (CAP)

Deficiencies are nonconformances that cannot be corrected by established procedures and will require actions to be defined and documented in a corrective action plan (CAP). Upon detection of a deficiency, project participants are responsible for notifying their management.

Deficiencies requiring a CAP may be identified and initiated by a project participant or a CAP may be requested by the PWSS Program Lead Quality Assurance Specialist, or designee.

When deficiencies are identified by the laboratory or contractor, the TCEQ must be notified of the circumstances by email within 24 hours. CAPs must be documented and submitted to PWSQA@tceq.texas.gov within 14 days of notification.

Deficiencies requiring a CAP may involve, but are not limited to, the following:

- Integrity of results are jeopardized
- Intentional misrepresentation of data or information
- Nonconformances with state or federal regulations
- Repeat nonconformances or deviations from standard practices
- Result in significant recollection of samples

The preparation of CAPs is assigned to appropriate staff by managers (e.g., laboratory, contractor, TCEQ) who are responsible for assuring that CAPS are:

- Appropriately prepared, reported, implemented, and verified effective.
- Implemented in ways that will most likely eliminate the problem and prevent recurrence.
- Forwarded to PWSQA@tceq.texas.gov within 14 days of initial notification.

The PWSS Program Lead Quality Assurance Specialist, or designee, receives and reviews CAPs to determine if actions planned to resolve the deficiency are acceptable, provides feedback on any items determined to be insufficient, tracks reported CAPs, and may

monitor implementation. Appropriate staff may be designated to review and track corrective actions that are not deemed significant, as described in C1.1.3.

If CAPs submitted by a laboratory are determined to be unacceptable, the PWSS Program may withhold samples until such time that an acceptable CAP is submitted.

Note: If a laboratory is required to issue an amended analysis report as part of a CAP, they are required to submit a copy to TCEQ in electronic form. All corrected reports and data must be clearly marked to identify them as "corrected" or "revised" and shall include the reason for the correction. Electronic data must be clearly identified as corrected in order to avoid duplicated data in the database of record.

C1.1.2 Required Content for a CAP

The procedure for preparing a CAP following the identification of a deficiency begins with an investigation to determine the root cause(s). Procedures for CAPs are specified in laboratory, contractor, or PWSS Program SOPs. Management selects and implements CAPs that will mostly like eliminate the problem, prevent recurrence, and are appropriate for the magnitude and degree of risk of the deficiency.

CAPs must include the following information:

- Description of the deficiency
  - What happened, how was it identified, and the date identified?
- Root cause
  - What was the underlying cause? Why did the deficiency occur?
- Programmatic or data impact(s)
  - How did the deficiency affect data or program decisions and what was reviewed (including timeframe) to determine the impact?
- Corrective action taken
  - What was done to correct the deficiency?
- Timeline for corrective action(s)
- Documentation
  - How will the corrective action(s) be documented?
- Actions to prevent recurrence
  - What actions will be taken to prevent the deficiency from occurring again? These must be distinctly different from the corrective actions.
- Timeline for action(s) to prevent recurrence
- Documentation
  - How will the preventative action(s) be documented?
- Verification of effectiveness
  - Who will verify effectiveness, when will verification occur, and how will verification be documented?

The TCEQ QA Program has developed a standardized template form that may be used, TCEQ QAF-005. This template can be accessed through the TCEQ Quality Assurance[18] webpage under the Corrective Action Process section. The form is also available by

[18] www.tceq.texas.gov/agency/qa

request at PWSQA@tceq.texas.gov.

C1.1.3 Significant Deviations

The PWSS Program Lead Quality Assurance Specialist determines whether an identified or reported deficiency is a significant deviation as defined by, but not limited to, any of the following:

- It jeopardizes the integrity of results or conclusions.
- Results in non-conformance with state or federal regulations.
- Was associated with the intentional misrepresentation of data or information.

The Lead Quality Assurance Specialist will forward information related to CAPs for significant deviations as described within the Programmatic QAPP, Section C1.1.3.

C1.2 Authorization to Stop Work

TCEQ management will authorize work stoppage if conditions are identified that indicate compliance is in jeopardy or if primacy requirements are not being met. The PWSS Program Lead Quality Assurance Specialist, Grant Manager, or TCEQ QA Manager may also request a work stoppage.

