

Texas Optimization Program Evaluations

Addendum #8

(Revision 1)

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

(Revision 13)

US EPA Q-TRAK # 20-054

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List of Acronyms


Acronym	Definition
CA	corrective action
CAP	corrective action plan
CCEDS	Consolidated Compliance and Enforcement Data Systems
CCI	Comprehensive Compliance Investigation
CCP	Composite Correction Program
CPE	comprehensive performance evaluations
CTA	Comprehensive Technical Assistance
DWQT	Drinking Water Quality Team
EPA	Environmental Protection Agency
MAOP	Minimum Acceptable Operating Practices
mCPEs	Mandatory Comprehensive Performance Evaluations
NOV	notice of violation
NTU	nephelometric turbidity units
OW	Office of Water
PDWP	Public Drinking Water Program
PTRS	Plan and Technical Review Section
PWS	public water system
PWSS	Public Water System Supervision
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QMP	Quality Management Plan
RCDT	Response and Capacity Development Team
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
SOP	standard operating procedure
SPE	special performance evaluation
SWMOR	Surface Water Monthly Operating Report
SWTP	surface water treatment plant
SWTRCO	Surface Water Treatment Rule Compliance Officer
SWTR	Surface Water Treatment Rule
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TOP	Texas Optimization Program
TOPAC	Texas Optimization Program Advisory Committee
WSD	Water Supply Division

A1 Title and Approval Page – PWSSP QAPP, Addendum #8

The following individuals are signatories on this Public Water System Supervision (PWSS) Programmatic Quality Assurance Project Plan (QAPP) Addendum because they are responsible for the direct oversight, implementation, and quality assurance of the Texas Optimization Program (TOP). Other individuals involved with the oversight of TOP are also signatories on the Programmatic QAPP for which this addendum is a part.

Gary Regner, PWSS Program Quality Assurance (QA) Manager

Texas Commission on Environmental Quality (TCEQ)/OW/WSD

Signature:  Date: 9/13/19

Kenneth Dykes, Team Leader

TCEQ/Office of Water (OW)/Water Supply Division (WSD)/Plan and Technical Review Section (PTRS)/Response and Capacity Development Team (RCDT)

Signature:  Date: 9/19/19

David Simons, Texas Optimization Program (TOP), Program Manager

TCEQ/OW/WSD/PTRS/RCDT

Signature: RICHARD BOSUN Date: 9/20/19

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A3 Distribution List

The following individuals will receive a final copy of this Programmatic QAPP Addendum and its subsequent revisions. Other individuals involved with the TOP are included on the Programmatic QAPP distribution list and will receive a copy of this addendum as part of the Programmatic QAPP distribution, or if revisions are made during interim annual reviews.

QAPP Recipients	Title	Contact Information
Jessica Hoch	PWSS Program Lead Quality Assurance Specialist	Jessica.Hoch@tceq.texas.gov (512) 239-2353
Vacant	Emergency Preparedness and Response Section Manager	
Brian Matthews	TOPR Team Leader	Brian.Matthews@tceq.texas.gov (512) 239-4972
David Simons	TOP Program Manager	David.Simons@tceq.texas.gov (512) 239-3154

A4 Project/Task Organization

The following individuals participate directly in the TOP. A description of roles and responsibilities as stated in the *TCEQ Standard Operating Procedure (SOP) TOP and General Description* are included below. Roles for other individuals (e.g. Division Director, Section Managers, TCEQ QA Manager) are described in the Programmatic QAPP.

Jessica Hoch, PWSS Program Lead Quality Assurance Specialist

The role of PWSS Program Lead Quality Assurance Specialist coordinates development and implementation of the QA program for the PWSS Program. Responsible for development and management of the QAPP, coordinating, monitoring, and reporting on corrective actions, and providing assistance and communication to program staff in areas of quality assurance.

