Guidance for the Analysis and Reporting

of

Water Quality Parameters
Under the Lead and Copper Rule

Addendum #3

(Revision 1)

to the

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

(Revision 12 – QTRAK #16-449)

Effective Date:

12/20/2017

List of Acronyms

Acronym	Definition
CA	corrective action
CFR	Code of Federal Regulations
COC	chain of custody
DQO	data quality objective
EDD	electronic data deliverable
EPA	Environmental Protection Agency
ID	identification
L	liter
LCR	Lead and Copper Rule
MB	method blank
MCLADW	Manual for the Cerification of Laboratories Analyzing Drinking Water, 5th Ed.(EPA)
MDL	method detection limit
mg/L	milligrams per liter
mL	milliliter
MRL	method reporting limit
NTU	nephelometric turbidity unit
PDF	portable document format
PWS	public water system
PWSS	Public Water System Supervision
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
SDWA	Safe Drinking Water Act
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
WQP	water quality parameter
WQPMF	water quality parameter monitoring form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202 - 2733

December 20, 2017

Ms. Sharon Coleman
Quality Assurance Manager
TX Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Dear Ms. Coleman:

I am pleased to inform you that EPA Region 6 has reviewed and approved the TCEQ QAPP for the Public Water Supply Supervision Program (QTRAK#16-449). This approval is the first annual review of this three-year QAPP, effective period being 11/04/2016 through 11/04/2019 and therefore for the second year of its usage. The next review and approval would occur in SFY 2019 and therefore around this time next year.

EPA Region 6 was pleased to read that the updates included revisions covering Lead and Copper Rule water quality parameters and that TCEQ also made changes in response to feedback received from laboratories even though they were minor amendments.

Thank you for your commitment to QA/QC measures for water quality monitoring that are to be undertaken to ensure and that the drinking water in Texas is as safe as sustainably possible for public consumption. If you have any questions, I can be reached at balli.javier@epa.gov or (214) 665-7261.

Sincerely,

Javier M. Ballí
DWSRF Coordinator and Project Officer

Enclosure.

Annual Review Certification
of the Quality Assurance Project Plan for the
Public Water Supply Supervision Program (PWSSP)
Relating to the Safe Drinking Water Act
of the Texas Commission on Environmental Quality

QTRAK #16-449

Original QAPP Effective Period: 11/04/2016 – 11/04/2019

Year – 2 of 3

Signatures below document certification of the annual review of the PWSSP QAPP by the TCEQ Quality Assurance Specialist. The original QAPP was approved by the Environmental Protection Agency on November 4, 2016. This is the first annual review.

The TCEQ Quality Assurance Specialist has verified that the original QAPP accurately reflects current project requirements. Revisions to Addenda 2, 3 and 4 that were approved in the last year are provided in attachments to this certification. The QAPP is currently approved until November 4, 2019.

The next revision (13) of the PWSSP QAPP will be submitted to EPA in 2019. Amendments that are necessary in the interim will be approved before their provisions are implemented.

10/10/17
Gary Regner, QA Specialist Date
Water Supply Division, TCEQ

10/10/2017
Gary Chauvin, Program Manager Date
PWSSP, TCEQ

10/10/17
Matthew Dodge, Grant Manager Date
Water Supply Division, TCEQ

10/10/17
Cari-Michel La Caille, Director Date
Water Supply Division, TCEQ

Enclosures: QAPP Revisions – Addenda 2, 3, and 4

Approval Page – PWSS Program QAPP, Addendum #3

The following TCEQ individuals listed on this page are signatories to this document because they are responsible for TCEQ oversight and quality-assurance (QA) of the work described.

Gary Regner, PWSS Program QA Manager

Texas Commission on Environmental Quality /Office of Water /Water Supply Division

Signature: _____ Date: 10/10/17

Gary Chauvin, Manager

Texas Commission on Environmental Quality /Office of Water /Water Supply Division/Drinking Water Standards Section/

Signature: _____ Date: 10/10/2017

Jessica Hoch, Team Leader

Texas Commission on Environmental Quality /Office of Water /Water Supply Division/Drinking Water Standards Section/Drinking Water Assessment Team

Signature: _____ Date: 10/10/2017

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Purpose

Water Quality Parameter (WQP) monitoring is a component of the Lead and Copper Rule required by federal regulations (40 Code of Federal Regulations (CFR) Part 141 Subpart I) and state rules (30 Texas Administrative Code (TAC) §290.117). WQP results are used to determine the corrosivity of water, and if needed, to help public water systems (PWS) and the Texas Commission on Environmental Quality (TCEQ) determine the type of corrosion control that the system should implement. For most systems that require treatment, corrosion control is the primary mechanism for reducing lead and copper levels.

All new systems, all large water systems (>50,000 population), and any size system that exceeds a lead or copper action level are required to perform initial and/or routine WQP monitoring required under 30 TAC §290.117(e). There may be additional reasons whereby a system is required to collect WQP samples. For example, systems must notify the TCEQ if there is a change in treatment or source water. In these cases, the TCEQ may require additional monitoring to ensure corrosion control is maintained.

The TCEQ sends letters to PWSs notifying them of upcoming WQP monitoring requirements and PWS WQP monitoring schedules are created in the Safe Drinking Water Information System (SDWIS). This document specifies the laboratory requirements related to initial and routine WQP monitoring including, but not limited to sample handling, analysis, quality control, data validation, and reporting.

The requirements specified in this document are consistent with state rules pertaining to the regulation of lead and copper. This document is included as part of the TCEQ PWSS Program's QAPP which is reviewed and approved by the EPA. The TCEQ may refuse to accept data and analyses from laboratories that do not comply with the conditions in this document in order to maintain compliance with programmatic requirements and specifications.

WQP monitoring under this project includes the parameters and analyte codes listed below. This entire list, as specified in 30 TAC §290.117(e)(2) went into effect in state rule, on March 30, 2017.