C2 Reports to Management

This section documents how the TCEQ program staff keeps TCEQ management and EPA informed of project oversight and assessment activities and findings. This information is provided in Section C2 of the Programmatic QAPP document.

(D) Data Review and Usability

D1 Data Review, Verification, and Validation Requirements

In order to use the data generated under this Addendum for LCR compliance determinations and other actions/decisions, they are reviewed to ensure they are of known and verifiable quality and adhere to the DQIs specified in Section A7. This involves both the verification and validation of data as described below.

Data verification involves the evaluation of completeness, correctness, and conformance of both field and laboratory data to the criteria and specifications defined in this Addendum and referenced procedures, methods, standards, etc.

Data validation extends the evaluation of data beyond method and procedural compliance (i.e., data verification) to determine the quality of each specific data set. The validation of lead and copper data is a responsibility of the TCEQ Lead and Copper Monitoring Team. The criteria TCEQ staff use to validate data are discussed in the Programmatic QAPP document.

D2 Verification and Validation Methods

Prior to relinquishing lead and copper samples to the laboratory, PWS staff inspect each individual sample to be sure it was properly collected and handled, and is intact (i.e., not leaking, not broken, within prescribed holding times, properly filled, etc.). PWS staff also review the sample documentation and verify the data and information on the sample label; the LCR Monitoring Form; and the COC form, if applicable; is correct and complete. PWS staff perform this process manually by checking each sample and documented item against the requirements defined in this Addendum (Section B3). PWS should correct issues with samples and related documentation prior to relinquishing to the laboratory.

Laboratories review and verify proper documentation and sample collection at the time of receipt (Section B3) and the time of analysis (Section B4) to be sure they are intact, properly collected, and within holding times. Laboratories address issues as described in Sections B3 and B4.

Prior to reporting sample results, laboratories also verify and document the results and associated information against the criteria and requirements defined in this QAPP and referenced documents. Laboratories perform this process manually and/or electronically depending on the laboratory. Laboratories verify their data according to internal SOPs for reviewing and verifying data.

Following receipt of submissions, TCEQ validates lead and copper data including EDD, analytical test reports (See Exhibit 1), and approved sample sites to determine their acceptability for compliance determinations and other uses. The procedures TCEQ staff follow to validate data are discussed in the Programmatic QAPP document.

D3 Reconciliation with User Requirements

The data and information collected under this Addendum conform to the user requirements defined by regulations, rules, and TCEQ requirements related to lead and copper sample collection, analysis, and reporting. Conformance to this QAPP ensures that the TCEQ can use the data to determine compliance with SDWA requirements. Only data and information that have been validated by TCEQ staff as discussed in the Programmatic QAPP document is used for this determination and EPA reporting. Qualified data are not used for LCR compliance determinations.

Exhibit 1 Reporting Requirements and Specifications

This exhibit contains the requirements and specifications for microbial compliance data quality control and reporting.

E1.1 Reporting Periods

All compliance data must be reported to the TCEQ. Compliance samples must never be changed to non-compliance samples once they have been submitted to the laboratory for analysis.

This exhibit summarizes the laboratory reporting requirements for lead and copper data from residential water tap and entry points samples. For the TCEQ to successfully receive and use the data, laboratories must comply with requirements related to the following data/reports.

- EDDs
- sample and result rejections
- EDD resubmittals
- Analytical rest reports

Reporting Periods: Federal and state rules require that **all data** be received within the TCEQ Reporting Period (i.e., no later than 10 days after the end of the Monitoring Period). Tap sample monitoring periods end each year on June 30, September 30, and December 31. Entry point sample monitoring periods end each year on March 31, June 30, and December 31.

Table 1 Reporting Periods

Monitoring Period	Monitoring Date Range	Reporting Deadline
Annual or less frequent	June 1 – September 30	October 10
6 Month Period 1	January 1 – June 30	July 10
6 Month Period 2	July 1 – December 31	January 10

E1.2 EDD Reporting

The EDD is the primary tool for laboratories to report lead and copper data to the TCEQ for upload to SDWIS. Electronic data is submitted to the TCEQ typically using MS ACCESS, in two separate files--Sample and Result. Laboratories submit Sample and Result files together **at least weekly** to the TCEQ at lcrdata@tceq.texas.gov. The Sample and Result file requirements are explained in the following sections. The TCEQ can provide the laboratory with a "test" database if requested.