Brian Matthews, Texas Optimization Program and Response Team Leader

Primary TCEQ contact Liaison between the TOP Core Team Members and the WSD. Ensures continued function of the group, to support consensus-based decision making.

David Simons, TOP Program Manager

Supervises the TCEQ's TOP Team, responsible for scheduling meetings of the Core Team and the TOP Advisory Committee (TOPAC), developing and revising budgets and time allocations, communicating with management as needed. Verifies that TOP contracts are performed in accordance with TCEQ's protocols. Represents the TCEQ on Environmental Protection Agency (EPA) Area Wide Optimization Program (AWOP) by participating in training and other events, transferring information to other Core Team members, and informing management of AWOP activities.

David Simons, TOP Data Manager

Ensures that TOP files are stored in accordance with all division and agency protocols, ensures that paper and electronic files are purged appropriately, and maintains compliance with accessibility standards.

Charles Middleton, TOP Support Contract Manager

Ensures that any contracts performed in support of TOP activities are done so in accordance with agency and division protocols, ensures that deliverables meet standards, and communicates with division and agency staffers who oversee contracts.

TOP Core Team

TCEQ's TOP Core Team Members include *experienced* engineers and technical specialists who have *knowledge* of PWS facility design and operation. During many TOP evaluations, team members break into three groups: design, operations, and administration. The team members are responsible for conducting the three area evaluations, training TCEQ staff, developing and updating SOPs, and providing technical assistance to PWS operators to troubleshoot treatment and distribution issues and optimize treatment. During each evaluation, a team leader is assigned who is responsible for scheduling the Comprehensive Performance Evaluations (CPE) or Special Performance Evaluation (SPE) Factors Meeting, and is responsible for completing the final reports.

TOPAC

This committee composed of WSD and Regional Directors was formed to provide management oversight and guidance to the Core Team. The TOPAC approves TOP SOPs.

A5 Background/Definition

In 1993, the Surface Water Treatment Rule (SWTR) was promulgated by the EPA to assure adequate removal of *Giardia* cysts. The SWTR lowered the maximum allowable turbidity level for combined filter effluent and increased the minimum sampling frequency. To help treatment plants meet these new turbidity standards, the EPA developed a process for improving surface water treatment plant (SWTP) performance. The approach, called the Composite Correction Program (CCP), consists of two components: CPE and Comprehensive Technical Assistance (CTA).

The EPA began working with Texas and several other states to utilize the CCP process to achieve optimized performance goals. Initial optimization activities in Texas focused primarily on conducting voluntary CPE, and gradually expanded into a multi-faced, statewide effort known as the TOP.

The TOP was formed at the TCEQ by a core team of engineers and technical specialists from the WSD and the field offices to develop and implement a state-wide optimization program for SWTPs. Optimization of a SWTP is achieved by identifying and addressing the various factors that limit its performance. It is a continuous process that involves:

- Setting performance targets for each major unit in the SWTPs.
- Monitoring the performance of each of the major treatment units.

- Analyzing the data to determine if each unit is achieving the desired performance level.
- Taking corrective action if the performance objectives are not being met.

At times, the broad scale implementation of CPEs is prevented by cost and staff resources. For this reason, the TCEQ’s TOP Core Team developed another evaluation tool called the SPE to provide resource effective collection of essential performance data from SWTPs.

The results for plant capacity, operation, and sanitary conditions of all the water system facilities are used to determine compliance with specific regulatory requirements and are documented in Comprehensive Compliance Investigation (CCI) final reports. Issues not addressed in the CCI are addressed in the CPEs and SPEs. The CPE and SPE differ from a routine CCI in that they focus exclusively on the chemistry of the source water, and the design and operations of the raw water pump station and the SWTP. There is also an administrative element of the CPE that is not addressed during the CCI.

