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

(Revision 14)

Effective: November 10, 2022

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List of Acronyms

BSS	Business Support Section
CA	corrective action
CAP	corrective action plan
CFR	Code of Federal Regulations
CMDP	Compliance Monitoring Data Portal
CCEDS	Comprehensive Compliance and Enforcement Data System
CCI	comprehensive compliance investigation
CCR	consumer confidence report
CPE	comprehensive performance evaluation
CRF	change request form
CROMERR	Cross Media Electronic Reporting Rule
DBP	disinfection by-products
DBT	Districts Bond Team
DCRT	Districts Creation Review Team
DIR	Department of Information Resources
DLOOR	Disinfection Level Quarterly Operating Report
DOI	Data Quality Indicator
DS	Districts Section
DSHS	Department of State Health Services
DWAT	Drinking Water Assessment Team
DWIPT	Drinking Water Inventory and Protection Team
DWOT	Drinking Water Quality Team
DWSFS	Drinking Water Special Functions Section
DWSS	Drinking Water Standards Section
DWTRT	Drinking Water Technical Review Team
DWSG	Drinking Water Sampling Guide
F2	Environmental Electronic Reporting System
FAR	Enforcement Action Referral
FD	Enforcement Division
FPA	Environmental Protection Agency
FPRS	Emergency Preparedness and Response Section
FOSD	Field Operations Support Division
FST	Field Support Team
GUI	groundwater under the influence of surface water
IOC	inorganic chemicals
IAP	Laboratory Accreditation Program
LCMT	Lead and Copper Monitoring Team
LCR	Lead and Copper Rule
	Lower Colorado River Authority Environmental Laboratory Services
LOAS	Laboratory and Quality Assurance Section
I T2	Long Term 2 Enhanced Surface Water Treatment Rule
MCL	maximum contaminant level
MD	Monitoring Division
NELAP	National Environmental Laboratory Accreditation Program
NOV	notice of violation

NPDWR	National Primary Drinking Water Regulations
NSDWR	National Secondary Drinking Water Regulations
OCE	Office of Compliance and Enforcement
OCP	Operator Certification Program
ODS	Operational Data System
OLS	Occupational Licensing Section
OOW	Office of Waste
OW	Office of Water
PDW	public drinking water
PPG	Performance Partnership Grant
PRSD	Permitting and Registration Support Division
PRT	Plan Review Team
PTRS	Plan and Technical Review Section
PWS	public water system
PWSS	Public Water System Supervision
PWSSP	Public Water System Supervision Program
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
QMP	quality management plan
RAA	running annual average
RAD	radionuclides
RCDT	Response and Capacity Development Team
RG	Regulatory Guidance
RTCR	Revised Total Coliform Rule
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SOP	standard operating procedure
SPE	Special Performance Evaluation
STEERS	State of Texas Electronic Environmental Reporting System
SWAP	Source Water Assessment and Protection
SWMOR	Surface Water Monthly Operating Report
SWP	source water protection
SWSA	Source Water Susceptibility Assessment
SWTR	Surface Water Treatment Rule
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
ТОР	Texas Optimization Program
TROT	Technical Review and Oversight Team
WSD	Water Supply Division
WUD	Water Utilities Database

Introduction

This Programmatic QAPP documents how the TCEQ organizes, plans, implements, and assesses the environmental data operations of the Public Water Supply Supervision (PWSS) Program. It is prepared according to the EPA Requirements for QAPPs (EPA QA/R-5) and managed according to the provisions of the TCEQ Quality Management Plan (QMP). All individuals and groups who perform work related to the environmental data operations defined in this document or applicable addenda are bound by its requirements.

For ease of review and approval, and to facilitate revisions, the PWSS Program QAPP is organized in a modular approach utilizing addenda to organize individual operations of the PWSS Program that are subject to the requirement for a QAPP. These addenda are listed below, and described in Section A6.

- Addendum 1 Chemical Compliance Sample Collection, Analysis, and Data Reporting
- Addendum 2 Lead and Copper Sample Collection, Analysis, and Data Reporting under the LCR
- Addendum 3 Water Quality Parameter Sample Collection, Analysis, and Data Reporting under the LCR.
- Addendum 4 Microbial Compliance Sample Collection, Analysis, and Data Reporting under the RTCR and GWR
- Addendum 5 Comprehensive Compliance Investigations
- Addendum 6 Source Water Susceptibility Assessments
- Addendum 7 Review and Approval of Public Water System Engineering Plans
- Addendum 8 Texas Optimization Program
- Addendum 9 Acquisition of PWS Operation and Treatment Data
- Addendum 10 Special Investigation QAPP Template.

The PWSS Program QAPP is updated every three years and reviewed, amended, and certified annually to incorporate organizational, program, or project changes which were implemented during the prior year. The PWSS Program QAPP is effective upon EPA approval.

The current version of the PWSS Program QAPP is located on the TCEQ <u>Public Water</u> <u>System Supervision Program</u>¹ 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 this main document.

¹ www.tceq.texas.gov/goto/pwss

(A) Project Management

A1 Approval Page

A1.1 TCEQ /Office of Water (OW)/Water Supply Division (WSD)/ Public Water System Supervision (PWSS) Program

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A3 Distribution List

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The current version of the PWSS Program QAPP is located on the TCEQ <u>Public Water</u> <u>System Supervision Program</u>² webpage.

A4 Project/Task Organization

Within the TCEQ, the OW/WSD manages the PWSS Program in coordination with other groups within the agency as described in Section (A). The TCEQ individuals listed in this section have roles and responsibilities described in this section related to the management and/or administration of PWSS Program operations. Program staff involved directly with the implementation of operations listed in Section A6 are described in the QAPP addenda. All TCEQ personnel working under this QAPP discharge their job responsibilities in accordance with Appendix C of the TCEQ QMP.

The WSD organizational chart is included in Figure A4.1 at the end of this section and was current at the time this document was approved. TCEQ <u>organizational information</u>³ is located on the TCEQ website. Readers may also request a current WSD organizational chart from PWSQA@tceq.texas.gov.

Note: The WSD is responsible for referring PWSs for enforcement and reporting drinking water enforcement activities to the EPA. Enforcement is the responsibility of the OCE and operates according to procedures and protocols developed by the OCE which are designed to meet their objectives. This QAPP does not include descriptions of enforcement activities related to how PWS enforcement cases are planned, implemented, and assessed.

A4.1 Roles and Responsibilities of Key Personnel

The following descriptions are the roles and responsibilities of key individuals of the PWSS Program.

Deputy Director, PWSS Program Manager, TCEQ/OW/WSD

Responsible for the implementation of the SDWA primacy requirements with the EPA related to adoption of drinking water rules including plan review and approval, PWS compliance with drinking water standards, source water assessment and protection,

² www.tceq.texas.gov/goto/pwss

³ www.tceq.texas.gov/agency/organization

capacity development, inventory and grant-withholding data maintenance, and delivery of violation, action, and inventory data to EPA.

PWSS Program Lead Quality Assurance Specialist, TCEQ/OW/WSD

Coordinates quality assurance activities for the PWSS Program. Responsible for development and management of the QAPP; coordinating, monitoring, and reporting on corrective actions; and providing training, technical consultation, and maintaining good lines of communication to program staff in areas of QA/QC.

Section Manager, TCEQ/OW/WSD/BSS

Manages Business Support Section (BSS) and PWSS Program contract and grant activities. Reviews applicable, federal grant procedures, tracks contract and grant progress and corrective actions; and ensures associated goals and requirements are met.

PWSS Program Grant Manager, TCEQ/OW/WSD/BSS

Oversees the implementation of PWSS Program grants. Ensures all associated deliverables are met. Manages grants for TCEQ environmental data operations in accordance with provisions of the TCEQ QMP.

Contract Manager, TCEQ/OW/WSD/BSS

Oversees the administrative management of the contracts which supports the environmental data operations for the PWSS Program. Additionally oversees special investigation contracts, as applicable. Manages contracts for TCEQ environmental data operations within WSD in accordance with provisions of the TCEQ QMP.

Section Manager, TCEQ/OW/WSD/DWSS

Manages Drinking Water Standards Section (DWSS) and PWSS Program activities within the DWSS including the adoption of drinking water rules, compliance of chemical and microbial standards, lead and copper rule, and treatment technique requirements of the surface water treatment rules.

Team Leader, TCEQ/OW/WSD/DWSS/DWQT

Supervises Drinking Water Quality Team (DWQT) activities related to compliance determinations related to radionuclides, the Surface Water Treatment Rule, inorganic chemical compliance, disinfection byproducts, organic chemical compliance, alternative disinfectant compliance, and monitoring and reporting. Supervises the management of the chemical compliance sampling contract. Supervises the management and transfer of associated drinking water compliance data to the EPA Safe Drinking Water Information System (SDWIS).

Team Leader, TCEQ/OW/WSD/DWSS/DWAT

Supervises Drinking Water Assessment Team (DWAT) activities related to compliance determinations for microbial drinking water quality related to the Revised Total Coliform Rule (RTCR), the Groundwater Rule (GWR), and other rules, as applicable. Supervises the management and transfer of microbial drinking water compliance data to SDWIS.

Team Leader, TCEQ/OW/WSD/DWSS/LCMT

Supervises Lead and Copper Monitoring Team (LCMT) activities related to LCR compliance determinations, initial/routine and reduced tap monitoring, entry point monitoring, water quality parameter monitoring, optimal water quality parameter monitoring, and source water monitoring. Supervises the management and transfer of associated drinking water compliance data to SDWIS.

Section Manager, TCEQ/OW/WSD/DWSFS

Manages Drinking Water Special Functions Section (DWSFS) and PWSS Program activities within the DWSFS including public notice and consumer confidence rules, source water assessment and protection, fees administration, inventory and grant-withholding data maintenance, and delivery of action data.

Team Leader, TCEQ/OW/WSD/DWSFS/DWTRT

Supervises Drinking Water Technical Review Team (DWTRT) data support functions of the PWSS Program including, but not limited to, data migration and transfer, GIS, and enforcement referrals (see Section B10 related to responsibilities associated with data transfer to the EPA).

Team Leader, TCEQ/OW/WSD/DWSFS/DWIPT

Supervises Drinking Water Inventory Protection Team (DWIPT) activities related to inventory tracking; monitoring plans; public notice and associated compliance determinations; GUI compliance determinations, and the Source Water Assessment and Protection (SWAP) Program.

Section Manager, TCEQ/OW/WSD/PTRS

Manages Plan and Technical Review Section (PTRS) and PWSS Program activities within the PTRS including the review and approval of engineered systems related to drinking water, Long Term 2 Enhanced Surface Water Treatment Rule (LT2), and supporting the Lead and Copper Rule program through technical reviews related to corrosion control.