- total alkalinity (1927)
- calcium (1919)
- conductivity (1064)
- pH (field measured) (1925)
- temperature (field measured) (1996)
- chloride (1017)
- total hardness (1915)
- iron (1028)
- manganese (1032)
- sodium (1052)
- sulfate (1055)

- total dissolved solids (TDS) dried at 180° C (1930)
- silica - if a corrosion inhibitor containing silica is used (1049)
- orthophosphate - if a corrosion inhibitor containing phosphate is used (1044)

In addition to initial and routine WQPs, this document can be used to guide the analysis and reporting of WQPs after the implementation of corrosion control treatment; after the designation of optimal water quality ranges; and after the requirement for WQP monitoring is reduced. The TCEQ will notify the PWSs (who will inform the laboratories) when this monitoring is required and outline what analytes are required, from where, and at what frequency.

The current version of this document is located on the TCEQ web page at <https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html>. For information on WQP monitoring, refer to this web page. For specific questions about this Addendum to the QAPP, contact the TCEQ at (512) 239-4691 and ask for the PWSS Program QA Manager.

***Note**: This document does not supersede additional requirements which apply to environmental laboratories. Requirements for training, supplies, equipment maintenance, internal audits, etc. are addressed in laboratory quality manuals (including the Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition) and standard operating procedures, and are reviewed by the TCEQ as part of the laboratory accreditation process.*

Data Quality Objectives and Criteria

The data quality objectives (DQOs) described below apply to all laboratories using this guidance document. They ensure that the type and quality of the analytical data generated meet the goals of the Safe Drinking Water Act (SDWA) and support defensible compliance decisions and actions by the TCEQ.

Sensitivity

Sensitivity refers to the ability of an instrument or method to discriminate between different levels of an analyte by producing a different response. Sensitivity requirements specific to the analysis of WQPs include the method detection limit (MDL) and the method reporting limit (MRL). MDLs and MRLs are defined in this document in the Section–*WQP Sample Analysis*.

Bias

Bias refers to the systematic distortion of a measurement which makes it different from the true value. A measurement is considered unbiased when the value reported does not differ from the true value. Bias is controlled by the use of blanks, proficiency testing samples, calibration standards, quality control samples, etc. To control for bias, WQP monitoring includes acceptance criteria and corrective actions for specific quality control samples listed in the approved analytical methods and implemented by the laboratory. Results are compared against defined criteria and used during the evaluation of analytical performance.

Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. It is a measure of agreement among replicate measurements and is an indication of random error. Precision is controlled by the use of split and duplicate samples. To control precision, WQP monitoring includes acceptance criteria and corrective actions for specific quality control samples listed in the approved analytical methods and implemented by the laboratory. Results are compared against defined criteria and used during the evaluation of analytical performance.

Representativeness

Representativeness refers to the degree to which the data accurately represent the frequency distribution of a specific variable in the population. Sample site selection, the appropriate sampling protocols, adherence to the monitoring plan, and use of approved analytical methods as defined in this document and all referenced documents ensure that the measurement data represents the conditions at the sampling site.

Comparability

Comparability refers to the degree in which methods or data sets are considered to be similar. Confidence in the comparability of data sets for drinking water compliance is based on approved sampling and analysis methods and quality assurance protocols in accordance with requirements described in this document and all referenced documents. Comparability is also guaranteed by standard reporting protocols as described in this document.

Completeness

The completeness of the data refers to the relationship of how much of the data are available for use compared to the total potential data. To determine compliance, 99.9% of samples must be collected and analyzed as enforcement may be necessary when results are not reported. Results may not be reported when a sample is not collected or there are sample or data loss due to insufficient sample volume, broken or lost samples, laboratory issues, etc. As described in this document, the processes in place for these situations require these occurrences be reported to the PWS and/or the TCEQ so replacement samples can be recollected as soon as possible. See Section – *Sample and Result Rejection*.

Data Integrity

Data collected and reported to the TCEQ are managed in such a way to ensure the confidentiality, integrity, and availability of data and information. Data management policies and procedures ensure data and information are recoverable and only used for their intended purposes.

Compliance

The requirements associated with this guidance document are consistent with state rules and federal regulations pursuant to the SDWA. Adherence to this document will ensure data are collected, analyzed, and reported according to statute.

Sample Handling and Custody

Sample Collection

Sample collection instructions are included in the TCEQ document *Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection* located on the TCEQ website at <https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html>. The PWS is responsible for collecting WQP samples at entry points to the distribution system, and at representative sampling locations throughout the distribution system.

Water Quality Parameter Monitoring Form 20679

PWS samplers/operators are required to complete and submit a WQP Monitoring Form (WQPMF) with their samples. The TCEQ WQPMF 20679 and instructions are located on the TCEQ web page at <https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html>.

The TCEQ WQPMF may replace the laboratory's COC Form at the laboratory's discretion, to avoid multiple forms. In this case, the receipt and relinquish information at the bottom of the form must be completed. If a laboratory utilizes a separate COC, they must submit both documents at the time of reporting as described in the Section-*Reporting Data to the TCEQ*.

Temperature and pH must be measured and recorded in the field, as soon as possible, but within 15 minutes of sample collection. When samples are delivered to the laboratory, pH and temperature results for each sample must be included on the WQPMF. The *Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection* includes the procedures used by field personnel to measure pH and temperature.

Requirements for Laboratory-designed WQP Monitoring Forms

The TCEQ designed its WQPMF 20679 specifically to meet federal and state reporting and quality control requirements specific to the SDWA. It captures certain information (especially related to sampling) that laboratories might not routinely include on their own COC forms. Laboratories have asked the TCEQ, on numerous occasions to add and/or omit information from their forms. If laboratories want additional information added to the WQPMF, they can modify their own (rather than use the TCEQ WQPMF 20679), and provide them to sampling personnel with their sampling containers. Laboratory-designed forms must capture the mandatory information defined below related to both the PWS and the laboratory. Laboratory forms must resemble the TCEQ form (to aid the TCEQ in manual data entry and data validation) and be approved by the TCEQ ***prior to use***.

