Special Investigation QAPP Template

Addendum 10

(Revision 2)

to the

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

Effective

November 10, 2022

Introduction and Instructions

The TCEQ Water Supply Division (WSD) collects special request samples and conducts special investigations when needed, often as part of Texas Optimization Program (TOP) activities. These events are "out of the ordinary" and sometimes involve public health and environmental issues of immediate concern. When these events occur, this quality assurance project plan (QAPP) template is used to document the quality assurance requirements associated with environmental data collection activities per the TCEQ Quality Management Plan (QMP).

This QAPP template is designed as a fill-in-the-blank document that can be prepared and signed quickly so that field activities are not delayed.

Note: Directions for completing the template are included in this document in *italicized text* which will be removed as each section is prepared.

This page and the prior (cover page) should be removed before finalizing.

Quality Assurance Project Plan for *Name of Special Investigation*

Texas Commission on Environmental Quality Public Water System Supervision Program

Revision: *##*

Effective: *Date*

This QAPP is effective for a period of one year from effective date.

A1 Title and Approval

Provide the project title, names and key personnel with approval authority. Add management structure (e.g., OW/WSD/EPRS/TOPRT) or organization to each signature line.

Approval Signatures

Name

Project Manager, OW/WSD/*Section/Team*

Signature: _____ Date: _____

Name

WSD Management*, OW/WSD/*Section/Team (as applicable)

Signature: _____ Date: _____

Name

Laboratory *Manager or Representative, Name of Laboratory*

Signature: _____ Date: _____

Name

PWSS Program Lead Quality Assurance Specialist, OW/WSD

Signature: _____ Date: _____

A2 Table of Contents

Update TOC when using this template.

A1 Title and Approval Page 3
A2 Table of Contents 4
A3 Distribution List 5
A4 Project/Task Organization 5
A5 Problem Definition/Background 6
A6 Project/Task Description 6
A7 Quality Objectives & Criteria 6
A8 Special Training Requirements/Certification 8
A9 Documents and Records 9
B1 Sampling Process Design 9
B2 Sampling Methods 10
B3 Sample Handing & Custody 10
B4 Analytical Methods 11
B5 Quality Control (QC) 11
B6 Instrument/Equipment Testing, Inspection, and Maintenance 11
B7 Instrument Calibration and Frequency 11
B8 Inspection/Acceptance Requirements of Supplies and Consumables 12
B9 Non-Direct Measurements 12
B10 Data Management 12
C1 Assessments and Response Actions 12
C2 Reports to Management 12
D1 Data Review, Verification, and Validation 14
D2 Verification and Validation Methods 14
D3 Reconciliation with User Requirements 15

A3 Distribution List

The Project Manager ensures this QAPP, and any subsequent revisions, are distributed to the individuals listed in Table A3.

Table A3. Roles, Responsibilities, and Distribution List

Key Personnel	Role	Contact Information
Name	Project Manager	*Email Address*
Name	Team Leader	*Email Address*
Name	*Section Manager, if applicable*	*Email Address*
Name	Laboratory Manager	*Email Address*
Name	PWSS Program Lead Quality Assurance Specialist	*Email Address*
Name	*Include additional roles, as applicable*	*Email Address*

The TCEQ Project Manager and PWSS Program Lead Quality Assurance Specialist maintain a copy of this QAPP in accordance with TCEQ records retention policies (see Programmatic QAPP[1]).

A4 Project/Task Organization

Section A4 of the Programmatic QAPP main document describes roles and responsibilities of TCEQ individuals in WSD management positions, including the PWSS Program Lead Quality Assurance Specialist, Deputy Directors, Section Managers, etc. The roles and responsibilities of key individuals performing work on this special investigation/data collection activity are addressed below.

Adapt roles and responsibilities for key project individuals, as needed. Include additional roles and responsibilities, if applicable.

A4.1 Project Manager

Performs project management work activities related to this QAPP per the TCEQ QMP, including but not limited to; developing and maintaining this QAPP and distributing it to all project participants; verifying the QAPP is implemented as written to ensure timelines and project QA and QC requirements are met; elevating problems and issues requiring resolution to supervisor; coordinating with laboratory, enforcing corrective action measures as needed; and developing and reviewing data, reports, and other deliverables.

Include additional roles and responsibilities, if applicable.

A4.2 WSD Management (i.e., Team Leader or Section Manager, as applicable)

Supervises activities related to this QAPP. Maintains lines of communication with WSD management and elevates problems and issues when identified. Per the TCEQ QMP, management is responsible for planning, monitoring, executing, evaluating, and improving quality-related work performed by staff under their supervision.

Include additional roles and responsibilities, if applicable.