Team Leader, TCEQ/OW/WSD/PTRS/PRT

Supervises the Plan Review Team (PRT) to ensure that the TCEQ responsibilities (e.g., oversight, assessment, corrective actions, standard operating procedure (SOP) maintenance, performance management) relating to the review and approval of engineering plans are implemented. Establishes annual goals, monitors monthly

performance, develops and adjusts strategies and assignments to ensure reviews are processed in a timely manner, and reviews all correspondence to ensure consistent reviews.

Team Leader, TCEQ/OW/WSD/PTRS/TROT

Supervises Technical Review and Oversight Team (TROT) data review and management for SDWA regulations related to the Long Term 2 Enhanced Surface Water Treatment Rule (LT2). Supervises activities related to this QAPP Addendum, maintains lines of communication with WSD management, and elevates issues when identified. Establishes annual goals, monitors monthly performance, develops and adjusts strategies and assignments to ensure reviews are processed in a timely manner, and reviews all correspondence to ensure consistent reviews.

Team Leader, TCEQ/OW/WSD/PTRS/CCDPT

Supervises the Corrosion Control and Disinfection Protocol Team responsible for reviews of submitted corrosion control studies related to the Lead and Copper Rule. Also supervises staff reviewing disinfection protocols (also known as Concentration Time (CT) Studies). Establishes annual goals, monitors monthly performance, develops and adjusts strategies and assignments to ensure reviews are processed in a timely manner, and reviews all correspondence to ensure consistent reviews.

Section Manager, TCEQ/OW/WSD/EPRS

Manages Emergency Preparedness and Response Section (EPRS) and PWSS Program activities within the EPRS including the Texas Optimization Program (TOP), building system resiliency through review and approval of emergency preparedness plans, and supporting capacity development through financial, managerial, and technical assistance.

Team Leader, TCEQ/OW/WSD/EPRS/TOPRT

Supervises the Texas Optimization Program and Response Team (TOPRT), developing and revising budgets and time allocations, and communicating with management as needed. Verifies that TOP contracts are performed in accordance with TCEQ's protocols and ensures TOP Staff are appointed to represent the TCEQ on Environmental Protection Agency (EPA) Area-Wide Optimization Program (AWOP). Ensures that TOP staff participate in training and other events, information is communicated to other Team members, and management is informed of AWOP activities.

Team Leader, TCEQ/OW/WSD/EPRS/RPT

Supervises the Resiliency and Preparedness Team (RPT), responsible for oversight of the PWS Capacity Development Program including the Financial, Managerial, and Technical (FMT) assistance contract and At-Risk/Temporary Manager/Receivership program. This role also oversees the Drought and Emergency Preparedness Plan programs, and elevates any significant or sensitive emergency information to management as necessary.

Section Manager, TCEQ/OW/WSD/DS

Manages Districts Section (DS) and PWSS Program activities within the DS which involve providing information to district customers, consultants, board members, and employees; reviewing applications for appointment to boards; reviewing the issuance of bonds; coordinating the review of PWS engineering plans with the Plan Review Team (PRT); and maintaining the Water District Database.

OCE Public Drinking Water Liaison, TCEQ/OCE/PSEAD/PSS/FST

Serves as the liaison between the TCEQ Regional Areas, the Enforcement Division, and WSD staff by providing Field Operations Support Division (FOSD) and Regional Area procedural updates to WSD, receiving sample collection and PWS data requirement updates from WSD, conveying SDWA rule changes to regional staff, and negotiating appropriate procedural and policy changes as programmatic needs require.

Water Section Managers, Sixteen Regional Field Offices, TCEQ/OCE

Responsible for managing and monitoring the activities of field investigators to collect special investigation and complaint samples related to drinking water. Ensure completion and quality of sanitary CCIs conducted at public water systems by field investigators.

Section Manager, TCEQ/OCE/MD/LQAS

Manages Laboratory and Quality Assurance Section (LQAS) and TCEQ activities related to laboratory accreditation of laboratories used for drinking water sample analysis according to the National Environmental Laboratory Accreditation Program (NELAP).

TCEQ QA Manager, TCEQ/OCE/MD/LQAS

Manages agency-level QA functions. Provides QA oversight for TCEQ environmental data operations in accordance with provisions of the TCEQ QMP. Approves all QAPP documents submitted to EPA.

Section Manager, Occupational Licensing Section (OLS), TCEQ/OOW/OLRD/OLS

Manages Occupational Licensing Section (OLS) and has responsibilities related to the issuance and renewal of all occupational licenses issued by the TCEQ, including water operators. The section is responsible for approval of all training material and providers for both basic licensing courses and continuing education. Additionally, the section creates and maintains all occupational licensing exams.



Figure A4.1 WSD Organizational chart

A5 Problem Definition/Background

The SDWA (Public Law 92-523) was passed by Congress in 1974 (and amended in 1986 and 1996) to protect public health by regulating the nation's public drinking water supplies. The SDWA requires many actions to protect drinking water and its sources including health-based standards for drinking water to protect against both naturally occurring and man-made contaminants. The EPA summarizes the SDWA on the EPA's website.

To ensure protection of public health, the SDWA set up multiple barriers against pollution of drinking water. These barriers include:

- water quality testing
- source water protection
- treatment
- distribution system integrity
- public information
- water system operator certification

The State of Texas retains primary enforcement authority (primacy) for the SDWA and its regulations including Title 40 Code of Federal Regulations (CFR) Part 141, *National Primary Drinking Water Regulations* (NPDWR), 40 CFR Part 142, *NPDWR Implementation* and 40 CFR Part 143 *National Secondary Drinking Water Regulations* (NSDWR). Required elements of the TCEQ PWSS Program as follows are managed by various organizational units within the TCEQ and are additionally listed is located on the TCEQ Public Water System Supervision Program⁴ webpage.

- Manage and administer federal grants.
- Deliver accurate, timely public water system (PWS) inventory, violation, lead/copper milestone, site visit, and action data to the EPA.
- Adopt rules at least as stringent as the NPDWRs.
- Ensure compliance monitoring and compliance determinations for chemical and microbiological standards, PWS operations and treatment techniques, reporting, public notifications, etc. Ensure initial raw water quality meets minimum standards before approving a new source.
- Assess the source water susceptibility of all drinking water sources in the state and provide support to help public water systems protect those source waters.
- Review and approve engineering plans for PWS infrastructure.
- Support programs for capacity development including the Texas Optimization Program (TOP).
- Oversee compliance with and provide technical assistance for Homeland Security requirements for PWSs.

⁴ www.tceq.texas.gov/goto/pwss

- Perform sanitary surveys of source, treatment, distribution, storage, pump facilities, data verification, management, operation, and operator compliance for new and existing PWS.
- Ensure formal enforcement action for PWSs that exceed compliance trigger levels agreed upon by the TCEQ and the EPA.
- Maintain a laboratory accreditation program for the analyses in the drinking water matrix.
- Maintain a licensing program for PWS operators.

Some of these activities involve environmental data operations as described in the introduction to this document. These environmental data operations are primarily managed by the TCEQ's WSD or are otherwise implemented by various areas of the TCEQ (see Section A4). They also involve PWSs, contractors, laboratories, and others from outside the Agency.

All activities under the TCEQ PWSS Program and addressed under this QAPP are funded through a combination of state, local, and appropriate federal funds. The funding sources for activities under the PWSS Program are identified in applicable grant work plans and award agreements on a yearly basis. The Texas PWSS Program is overseen and audited by EPA Region 6 in Dallas. EPA Region 6 performs quarterly and end-of-year reviews of the TCEQ PWSS Program.

Maximum contaminant and action levels are specific to individual data operations and are defined in applicable addenda to this Programmatic QAPP.

A6 Project/Task Description

The environmental data operations described in this section are implemented in accordance with SDWA and rules and regulations specified in 30 TAC §290: Public Water Systems. Each summary explains how TCEQ PWSS Program environmental data operations are addressed within this QAPP.

A6.1 Chemical Compliance Monitoring

The rules contained in 30 TAC §290 Subchapter F: Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems require the collection and analysis of drinking water samples to determine whether chemical contaminants are present in public drinking water above the limits set by regulation.

- inorganic contaminants 30 TAC §290.106
- volatile organic contaminants 30 TAC §290.107
- synthetic organic contaminants 30 TAC §290.107
- disinfection byproducts 30 TAC §290.113
- radionuclides 30 TAC §290.108
- secondary constituents 30 TAC §290.118

A6.2 Lead and Copper Rule (LCR) Lead and Copper Compliance Monitoring

The primary rules to manage levels of lead and copper in drinking water are specified in 30 TAC §290.117: Regulation of Lead and Copper. Under these rules, an exceedance of a lead or copper action level is not a violation but will trigger other requirements that can include water quality parameter (WQP) monitoring, corrosion control treatment, source water monitoring and treatment, public education, and lead service line replacement. Sample collection, analysis, and reporting of lead and copper data are addressed in Addendum 2. Activities associated with project oversight, data management, data validation, and compliance determinations performed by WSD staff are addressed within this Programmatic QAPP.

A6.3 LCR Water Quality Parameter (WQP) Compliance Monitoring

The primary rules requiring lead and copper monitoring, as specified in 30 TAC §290.117, also require WQP monitoring to determine the corrosivity of water, and if needed, to help PWSs and TCEQ determine what corrosion control measures are needed to control lead and copper concentrations. Sample collection, analysis, and reporting of WQP data are addressed in Addendum 3. Activities associated with project oversight, data management, data validation, and compliance determinations performed by WSD staff are addressed within this Programmatic QAPP.

A6.4 Microbial Compliance Monitoring

PWSs perform microbial monitoring and implement corrective action and public notification, if warranted, in accordance with 30 TAC §290.109: Microbial Contaminants and §290.116: Groundwater Corrective Actions and Treatment Techniques. Additional rules may require microbial monitoring as described in <u>TCEQ RG-421 Coliform Monitoring</u>, <u>Analyzing</u>, and <u>Reporting</u>⁵ found on the RTCR webpage.

Sample collection, analysis, and reporting of microbial sample results are addressed in Addendum 4. Activities associated with project oversight, data management, data validation, and compliance determinations performed by WSD staff are addressed within this Programmatic QAPP.

A6.5 Comprehensive Compliance Investigations (CCI)

The TCEQ Regional Areas conduct PWS CCIs to evaluate the adequacy of treatment facilities to produce and deliver drinking water protective of public health on a sustainable basis. The requirements for PWS CCIs are contained within various sections of 30 TAC §290: Subchapter F Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems. Regional Area CCI activities subject to QAPP requirements are addressed in Addendum 5, with the exception of updating PWS inventory data in SDWIS which is the responsibility of the WSD (see Section B9).