The TCEQ can provide laboratories with the Microsoft Excel version of the TCEQ form to use as a template. Laboratory-designed forms are not official TCEQ forms; therefore, laboratories must remove the TCEQ form number from their own forms. Laboratories should direct requests and questions about modifying forms to the PWSS Program QA Manager.

PWS Information

- PWS name, PWS ID number, PWS Address, PWS (or agent) contact name and phone number
- Community or NTNC indicator
- Population indicator <50,000 or ≥50,000
- Sample type indicator – initial, routine, or other
- Sample type indicator – compliance or non-compliance
- Inhibitor or stabilizer indicator (orthophosphate, silica, calcium carbonate)
- Sampling Information
  - Question – Are temperature and pH included on the sampling entity's laboratory approval form on file at the TCEQ? Y or N
  - Question – Were pH and temperature measured in the field upon sample collection (i.e., within 15 minutes of sample collection)? Y or N
  - Sampling acknowledgement statement and name/signature/organization/date/time of authorized PWS official
- Individual Sample Information including:
  - source ID Number
  - sample location
  - collection date (MMDDYY)
  - collection time (24 hour – HHMM)
  - sample pH
  - sample temp (°C)
  - replacement indicator
  - Original sample ID Number (for previously rejected samples)
  - Original sample collection date (for previously rejected samples)
- Relinquish by signature lines

Laboratory Information

- Laboratory name and address
- TCEQ Laboratory ID number (See note below)
- Laboratory contact name and contact phone number
- Laboratory sample ID for each sample
- Parameters requested for each sample
- Sample condition records (e.g. check boxes) to document:
  - sample collected in appropriate containers, unpreserved, iced or ambient
  - actual/corrected sample temperature
  - thermometer ID number
- Laboratory comments/Rejection Code (if applicable)
- Received by signature lines

Note: *The TCEQ Laboratory ID Number is a laboratory specific, ten-digit number associated with the SDWIS. It is usually, but not always, the same as the NELAP Accreditation Certificate Number, minus the last 4 digits. Email addresses are not included on TCEQ forms for privacy reasons.*

Sample Labels

The sample label information is completed by PWS personnel at the time of collection. Laboratories may provide sample labels with their containers.

Alternatively, PWS personnel may supply their own labels, or write the sample label information directly on the bottle. These alternatives are all acceptable as long as the required information is included on the bottle or label as follows:

- PWS Identification (ID) Number
- Date and time sample was collected
- Sampler's initials
- Address/location where the sample was collected.

The sample label information must be recorded legibly by PWS personnel with indelible ink. The PWS is responsible for filling out the sample label information and laboratories should not fill out the labels ahead of time for the PWS.

Sample Handling–Containers, Preservation, Holding Time

Table 1 summarizes the requirements for containers and holding times. Further detail is provided below.

Sample Containers

Samples are collected in laboratory-grade plastic containers provided by the laboratory. A volume of water sufficient for the laboratory to conduct analysis of all necessary parameters is required. This may require more than one container for each sample site. Containers must be provided by the laboratory without preservative. Containers must be free from the analytes of interest. This can be achieved by using pre-certified containers or those that are lot tested by the laboratory.

Two sample containers may be used for each sample site. Analysis of total hardness and metals (calcium, iron, manganese, and sodium) requires preservation (acidification) at the time of laboratory receipt. Analysis of non-metals (total alkalinity, chloride, conductivity, sulfate, total dissolved solids, and orthophosphate or silica (depending on the inhibitor used) does not require preservation. When collecting two containers, together they count as one sample.

Note: *The laboratory may provide a single sample container of sufficient volume for all analyses. The laboratory will then split the sample in-house, preserving a portion of the sample for metals analysis.*

Sample Preservation

Samples for the analysis of calcium, iron, manganese, sodium, and hardness are preserved with acid upon receipt at the laboratory.

Note: *To avoid the hazards of strong acids in the field, transport restrictions, and possible contamination, samples must be returned to the laboratory as soon as possible after collection and acid-preserved by laboratory personnel within 14 days of sample collection (14 24-hour periods).*

For most waters, 0.15% nitric acid ($HNO_{3)}$ will result in a pH <2. Therefore, a 500 mL sample can be automatically preserved in lab with 1.5 mL (with adjustments for other sample sizes) of 1+1 nitric acid. All standards must be made with the same acid concentration. In some extreme, high-alkalinity cases, more acid may be necessary.

Following acidification, the sample should be mixed, held for 16 hours, and then verified to be pH <2 just prior to withdrawing an aliquot for processing or "direct analysis." If the sample pH is verified to be >2, more acid must be added and the sample held for at least 16 hours until verified to be pH <2.

Samples for the analysis of alkalinity, chloride, conductivity, sulfate, TDS, silica, and orthophosphate must be delivered to the laboratory in coolers, on ice, and must comply with the temperature requirements specified in Table 1. Thermal preservation is considered acceptable if the arrival temperature ranges above the freezing temperature of water up to 6°C. Samples that are delivered to the laboratory on the same day as collection may not meet this requrement. In these cases, the samples are considered acceptable if the samples are received on ice. [MCLADW, Supplement 1 to 5th Ed., pg. 6]

Table 1. Sample Containers and Preservation

Parameters	Notes	Preservation
pH and temperature	Field measurements	NA
Calcium, iron, manganese, sodium, hardness	Laboratory grade plastic	Conc. HNO_3 to pH<2 in laboratory
Alkalinity, conductivity, sulfate, TDS, and orthophosphate (if applicable) or silica (if applicable)	Laboratory grade plastic	Cool, 4°C
Chloride	Laboratory grade plastic	None required

Sample Holding Time

Holding time refers to the maximum time that samples may be held after the sample is collected until analysis and still be considered valid. The regulatory holding times for the WQPs are as follows:

- calcium, iron, manganese, sodium, and hardness—6 months (after acid preservation)
- chloride, sulfate, conductivity—28 days
- alkalinity—14 days
- TDS—7 days

The regulatory holding times for corrosion inhibitors are as follows and apply to only PWSs using them for corrosion control.