[1] www.tceq.texas.gov/drinkingwater/pwss.html#pwssp-qapp-links

A4.3 Laboratory Manager or Representative

Ensures laboratory or facility maintains TNI accreditation and/or laboratory approval to analyze samples; adheres to applicable requirements described in this QAPP; coordinates with project manager to receive and analyze special investigation samples, and reports results per this QAPP; and immediately reports deviations from this QAPP to TCEQ project manager, and initiates corrective action(s) as required

Include additional roles and responsibilities for laboratory representative(s), if applicable.

A5 Problem Definition/Background

This QAPP describes the data quality objectives, field activities, sampling and analysis methods to be used, and the activities for managing the collected data and supporting information. The individuals involved with the investigation will comply with procedures described in this document.

State the specific environmental problem to be investigated. Include brief background information to provide perspective or justification for the investigation. Describe the water quality problem and the historical or regulatory background, as applicable.

A6 Project/Task Description

The TCEQ Project Manager maintains the schedule for QAPP activities specified in Table A6. The Project Manager is responsible for communicating the schedule to the project team.

Adapt Table A6 to summarize key activities detailed in this QAPP and the schedule for implementation.

Table A6. Project Task Description

Key Activity	Start Date	End Date
QAPP development and approval		
Field measurements and sample collection		
Laboratory analysis		
Data review		
Final report development		
Final report approval		
Include additional relevant tasks, as applicable		

A7 Quality Objectives & Criteria

A7.1 Objectives and Project Decisions

The objective for the activities described in this QAPP is consistent with the overall objective of the SDWA to protect drinking water and public health.

State the monitoring goal(s).

A7.2 Data Quality Activities and Indicators

The activities and requirements described in this document ensure environmental data and information generated under this QAPP are of a known and defensible quality. This is accomplished through the following activities.

1. project management
2. training and certifications (as applicable)
3. adherence to timelines
4. data and information management processes
5. corrective action and response procedures
6. *Include any additional activities or objectives, as applicable.*

The data quality indicators (DQIs) listed below and described in the Programmatic QAPP document relate to the level of quality needed to generate known and defensible data under this QAPP.

Adapt the language in the following sections to be specific for the project.

Precision

Precision is the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves. It is a measure of agreement among replicate measurements and is an indication of random error. Precision is controlled by the use of duplicate samples. Requirements for field duplicates are defined in the TCEQ Drinking Water Sampling Guide. Analytical requirements for precision in the test methods are followed. Results are compared against criteria defined in the methods and used during the evaluation of analytical performance.

Bias

Bias refers to the systematic distortion of a measurement which makes it different from the true value. A measurement is considered unbiased when the value reported does not differ from the true value. Bias is controlled by the use of proficiency test (PT) samples, calibration standards, quality control samples, blanks (field and laboratory), laboratory fortified sample matrices, etc. Specific project field QC requirements for field blanks are defined in the TCEQ Drinking Water Sampling Guide. Otherwise, requirements in the test methods are followed. Results are compared against criteria defined in the methods and used during the evaluation of analytical performance.

Completeness

The completeness of the data is basically a relationship of how much of the data are available for use compared to the total potential data. 100% of the data must be available for this investigation. However, sample or data loss may occur due to accidents, insufficient sample volume, broken or lost samples, laboratory issues, etc. In such cases, samples will be recollected.

Representativeness

Representativeness refers to the degree to which the data accurately represents the frequency distribution of a specific variable in the population. Site selection, the appropriate sampling regime, adherence to the sampling schedule defined in this QAPP, and use of approved analytical methods as defined in the TCEQ Drinking Water Sampling Guide will ensure data are representative of the population being sampled.

Comparability
Comparability refers to the degree in which methods or data sets are considered to be similar. Confidence in the comparability of data sets for this project is based on sampler training and use of approved sampling and analysis methods and quality assurance protocols in accordance with requirements and described in this QAPP. Comparability is also guaranteed by standard reporting protocols.

Sensitivity
Sensitivity refers to the ability of an instrument or method to discriminate between different levels of an analyte by producing a different response. Sensitivity requirements specific to this project include the method detection limit (MDL) and method reporting limit (MRL) for the analytical data. Requirements in the test methods for MDLs and MRLs are followed. Results are compared against criteria defined in the methods and used during the evaluation of analytical performance.

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

Measurement performance for quality control requirements are addressed in Section B5 of this QAPP.

A8 Special Training Requirements/Certification

TCEQ staff performing work on this project are qualified/trained to perform their assigned work per the TCEQ QMP and Section A8 of the Programmatic QAPP document.

Include all applicable roles that require special training or certification before performing work under this QAPP (i.e., sampler or contractor training requirements).