Electronic File Naming Convention

Laboratories submit electronic data to the TCEQ using the following file naming convention.

Lab Name_LCR_date of submittal (formatted as ddMMMyyyy)

An example of this naming convention's use is as follows: LABNAME_LCR_19MAR2022

Submitting Multiple Files

If multiple submissions are reported from a laboratory in a single day, follow the examples below, as applicable.

Example of multiple submissions in one day submitted from a single location:

LABNAME_LCR_19MAR2020_A
LABNAME_LCR_19MAR2020_B

Example of multiple submissions in one day submitted from a single laboratory entity at multiple locations:

LABNAME_LCR_19MAR2020_EMPLOYEE INITIALS
LABNAME_LCR_19MAR2020_EMPLOYEE INITIALS_A

Sample Table

The Sample file contains information about the sample, including collection date and time, the collector, laboratory ID, sample point IDs, and the corresponding addresses where the lead and copper tap samples were taken. There is always only one record per sample. Fields must be in the order listed in the table below and each field may or may not contain data. All fields (except those marked with an "N/A") must contain either a text or numeric value for every sample taken. Except for the "Comment" field, these fields must contain only alpha-numeric characters (letters or numbers), as designated in field descriptions. Those fields marked as "N/A" must be left blank. All fields are mandatory, even if blank, and must be in the order listed. Do not use special characters since they may cause errors in the migration process.

Pass-through laboratories are indicated in [B_SAMPLE_COMMENTS] in the sample file.

An EDD must be generated for all rejected samples and results. See later section on Sample and Result Rejections.

SDWIS uses three identifiers to describe the sample location:

- Facility ID [B_WSF_STATE_ASSGN_ID] - which for lead and copper tap samples is always DS01)
- Sample Point ID [B_SAMPLING_POINT] - which for lead and copper tap samples starts with "LCR" (LCR001, LCR002, LCR003, etc.) and for entry points is always ELCR. These can be found in DWW. The PWS is required to fill out the LCRMF with the sampling points when submitting samples.
- Sample Location [B_SAMPLING_LOCATION] - which for lead and copper tap samples is always an address and inside tap like kitchen sink or bathroom sink.

Table 2. Sample Table

No.	Field Name	Description	Data Type	Field Size
1	FILE_NAME	Default to "sample"	Text	6
2	B_RECORD_ID	Auto number, unique	Auto Number	7
3	B_LAB_SAMPLE_NUM	Laboratory sample ID number	Text	20
4	B_STATE_SAMPLE_NUMBER	N/A		
5	B_PWS_NUMBER	PWS ID number, preceded by "TX"	Text	9
6	B_REPLACEMENT_INDICATOR	"Y" if sample replaces a previously rejected sample, otherwise defaults to "N." If "Y", populate field 24, 25, 37, 38.	Text	1
7	B_LABORATORY_CERTIFYING_AGENCY	"State" if accredited by TCEQ, "Federal" if certified by EPA	Text	7
8	B_LABORATORY_CERTIFICATION_ID	TCEQ Laboratory ID Number.	Text	10
9	B_WSF_STATE_ASGN_ID	Water System Facility, always use "DS01" for lead and copper tap samples; for entry points use PBCU00#	Text	12
10	B_SAMPLING_POINT	Sample Point, LCR001, LCR002, LCR003, etc. Sample point must match label on bottle and what is in SDWIS. This is provided to the lab by the PWS. Entry points will always have the value ELCR.	Text	12
11	B_SAMPLING_LOCATION	Address and location of Sample Point i.e., kitchen sink, bathroom sink, 123 Main Street = must correspond to LCR001, LCR002, LCR003, and what is in SDWIS. No special characters, like commas, periods, number signs, etc. can be included in this field. This field may also contain the location of the entry point.	Text	40
12	B_SAMPLE CATEGORY	Default to "PB" for Lead and Copper	Text	2
13	B_COMPLIANCE INDICATOR	"Y" for yes or "N" for no	Text	1