Work performed for TOP evaluations can be considered environmental data operations as defined by the TCEQ Quality Management Plan (QMP) and *EPA Requirements for QAPPs, EPA QA/R-5*. As such, the QA processes regarding organization, planning, implementation, and assessment must be addressed in a QAPP which is reviewed and approved by the EPA. This document is written as an addendum to the PWSS Programmatic QAPP as referenced on the title page of this document. This addendum format will facilitate this management, review, and future revision of this document.

A6 Project/Task Description

The TCEQ implements the TOP by conducting CPEs and the SPEs as diagrammed in Exhibit 1. CPEs and SPEs involve thorough assessments of plant design, operation, maintenance, and administration to identify the specific factors that are adversely affecting plant performance. The evaluation components are listed in Table A6.

Table A6. CPE and SPE Components

Facility Description	Component
Raw Water Source Information	<ul style="list-style-type: none"> • Intake Structure • Evidence of Siltation • Watershed Control • Contamination Sources
Major Treatment Units	<ul style="list-style-type: none"> • Rapid Mixing • Flocculation • Sedimentation • Filtration • Clear Well Storage • Wastewater Management • Pumping and Chemical Feed Equipment • Flow Metering Equipment • Chemical Feed Equipment

Table A6. CPE and SPE Components

Facility Description	Component
Age and Condition of Facility	<ul style="list-style-type: none"> • Age of Facility • Condition of Facility • Filter Assessment • Maintenance Program
Unit Treatment Capacities	<ul style="list-style-type: none"> • Design Capacity • Approved Capacity • Maximum Daily Usage • Peak Flow Rate • Peak Flow Source • Flow Splitting
Operations	<ul style="list-style-type: none"> • Process Monitoring • Process Control Procedures • Data Records • Data Reporting
Administration	<ul style="list-style-type: none"> • Utility Administration • Administrative Policies • Plant Staffing • Operator Training • Capital Improvements • Utility Financial Status

The *TCEQ SOP Mandatory Comprehensive Performance Evaluation Activities Schedule* describes how the TCEQ schedules both CPEs and SPEs. The TCEQ conducts CPEs and SPEs by inspecting plant facilities, reviewing historical performance records, reviewing engineering drawings and specifications, interviewing plant operators and administrators, and performing special studies during the evaluations. If performance-limiting factors are identified during a mandatory CPE, the CPE Team develops a Corrective Action Plan (CAP) to systematically correct the factors and improve plant performance. The CAP developed by TOP for the plant is not addressed in this Programmatic QAPP Addendum. Specific information on CPEs and SPEs is provided in Table A6.

Mandatory and Optimization Comprehensive Performance Evaluations

Mandatory CPEs are performed in response to regulatory triggers described in Title 30 Texas Administrative Code (30 TAC) §290.111. For example, each time the individual filter effluent turbidity level exceeds 2.0 nephelometric turbidity units (NTU) on two consecutive 15-minute readings during two consecutive months in a specific filter or any combination of individual filters, the public water system must participate in a CPE conducted by the State within 90-120 days (depending on the system size) of the first exceedance in the second month. When such a trigger event occurs, the utility must complete and submit a CPE Request Form with their Surface Water Monthly Operating Report (SWMOR) no later than the 10th day of the following month.

Optimization CPEs are performed to train staff on how to perform CPEs and to assist PWSs who wish to optimize the quality of the drinking water produced by

their SWTP. Optimization CPEs are voluntary and do not include development of a CAP.

The TCEQ's CPE is conducted by a team of 2-10 engineers and other technical specialists who spend a total of 350 to 450 hours to complete the evaluation and prepare the technical report. The *TCEQ SOP Comprehensive Performance Evaluation Duties and Deadlines* describes the duties of the various members of the CPE team and sets the timeline for the preparation of the materials needed for the exit meeting and final report. At the end of the onsite portion of a CPE, the TCEQ team conducts a Factors Meeting. The *TCEQ SOP Comprehensive Performance Evaluation Factors Meeting* describes how TOP Core Team members identify the performance limiting factors that impede the ability of the plant to produce drinking water that meets all of the regulatory requirements or optimization standards related to microbial quality.