⁵ www.tceq.texas.gov/drinkingwater/revised-total-coliform-rule

A6.6 Source Water Susceptibility Assessments (SWSA)

The WSD implements the SDWA amendments of 1996 by preparing PWS SWSAs. The amendments require the determination of source water for each PWS, the origin of any potential sources of contamination (PSOC), and the susceptibility of the PWS to PSOC exposure. WSD activities subject to QAPP requirements are addressed in Addendum 6.

The Source Water Protection (SWP) Program involves the TCEQ activities to protect drinking water by providing technical assistance and information to PWSs related to source water protection. PWS participation in the SWP Program is a voluntary public outreach activity.

A6.7 Review and Approval of PWS Engineering Plans

The TCEQ reviews engineering plans for new and modified PWS facilities to ensure they comply with the minimum design requirements specified in 30 TAC §290. All TCEQ engineering plan review and approval activities subject to QAPP requirements are addressed in Appendix 7.

A6.8 Texas Optimization Program (TOP) Performance Evaluations

The SDWA Surface Water Treatment Rule promulgated by the EPA in 1993 and specified in 30 TAC §290.111 lowered the turbidity standards at surface water treatment plants (SWTP). To help SWTPs meet these new standards the TCEQ developed and implements the TOP which is designed to lower the risk of waterborne disease by reducing the number of pathogenic organisms that pass through a SWTP. Optimization activities in Texas focus on Special Performance Evaluations (SPEs) and technical assistance. TCEQ activities associated with SPEs are subject to QAPP requirements and are addressed in Addendum 8.

A6.9 Acquisition of PWS Operation and Treatment Data

The following rules require PWSs to self-report operational treatment date to the TCEQ to determine compliance with rule requirements.

- §290.110 Disinfection Residuals
- §290.111 Surface Water Treatment
- §290.112 Total Organic Carbon
- §290.114: Other Disinfectant Byproducts (Chlorite and Bromate)
- §290.116 Groundwater Corrective Action and Treatment Techniques

These rules include requirements for PWSs to monitor and analyze samples or measure other variables (e.g., flow) to determine whether the PWS is operating correctly and treating water within the regulatory limits. Sample collection, analysis, and reporting of treatment technique and disinfectant data are addressed in Addendum 9. The activities associated with TCEQ data management, data validation, and compliance determinations performed by WSD staff are addressed within the Addendum 9.

A6.10 Special Studies and Investigations Template

The TCEQ WSD staff may collect process control and special request samples, or conduct special investigations as needed. These events are conducted when necessary and sometimes involve public health and environmental issues of immediate concern. When these events occur, the WSD uses this QAPP template to document the QA requirements associated with the environmental data collection activities.

The QAPP template is designed as a "fill in the blank" document that can be prepared quickly with an expedited signature process so that field activities are not delayed. The template includes the instructions for completing, signing, and distributing the template. The completed Special Investigation QAPPs are maintained by the PWSS Program Lead Quality Assurance Specialist. The QAPP template and instructions for use are included in Addendum 10.

A7 Quality Objectives and Criteria

A7.1 Objectives and Project Decisions

The objective of the PWSS Program is to fulfill the requirements of the SDWA to protect drinking water and public health. All operations outlined in this QAPP support <u>TCEQ's</u> <u>Agency Mission Statement</u>⁶ and philosophies of basing decisions on the law, common sense, sound science, and fiscal responsibility through applying regulations clearly and consistently.

To use the data for the SDWA objective to protect drinking water and public health, all individuals and groups working on behalf of this QAPP adhere to the methods, procedures, requirements, and specifications described within the PWSS Program QAPP to ensure environmental data/information generated are of a known and defensible quality. The data quality indicators (DQI) listed below define the quality of measurement data needed for this purpose. The TCEQ requires data of this quality and sets performance standards accordingly to assure it makes fair and defensible decisions about drinking water compliance, consistent with the TCEQ philosophies referenced above.

Accuracy

Accuracy refers to the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components that are due to sampling and analytical operations and reflects the closeness of the product or measurement to a true value.

Sensitivity

Sensitivity refers to the capability of a method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable

⁶ https://www.tceq.texas.gov/agency/mission.html

of interest. The ability to demonstrate that samples have different amounts of analyte is an essential part of drinking water analyses to make valid conclusions about whether drinking water contaminants exceed, or do not exceed, their action levels so the TCEQ can take consistent, just, and timely enforcement actions when warranted.

Bias

Bias refers to the systematic or persistent distortion of a measurement process which causes errors in one direction making it different from the true value. Bias may be introduced in sampling or analysis. Field and laboratory staff minimize measurement bias by strictly following instrument calibration and maintenance requirements, measurement SOPs, sampling and handling protocols, running QC samples, etc. Unbiased data is crucial to making valid compliance conclusions, as well as other decisions based on analyte concentrations.

Precision

Precision refers to the degree to which a set of observations or measurements of the sample property, obtained under similar conditions, conform to themselves. It is a measure of variability in the results of replicate measurements due to random error. Random error is imparted by the variation in concentrations of samples from the environment and other introduced sources of variation, such as field and laboratory procedures. For data to be considered valid for compliance determinations and other TCEQ decision making, they must be both sufficiently precise and unbiased.

Comparability

Comparability refers to the degree to which different methods, data sets, and decisions agree or can be represented as similar. It is a measure of the confidence with which one data set can be compared to another as it applies to compliance determinations and other TCEQ decision making. Comparability requires a level of standardization that allows data and information to be compared over time and from multiple organizations. Comparability is established by strictly following the protocols defined in this QAPP and adhering to data quality criteria.

Completeness

Completeness refers to the amount of valid data obtained compared to the planned amount. It is a measure of the amount of valid data available for decision-making. The TCEQ develops monitoring schedules, monitoring forms, and other requirements to reflect the amount of data and information needed to support compliance determinations. The goal for the PWSS Program is to correctly collect and analyze 100% of data and information from all sources. The protocols and components defined in this QAPP (e.g., training, auditing, detailed SOPs, sampling protocols, accreditation, etc) are designed to minimize incomplete data sets. When samples or results are rejected for any reason; replacement samples are immediately requested so the required number of samples are available for compliance determinations.

Representativeness

Representativeness refers to the degree to which the data and information accurately and precisely represent a specific variable in the population (i.e., how well the data reflects the conditions under which and where it was collected). Under this QAPP, contract samplers for chemical compliance samples collect samples and take field measurements at sites (usually entry points to distribution systems) and frequencies defined in pre-designed monitoring plans which are incorporated into the sampling contract. To ensure samples are of the right type and number, contract samplers follow strictly defined sampling protocols which they are trained and audited against.

Data Integrity

Data integrity refers to the condition that exists when data is sound, correct, complete, and accurately reflects activities and requirements. Drinking water data and information collected and reported under this QAPP are managed by all parties in such a way to ensure their confidentiality, integrity, and availability. Data management policies and procedures ensure data and information are recoverable and only used for their intended purposes.

Compliance

All TCEQ requirements associated with its environmental data operations have been developed to be consistent with state rules and federal regulations pursuant to the SDWA. This ensures all compliance actions and other activities undertaken by the TCEQ are fair and defensible.

A7.2 Measurement Performance Criteria/Acceptance Criteria

For the TCEQ to accurately evaluate and use the measurement data collected under this QAPP, data must be of known and defensible quality stipulated by the DQIs listed in Section A7.1. Measurement performance and acceptance criteria are specific to individual data operations and are defined in applicable addenda to this Programmatic QAPP.

A8 Special Training/Certification

The following subsections address training/certification requirements applicable to the PWSS Program.

A8.1 TCEQ Water Supply Division, PWSS Program Staff

All individuals performing work under this QAPP have the experience and technical competency to satisfactorily perform all tasks described. All PWSS Program staff meet job qualifications as described in functional job descriptions, job performance plans, and meet minimum requirements described within applicable addenda.

As specified in the TCEQ QMP, all PWSS Program staff participate in training programs tailored to development needs of the staff and applicable program area. Specialized training requirements of PWSS Program staff are described in the addenda to this QAPP.

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Documentation of training is maintained according to section or team management procedures and is also documented within an individual's performance appraisal.

A8.2 TCEQ Laboratory Accreditation Program

To receive and retain primacy, Texas [40 CFR Part 142.10(b)(4)] retains laboratory facilities capable of performing analytical measurements for all the federally mandated contaminants specified in the drinking water regulations. The TCEQ is responsible for accrediting drinking water laboratories consistent with the requirements of 30 TAC §25. A current list of accredited laboratories is maintained with the analytes, methods, and matrices for which accreditations are established.

The EPA maintains authority for certification of microbiological, organic, inorganic, and radiochemical testing according to 40 CFR Parts 141 and 142 at the State's principal compliance laboratory, the Laboratory Services Section of the Texas Department of State Health Service (DSHS).

Within TCEQ, the accreditation of laboratories is the primary responsibility of the LQAS within the OCE/MD. The LQAS is responsible for auditing and accrediting laboratories per state rule 30 TAC §25. Laboratory assessors responsible for onsite assessments of laboratories accredited under the drinking water matrix successfully complete EPA Drinking Water Laboratory Certification Officer Training.

TCEQ implements a detailed application and audit process to grant accredited status. TCEQ laboratory assessment reports for accredited laboratories are retained by the Laboratory Accreditation Program's Records Specialist for ten years. The LQAS also assists, when requested, the WSD in ensuring that drinking water samples are analyzed at accredited laboratories.

The rules, checklists, and procedures by which the LQAS operates the TCEQ Accreditation Program are on the <u>TCEQ Environmental Laboratory (NELAP) Accreditation</u>⁷ webpage. How the laboratory accreditation program is organized, planned, implemented, and assessed is not addressed in the PWSS Program QAPP.

A8.3 TCEQ Laboratory Approval Program

PWS samples collected, analyzed, and used to determine compliance with treatment technique requirements and disinfectant residual requirements under 30 TAC §290.110, §290.111, §290.112, §290.116, and water quality parameters under §290.117, must be analyzed at a laboratory approved by the executive director, per 290.119(a)(2). Applicable parameters include, but are not limited to, turbidity, free chlorine, chlorine dioxide, combined chlorine, alkalinity, total organic carbon, entry point chlorite, pH, conductivity, calcium, phosphate, and silica. PWSs are required to submit a laboratory approval form as part of their monitoring plan.

⁷ www.tceq.texas.gov/agency/qa/env_lab_accreditation.html

To gain laboratory approval, PWSs or other applicable entities submit the laboratory approval form (TCEQ Form-10450) to the laboratory approval coordinator at PWSChem@tceq.texas.gov. The TCEQ webpage on <u>Public Water System Monitoring Plans</u>⁸ provides information about laboratory approval, including a link to the form and instructions.