Table 2. Sample Table

No.	Field Name	Description	Data Type	Field Size
14	B_COLLECTION_DATE	Collection date as text in the following format – MMDDYYYY	Text	8
15	B_COLLECTION_TIME	Collection time (24 hour clock) as text in the following format – HHMM	Text	4
16	B_SAMPLE_TYPE	"RT" = routine for lead and copper	Text	2
17	B_REPEAT_LOCATION	N/A		
18	B_LAB_RECEIPT_DATE	The date the lab received the bottles formatted – MMDDYYYY	Text	8
19	B_COLLECTOR_NAME	First and last name of sample collector if known	Text	40
20	B_SAMPLE_VOLUME	N/A		
21	B_LEAD_COPPER_SAMPLE_TYPE	"FSD" always, means First Draw; for entry points this field shall be blank	Text	10
22	B_SAMPLE_REJECTION_REASON	Rejection Code if applicable.	Text	2
23	B_COLLECTION_METHOD_CODE	N/A		
24	B_ORIGINAL_LAB_SAMPLE_NUMBER	Original lab sample ID number (if replacing a previously rejected sample)	Text	11
25	B_ORIGINAL_COLLECTION_DATE	Original collection date (if replacing a previously rejected sample) - MMDDYYYY	Text	8
26	B_LAB_COMPOSITE_NUMBER	N/A		
27	B_COMPOSITE_DATE	N/A		
28	B_FREE_CHLORINE_RESIDUAL	N/A		
29	B_TOTAL_CHLORINE_RESIDUAL	N/A		
30	B_SAMPLE_WATER_TEMPERATURE	N/A		

Table 2. Sample Table

No.	Field Name	Description	Data Type	Field Size
31	B_TEMPERATURE_UNIT_MEASURE	N/A		
32	B_TURBIDITY_MEASURE	N/A		
33	B_PH_MEASURE	N/A		
34	B_FLOW_RATE	N/A		
35	B_SAMPLE_PURPOSE	N/A		
36	B_STATE_CLASSIFICATION_CODE	"LC" = Lead and Copper default	Text	2
37	B_ORIGINAL_LABORATORY_CERTIFYING_AGENCY	Original laboratory accrediting or certifying agency (if replacing a previously rejected sample). "State" = default	Text	8
38	B_ORIGINAL_LABORATORY_CERTIFICATION_ID	Original TCEQ Laboratory ID Number located on the LCRMF (if replacing a previously rejected sample)	Text	10
39	B_SAMPLE_COMMENTS	Comments related to the entire sample (pass thru lab information)	Text	255
40	B_COLLECTION_ADDRESS	Address or description of sample site. This is a repeat of what is recorded in table B_SAMPLING_LOCATION	Text	200

Result Table

The Result file contains the analysis results. Table 3 describes the contents, format, and structure for this file.

In the case of lead and copper reporting, there are two result files for each sample file - one for lead and one for copper. A result file is only created if a result is available.

When reporting data, all fields except those marked with an "N/A", must contain either a text or numeric value for every sample collected as designated in field descriptions. Those fields marked as "N/A" are left blank. All fields are mandatory, even if blank, and must be in the order listed. Lead and copper concentrations are reported in mg/L.

Table 3 Result File

No	Field Name	Description	Data Type	Field Size
1	B_FILE_NAME	Default to "result"	Text	6
2	B_RECORD_ID	Auto-number, unique	Auto Number	7

3	B_LAB_SAMPLE_NUM	Laboratory sample ID number, unique	Text	20
4	B_COLLECTION_DATE	Collection date as text in the following format - MMDDYYYY	Text	8
5	B_PWS_NUMBER	PWS ID number, preceded with "TX"	Text	9
6	B_LABORATORY_CERTIFYING_AGENCY	"State" if accredited by TCEQ, "FEDERAL" if certified by EPA	Text	7
7	B_LABORATORY_CERTICATION_ID	TCEQ Laboratory ID number; check with TCEQ	Text	10
8	B_ANALYTE_CODE	EPA analyte code, 1030=lead and 1022=copper	Text	4
9	B_ANALYSIS_START_DATE	Date analysis is started as text in the following format: MMDDYYYY	Text	8
10	B_ANALYSIS_START_TIME	Time analysis is started as text in the following format: HHMM	Text	4
11	B_ANALYSIS_COMPLETE_DATE	Date analysis ends as text in the following format: MMDDYYYY	Text	8
12	B_ANALYSIS_COMPLETE_TIME	Time analysis ends as text in the following format: HHMM	Text	4
13	B_STATE_NOTIFY_DATE	Date data are reported to TCEQ as text in the following format: MMDDYYYY. If the data are rejected and returned for correction, use the original date when re-submitting.	Text	8
14	B_WATER_SYSTEM_NOTIFY_DATE	Date data are reported to the public water system as text in the following format - MMDDYYYY	Text	8
13	B_DATA_QUALITY	Default to "A" for acceptable	Text	1
16	B_DATA_QUALITY_REASON	N/A		
17	B_ANALYSIS_METHOD_CODE	Analysis method code-see B4.1	Text	30
18	B_VOLUME_ASSAYED	N/A		
19	B_LAB_REJECTION_REASON	Rejection reason specific to results (if applicable)	Text	2
20	B_MICROBE_PRESENCE_INDICATOR	N/A		
21	B_COUNT	N/A		
22	B_COUNT_TYPE	N/A		
23	B_COUNT_UNITS	N/A		
24	B_LESS_THAN_INDICATOR	Populate with "Y" if the result is less than the laboratory MRL. Populate with "N" if a concentration is reported.	Text	3