- Silica - 28 days
- orthophosphate - 48 hours

Holding times cannot exceed those specified above. However, laboratories should be mindful of holding times relative to the end of each monitoring period. The two

monitoring periods end each year on June 30 and December 31. PWSs monitor quarterly during each six-month monitoring period. Federal and state rules require that all analytical results be received by the TCEQ 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 holding time may be limited. To avoid this situation, PWSs should collect samples as early as possible in the monitoring period. To help facilitate the TCEQ requirements for data processing, reporting, and maintaining PWS compliance, the TCEQ requests that samples be analyzed as soon as possible after receipt and no longer than 48-hours for orthophosphate and seven days for the rest of the WQPs.

Temperature and pH are measured in the field by the sample collector as soon as possible no longer than 15 minutes after sample collection.

Sample Receipt

Incorrect/InsufficientSample Documentation

It is extremely important for the laboratory to check the sample documentation (i.e., WQPMF and sample label) very carefully at the time of receipt because both incorrect and insufficient documentation may result in monitoring or reporting violations for the PWS. The laboratory can use some discretion assisting PWS sample delivery personnel with "fixing" errors in the documentation at the time of receipt in order to avoid the unnecessary recollection of samples. For example, if the PWS ID # is not filled in at the time of sample receipt, the laboratory can inform the PWS delivery person and he/she can add the information.

If documentation errors or omissions cannot be fixed, or are not fixed at the time of sample receipt, laboratories must reject samples, document the reason on the WQPMF, and request a replacement. Reasons for rejecting samples due to documentation errors correspond to rejection codes listed in Table 5. They include, but are not limited to:

- Insufficient information
  - Handwriting not legible
  - PWS side of form incomplete
  - WQPMF not included with samples at time of laboratory receipt
  - Not the current version of the WQPMF
  - Discrepancies between the completed WQPMF Form and sample label
- Missing PWS representative signature
- Invalid dates/times
- Missing dates/times

The laboratory custodian (or designee) cannot correct or complete the WQPMF. It is the responsibility of PWS personnel to fill out the form (and correct it, if necessary), sign, and date it. Also, under no circumstances can the laboratory modify the information on the form (including the type of sample; compliance or noncompliance) after it has been received, signed, and dated by the laboratory. If there is a question about modifying sample documentation after samples are received, the laboratory should contact the PWSS Program QA Manager for guidance.

Sample Issues

It is also very important for the laboratory custodian (or designee) to check the samples carefully at the time of receipt to determine if any need to be rejected outright. Reasons for rejecting samples outright at the time of sample receipt include, but may not be limited to the reasons listed below. These reasons also correspond to rejection codes listed in Table 5.

- Broken container
- Leaking container
- Invalid containers
- Insufficient sample volume
- Exceeded holding time
- Improperly preserved (e.g., samples requiring thermal preservation, not delivered to the laboratory in coolers on ice; or samples delivered to the laboratory already acid-preserved)
- Temperature or pH not measured in the field. (See Table 5. Use Rejection Code "IP" – "Invalid Sampling Protocol."

If a laboratory rejects a sample outright at the time of receipt, the custodian should document the reason on the WQPMF and request a replacement sample while the PWS personnel/courier is still on the premises.

WQP Sample Analysis

Analytical Method Approval/Accreditation

The laboratory must be either accredited or approved for the methods they use to analyze WQP parameters in accordance with 30 TAC §290(h)(4)(b) and Table 2 below. This approval requirement also applies to the field measurement of pH and temperature. Temperature and pH must be measured in the field using TCEQ allowable methods as specified in the *Public Water System Guidance for Water Quality Parameter Monitoring and Sample Collection.*

A PWS that collects WQP samples and measures pH and temperature in the field must complete and submit to TCEQ a Laboratory Approval form prior to collecting samples.

Information concerning laboratory approval is located on the TCEQ web page at <https://www.tceq.texas.gov/drinkingwater/monitoring_plans/monitoring_plans.html>. For specific questions about laboratory approval contact the TCEQ at (512) 239-4691 and ask for the Laboratory Approval Coordinator.

Information concerning laboratory accreditation is located on the TCEQ web page at <https://www.tceq.texas.gov/field/qa/env_lab_accreditation.html>. For specific questions, call 512-239-3754 or email labprgms@tceq.texas.gov.

Allowable Drinking Water Methods

All WQP samples must be analyzed using the methods included in Table 2. The methods in Table 2 are included in the EPA's list of *Approved Drinking Water Analytical Methods* on its web page at

<https://www.epa.gov/dwanalyticalmethods/approved-drinking-water-analytical-methods>

Table 2 is not inclusive of all the allowable methods on the EPA web site; it only includes those the TCEQ currently approves and/or accredits. A laboratory may want to use an analytical method listed on EPA's list that is not included in Table 2. If so, it should contact the PWSS Program QA Manager to discuss the process for adding the method to Table 2 in the future.

If a laboratory is accredited for a method which requires "approval" as indicated in Table 2 in the last column, then the accreditation substitutes for the TCEQ approval requirement. Accreditation must be ***under the drinking water matrix only***.

Note: *The method approval and accreditation requirements identified in Table 2 are reflective of both the original list of WQPs and the expanded list that became effective in state rule on March 30, 2017. The TCEQ decided not to expand their Laboratory Approval Program to include the expanded parameters, but rather to rely on the TCEQ's Laboratory Accreditation Program. Therefore, the original set of parameters (first seven parameters in Table 2) included in state rule prior to March 30, 2017 can be analyzed using TCEQ-approved methods (or accredited methods, if applicable). The expanded parameters (last seven parameters in Table 2) must be analyzed using TCEQ accredited methods.*

Table 2. Allowable Methods for WQP Sample Analysis[8,9]