The DWQT is responsible for implementing the laboratory approval program and approving laboratories for analyses of the parameters specified above and adding laboratory approval form information into SDWIS. Laboratory approval data entry is conducted upon receipt of a Drinking Water Laboratory Approval Form and Proficiency Testing (PT) data, as applicable. The TCEQ Laboratory Approval Coordinator reviews, grants, and/or denies approval for laboratories that wish to analyze parameters listed in 30 TAC 290.119(a)(2).

A8.4 PWS Operator Licensing

The production, treatment, and distribution facilities at the PWSs must be operated at all times (with some exceptions) by a water operator, who holds a valid license issued by the TCEQ. To become licensed as a PWS water operator, an applicant must meet the education and experience requirements, take classes, complete the TCEQ application, pay the fee, and pass the exam. Occupational licenses are valid for three years then must be renewed with TCEQ. For license renewal, operators must meet continuing education requirements and submit required renewal application and fee.

The TCEQ Office of Waste (OOW) implements the agency program for licensing operators at PWSs, including a list of current licenses, in accordance with the requirements of 40 CFR Parts 141 and 142, and 30 TAC §30 Subchapters A & K. The WSD assists with aspects of operator licensing in coordination with the OCE by identifying, whenever possible, operators misusing their licenses. Otherwise, how this program is organized, planned, implemented, and assessed is not addressed in the PWSS Program QAPP.

A9 Documents and Records

Documents that specify quality-related instructions and requirements of the PWSS Program are consistent with regulatory and contractual requirements and are designed to serve their intended use per the TCEQ QMP, Chapter 5. Records also fulfill regulatory and contractual requirements and are prepared and maintained to reflect the achievement of required quality described in Section A7. This section of the QAPP describes the TCEQ quality-related documents and records, by environmental data operation and in general, related to this QAPP.

⁸ www.tceq.texas.gov/drinkingwater/monitoring_plans

A9.1 Chemical Compliance Monitoring – Addendum 1

Documents and records associated with chemical compliance sampling, analysis, and reporting that describe, specify, certify, and report on related activities are addressed in Addendum 1.

Documents and records supporting TCEQ management and oversight of sampling, analysis, and reporting as well as the receipt, migration, quality assurance, management, and analysis of data and information by WSD staff are listed in this section.

Document or Record PWSS Program Addendum 1 -	OAPP Addendum to PWSSP OAPP	Location WSD Network drives
Sampling, Analysis, and	documenting QA/QC practices related to	
Reporting of Chemical Compliance Data	chemical sampling, analysis, and reporting.	
	the list in Section A3.	
Drinking Water Compliance	Contract between the TCEQ and the	Budget Accounting and
Sampling Contract	sampling contractor authorizing chemical	Management System (BAMS).
	protection of public health. Signed and	
	retained by the TCEQ and the sampling	
Sampling Schedule and	List of PWS sampling sites compiled by the	WSD Network drives
Amendments	TCEQ from PWS Monitoring Plans. The	
	information at the beginning of the fiscal	
	year with monthly updates thereafter.	
TCEQ #12-06 Authorization to	TCEQ document distributed to the sampling	WSD Network drives
Water Samples	Used by the contractor to demonstrate	
	proficiency of its samplers in data collection	
	PWS information, etc.	
Drinking Water Sampling	Primary TCEQ Sampling Guidance based on	WSD Network drives
Guide	requirements, including analytical method	
	requirements. Distributed to all sampling	
Physical copies of sampling	Maintenance of records according to SDWA	Central File Room
results, site selection forms	requirements. Filed at the Central Office of	
reports, and corrective action	state records program. Records are	
reports from contractor	retained at the central office and are	
	transferred to microfiche or scanned to electronic format as time and monetary	
	constraints allow.	
Physical copy analysis reports	Maintenance of records according to SDWA	Central File Room
	TCEQ in Austin, Texas according to official	
	state records program. Records are	
	transferred to microfiche or scanned to	
	electronic format as time and monetary	
Electronic data from	Sample and result records containing	WSD Network drives
laboratories	sampling and analytical results	

Table A9.1 Chemical Compliance Documents and Records

Document or Record	Description	Location
SDWIS Lab Data Import Log	Records the file name, # of sample/results, and date received.	WSD Network drives
SDWIS Data Import Module	Database used to quality-assure data.	WSD Network drives
SDWIS_DataQC.xlsx	Tracks 5% review of migrated data.	WSD Network drives

A9.2 LCR Compliance Monitoring – Addendum 2 and Addendum 3

Documents and records associated with LCR lead and copper and water quality parameter sampling, analysis, and reporting that describe, specify, certify, and report on these activities are addressed in Addendum 2 and Addendum 3, respectively.

Documents, records, and forms associated with the TCEQ LCR management and oversight as well as the receipt, migration, quality assurance, management, and analysis of data and information by WSD staff are listed in this section.

Document or Record	Description	Location
Addendum 2—Guidance for Collection, Analysis and Reporting of Tap Water Samples under the Lead and Copper Rule	QAPP Addendum to PWSSP QAPP documenting QA/QC practices related to lead and copper sampling, analysis, and reporting. Distributed to each person/organization on the List in Section A3.	WSD Network drives
Addendum 3—Guidance for Analysis and Reporting of Water Quality Parameters under the Lead and Copper Rule	QAPP Addendum to PWSSP QAPP documenting QA/QC practices related to water quality parameter sampling, analysis, and reporting. Distributed to each person/organization on the List in Section A3.	WSD Network drives
PWS Sampling Instructions	Sampling Instructions for PWSs corresponding to initial monitoring (6M1 and 6M2) and reduced monitoring.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
Initial and Reduced Sampling Schedules	List of PWSs that must have lead and copper samples collected and analyzed in a given monitoring period.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Lead and Copper Program Homeowner Tap Sample Collection Procedures (English and Spanish)	Instructions for residents on how to collect samples and coordinate with the PWS.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20967	Form for PWSs to provide to TCEQ with addresses from previously approved sampling pool.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20683	LCR Chain of Custody, accompanies sample bottles to the laboratory for analysis.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20495	Form and instructions to document corrosion control studies to be used when action levels for lead and copper are exceeded.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html

Table A9.2 LCR Compliance Documents and Records

Document or Record	Description	Location
TCEQ Form 20680a	Lead Consumer Notice for community water systems. Used by PWSs to report and certify customer lead results after the PWS receives the analytical results back from the laboratory.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20680b	Lead Consumer Notice for nontransient, noncommunity water systems. Used by PWSs to report and certify customer lead results after the PWS receives the analytical results back from the laboratory.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20679	Collection and reporting form for PWSs to use for water quality parameter field and laboratory results.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 20507	Form for PWSs to use when requesting nine year monitoring schedules.	tceq.texas.gov/drinkingwat er/chemicals/lead_copper/l ead-copper.html
TCEQ Form 10450	Form and Instructions for PWSs, commercial laboratories, or water treatment facilities to use when analyzing water quality parameters by a TCEQ "approved" laboratory rather than a TCEQ accredited laboratory.	tceq.texas.gov/drinkingwat er/monitoring_plans
PDWS Work Instruction Template – Chemical Data Migration and Quality Control	Describes the process to perform quality control and migrate data into SDWIS.	WSD Network drives
Physical copies of sampling results, site selection forms and records, corrected reports, and corrective action reports from sampling contractor	Maintenance of scanned records according to SDWA requirements filed at the Central Office of TCEQ in Austin, Texas according to official state records requirements.	Central File Room
Physical copy analysis reports and records from laboratories	Maintenance of scanned records according to SDWA requirements filed at the Central Office of TCEQ in Austin, Texas according to official state records program.	Central File Room
Electronic data from laboratories, compliance determination data, TCEQ data verification data, etc.	Data maintained in SDWIS per SDWA requirements.	WSD Network drives
SDWIS Lab Data Import Log	Records the file name, # of sample/results, and date received.	WSD Network drives
SDWIS Data Import Module	Database used to quality-assure data.	WSD Network drives
SDWIS_DataQC.xlsx	Track 5% review of migrated data.	WSD Network drives

A9.3 Microbial Compliance Monitoring – Addendum 4

Documents and records associated with microbial compliance sampling, analysis, and reporting that describe, specify, certify, and report on these activities are addressed in Addendum 4.

Documents, records, and forms associated with management and oversight of sampling, analysis, and reporting as well as the receipt, migration, quality assurance, management, and analysis of data and information by WSD staff are listed in this section.

Table A9.3 Microbial Compliance Documents and Records

Document or Record	Description	Location
Addendum 4 Guidance for Collection, Analysis and Reporting for Microbial Contaminants under the Revised Total Coliform and Groundwater Rules	QAPP Addendum to PWSSP QAPP documenting QA/QC practices by PWSs and laboratories for sampling, analysis, and reporting. Distributed to each person/organization on the List in Section A3	tceq.texas.gov/drinkingwate r/pwss.html#pwssp-qapp- links
Electronic Reporting for Public Water Systems and Labs	Webpage for E2 information and guidance.	tceq.texas.gov/drinkingwate r/e2-reporting-system
State of Texas Environmental Electronic Reporting System (STEERS)	Web-based tool maintained by the TCEQ for laboratories to report total coliform and <i>E. coli</i> data.	www3.tceq.texas.gov/steers /
Electronic Environmental Drinking Water Report (E2-DWR) System Laboratory User Guide	TCEQ Guide for laboratories to use when reporting electronic total coliform and <i>E. coli</i> data.	tceq.texas.gov/drinkingwate r/e2-reporting-system
Drinking Water Watch	Web-enabled application that retrieves drinking water related information from SDWIS including name of system, addresses, type, contact information, sources(s) of water, number of monthly routine samples required, etc.	tceq.texas.gov/goto/dww
SDWIS/State	Database of record for drinking water compliance information. Data maintained in SDWIS per SDWA requirements. Data used for compliance determination.	WSD Network Location
TCEQ Form 10525 - Microbial Reporting Form	TCEQ Form for PWSs to document the collection of samples. Submitted to the laboratories with samples and serves as Chain of Custody Form.	tceq.texas.gov/drinkingwate r/pwss
TCEQ Form 20894 - Laboratory Positive Result Form RTCR and GWR	TCEQ form completed by laboratories when reporting positive results.	tceq.texas.gov/drinkingwate r/revised-total-coliform-rule
TCEQ Form 20629 - RTCR Positive Sample Invalidation Request	TCEQ form completed by PWSs to request that a sample result be invalidated in accordance with 40 CFR §141.853(c) and 30 TAC § 290.109(e).	tceq.texas.gov/drinkingwate r/revised-total-coliform-rule
RTCR SOP - Coliform Sample Data Entry	TCEQ document that describes the protocol for manually entering compliance samples into the SDWIS database. The sample data is used to determine compliance for each system.	WSD Network Drives
RTCR SOP – EMCL Compliance	Describes the process for actions to complete after an E. coli positive is received.	WSD Network Drives
RTCR SOP - Daily List and Migrating Repeat Schedules	Describes the protocol for creating a daily list of all positive samples entered in SDWIS to perform quality assurance on positive samples reported and creating repeat sample schedules for positive samples using the SDWIS Bridge.	WSD Network Drives
RTCR SOP – Lab Outreach	Describes process for completing laboratory outreach following the deadline for reporting.	WSD Network Drives

Document or Record	Description	Location
Records of phone conversations with PWS	Documentation of notifying PWSs of TCEQ actions following positive samples.	WSD Network Drives

A9.4 Other Environmental Data Operations

PWS Comprehensive Compliance Investigations – Addendum 5

All documents and records associated with PWS CCIs that describe, specify, certify, and report on assessment information and data are specified in Addendum 5.