Chapter 2 of the *TCEQ Guidance Manual for Conducting Mandatory Comprehensive Evaluations* includes processes for completing CPE reports. Following the exit meeting with the utility officials, the CPE Team members prepare rough drafts of all the sections that will be included in the final report. Within the next three to four weeks, the CPE Team Leader completes the first draft of the final report. The first draft of the final report is sent to the other team members for review and comment. The report is finalized and distributed as described in Section C2. The review and revision process takes four to eight weeks.

Special Performance Evaluations

SPEs involve some of the same technical components as a CPE but do not require the same commitment of time and staff, nor do they include the identification of performance-limiting factors. The SPE, including the onsite evaluation and preparation of the final report, takes a minimum of 38 hours to complete. This includes 24 hours per SPE team member at the treatment plant as indicated in Chapter 2 of the *TCEQ Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations*.

SPEs are conducted at SWTPs that have difficulty meeting regulatory standards for filtered water turbidity levels, but have not reached a regulatory trigger. These plants are identified based on a review of the SWMORs submitted to the Public Drinking Water Program (PDWP) at the TCEQ. The TCEQ may initiate SPEs based on actual conditions that are observed at a plant during a CCI or focused investigation, or when a suspected waterborne disease outbreak is reported.

There are several conditions under which data included in a SWMOR might justify an SPE, such as:

- Combined filter effluent (CFE) turbidity readings above 1.0 NTU.
- Turbidity readings above 0.3 NTU in more than five percent of these samples measured during a month.
- Individual filter effluent turbidity readings above 1.0 NTU.
- Finished water turbidity and disinfectant data that do not appear to be accurate and may represent a public health concern.

The data audit portion of the SPE as described in Chapter 7 of the *Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations* is performed to determine whether or not reported performance data is consistent with other data collected and stored by the operators and electronic equipment. The data audit is used to determine the degree of accuracy with which the information is transferred from the point of origin to the SWMOR. To determine if there are any systematic reporting problems, the SPE team members compare the SWMOR-reported data to the plant's laboratory reports, operation logs, strip charts, etc. If performance limiting factors are identified which would lead to CPE triggers, then a CPE may be required.

Once all the onsite evaluation activities associated with the SPE have been completed, an exit meeting is held with the plant manager and/or utility administrator to answer general questions related to the evaluation. The SPE team prepares rough drafts of the SPE report which are completed and reviewed as described above under CPEs.

If the SPE identifies violations of drinking water regulations, the SPE team informs the system that the TCEQ regional office will receive a copy of the final SPE report and may follow-up by issuing one or more Notices of Violation. Similarly, if the SPE identified performance data that would trigger a CPE, the SPE Team advises the water system of the findings. SPE team members record the performance data and provide summaries and recommendations to the water system. TCEQ management makes the final decisions regarding appropriate follow-up action. Enforcement activities are not addressed in this Programmatic QAPP Addendum. However, the TOP Program Manager coordinates with TCEQ management including the Enforcement Division as required by the results of the SPE.

A7 Quality Objectives & Criteria

The overall quality objective of the PWSS Program as described in the Programmatic QAPP is to fulfill the requirements of the SDWA to ensure that water produced and distributed by PWSs is safe to drink. Consequently, as the state's environmental agency, the TCEQ can provide better protection of the health of all Texas citizens currently served by PWSs and all those who consume water from the systems.

TOP Quality Objectives

The goal of all quality objectives related to TOP evaluations undertaken by the TCEQ is to produce data and information of a known and verifiable quality that will meet the overall objectives of the SDWA. A combination of the following activities described in this document pursuant to state and federal rules and regulations ensure the data quality objectives are met:

- Management oversight
- Training
- Available and well defined TCEQ guidance
- Required reporting protocols and standardized forms
- TCEQ surveys and investigations

- TCEQ SOPs for acquiring, managing, and accepting data
- Corrective action procedures
- Data security process

Accuracy

Accuracy is a reflection of correctness. To be accurate, CPE and SPE data must be unique to each water system, logical, and representative of the real world. This ensures corrective actions are targeted to actual problems within the PWS.