Parameter	**Units** [EDD Units]	**EPA**	**ASTM[3]**	**SM[2]**	**Other**	**Approval/ Accreditation Requirement**
Temperature	°C [C]			2550		Approval
pH	pH units [PH]	150.1[7] 150.2[7] 150.3	D1293	4500-H B		Approval
Alkalinity-$CaCO_3$	mg/L [MG/L]		D1067 B	2320 B	I-1030-85[1]	Approval
Calcium-Ca	mg/L [MG/L]	200.5[4] 200.7[5]	D511 A D511 B D6919	3111 B 3120 B 3500-Ca B 3500-Ca D		Approval
Conductivity	umhos/cm [UMHO/CM]		D1125 A	2510 B		Approval
Ortho phosphate-P	mg/L [MG/L]	300.0[5] 300.1[6] 365.1[5]	D4327 A D6508	4110 B 4500-P E 4500-P F	I-1601-85[1] I-2598-85[1] I-2601-90[1] Thermo Fisher Discrete Analyzer[11]	Approval

Table 2. Allowable Methods for WQP Sample Analysis[8,9]

Parameter	Units [EDD Units]	EPA	ASTM[3]	SM[2]	Other	Approval/ Accreditation Requirement
Silica	mg/L [MG/L]	200.5[4] 200.7[5]	D859	3120 B 4500-Si D 4500-Si E 4500-Si F 4500-SiO_2 C 4500-SiO_2 D 4500-SiO_2 E 4500-SiO_2 F	I-1700-85[1] I-2700-85[1]	Approval
Chloride	mg/L [MG/L]	300.0[5]				Accreditation
Hardness-$CaCO_3$	mg/L [MG/L]			2340 C 2340 B[10]		Accreditation
Iron	mg/L [MG/L]	200.7[5]				Accreditation
Manganese	mg/L [MG/L]	200.7[5] 200.8[5]				Accreditation
Sodium	mg/L [MG/L]	200.5[4] 200.7[4]		3111B		Accreditation
Sulfate-SO4	mg/L [MG/L]	300.0[5]				Accreditation
TDS (dried at 180°C)	mg/L [MG/L]			2540 C		Accreditation

1. Methods for determination of Inorganic Substances in Water and Fluvial Sediments, USGS Series: Techniques of Water- Resources Investigations 05-A1<http://pubs.er.usgs.gov/>
2. Multiple editions of Standard Methods for the Examination of Water and Wastewater may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005. Refer to <https://www.epa.gov/dwanalyticalmethods>
3. Multiple editions of Annual Book of ASTM Standards, Volume 1 may be used. Refer to <https://www.epa.gov/dwanalyticalmethods>
4. Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry <http://www.epa.gov/nerlcwww/ordmeth.htm>
5. Methods for the Determination of Metals in Environmental Samples, Supplement 1<http://www.nemi.gov>
6. Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1 <https://www.epa.gov/dwanalyticalmethods>
7. Methods for Chemical Analysis of Water and Wastes <http://www.nemi.gov>
8. Analyses of alkalinity, calcium, conductivity,pH, ortho-phosphate, silica, sodium, and temperature must be conducted using methods listed in 40 CFR Part 141 or Appendix A to Subpart C of Part 141. Analyses of chloride, iron, manganese, sulfate, and total dissolved solids must be conducted using the methods list in 40 CFR Part 143 or Appendix A to Subpart C of Part 141. Note: The analysis of hardness is included in the expanded list of WQPs. The method reference for hardness is 40 CFR Part 136.
9. For the "direct analysis" of total recoverable metal analytes in drinking water samples containing turbidity of less than one nephelometric turbidity units (NTU), the laboratory must treat an unfiltered acid preserved sample aliquot using the sample preparation procedure described in the method while making allowance for sample dilution in the data calculation. For the determination of total recoverable analytes in aqueous samples where turbidity is greater than one NTU, sample digestion is required using the

procedure described in the method. Samples processed in this way and those "directly analyzed" are reported to the TCEQ using the same analyte codes as those not digested.

10. Hardness can also be calculated according to Standard Methods 2340 B. This requires TCEQ Laboratory Approval for calcium and TCEQ Laboratory Accreditation for magnesium.
11. Thermo Fisher. ''Thermo Fisher Scientific Drinking Water Orthophosphate Method for Thermo Scientific Gallery Discrete Analyzer,'' February 2016. Revision 5. Thermo Fisher Scientific, Ratastie 2, 01620 Vantaa, Finland.

Analytical Sensitivity

Analytical sensitivity refers to the ability of an analytical instrument and/or method to detect or analyze small quantities of analyte. This is numerically characterized by the determination of detection and reporting limits, and blanks. Aspects of sensitivity as they apply to the analysis of water quality parameters are described below.

Method Detection Limit

The Method Detection Limit (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 determined according to method requirements.

Minimum Reporting Limit

Minimum Reporting Limits (MRL) are equivalent to the lowest non-zero calibration standard in a multi-point calibration curve, as applicable. Per the TCEQ PWSS Program, laboratories must run a laboratory fortified blank every analysis day and not report WQP results at levels less than the level at which they routinely analyze their lowest calibration standard. 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 or near 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 MRL verifications before continuing, if results are out of control.

Method Blank

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 once per preparation batch. The MB is used to document contamination from the analytical process. Results of MB analyses must either be less than the MDL or be less than or equal to 1/10th of the concentration measured in the sample.

Reporting Data to the TCEQ

All laboratories must report WQP compliance results to the TCEQ as explained in the following sections. This includes (1) the forms and the analytical test reports, in

portable document format (PDF) for the TCEQ Central Records, and (2) the electronic data deliverable (EDD).

Submission of Completed WQPMFs and Analytical Test Reports to the TCEQ

The TCEQ retains all analytical data and associated information in its central records for a period of time according to 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 WQPMFs
- Completed Laboratory COCs (if applicable)
- Analytical test reports given to the PWS.

To help facilitate the management of TCEQ records, laboratories must package data and information according to one PWS sample submittal (i.e., all the sample results corresponding to a single WQPMF). When the documents are scanned, the WQPMF should be on top of the associated laboratory COC (if applicable) and the analytical test report.