Source Water Susceptibility Assessments – Addendum 6

Documents and records associated with SWSAs that describe, specify, certify, and report on assessment activities are specified in Addendum 6.

Review and Approval of PWS Engineering Plans – Addendum 7

Documents and records associated with the TCEQ's review and approval of engineering plans that describe, specify, certify, and report on environmental activities are specified in Addendum 7.

Texas Optimization Program – Addendum 8

Documents and records associated with the TOP that describe, specify, certify, and report on programmatic evaluations are specified in Addendum 8.

Acquisition of PWS Operation and Treatment Data – Addendum 9

Documents and records associated with PWS treatment technique and disinfectant residual data collection, analysis, and data reporting are specified in Addendum 9, including documents and records associated with the WSD's receipt, migration, quality assurance, management, and analysis of data.

WSD Special Investigation Template – Addendum 10

Documents and records associated with WSD special studies and investigations that describe, specify, certify, and report on activities are included in special study QAPPs as specified in Addendum 10.

A9.5 TCEQ Documents and Records

TCEQ QMP

The <u>TCEQ QMP</u>⁹ documents and describes the organizational arrangement, processes, procedures, and requirements of the TCEQ QA Program. The document describes the

⁹ https://www.tceq.texas.gov/agency/qa/qmp

TCEQ QA and QC principles, commitments, and requirements for all applicable programs, including the PWSS Program.

Official State Records

PWSS Program staff comply with record management procedures specified in TCEQ OPP 13.02 to safeguard Texas' legal and financial rights. Official Records produced by the PWSS Program are identified in the TCEQ Records Retention Schedule and maintained in TCEQ's Central File Room (CFR). PWSS Program staff maintain applicable records and ensure that they are identified in the Records Retention Schedule, as required.

A9.6 Other PWSS Program Documents

PWSS Program QAPP

This QAPP documents how the TCEQ organizes, plans, implements, and assesses the environmental data operations of the PWSS Program (see Introduction). It is maintained per the TCEQ Records Retention Schedule.

SOPs

PWSS Program SOPs are prepared by staff of the various programs in accordance with the TCEQ QMP. To prepare, revise, review, approve, maintain, and control their SOPS, WSD staff and managers follow policy outlined in the WSD's current document control SOP. This SOP includes an SOP template to ensure WSD SOPs are consistent across the Division and include required content, including, but not limited to effective date, approval signatures, responsible parties, a step-by-step procedure, and records management. The template also ensures the user creates accessible documents following TCEQ guidelines. All documents are located on the WSD network drive.

Program Guidance

The TCEQ WSD provides numerous <u>drinking water program</u>¹⁰ guidance documents and forms. These documents pertain to environmental data operations described in this Programmatic QAPP and include links to rules and regulations, the lead and copper program, source water protection, requirements for new systems, and PWS operation and treatment.

TCEQ Regulatory Guidance

The TCEQ develops and maintains regulatory guidance (RG) to help PWSs comply with rules and regulations, and other requirements addressing aspects of this QAPP such as monitoring, sample collection, documentation, analysis, reporting, etc. The TCEQ maintains its <u>RG documents</u>¹¹ on its website.

¹⁰ www.tceq.texas.gov/drinkingwater

¹¹ www.tceq.texas.gov/downloads/publications/rg

The TCEQ's RG documents related to the environmental data operations of this QAPP include, but are not limited to, the following documents.

- RG 211-Monthly Testing and Reporting of Surface Water Treatment Plants
- RG 407-Disinfectant Residual Reporting for Public Water Systems
- RG 421-Coliform Sampling for Public Water Systems
- RG 384-How to Develop a Monitoring Plan for a Public Water System
- RG 195-Rules and Regulations for Public Water Systems (30 TAC Chapter 290 Subchapter D)
- RG 346-Standards and Reporting Requirements for Public Water Systems (30 TAC 290 Subchapter F)
- RG 379-Total Organic Carbon (TOC) Guidance Manual
- RG 496-You're a Public Water System... Now What?
- RG 501-Managing Small Public Water Systems (RG-501a-e Series)
- RG 503-Monitoring, Analyzing, and Reporting Chlorine Dioxide and Chlorite
- RG 544-Monitoring, Analyzing, and Reporting Bromate for Public Water Systems using Ozone
- RG 563-PWS How to Use Chlorine Dioxide
- RG 590-Guidance for Water Haulers

Drinking Water Watch (DWW)

<u>DWW</u>¹² is a web-enabled application that contains drinking water related information from SDWIS including name of system, addresses, type, contact information, sources(s) of water, number of monthly routine samples required, compliance data, violation data, etc.

Grants and Contracts

A number of PWSS Program grants and contracts govern PWSS Program environmental operations. TCEQ procurements procedures are documented in Chapter 2.0 of the TCEQ OPPs and the TCEQ *Guide for Administrative Procedures Manual.* Grants and contracts are implemented according to EPA (as applicable) and TCEQ requirements per the TCEQ *Contract Management Handbook.* Grants and contracts contain QA terms and conditions to ensure adequate quality.

Documents and records associated with PWSS Program grants and contracts are maintained by the Business Support Section (BSS) in accordance with Agency policies.

(B) Data Generation and Acquisition

B1 Sampling Process Design

PWSs develop monitoring plans for all SDWA required monitoring and submit them to the TCEQ, if required or requested, for review and approval in accordance with 30 TAC

¹² www.tceq.texas.gov/goto/dww

§290.121: Monitoring Plans. RG 384 – How to Develop a Monitoring Plan for a Public Water System helps PWSs comply with monitoring plan rules to maintain a current monitoring plan listing all sample sites. The sampling process designs applicable to individual PWSS Program operations are described in each applicable addendum of this QAPP.

A list of sample sites for bacteriological monitoring is maintained by the system and reviewed during the CCI. Chemical sampling sites located within the drinking water distribution system are reviewed by DWQT staff on a case-by-case basis. The TCEQ maintains GPS location data for source and entry point locations. Locational data are used during chemical sampling to ensure accuracy and consistency. DWA staff members review a subset of microbial Sample Siting Plans when submitted. Sample sites for turbidity, disinfectant residual, total organic carbon, and disinfection byproducts (trihalomethanes and haloacetic acids) are included as part of the monitoring plan.

Unless specifically required by rule, all drinking water quality chemical monitoring is conducted at sample sites representing entry points to the water distribution system. These locations provide the most representative data for water quality that has been treated and is available for human consumption. Entry point sample sites for inorganic and organic chemicals are reviewed by the DWQT. Sampling sites for the lead/copper monitoring are submitted on the Lead and Copper Sample Site Selection Form. All proposed lead/copper sample sites are reviewed and approved by staff. As stated above, all sample collection site arrangements are either specified or presented as guidelines provided in the federal regulations to minimize spatial variability. The sampling process designs applicable to individual PWSS Program operations are described in the applicable addenda of this QAPP.

B2 Sampling Methods

Sampling conducted under this QAPP is performed using methodology consistent with rules specified in Section A6 as well as other federal and state rules, as applicable. These sampling methods help to ensure that sample results will be comparable, representative, and consistent with DQIs described in Section A7 by specifying requirements for standardized sampling methods.

To assist PWS samplers achieve this and have adequate documentation of procedures used for sampling/monitoring conducted by the PWS, the PWSS Program has begun to develop example/template SOPs for sample collection that can be modified to fit a PWS's specific needs.

The addenda include or reference sampling method information and requirements including field measurement and sample collection procedures, use of required monitoring forms, field QC requirements, etc., as applicable.

B3 Sample Handling and Custody

The principle of sample custody accounts for a sample's integrity from the moment a portion of drinking water is placed in a sample container until all analytical tests have

been completed and the results recorded. Proper sample custody is a joint effort of sample collectors, shippers, and laboratory staff.

The addenda include sample handling and custody requirements such as the use of standardized forms, sample receipt and rejection procedures, requirements for custody transfer signatures, and sample labels, as applicable.

B4 Analytical Methods

Analytical methods used under this QAPP by laboratories and others that perform analyses on behalf of the PWSS Program are described in each applicable addendum. The EPAapproved analytical methods for drinking water analyses are specified in 40 CFR Part 141 NPDWR and 40 CFR Part 143 NSDWR. Each laboratory that is used for compliance is required to be fully compliant with all federal regulations regarding analytical methods. This includes, but is not limited to, adherence to EPA-approved drinking water methods, required detection limits, and reporting requirements.

Adherence to the approved methods is the responsibility of the management of each individual laboratory reporting data to the program. The analytical methods used by each laboratory have been reviewed by the TCEQ for acceptability. Methods are verified by the TCEQ during sample/result QC and migration as well as during onsite accreditation assessments. Lab employees refer method failure to their management and if the issue will cause a disruption in the flow of acceptable data to TCEQ, the laboratory management notifies the TCEQ. If the laboratory produces a written investigation/correction report associated with nonconformances with analytical methods, copies are provided to the PWSSP Lead Quality Assurance Specialist. Additionally, if the TCEQ becomes aware of analytical procedure changes mandated by the EPA, the laboratories are notified.

The addenda include analytical method information for the individual operations such as required test methods, detection and reporting limits; corrective actions in the case of analytical failure; laboratory accreditation and/or approval requirements, as applicable

B5 Quality Control

Quality control (QC) practices are technical activities routinely performed to control the effects of potential variability in sample collection, measurements, and analysis. This section references the checks that are performed for each environmental data operation of the PWSS Program to control variability.

The quality control activities for individual PWSS Program operations are described in the addenda of this QAPP. The addenda include QC requirements for the individual operations, such as QC checks, acceptance criteria, and corrective actions in the event of an excursion, as applicable.