25	B_LESS_THAN_CODE	Populate with the term "MRL" if field 24 is "Y." Do not populate if field 24 is "N".	Text	3
26	B_DETECTION_LEVEL	Populate with the actual laboratory MRL.	Number	Double
27	B_DETECTION_LEVEL_UNIT_CODE	Populate with "mg/L" if field 24 = "Y."	Text	10
28	B_CONCENTRATION	Populate with concentration if field 24 = "N"	Number	Double
29	B_CONCENTRATION_UNIT_CODE	Populate with concentration units (mg/L) if field 24 = "N"	Text	9
30	B_REPORTED_MEASURE	N/A		
31	B_REPORTED_MEASURE_COUNT _ERROR	N/A		
32	B_COMMENT	Comment specific to result	Text	254
33	B_STATE_SAMPLE_NUMBER	N/A		

EDD Resubmittals

After laboratories submit lead and copper data, the TCEQ validates the results as described in the Programmatic QAPP document. If fields are incorrect or missing, the TCEQ rejects the data and may request that it be corrected and resubmitted.

When reporting errors occur and data is resubmitted, the laboratory includes an email making it clear that they are resubmitting updated data. The email should state why the data is being resubmitted and identify the PWS ID numbers.

In addition, the laboratory must rename the EDD file to reflect that data was amended (e.g., LABNAME_LCR_19MAR2022revised). It is important that the original submission date in the naming convention be preserved. In addition, laboratories must not change the [B_STATE_NOTIFY_DATE]. This reflects when data was originally reported to the TCEQ. Changing this date can result in monitoring and reporting violations for PWS.

E1.3 Sample and Result Rejections

The laboratory is responsible for the rejection of samples and invalidation of results that do not meet requirements according to this Addendum. Invalidation of results must be conducted in coordination and with approval from TCEQ, see Section A9.2. All sample and result rejections must be reported to the TCEQ if a sample has been delivered to the laboratory.

Table 4 lists codes and descriptions for rejecting samples. The rejection "description" dictates whether it is reported in the Sample file or the Result file.

For example, samples must be preserved within 14 days of collection. If a sample is delivered after that time period, the lab rejects the sample and requests a replacement. The laboratory reports the sample rejection in the Sample file, but with no results. The

laboratory reports the rejection code "EH" for "exceeds holding time" on Field 22 of the Sample Table. When the replacement sample is resubmitted Field 24 and 25 of the Sample table will be completed with the original sample number and the original collection date. This will "tie" the original sample to the replacement and ensure that the PWS gets proper monitoring credit.

Table 4. Rejection Codes and Description

Code	Name	Use
BR	Broken container	Cracked or broken sample container.
EH	Exceeds hold time	When the sample has exceeded the hold time (see B3.3.4 Sample Holding Time).
EV	Excessive sample volume	When the sample volume is too high and does not allow for homogenous mixing through shaking.
FZ	Frozen container	Sample partially or completely frozen.
IC	Invalid container	Not laboratory-supplied.
ID	Invalid date/time	When sampling documentation dates and time are not accurate or don't match each other. See note below.
IN	Insufficient documentation	Missing information on LCRMF or the laboratory COC, as applicable. Include comment stating what was insufficient. See note below.
IP	Invalid sampling protocol	With approval from TCEQ.
LA	Lab accident	When a sample cannot be analyzed due to a lab accident.
LE	Lab error	Error in analysis.
LT	Leaked in transit	Unsealed container or evidence of leakage.
NR	No sample received	When the sample container is not present during relinquishment but is documented on the LCRMF.
PR	Improperly preserved	When samples are preserved prior to laboratory receipt or improper thermal preservation occurred (see B4.2 Sample Preservation).
QC	QA/QC issue	When a QA/QC process failure occurs during the processing or analysis of the sample.
RL	Reporting limit not met	When a preparation batch experiences an MRL verification failure.
VO	Insufficient sample volume	When the sample volume does not meet the one-liter requirement.