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

- Series Code: PWS
- Primary ID: County Code # and Identification #: 7 digits 3+4 (PWS ID #)
- Document Type: AC
- Document Date: YYYYMMDD (Collection Date)
- Document Name: WQP Analysis Report

Example 1:

PWS_1010014_AC_20150928_WQP Analysis Report (printed on the top right corner of the WQPCOC before scanning)

Example 2:

PWS_1010014_AC_20150928_WQP Analysis Report.PDF (electronic file name of the PDF)

Note that there must be a space between "WQP" and "Analysis" and "Report."

All PDFs should be emailed to the TCEQ's dedicated mail box at <lcrdata@tceq.texas.gov>.

In the event that the laboratory does not have PDF scanning capabilities, the laboratory should send hardcopy data reports and associated information to the following postal address. Laboratories should coordinate with the TCEQ Lead and Copper Rule Program before mailing data and information via the postal service.

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

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

Analytical Test Reports

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

- Laboratory name, address, TCEQ Laboratory ID number, and phone number
- PWS name, address, PWS ID number, and phone number
- Sample point address, and sample point ID number
- Report date
- Labortory Sample ID
- Date and time of sample collection
- Date and time of sample receipt
- Analytical results with units, dilution factors (if applicable), and relevant data flags. (Results of pH and temperature are not required on the laboratory analytical test report. These results are reported to the TCEQ on the WQPCOC and in the field measurement portion of the EDD.)
- 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 whether the result was generated by an accredited or approved method
- Quality control results
- Data comments or case narrative, including information regarding deviations from methods or requirements
- 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

An analytical test report form is provided as Exhibit 1 of this document, as an example. The current version of this form is located on the TCEQ web site at: <https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper/lead-copper.html >. This form incorporates the required analytical test report information as identified above. It is provided as a tool only and is not required for reporting WQP results to the TCEQ.

Electronic Data Deliverable (EDD)

The EDD must be in a format compatible with SDWIS requirements. Data must be submitted electronically in a TCEQ-approved format (typically MS ACCESS) using two separate files – a Sample file and a Result file. The Sample and Result files should be submitted together to the TCEQ at least weekly.

The field structures and requirements for each file are included in this addendum. The TCEQ can provide the laboratory with a "test" database if requested.

Laboratories should validate analyte codes, units, methods, and sampler names against SDWIS prior to submission. If fields are incorrect or missing, the TCEQ will reject the files.

All fields must be included in the respective tables in the order listed even if a particular field is not used.

Pass-through laboratories should be noted in [B_SAMPLE_COMMENTS] in the sample file.

Electronic File Naming Convention

Electronic data deliverables (EDD) should be submitted to the TCEQ with the following file naming convention.

Lab Name_WQP_date of submittal.

An example of this naming convention's use is as follows:
LCRLAB_WQP_19MAR2017

Sample Table

The sample table file structure contains information about the sample, including collection date and time, the collector, laboratory, sample point IDs, and the corresponding addresses where the WQP samples were taken. The sample table file structure is outlined in Table 3. 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, as designated in field descriptions. Those fields marked as "N/A" should be left blank. The laboratory must report the field measurement results of pH and temperature in this table.

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

Table 3. Sample Table File Structure

#	Field Name	Description	Data Type	Field Size
1	FILE_NAME	Default to “sample”	Text	6
2	B_RECORD_ID	Auto number, unique	AutoNumber	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/approved by TCEQ, “Federal” if certified by EPA	Text	7
8	B_LABORATORY_CERTIFICATION_ID	Laboratory Certification ID Number	Text	10
9	B_WSF_STATE_ASGN_ID	Examples: DS01= Samples taken in distribution system PBCU001, PBCU002, etc. = samples taken at entry points	Text	12
10	B_SAMPLING_POINT	Examples: “EWQP” = entry point “DSTWQP” = distribution system	Text	12
11	B_SAMPLING_LOCATION	Address of sample point	Text	40
12	B_SAMPLE_CATEGORY	“GE” = General; default for water quality parameters	Text	2
13	B_COMPLIANCE_INDICATOR	“Y” for yes	Text	1
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 HHMM	Text	4
16	B_SAMPLE_TYPE	“RT” = routine for WQPs	Text	2
17	B_REPEAT_LOCATION	N/A		
18	B_LAB_RECEIPT_DATE	The date the lab received the samples as text MMDDYYYY	Text	8
19	B_COLLECTOR_NAME	Sample collector name	Text	40
20	B_SAMPLE_VOLUME	N/A		
21	B_LEAD_COPPER_SAMPLE_TYPE	N/A		
22	B_SAMPLE_REJECTION_REASON	Rejection Code if applicable=see list of rejection codes.	Text	2
23	B_COLLECTION_METHOD_CODE	N/A		

Table 3. Sample Table File Structure

#	Field Name	Description	Data Type	Field Size
24	B_ORIGINAL_LAB_SAMPLE_NUMBER	Populate with original laboratory sample ID number if sample is a replacement for a previously rejected sample	Text	11
25	B_ORIGINAL_COLLECTION_DATE	Populate with original collection date if sample is a replacement for a previously rejected sample	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	Populate with *field measured* temperature in °C, whole numbers	Number	2
31	B_TEMPERATURE_UNIT_MEASURE	"C"	Text	1
32	B_TURBIDITY_MEASURE	N/A		
33	B_PH_MEASURE	Populate with *field measured* pH	Number	Double
34	B_FLOW_RATE	N/A		
35	B_SAMPLE_PURPOSE	N/A		
36	B_STATE_CLASSIFICATION_CODE	"WQP"	Text	3
37	B_ORIGINAL_LABORATORY_CERTIFYING_AGENCY	"State" if accredited by TCEQ or approved by the TCEQ,"Federal" if certified by EPA (if replacing a previously rejected sample)	Text	7
38	B_ORIGINAL_LABORATORY_CERTIFICATION_ID	TCEQ Laboratory Certification ID Number (if replacing a previously rejected sample)	Text	10
39	B_SAMPLE_COMMENTS	Comments related to the entire sample.	Text	255
40	B_COLLECTION_ADDRESS	Address of sample point. This is a repeat Line 11 - B_SAMPLING_LOCATION	Text	200

Result Table

The Result table contains the individual analyte results. The result table file structure is outlined in Table 4. There may be multiple records depending on how many constituents were analyzed in the particular water sample. A result record should only be created if a result is available. If an entire sample is rejected and not analyzed, no result records should be reported with the sample record.