B6 Instrument/Equipment Testing, Inspection, and Maintenance

All instruments/equipment used on behalf of the PWSS Program are tested, inspected, and maintained upon receipt to ensure they are appropriate for use. All instruments/equipment must meet specifications listed in federal regulations related to public drinking water (40 CFR Parts 141, 142 and 143) and state rules (30 TAC §290).

The addenda describe instrument testing, inspection, and maintenance requirements for the individual operations, as applicable.

B7 Instrument/Equipment Calibration and Frequency

All instruments and devices used on behalf of the PWSS Program have a specialized procedure for calibration and a special type of standard used to verify calibration. This section of the QAPP describes/references how instruments/equipment used to generate data for the PWSS Program are calibrated and at what frequency. At a minimum, all calibration procedures will meet the requirements specified in the EPA-approved methods of analysis and are documented in a SOP. It is a general rule that the means and frequency of calibration recommended by the manufacturer of the equipment or devices and any instruction given in an analytical method is followed. Calibration records are kept by the person performing the calibration and are accessible for verification during either an audit, investigation, or other type of evaluation. The frequency of calibration for approved laboratories at public water systems must meet the requirements of 30 TAC $\S290.46(s)$.

Field equipment needing periodic calibration and/or verification include, but is not limited to, equipment for disinfectant residual analysis, thermometers, pressure measuring equipment, pH meters, and conductivity meters. Laboratory equipment needing calibration and/or verification include but are not limited to analytical balances, thermometers, spectrophotometers, ion chromatographs, gas chromatographs, etc. Calibration methods and records for all laboratory analytical equipment and reagents used to analyze drinking water compliance samples are the responsibility of the respective laboratory's QA Officer.

The addenda describe instrument calibration requirements for the individual operations, as applicable.

B8 Inspection/Acceptance of Supplies and Consumables

This section addresses how critical supplies and consumables related to the environmental data operations, as applicable, are inspected and accepted. Not all projects involve supplies or consumables considered "critical" to the project. Supplies and consumables used in the field or by the analytical laboratories are the responsibility of the manager, team leader, or laboratory management, as applicable.

The addenda describe requirements related to critical supplies and consumables for the individual operations, as applicable.

B9 Non-Direct Measurements

Some operations of the PWSS Program acquire data and information from a number of sources and use them to make decisions pursuant to the SDWA, as applicable.

The addenda describe non-direct measurements and their use, as applicable.

B10 Data Management

The PWSS Program's hardware and software requirements and configurations, and data management practices are designed to facilitate data reporting, compliance and enforcement, and are consistent with the TCEQ QMP. PWSS Program participants outside of the TCEQ maintain computer hardware and software systems compatible with TCEQ systems and must provide data and documentation in the required formats. All participants follow procedures which ensure data integrity and the retention of information.

The addenda include specific information regarding data management practices for individual data operations.

B10.1 TCEQ Computer Network

The TCEQ server environment is managed by the State of Texas vendor contracted by the Department of Information Resources (DIR). The DIR has documented procedures to be followed for demonstrating the acceptability of the hardware/software configuration required. All users of this QAPP must have internet connectivity. TCEQ staff may telework and access TCEQ server networks utilizing a Virtual Private Network (VPN) connection.

B10.2 Database of Record and Electronic Reporting

SDWIS is the primary database of record used by the PWSS Program to maintain and store PWS inventory data, sample results, schedules, compliance determinations, violation data, resolution, and enforcement referral data. TCEQ utilizes SDWIS integrated data quality control as well as the SDWIS Data Import Module, an Access database used to perform quality control activities on reported data by querying, checking, and validating data, as applicable, when it is received.

PWSs and laboratories submit data for the Disinfection Level Quarterly Operating Reports (DLQOR) and microbial samples using the Electronic Environmental (E2) Reporting System application. Data submitted via the E2 application use the State of Texas Electronic Environmental Reporting System (STEERS) and are compliant with the EPA Cross Media Electronic Reporting Rule (CROMERR). In order to submit data using the E2 application, users create a STEERS account and sign a STEERS Participation Agreement (SPA). Once the SPA is validated the user can submit data for compliance.

Note: The TCEQ is taking steps for implementing required electronic reporting using the Compliance Monitoring Data Portal (CMDP) for all compliance programs. This transition to CMDP will ensure compliance with CROMERR and all labs reporting manually should take

steps to develop electronic reporting procedures in preparation for eventual CMDP implementation. The E2 application will be phased out with the implementation of CMDP.

B10.3 Data Management Summaries

B10.3.1 Chemical Compliance Data/Information

Sample collectors submit sample collection documentation on a PWS Water Analysis form (or electronic equivalent) with every chemical compliance sample collected, along with a chain of custody record for each sample shipment. Forms are sent to the laboratories and TCEQ for each collected sample. Copies of the Public Water System Water Analysis form and chain of custody form are located in the *Drinking Water Sampling Guide (DWSG)*.

Each laboratory is required to notify TCEQ by email when sample results which would indicate a system is out of compliance (results exceed an associated MCL) in accordance with the EPA *Manual for the Certification of Laboratories Analyzing Drinking Water* and federal regulations. TCEQ must be notified the same day that an acute MCL is exceeded (e.g., nitrate/nitrite). Notification of non-acute MCL exceedances must be made no later than 72 hours after analysis is completed. Exceedance reports by email must be in a format that can be migrated into a database, such as an Excel spreadsheet or equivalent. A weekly summary in this format is acceptable.

Appropriate follow-up actions are taken by the DWQT as required by the applicable rule. The sampling schedule is continuously updated by DWQT staff and the sample contractor is provided with an update on a monthly basis.

Laboratories that provide data to the TCEQ for use in compliance are required to submit electronic data deliverables to the TCEQ no less often than once per week. Data format requirements are included in Appendix J of the *DWSG*.

The compliance laboratories also send analysis reports for radiochemical, organic, inorganic and disinfection byproduct samples to the TCEQ monthly. The sample analysis turnaround time for most results is typically two to three weeks, with an exception for some organic and radiochemical results. The compliance laboratories are required to send analysis reports for radiochemical, organic, inorganic and disinfection byproduct samples to the TCEQ and PWSs in PDF format on recordable media (CD). Final analytical reports must meet agency standards, including coding requirements for Central Records. PDFs are sent to the TCEQ monthly after analysis is completed.

When TCEQ staff members receive the chemical compliance data, they maintain an electronic copy of the laboratory or other reports for the TCEQ Central File Room. They perform quality control activities and migrate data into SDWIS. Specific guidelines for data review are included in Section D2. Additional detail regarding data management of chemical compliance data is in Addendum 1.

The LCRA laboratory analyzes organic, minerals, metals, and disinfection byproduct compliance samples. The DSHS laboratory also analyzes organics, minerals, metals, disinfection byproduct compliance samples; and all radiochemical, free cyanide, endothall, glyphosate, diquat and PCB samples. Asbestos samples are analyzed by laboratories

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specified by the PWSS Program and that have provided laboratory adherence documentation.

a) Nitrate and Nitrite

Nitrate and nitrite data follow the protocol described below, under Inorganic Chemicals, with one notable exception. DWQT staff members evaluate exceedance reports as soon as possible the same day to determine the need for an acute Notice of Violation and immediate public notice. This special attention is required due to the acute nature of nitrate and nitrite health effects, and the resulting EPA requirements for rapid follow-up.

Laboratory Reporting Requirements:

- The laboratories are required to fax and email results of nitrate or nitrite analyses that exceed the maximum contaminant level to the nitrate program coordinator and DWQT within 24 hours of sample analysis.
- The laboratories are required to transmit electronic data deliverables to the TCEQ on a weekly or more frequent basis.
- Electronic sample result data must be reported to TCEQ no later than one week after analysis is completed.
- PDFs of sample results must be submitted to the TCEQ and each PWS on a monthly or more frequent basis. PDFs must meet agency standards, including coding requirements for the Central File Room.

b) Inorganic Chemicals (other than Nitrate and Nitrite) and Radiochemical Sample Analysis Data

Compliance determinations are conducted weekly using SDWIS. When SDWIS determines a candidate violation based on sample result data, DWQT staff verify the violations before issuing Notice of Violations (NOV). This verification includes review of sample result history and running annual average (RAA) calculations. The program also schedules follow up sampling when warranted.

Laboratory Reporting Requirements:

- The laboratories are required to fax and email results of inorganic chemical analyses that exceed the maximum contaminant level to the DWQT within 72 hours after samples are analyzed.
- The laboratories are required to transmit electronic data deliverables to the TCEQ on a weekly or more frequent basis.
- Electronic sample result data must be reported to TCEQ no later than one week after analysis is completed.
- PDFs of sample results must be submitted to the TCEQ and each PWS on a monthly or more frequent basis. PDFs must meet agency standards, including coding requirements for the Central File Room.

c) Organic Chemicals and Disinfection Byproducts (Trihalomethanes and Haloacetic Acids)

The organic chemical compliance coordinator reviews all regulated chemical detections on a quarterly basis and modifies sample schedules when appropriate.

Laboratory Reporting Requirements:

- The laboratories are required to fax and email results of organic chemical analyses that exceed the maximum contaminant level to the DWQT within 72 hours after samples are analyzed.
- The laboratories are required to transmit electronic data deliverables to TCEQ on a weekly or more frequent basis.
- Electronic data deliverable must be transmitted to TCEQ no later than one week after analysis is completed.
- PDFs of sample results must be submitted to the TCEQ and each PWS on a monthly or more frequent basis. PDFs must meet agency standards, including coding requirements for the Central File Room.
- Results reports for organic and disinfection byproducts shall be organized into groups of regulated chemicals, monitored chemicals, screened chemicals, other chemicals, and tentatively identified compounds.

B10.3.2 Lead and Copper and WQP Compliance Data/Information

Electronic data reporting brings raw analytical lead and copper data results into SDWIS from the analytical laboratory. SDWIS will automatically process lead and copper analytical result data to determine the 90th percentile. The 90th percentile analytical values are used to determine tap water monitoring under the Lead and Copper Rule (LCR). Lead and copper tap water monitoring is the main component of the regulation.

In addition, other layers of compliance components under the LCR include systems with a population greater than 50,000. These systems are required to submit water quality parameters once every three years. All systems are required to submit water quality parameters every quarter if the public water system has been found to exceed the 90th percentile in either lead or copper tap water monitoring analytical results. Water quality parameter compliance is tracked by TCEQ staff. Additional detail regarding data management of lead and copper data is included in Addendum 2. Additional information regarding the data management of water quality parameter data is included in Addendum 3.