Laboratory/Facility Approval and Accreditation

Laboratories and/or facilities who perform analyses under this QAPP are approved or accredited by the TCEQ depending on rule-specific requirements. Accreditation must be through TCEQ, and all analytes collected under this QAPP are accredited under the drinking water matrix. Section A8 of the QAPP main document describes the TCEQ Programs for laboratory approval and laboratory accreditation.

Include additional requirements or certifications, as needed.

A9 Documents and Records

A9.1 QA Project Plan Distribution

The distribution of the QAPP is specified in Section A3 of this QAPP.

A9.2 Documentation and Records

Identify project records that will be generated and how/where the records will be stored. This includes information generated in the field (e.g., field forms, chain-of-custody forms) as well as laboratory records. The table below includes example records, adapt accordingly.

Table A9.2 Documentation and Records

Documentation/Record Name	Description	Location
Completed COC	*Form completed and signed by sampler and laboratory to ensure sample integrity as well as legal and defensible data*	*TCEQ network drives, project files.*
Sample collection records/field notes	*Notes taken by individual samplers of each sample collected to document field activities. Required for all field visits. Documents calibrations and records of all samples collected, including date and time; unusual conditions, etc. Handwritten notes must be legible; scratch-outs must be initialed and dated.*	*TCEQ network drives, project files.*
Laboratory records including but not limited to bench sheets; calibration/ maintenance records'.	*Records documenting the performance of laboratory activities and requirements including this QAPP.*	*TCEQ network drives, project files.*
Laboratory test reports	*Analytical results reported to the TCEQ in electronic and hard copy formats according to Appendix J of the DWSG so the TCEQ can use the data for compliance determinations.*	*TCEQ network drives, project files.*
Special Investigation QAPP	Official copy of final, signed QAPP.	*TCEQ network drives, QA files.*

A9.3 Project Reports

Describe interim and final project reports, who they will be provided to, format (i.e. report of summarized data, excel or access report, etc), and required content.

B1 Sampling Process Design

Describe the overall design of the project's data collection.

Complete Table B1 to summarize the data collection activities (i.e., parameters, location, and rationale/additional information, as needed).

Table B1. Sample locations, Measurement/Analytical Parameters, and Data Collection Rationale

Sample Location	Parameters	Rationale/Additional Information (as needed)

Include map with sampling locations, if helpful/applicable.

B2 Sampling Methods

Complete Table B2 by identifying or describing the sampling method (i.e., name of sampling SOP, if applicable) to be used for each parameter to be measured; as well as container, preservation, and holding time requirements.

Table B2. Sampling Method/Procedure, Containers, Volume, and Preservation

Parameter	Sampling Procedure	Container and Volume Collected	Preservation	Holding Time
Enter all parameters to be measured.	*Describe or make reference to sampling methods used for each parameter.*	*Describe the sample containers to be used and volume required to be collected.*	*Describe specific preservation requirements and where they are performed, in the field or by the laboratory at receipt.*	*Indicate the maximum holding time allowed.*

B3 Sample Handing & Custody

Following sample collection, samplers handle samples in accordance with sampling procedures (see Table B2). The sample handling and custody requirements addressed in this document include, but are not limited to the following items.

- COC documentation
- sample labels
- sample storage
- sample transport

Adapt sample handling and custody descriptions accordingly.

Sample Delivery and Custody Transfer

Following sample collection, samplers ship or deliver samples to the laboratory where custody is relinquished to a sample custodian or designee. The custodian carefully inspects the sample(s) and sample documentation at the time of receipt for any issues which may necessitate sample rejection. After the sample custodian inspects and approves the sample documentation, sample delivery personnel and the laboratory custodian sign and date the COC with the date and time it was delivered.

Laboratories then follow internal sample acceptance/receipt procedures as described within internal laboratory SOPs.

Adapt sample delivery and custody transfer descriptions accordingly.

B4 Analytical Methods

The field measurements and laboratory analyses performed under this QAPP are conducted in the field or in appropriate laboratories (i.e., TCEQ-approved or accredited) as described in Section A8. Laboratories follow internal SOPs to analyze samples in accordance with the analytical methods and requirements listed in Table B4.

Complete table B4, as applicable.

Table B4. Parameter, Analytical Methods, and Reporting Units

Parameter	Analytical Method	Units for Reporting	Laboratory Data Reporting Turn-Around time (optional)

***Note**: Laboratory data turn-around-time may be an important element to specifically define given possible health implication of the special investigation.*

B5 Quality Control (QC)

Samplers and laboratories implement QC practices to ensure the data/information generated and reported under this QAPP conforms to the DQOs/DQIs specified in Section A7. Laboratories follow internal SOPs to control and document measurement performance so that DQOs/DQIs are achieved.