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 collected as designated in field descriptions. Those fields marked as "N/A" should be left blank.

Table 4. Result Table File Structure

#	Field Name	Description	Data Type	Field Size
1	B_FILE_NAME	Default to “result”	Text	6
2	B_RECORD_ID	Auto-number, unique	Auto	7
3	B_LAB_SAMPLE_NUM	Laboratory sample ID number, unique	Text	20
4	B_COLLECTION_DATE	Collection date as text MMDDYYYY	Text	8
5	B_PWS_NUMBER	PWS ID number, precede number with “TX”	Text	9
6	B_LABORATORY_CERTIFYING_AGENCY	“State” if accredited by TCEQ or approved by the TCEQ, “Federal” if accredited by EPA	Text	7
7	B_LABORATORY_CERTICATION_ID	TCEQ Laboratory ID Number, check with TCEQ for laboratory unique number	Text	10
8	B_ANALYTE_CODE	alkalinity (1927), calcium (1919), chloride (1017), conductivity (1064), hardness (1915), iron (1028), manganese (1032), sodium (1052), sulfate (1055), TDS (1930), orthophosphate (1044), silica (1049)	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 is reported to TCEQ as text in the following format: MMDDYYYY. If the data is rejected and returned for correction, use the current date when re- submitting.	Text	8
14	B_WATER_SYSTEM_NOTIFY_DATE	Date data is reported to the PWS as text in the following format - MMDDYYYY	Text	8
15	B_DATA_QUALITY	Default to “A”	Text	1
16	B_DATA_QUALITY_REASON	N/A		
17	B_ANALYSIS_METHOD_CODE	Analysis method code-see WQP Allowable Methods	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_INDICATO	N/A		
21	B_COUNT	N/A		

Table 4. Result Table File Structure

#	Field Name	Description	Data Type	Field Size
22	B_COUNT_TYPE	N/A		
23	B_COUNT_UNITS	N/A		
24	B_LESS_THAN_INDICATOR	If < MRL, mark field "Y", if not mark "N"	Text	1
25	B_LESS_THAN_CODE	Populate with "MRL" if field 24="Y"	Text	4
26	B_DETECTION_LEVEL	Populate with lab MRL if field 24="Y"	Number	Double
27	B_DETECTION_LEVEL_UNIT_CODE	Populate with units if field 24 ="Y" [C, MG/L, PH, or UHMO/CM]	Text	10
28	B_CONCENTRATION	Populate with concentration if field 24="N"	Number	Double
29	B_CONCENTRATION_UNIT_CODE	Populate with concentration units if field 24 ="N" [C, MG/L, PH, or UHMO/CM]	Text	9
30	B_REPORTED_MEASURE	N/A		
31	B_REPORTED_MEASURE_COUNT_ER	N/A		
32	B_COMMENT	Comment specific to result	Text	254
33	B_STATE_SAMPLE_NUMBER	N/A		

Sample and Result Rejection

Laboratories may reject samples or results in coordination with the TCEQ and the PWS. If a sample is delivered to the laboratory and rejected, the rejected sample occurrence must be reported to the TCEQ electronically. See example below. The table below lists description codes for rejecting both samples and results. The rejection "description" will dictate whether the rejection is reported on the SAMPLE table or the RESULT table.

Example – The PWS delivers a sample to the laboratory in excess of the holding times described in this document. The lab will reject the sample and request a replacement. The sample rejection occurrence will be reported to the TCEQ in an EDD with just the sample table completed with no results. The rejection code "EH" for "Exceeded Hold Time" will be used. When the sample is resubmitted, Lines 24 and 25 of the sample table will be completed with the original laboratory ID number and the original collection date, which is included in the WQPMF 20679. This will "tie" the original sample to the replacement. The rejection codes and descriptions are listed in Table 5.

Table 5. Sample Rejection Codes and Descriptions

CODE	DESCRIPTION
BR	Sample Broken In Transit
BP	Invalid Sample Point
EH	Exceeded Hold Time
FZ	Sample Frozen
IC	Invalid Container
ID	Invalid Date/Time
IN	Insufficient Sample Information

Table 5. Sample Rejection Codes and Descriptions

CODE	DESCRIPTION
IP	Invalid Sampling Protocol
LA	Lab Accident
LE	Lab Error / Lab QC Failure
LT	Leaked in Transit
MF	Submission Form and Chain of Custody Do Not Match
MP	Missing pH
ND	No Date/Time
NS	No Sampler Signature
PR	Improperly Preserved
PS	No PWS Representative Signature
SE	Shipping Error
TH	Temperature Too High
VO	Insufficient Volume

How to Report WQP Results to the TCEQ when Single Samples are Analyzed by Multiple Laboratories

WQPs samples are often analyzed by multiple laboratories (i.e. passed-through, subcontracted, etc.). In these cases, analytical results are reported to the TCEQ by the laboratory that performed the analysis, with the exception of pH and temperature. Field measurement results of pH and temperature are reported to the TCEQ by the initial receiving laboratory in the Sample table of EDD (but not in the analytical test report).

The process for transferring samples and reporting results from multiple laboratories is described in this section by way of the following example:

Example - Sampling personnel collect a sample and measure pH and temperature in the field. He/she (or a courier) takes the sample to an initial receiving (sometimes in-house) laboratory where parameters such as alkalinity and conductivity are analyzed. The remaining sample with the WQPMF,original and new, (see next paragraph) is then relinquished to a commercial laboratory to complete the required analyses.

To transfer a sample, the initial receiving laboratory should generate a new WQPMF. The laboratory should strike through the PWS portion of the new WQPMF form and write “Refer to original WQPMF.” The initial laboratory should give the second laboratory both a copy of the original WQPMF and the new WQPMF with the sample(s). The second laboratory will record its laboratory-specific information on the new WQPMF, including its TCEQ laboratory ID Number, its sample ID number(s), and check marks on the analyses it will run. The second laboratory will transfer both WQPMFs to the TCEQ with the PDF of the analytical test report package.