Laboratory Reporting Requirements:

- The laboratories are required to transmit electronic data deliverables to the TCEQ on a weekly or more frequent basis.
- Electronic sample result data must be reported to TCEQ no later than one (1) week after analysis is completed. PWSs are subject to monitoring/reporting violations if data is received more than ten days after the end of the compliance period.

• PDFs of sample results must be submitted to TCEQ on a monthly or more frequent basis. PDFs must meet agency standards, including coding requirements for the Central File Room described in applicable addenda.

B10.3.3 Microbiological Data/Information

Accredited laboratories report sample results and data are received and managed as described in Addendum 4.

Accredited laboratories report the results of all positive and negative bacteriological samples to TCEQ. Positive reports arrive by email and are entered into SDWIS by data entry staff. Many laboratories submit results electronically. All data are maintained in SDWIS.

TCEQ personnel monitor positive reports for all MCL violations and track repeat sampling compliance in accordance with the NPDWR. Data entry errors are corrected as individual files are activated and when water utility officials report errors. SDWIS limits the type of data that may be entered for certain fields to prevent data entry errors. All corrections to the database are channeled through the microbial sub-team's lead staff member.

B10.3.4 PWS CCI Data/Information

The processes the TCEQ regional investigators use to manage data/information captured during CCIs is described in Addendum 5. TCEQ regional investigators complete a CCI report with every inspection of a PWS that includes the data and information collected during the investigation. This information is stored in the Comprehensive Compliance and Enforcement Data System (CCEDS) (See Addendum 5).

Investigations capture the inventory components required by the EPA, including sources of raw water, type of public water system, population, connections, capacity, responsible official, and responsible official's address. Inventory data are also received directly from PWSs or from the Sampling Contractor in the form of a field report. Staff of the DWSFS will document the data on the Change Request Form (CRF). All inventory data related to PWSs are stored in SDWIS. Members of the WSD BSS, TROT, DWQT, DWAT, and DWPT process each CCI report or CRF for data entry and perform quality control activities. These staff members will also closely evaluate all available information for a public water system wishing to be designated as "Superior" and provide that status as appropriate.

B10.3.5 Source Water Susceptibility Assessment (SWSA) Data/Information

Addendum 6 describes how SWSA data/information are generated, reported, and managed by the PWSS Program.

B10.3.6 Engineering Review and Approval Data/Information

Addendum 7 describes how data/information related to the review and approval of PWS engineering plans are generated, reported, and managed by the PWSS Program.

B10.3.7 TOP Performance Evaluation Data/Information

Addendum 8 describes how data/information related to TOP evaluations are generated, reported, and managed by the PWSS Program.

B10.3.8 PWS Operation and Treatment Data/Information

Addendum 9 describes how PWS operational and treatment data/information are generated, reported, and managed by the PWSS Program. Each of the state's PWSs that operate surface water treatment plants submit a Surface Water Monthly Operating Report (SWMOR) monthly to DWQT staff for each plant. The SWMOR is an Excel spreadsheet that contains numerous field restrictions, formulae, and macros designed to ensure that data meets the required quality restrictions. This report contains self-reporting data related to turbidity and microbial inactivation. A percentage of the incoming forms are reviewed for accuracy to provide quality assurance. Data are maintained in SDWIS.

B10.3.9 Special Investigation Data/Information

Addendum 10 describes how data/information related to special investigations are generated, reported, and managed by the PWSS Program.

B10.4 Transfer of Data to the EPA

TCEQ activities associated with transferring data to EPA are summarized below.

- TCEQ WSD maintains data tools and platforms used to check and transfer data. SDWIS
 is the current database of record for PWS inventory data. SDWIS is used to submit
 data to the EPA.
 - Develops and maintains migration software to migrate data from any other databases into SDWIS.
 - Synchronizes PWS data between SDWIS and Central Registry.
- TCEQ WSD reviews and transfers inventory data. SDWIS is the database of record for PWS inventory data.
 - Reviews the PWS inventory for compliance with data standards for affiliations (such as responsible officials), source names and identification numbers, entry point designation, production capacities, and treatment information for all systems. Resolves non-conformances.
 - Compiles inventory data to prepare fiscal year quarterly reports to the EPA through SDWIS for incorporation in the federal Operational Data System (ODS).
 - Provides these data to the EPA within sixty days after the end of each quarter.
- TCEQ WSD performs quality checks and transfers grant-withholding data. This data includes locational data for PWSs. The DWTRT performs the following functions:
 - Maintains the databases of record for locational data.
 - Reviews locational data for consistency with data standards and resolve nonconformances.

- \circ Compiles this locational data to prepare grant-withholding data to provide to the EPA.
- TCEQ WSD performs quality control checks and transfers data for actions created by rule coordinators in the PWSSP.
 - SDWIS is currently used as the database of record for violations and actions.
 - DWTRT reviews action data for consistency with data standards and refers issues to the DWQT and DWIET for correction when necessary.
- TCEQ WSD performs quality control checks and transfers data for formal enforcement actions.
 - \circ $\;$ Receives report of formal enforcement actions from the ED.
 - Appends data to action file for delivery to SDWIS.

(C) Assessment and Oversight

This section of the QAPP describes and/or references activities and information on how the TCEQ assesses the PWSS Program activities and implements corrective actions to ensure that the QAPP is being executed as approved and the data/information produced is of known and defensible quality. Assessments are conducted consistent with federal and state rules for public drinking water to determine the adequacy, compliance, readiness, effectiveness and verification of personnel, data, information, and operations.

C1 Assessments and Response Actions

Program and operational deficiencies are defined, documented, corrected, and those corrective actions (CA) are verified. The types of assessments to be conducted, and the frequency for conducting these assessments depend on the intended use of the information. Additionally, operation-specific assessment and response information is included in the addenda to this Programmatic QAPP, as applicable.

The PWSS Program assessment activities are consistent with SDWA requirements as specified in federal rules pertaining to public drinking water (40 CFR Parts 141, 142 and 143) as well as applicable state rules (30 TAC Chapter §290). Descriptions of PWSS Program assessments and corrective action procedures are provided below. Note that data assessments involve the review, verification, and validation of data which are discussed in Sections D1 and D2 later in this document.

Varying types of assessments are the responsibility of TCEQ staff, contractors, and/or laboratories. Operation-specific information regarding PWSS Program assessments is included in the addenda to this QAPP, as applicable.

C1.1 Corrective Action (CA)

All project participants (e.g., laboratory, contractor, TCEQ, etc) involved with work described in this QAPP are responsible for identifying deficiencies when there are nonconformances with established procedures involving the performance of their work.

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 unique nonconformances that cannot be corrected by established procedures and will require actions to be defined and documented in a corrective action plan (CAP) within 14 days. Upon detection of a deficiency, project participants are responsible for notifying their management in writing.

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

For the PWSS Program, deficiencies may involve, but are not limited to the following situations.

- Integrity of results is jeopardized
- Nonconformances with state or federal regulations
- Intentional misrepresentation of data or information
- Repeat nonconformances or deviations from standard practices
- Other project-specific circumstances defined within applicable addenda or other quality documentation

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 "amended" 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 <u>TCEQ Quality Assurance</u>¹³ webpage under the Corrective Action Process section. The form is also available by 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 to the TCEQ QA Manager, WSD Grant Manager, affected Deputy Director(s), Program and Section Managers within 30 days of receipt of the CAP, as applicable. The Lead Quality Assurance Specialist will monitor the implementation and completion of CAPs related to significant deviations and advise management of the status of the CAP (recurring, closed, etc.).

C1.2 Assessments and Audits

C1.2.1 Project Oversight

Project oversight involves initiating, planning, executing, managing, and closing the work of an activity or task to achieve specific goals and meet specific success criteria. Project, grant, and contract management staff measure work activities against specifications in grants and work plans on a monthly, quarterly, and/or annual basis. Environmental work activities of the TCEQ are reported to division, office, and executive management on a monthly basis.

Peer Review and Staff Coordination

All PWSS Program mail-outs, document forms, reports, and individual letters are reviewed prior to issuance. Individual letters are subject to peer review within each respective

¹³ www.tceq.texas.gov/agency/qa

team. Mail-outs and mass-produced forms are subject to cross-team peer review, as needed.

PWSS Program staff conduct meetings to discuss compliance issues, non-conforming work, upcoming project events such as mass mail-outs, notice of violation letters, and training events.

Section members handle non-conforming conditions as they arise by consulting with team leaders and the section manager, if necessary. Each problem or discrepancy is handled on an individual basis and is resolved as quickly as possible within the team or section, as applicable.

TCEQ Performance Appraisals

TCEQ management assesses all employees annually as part of its Performance Management System. Performance appraisals include assessments of employee competency to perform technical tasks which help to ensure the generation of valid environmental data, such as tasks described in this QAPP.

C1.2.2 Laboratory Accreditation Assessments

The TCEQ LQAS audits laboratories in accordance with NELAP requirements as described in Section A8. The LQAS maintains a <u>list of accredited laboratories</u>¹⁴ and their fields of accreditation.

C1.2.3 Financial and Grant Requirement Audits

TCEQ grant managers and fiscal auditors conduct audits to determine that contractual obligations and grant conditions are met.

C1.2.4 Data Verification Audits

TCEQ conducts quarterly Federal Reporting of SDWIS compliance data to EPA. EPA reviews the reported data for accuracy and issues error reports to TCEQ for correction. Data corrections are made by TCEQ as required.

At a minimum of once every three to five years, EPA Region 6 performs a Data Verification audit. The results of the audit are reviewed with TCEQ management, solutions to issues are discussed, and these solutions are implemented by TCEQ staff. The DWSS and DWSFS Section Managers ensure that solutions are implemented by TCEQ staff.

C1.2.5 TCEQ Sample Collection Audits

The TCEQ project manager for the Drinking Water Compliance Sampling Contract (sampling contract), PWSSP Lead Quality Assurance Specialist, or other designated person

¹⁴ https://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html

conducts regular audits of all phases of the chemical compliance sample collection process. Every month, the TCEQ project manager reviews the sample collection records, comparing weekly or monthly totals for accuracy, and assuring that all submitted data are complete and accurate. Sample collection and rejection statistics are analyzed monthly or quarterly, and a review of sampling contractor performance is conducted quarterly or annually.

The WSD project manager for the Drinking Water Compliance Sampling Contract also monitors all samples rejected by the laboratory and checks to make sure the number of rejected samples matches that of the DWSC monthly report. Differences are reconciled with the contractor or laboratory. Rejected samples are rescheduled by the contractor for recollection in accordance with contract requirements.