Adapt quality control descriptions accordingly.

B6 Instrument/Equipment Testing, Inspection, and Maintenance

TCEQ personnel follow maintenance procedures described in *Name of SOP* to ensure field instruments/equipment are appropriate for use.

Laboratories follow internal SOPs to ensure instrument/equipment maintenance requirements are implemented.

Adapt instrument maintenance descriptions accordingly.

B7 Instrument Calibration and Frequency

TCEQ personnel follow calibration procedures described in *Name of SOP* to ensure field instruments are appropriate for use.

Laboratories follow internal SOPs to ensure instrument calibration requirements are implemented.

Adapt instrument calibration descriptions accordingly.

B8 Inspection/Acceptance Requirements of Supplies and Consumables

TCEQ personnel inspect and accept supplies and consumables used to generate and report data under this QAPP when received to ensure they are appropriate for use.

Laboratories follow internal SOPs to ensure requirements for supplies and consumables are implemented.

Adapt inspection of supplies descriptions accordingly.

B9 Non-Direct Measurements

Identify any data needed for this project that will be obtained from non-measurement sources such as computer databases, literature files, etc., and specify any limitations on the use of the data.

B10 Data Management

List and describe the steps involved in managing the data, including how the analytical results (and any additional information) are transferred from the sampler and laboratory (i.e., electronic or hardcopy format), merged with field data, reviewed, evaluated, and stored.

(C) Assessment and Oversight

C1 Assessments and Response Actions

All project participants (i.e., TCEQ, contractors, laboratories, etc.) involved with work described in this addendum are responsible for identifying deficiencies when there are nonconformances with established procedures involving the performance of their work. Deficiencies may be identified during the performance of routine work, or during audits and oversight.

Most nonconformances are not "deficiencies" as addressed in this section. Staff routinely encounter, document, and correct technical and procedural nonconformances at the point of origin using established procedures defined in SOPs that include documentation of problem, solution, implementation and follow-up. These nonconformances are documented at the point of origin and maintained with the applicable project records. However, the level of corrective action described in this section may be warranted when established procedures don't prevent a situation from recurring.

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, staff are responsible for notifying their management in writing.

For this project, deficiencies may involve, but are not limited to the following situations.

- Results or conclusions are jeopardized
- Nonconformances with state or federal regulations

- Intentional misrepresentation of data or information
- Repeat nonconformances or deviations from standard practices
- *List additional project-specific deficiencies which would require a CAP*

The preparation of CAPs is assigned to appropriate staff by managers 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 Project Manager and 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.

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 most likely eliminate the problem, prevent recurrence, and are appropriate for the magnitude and degree of risk of the deficiency.

CAPs must include the following information:

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

- Documentation
    - How will the preventative action(s) be documented?
- Verification of effectiveness
    - Who will verify effectiveness, when will verification occur, and how will verification be documented?

The TCEQ QA Program has developed a standardized template form that may be used, TCEQ QAF-005. This template can be accessed through the TCEQ Quality Assurance[2] webpage under the Corrective Action Process section. The form is also available by request at PWSQA@tceq.texas.gov.

C1.1.3 Significant Deviations

Actions associated with significant deviations are described within the Programmatic QAPP, Section C1.1.3.

C1.2 Authorization to Stop Work

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

C2 Reports to Management

Describe type, frequency, and contents of status reports that will be provided to management.

D1 Data Review, Verification, and Validation

This section defines the review processes to ensure data and information are of known and defensible quality consistent with program objectives specified in Section A7. For the purpose of this QAPP, the review of data/information generated and reported under this QAPP involves verification and validation as defined below.

Verification: Evaluating the completeness, correctness, and conformance/compliance of specific data/information against method and procedural requirements described/referenced in this QAPP.

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

Adapt review, verification, and validation descriptions accordingly. Describe the measures you will take to review the data.

D2 Verification and Validation Methods

Sampler's review and verify the field data they collect in accordance with the field sampling procedure specified in Table B2.

The laboratory reviews and verifies the data they report before submittal in accordance with internal SOPs.

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

WSD staff are responsible for validating that the data/information reported are of known and defensible quality and support their intended use. WSD reviews and validates data and information. When unacceptable data are observed, TCEQ staff coordinate with the laboratory to have corrected data resubmitted, as applicable.

Adapt verification and validation method descriptions for all stakeholders accordingly.

D3 Reconciliation with User Requirements

Identify the data users. Describe your approach to converting the raw measurements and data into meaningful results. In other words, describe how results will be reconciled with user requirements.