All aspects of this document apply to both laboratories, including sample receipt, custody transfer, sample rejection, approved methods , reporting, records maintenance, and corrective action. Each laboratory is responsible for submitting their own results to the the TCEQ including the:

- Completed WQPMFs (original and new)

- Laboratory COCs (if applicable)
- Analytical Test Report
- EDD – See Section – *Electronic Data Deliverale (EDD)*

Analytical Records Maintained by the Laboratory

The laboratory should maintain easily accessible records for five years. Adequate information should be available to allow an auditor to reconstruct the final results for compliance purposes. Changes in ownership, mergers, or closures of laboratories do not eliminate these requirements. The laboratory must notify the PWS before disposing of records which are less than five years old so they may request copies, if needed. This includes all raw data, calculations, and quality control information. If the laboratory changes its computer hardware or software, it should make provisions for transferring old data to be retrievable in the timeframe listed above.

Corrective Actions (CA)

Any person involved with work described in this document must initiate a CA if there is deviation from required protocols specified in it and/or referenced documents. The procedure for a CA following the identification of a deviation begins with an investigation to determine the root cause(s). The laboratory must select and implement the CAs that will eliminate the problem and prevent recurrence. Any CAs identified must be appropriate in degree to the magnitude and risk of the deviation. Laboratory QA Officers (or designees) are responsible for assuring that CAs are documented, reported, implemented, and tracked appropriately.

Deviations that require CA include, but are not limited to the following:

- Equipment failure
- Excursions from quality control limits
- Samples lost due to laboratory accidents
- Failure to meet acceptance limits when analyzing EPA Proficiency Test samples
- Holding time exceedances

Most CAs can be accomplished at the point of origin using an established procedure through some combination of the following: repair or replacement of faulty equipment; re-analysis of samples and standards; checking reagents for proper strength; etc. CA procedures/response actions are specified in laboratory SOPs that include required documentation, solutions, and follow-up.

Unique deviations/problems that cannot be corrected by the procedures listed above will require CAs to be defined when the need arises.

If laboratory deviations involve the following list, the laboratory QA Officer must notify the TCEQ by phone or e-mail within 48 hours, draft a CA report, and submit it to the PWSS Program QA Manager within 14 days of the incident detection.

- Calls into question the integrity of sample analysis results which have been

previously reported to the TCEQ

- Results in non-conformance with state or federal regulations
- Was associated with the intentional misrepresentation of data or information

CA Reports include the following components:

- Description of the problem - how it was identified and the date it was identified
- Root cause
- Description of the significance or consequences of the deviation– including sample ID number(s) affected
- CA(s) taken, including the timetable for implementation
- Actions implemented to prevent recurrence;
- Technicians/staff names (or job titles) involved
- Who prepared the report
- A review process with signatures and dates that includes a manager(s)

The TCEQ will review each CA report and respond within 30 days if (1) actions taken to resolve the deviation are unacceptable, or (2) the TCEQ needs more time to research the issue and make a determination. If CAs taken by a laboratory are unacceptable to the TCEQ, the TCEQ may not use sample results from the laboratory until such time that acceptable CA is achieved.

Corrected data must be submitted in a completely separate file from routinely submitted data. The laboratory must notify the TCEQ in advance in order to prevent duplication in the database of record.

Falsification and Fraud

Falsification of the WQPMF 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 WQPMF, 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.

Exhibit 1: Example WQP Analytical Test Report

WATER QUALITY PARAMETER ANALYTICAL TEST REPORT

Insert Lab Logo Here

Laboratory Name
Laboratory Address
Laboratory ID
Laboratory Phone

PWS Name			
PWS Number			
PWS Address			
PWS Phone			
	Sample Lab ID		
State ID	**Sample Type**		
Sample Point ID	**Sample Collection—**	**Date**	**Time**
Collection Address	**Sample Received—**	**Date**	**Time**

WATER QUALITY PARAMETER RESULTS

Parameters	Results						Prepared			Analyzed			Method	Accred (Y/N)
	Result	Units	DF	MRL	MDL	Q	Date	Time	By	Date	Time	By		
alkalinity		mg/L												
calcium as Ca		mg/L												
conductivity		S/m												
chloride		mg/L												
hardness		mg/L												
iron		mg/L												
manganese		mg/L												
o-phosphate-P		mg/L												
silica		mg/L												
sodium		mg/L												
sulfate		mg/L												
TDS		mg/L												

Comments

Report Definitions

DF	Dilution Factor
MRL	Minimum Reporting Limit
MDL	Method Detection Limit
Q	Data Qualifier or flag
Accred	Accreditation Status

Insert Lab Logo Here

Laboratory Name
Laboratory Address
Laboratory ID
Laboratory Phone

PWS Name	
PWS Number	
PWS Address	
PWS Phone	
	Sample Lab ID
State ID	**Sample Type**
Sample Point ID	**Sample Collection— Date** **Time**
Collection Address	**Sample Received— Date** **Time**

QUALITY CONTROL RESULTS

Analysis	MB		LCS				MRL Verification				MS				MSD			
	Result	Q	Result	% Rec	Limit	Q	Result	% Rec	Limit	Q	MS-Result	% Rec	Limit	Q	MSD-Result	%RPD	Limit	Q
alkalinity																		
calcium as Ca																		
conductivity																		
chloride																		
hardness																		
iron																		
manganese																		
o-phopsphate-P																		
silica																		
sodium																		
sulfate																		
TDS																		

Comments

Report Definitions	
MB	Method Blank
LCS	Lab Control Standard
MRL	Minimum Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference

Data Qualifiers	
S	Spike Recovery Outside
RPD	Outside Recovery Limits
B	Analyte Detected in Methoc
Q	Data Qualifier of flag

REPORT AUTHORIZATION

Name	Function	Signature or electronic equivalent	Date