The TCEQ project manager for the sampling contract, PWSSP Lead Quality Assurance Specialist, or other designated person conducts field audits with sample collectors to confirm that the collectors are following all requirements. Problems are recorded then reconciled with the sampling contractor and retraining is conducted, as needed. The project manager or other designated person investigates PWS concerns with specific samples or the sampling process to ensure that established SOPs and quality controls are followed by contract samplers. Problems are reconciled with the contractor.

The sample collectors are audited on a rotating basis. All samplers are audited at least once every two years. The results of these performance audits are reviewed by TCEQ management, approved, and then shared with the contractor. The sampling contractor is required to reply in writing detailing changes made to correct any noted nonconformances (if applicable). These audit processes are documented in the DWQT SOPs.

The contractor's QA Manager audits all samplers at least once each year to ensure compliance with established SOPs as described in Addendum 1. The process includes reviewing sample reports from each collector, comparing them to associated field notes, and verifying that they are correctly completed. Field audits are also conducted to ensure adherence to established drinking water sample collection procedures as documented in the DWSG. The audit reports for each sampler are submitted to the TCEQ with the monthly invoice and are reviewed by the TCEQ project manager.

C1.3 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 PWSS Program management and the EPA are kept informed of project oversight and assessment activities and findings. Reporting is specified in federal regulations and state rules related to the SDWA.

C2.1 Reports to TCEQ Management

Team Leaders of all environmental data operations report project status to their Section Managers, who in turn report to their Deputy Director. Matrix-managed staff members located in regional field offices also report to their appropriate team leaders in the central office. Grant managers and contract managers report to management, as applicable.

The Regional Investigators report to their individual Water Section Managers concerning all CCIs, all complaints, and any other drinking water issues encountered in their duty assignments. The Water Section Managers report to the individual Regional Directors, who report to the Area Directors.

Reports of significant deviations are reported to affected Division Directors and the TCEQ QA Manager as described in Section C1.

C2.2 Reports to EPA

The TCEQ reports general status of the PWSS Program to EPA R6 annually. The report is part of the Performance Partnership Grant (PPG) requirements. EPA identifies any problems and recommends solutions and PWSS Program management ensure that TCEQ evaluates and accommodates those solutions as appropriate.

The TCEQ is responsible for delivering data to the EPA in accordance with quality and timeliness requirements specified in 40 CFR Part 142.15 primacy reporting requirements.

Delivery of data for federal reporting purposes is managed through a joint effort by teams within the WSD. Data from various sources are gathered and manipulated to provide the final report in a format acceptable by the federal SDWIS. Data deliverables include quarterly inventory data, grant-withholding, and compliance action data. Detailed EPA requirements for data delivery are contained in Implementation Guidance associated with individual rules and in guidance related to the SDWIS data platform.

Program staff gathers data from sources described below. Action data refer to formal enforcement actions (Notices of Enforcement, Agreed Orders, and Compliance Agreements) or informal enforcement actions (Notices of Violation), as well as technical assistance site visits and reminder letters. Some of these data are generated by the WSD, and some are generated by the Enforcement Division (ED). Action data for violations of a chemical or microbial treatment technique, maximum contaminant levels, monitoring, reporting, or notification are determined by rule coordination staff, and maintained in databases of record (SDWIS). Action data for formal enforcement actions are generated by the ED and reported to the WSD quarterly.

TCEQ submits PWSS Program data to EPA through SDWIS quarterly. An initial data submittal is delivered six weeks after the close of each quarter. EPA generates error reports based on the initial data submittal and returns this to the TCEQ DWSFS. TCEQ then corrects all identified errors and resubmits the corrected data. The report is part of the PPG requirements. EPA identifies any problems and recommends solutions. PWSS Program management ensures that TCEQ evaluates and accommodates those solutions as appropriate.

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The DWSFS also prepares an Annual Compliance Report for the EPA. In addition, the PWSS Program Lead Quality Assurance Specialist coordinates and prepares annual updates for the TCEQ QMP, the Annual QA Report to EPA, and this QAPP. The DWSS and DWSFS Managers take responsibility for the accuracy of team databases and any reporting performed by teams in their respective sections.

(D) Data Validation and Usability

This section describes the PWSS Program review requirements that are used to accept, reject, qualify, or invalidate data and information in an objective and consistent manner. This is to assure the data or product obtained conforms to the Program objectives. For projects that use non-measurement data, these elements focus on evaluating how data values from these acquired data sets will be used to determine their acceptability.

D1 Data Review, Validation, and Verification

For the purposes of the PWSS Program QAPP, the review of data/information involves verification and validation as defined in this section.

Verification: Evaluating the completeness, correctness, and conformance/compliance of specific data/information against method, procedural, or contractual requirements described in this QAPP. Multiple individuals and entities are responsible for verifying data collected and reported under this QAPP, including sample collectors, PWSs, contractors, laboratories, and TCEQ staff.

Validation: A sample and analyte-specific process that extends the evaluation of data/information beyond method, procedural, or contractual compliance (i.e., data verification) to determine the quality of specific data sets. The validation of data is the responsibility of the TCEQ.

The implementation of verification and validation activities provide a way to decide the degree to which each data or information item has met its quality specifications as described in this document and applicable addenda. Verification and validation of data and information generated for the PWSS Program are a shared responsibility of the sampling contractor, the laboratories, PWSs, TCEQ staff, and the EPA. The methods and criteria for verifying and validating data for the PWSS Program are discussed/referenced in Section D2.

D2 Verification and Validation Methods

As specified in Section D1, sample collectors, laboratories, and others review and verify the data and information they collect and report to comply with QAPP requirements. TCEQ staff are responsible for determining whether the data results and information are of the appropriate type, quality, and quantity to support their intended use. The methods to review, verify, and validate data are summarized below according to data/information type.

D2.1 Compliance Data and Information

Field and laboratory data and information, such as compliance monitoring forms, are verified and validated by the sample collectors and the laboratories prior to TCEQ reporting. The verification and validation methods, including those for rejected and invalidated samples and the use of data qualifiers and rejection codes are included in Addenda 1,2,3, and 4.

Upon receipt, TCEQ staff review data according to SOPs listed in Section A9 or in the addendum. TCEQ PWSS Program personnel perform QA/QC by reviewing completeness and correctness of data reported by samplers and laboratories as well as compliance data submitted directly by the public water systems.

The laboratories submit electronic and hard copy data to the TCEQ in packets. Each packet is subjected to quality assessment procedures which include, but are not limited to, review of data table record totals; accuracy of records for parameters reported; and completeness of data fields, records, and tables.

TCEQ personnel use MS Access database queries to validate the sample/result data before migration into SDWIS. All of the following parameters are verified:

- Valid PWS IDs
- Valid Facility IDs
- Valid Sample Points
- Valid Sample Collector Names
- Valid Rejection Codes
- Valid TCEQ ID numbers
- Valid pH measurements
- Valid Detection Limits
- Valid Analyte Codes
- Valid Analytical Methods
- Valid Analyte/Method Pairs
- Valid Concentration and Detection Level Units
- Check for Duplicate Records
- Check for Significant Digits

In addition, SDWIS Lab-To-State and XML Sampling software both perform various QC measures on sample/result data. Samples or results that are identified as incorrect during any of these three stages (MS Access QC, Lab-To-State and XML Sampling) are verified and corrected before data is migrated into SDWIS for use in compliance. Additionally, compliance programs work with laboratories reporting data to minimize inaccurately issued violations through coordination to identify missing compliance data.

For additional quality assurance, compliance team staff or designee(s) will check at least five percent (5%) of printed reports against the electronic data received from the labs. Any errors that are identified will be reported to the originating laboratory for correction.

The percentage of reports verified for accuracy is subject to increase if a pattern of errors is identified.

When unacceptable data are observed, TCEQ staff members coordinate with the lab(s) to have corrected data resubmitted and submit a laboratory nonconformance referral to the PWSS Program Quality Assurance Specialist. Repeated nonconformances or errors that create a potential to impact public health warrant corrective actions as described in Section C1. Reasons data are deemed unacceptable include, but are not limited to, not meeting laboratory QC requirements, sample collection requirements, field format requirements, if any field is invalid, if any required field is left blank, or if any record duplicates a previously submitted data record.

Data submitted directly by water systems via monthly or quarterly operating reports are also checked for completeness and accuracy. If required reports are missing data or contain erroneous data, the water system can be issued monitoring/reporting violations.

The TCEQ conducts quarterly federal reporting of SDWIS compliance data to EPA. EPA also reviews the reported data for accuracy and issues error reports to TCEQ for correction. Some data corrections are made by TCEQ, as required or applicable.

D2.2 E2 Microbial Data Validation

The E2 application validation rules for microbial sample/result data are based off the SDWIS/XMLSampling application. These validation rules can be found in the SDWIS/XMLSampling documentation.

D2.3 Other Environmental Data Operations

CCI Data and Results

Addendum 5 describes the procedures to review, verify, and validate PWS CCI data/information.

Source Water Susceptibility Data

Addendum 6 describes the procedures to review, verify, and validate SWSA data/information.

Texas Optimization Program

Addendum 7 describes the procedures to review, verify, and validate TOP data/information.

PWS Engineering Plans Data

Addendum 8 describes the procedures to review, verify, and validate engineering plan data/information.

Acquisition of PWS Operation and Treatment Data

Addendum 9 describes the procedures to review, verify, and validate treatment technique and disinfectant residual data.

Special Investigations

Addendum 10 describes procedures to review, verify, and validate special study data/information.

D3 Reconciliation with User Requirements

Data and information collected, managed, and reported under the PWSS Program QAPP conform to the SDWA, 40 CFR §141-143, and 30 TAC §290. These statutes and requirements define PWSS Program objectives and DQIs specified in Section A7. Conformance to this QAPP helps ensure users (i.e., PWSs, consumers, TCEQ, and EPA) can use the data and information as generated and have confidence in the results. Data and information not meeting DQIs for sensitivity, accuracy, bias, precision, comparability, completeness, representativeness, data integrity, and compliance is not used by the PWSS Program for SDWA determinations or reported to the EPA. If used, the identified problems with the data will be clearly defined, flagged appropriately, and its use clearly delimited and justified.

Corrective actions for deficiencies in sampling, sample handling, analysis, reporting, etc. are documented as indicated in section (C). Only data and information that have been validated and/or qualified as necessary are entered into SDWIS for compliance determinations and EPA reporting.

Sample Invalidations

All sample/result invalidations must be approved by the PWSSP Lead Quality Assurance Specialist or through documented procedures approved by the PWSSP Lead Quality Assurance Specialist. All decisions to invalidate samples or results must be supported by applicable rule requirements and documented thoroughly with supporting information that corroborates the decision to invalidate. The sample/result must be properly documented within SDWIS to indicate the specific reason(s) for invalidation.