Comparability

Comparability refers to the degree in which methods or data sets are considered to be similar under similar circumstances. CPEs and SPEs must be comparable to ensure consistent results over time so that changes in results reflect changes in the environment and/or problems within the PWS. Comparability of results is ensured by the use of the same tools and methods for all evaluations.

Completeness

The completeness of the data is basically a relationship of how much of the data or information is available for use compared to the total potential data. CPEs and SPEs must be complete and contain all the requisite data (including all performance limiting factors) to produce a meaningful report and target valid corrective actions.

Representativeness

Representativeness refers to the degree to which the data and information accurately represent a specific variable in the population—how well the data reflects the conditions where it was collected.

Data Integrity

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

Compliance

All TCEQ requirements associated with CPEs and SPEs have been developed to be consistent with state rules and federal regulations pursuant to the SDWA. This ensures all compliance and enforcement actions taken by the TCEQ are fair and justifiable.

A8 Special Training/Certifications

The TCEQ provides an advanced training program to transfer CPE and SPE skills to WSD staff and PWS investigators who have extensive knowledge and experience related to SWTPs. The TOP Core Team members provide training opportunities which are organized based on the availability of trainers; the interest of qualified

trainees; the support of the WSD, Regional Water Section Managers, and Regional Directors; and the specific needs of individual regions. The TCEQ training process is included in the *TCEQ Guidance Manual for Conducting SWTP Special Performance Evaluations*. Hands-on training events are designed by the TOP Core Team members to achieve a progressive transfer of advanced evaluation skills. Additional detail is provided below.

Comprehensive Performance Evaluation Training

TCEQ TOP CPE trainees participate in a one-day seminar that provides instruction and workshop opportunities to familiarize themselves with the CPE terminology and approach. After the seminar, CPE trainees participate in three live CPEs where they gain CPE skills through progressive training facilitated by experienced CPE providers. The training process is typically scheduled over a four to six-month period. The *EPA Handbook Optimizing Water Treatment Plant Performance Using the Composite Correction Program* Table 8-1 includes the Training Approach to Achieve Transfer of CPE Skills.

Special Performance Evaluation Training

The TCEQ TOP implements a broad scale advanced training program for SPEs to transfer SPE skills to senior field staff. The primary goal of SPE training establishes a network of specially trained WSD staff and PWS investigators who can conduct performance-based evaluations of SWTPs. Additionally, SPE training facilitates other agency initiatives by contributing to a higher level of technical expertise in the field of surface water treatment. The advanced technical skills that are developed during the training process enhance the ability of investigators to perform other PWS duties related to enforcement and basic investigator training.

The *TCEQ Guidance Manual for Conducting a WTP SPE* Chapter 2 describes the SPE training program which consists of four modules which must be completed in order. The first three modules equip the WSD staff or PWS investigator to conduct SPEs independently, without the on-site supervision of an approved SPE trainer. The fourth module equips and entitles the SPE-trained person to train other WSD staff and PWS investigators to perform SPEs. Each of these modules contributes to the 32 hours of technical or professional development training that the PWS investigator must complete every two years. SPE training is provided by the members of the TOP Core Team and by other senior staff trained by the TOP Core Team. At least one SPE-trained person is necessary to conduct an SPE at a SWTP.

A9 Documents and Records

The documents and records that describe, specify, manage, and report CPEs and SPEs are listed in the table below.