Note: When data is rejected for circumstances that do not allow for reporting of EDDs, such as invalid dates, the laboratory should notify TCEQ for guidance on reporting the data.

E1.4 Submission of LCRMF and Analytical Test Reports

The TCEQ retains all analytical data and associated information in its central records for a period defined by federal and state records retention regulations. Therefore, all laboratories are required to submit the following data and information electronically, as PDFs, at least once a month.

- Completed LCRMFs
- Completed Laboratory COCs (if applicable)
- Analytical test reports given to the PWS

Laboratories must package the records listed above according to each PWS to facilitate compliance with record retention requirements (e.g., one LCRMF, one Lab COC (if applicable), and one analytical report per package). Please note that when the documents are packaged the LCRMF, the associated laboratory COC (if applicable), and the analytical test report must be included.

When the PDFs are transmitted to the TCEQ, the analytical test report shall be transmitted to the PWS within the same timeframe to help ensure that the TCEQ and the PWS have the same information.

Data Package Naming Convention

The TCEQ requires the following information to successfully code documents which are submitted to the TCEQ Central File Room.

- Series Code: PWS
- Primary ID: County Code (3 digits) and Identification (4 digits) (This is the 7-digit PWS ID)
- Document Type: AC
- Document Date: YYYYMMDD (Earliest Collection Date)
- Document Name: LCR Analysis Report

Example 1: Electronic file name of the PDF

PWS_1010014_AC_20150928_LCR Analysis Report.PDF

Note: There must be a space between "LCR" and "Analysis" and "Report" in the file name.

Example 2: Printed on the top right corner of the first page of data package

PWS_1010014_AC_20150928_LCR Analysis Report

All PDFs shall be emailed to the TCEQ's dedicated email at lcrdata@tceq.texas.gov.

If the laboratory does not have PDF scanning capabilities, the laboratory must send hardcopy data reports and associated information to the following postal address. These documents shall be coded following example 2 above. Laboratories should notify the LCMT before mailing data and information via the postal service.

Texas Commission on Environmental Quality
Attn: Lead and Copper Program
MC 155
PO Box 13087
Austin, TX 78711-3087

Analytical Test Reports

Test reports from the laboratory must document the test results clearly and accurately. Test reports shall include the information necessary for the interpretation and validation of data by the TCEQ and the PWS. At the very minimum, lead and copper analytical test reports shall include the following even if the laboratory is reporting within its own organization.

- Laboratory name, address, Laboratory ID number, and phone number
- PWS name, address, PWS ID number
- Sample point name, address, and sample point ID number
- Report date
- Laboratory Sample ID
- Date and time of sample collection
- Date and time of sample receipt
- Results with units, dilution factors (if applicable), and relevant data flags
- Numerical results for the MRL and MDL
- Date and time of sample preparation and analysis, and initials of technicians or analysts who performed the work
- Identification of the analytical methods used
- Indication that the result was generated by an accredited laboratory
- Quality control sample results, including concentrations, units, recoveries and acceptance criteria for:
    - MRL check samples (include spike concentration, result, % recovery, and % recovery limits)
    - LFBs (include spike concentration, result, % recovery, and % recovery limits)
    - LFMs (include original result, spike concentration, result, % recovery, and % recovery limits)
    - Blanks (include result and reporting limit)
    - Laboratory duplicates (include RPD and maximum RPD)
- Data comments or case narrative, including information regarding deviations from methods or requirements
    - Data qualifiers with definitions
    - Definitions of any abbreviations or codes
- Page numbers
- Name, function, date, and signature (or electronic equivalent) of person authorized to approve report
- Statement that the report (or portions of the report) cannot be duplicated, except in whole