Table A9. Documents and Records

Document or Record	Purpose	Format/Location
<i>QAPP for the TCEQ PWSS Program Relating to the SDWA</i>	Document that describes QA requirements and activities of the PWSS Program designed to ensure maintenance of appropriate quality and quantity of drinking water in Texas as well as compliance with the SDWA	Electronic https://www.tceq.texas.gov/assets/public/permitting/watersupply/pdw/qapp/PWSSP_QAPP_Programmatic_Rev13.pdf

Table A9. Documents and Records

Document or Record	Purpose	Format/Location
<i>TOP QAPP Addendum 8</i>	Project specific addendum to the <i>Programmatic QAPP</i> that addresses QA processes for TOP evaluations to plan, implement, and assess associated activities.	Electronic https://www.tceq.texas.gov/assets/public/permitting/watersupply/pdw/qapp/PWSSP_QAPP_Addendum8_Rev1_TOP.pdf
TCEQ QMP, Current Version	TCEQ document that describes the organizational arrangements, processes, procedures, and requirements of the TCEQ's QA Program	Electronic https://www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/qmp.pdf
<i>SOP TOP Core Team Program Manager</i>	TCEQ document that describes roles of PM to ensure continued function of the TOP Core Team.	WSD Network Drives
<i>SOP TOP Equipment Inventory and Maintenance</i>	TCEQ document that describes the equipment for which the TOP is responsible and describes how to maintain the inventory of that equipment.	WSD Network Drives
<i>SOP TOP Organization General Description</i>	TCEQ document describes TOP background, Key Objectives, TOP Core Team roles and responsibilities.	WSD Network Drives
<i>SOP TOP Mandatory CPE Activities Schedule</i>	TCEQ document that describes how to plan and schedule a CPE.	WSD Network Drives
<i>TOP CPE Duties and Deadlines</i>	TCEQ document that describes the duties related to conducting the various activities during a CPE.	WSD Network Drives
<i>TOP CPE Factors Meeting</i>	TCEQ document that describes the steps that the CPE team goes through during the Factors meeting.	WSD Network Drives
<i>CPE Design Data Collection Guidance</i>	TCEQ guidance document which supports the process of CPE data gathering.	WSD Network Drives
<i>TCEQ Guidance Manual for Conducting SWTP SPE</i>	TCEQ technical guidance provides essential instructions for planning, conducting, and documenting a SPE at a SWTP.	WSD Network Drives
<i>Technical Guidance for Conducting Mandatory CPEs</i>	TCEQ technical guidance document provides essential instructions for planning, conducting, and documenting a CPE at a SWTP.	WSD Network Drives
CPE Final Reports	CPE Final Reports contain records of facility information, Performance assessment, major unit process evaluations, limiting-performance factors, factors meeting and Corrective Action Plans (CAP).	Hardcopies stored at PWS, Regional Office, Central Records, per Agency Archival procedure
SPE Final Reports	SPE Final Reports contain the data collected during the SPE, The RSF Chart which contains data from the previous 12 months of SWMORs used to produce the raw data, settled water, and filtered water, and the IFE Chart which contains the data from the previous 12 months of SWMORs used to produce the individual filter effluent.	Hardcopies stored at PWS, Regional Office, Central Records, per Agency Archival procedure

Table A9. Documents and Records

Document or Record	Purpose	Format/Location
Work product records (e.g., checklists, worksheets, field notes, data forms, etc.)	TCEQ records documenting activities associated with SPEs and CPEs.	WSD Network Drives Hard copies of work products are maintained by the TOP Program Manager once the project is complete according to agency archival procedures.
<i>EPA Handbook: Optimizing Water Treatment Plant Performance Using the Composite Correction Program</i> EPA/625/6-91/027 Revised 1998	EPA document that describes the waste water treatment, water treatment optimization, comprehensive performance evaluations, conducting and reporting CPEs, and comprehensive technical assistance.	Electronic http://nepis.epa.gov/Exe/ZyPDF.F.cgi/30004D17.PDF?Dockey=30004D17.PDF
Hach 1720E Set-up SOP	TCEQ document describes turbidimeter calibration and operation.	WSD Network Drives
Turbidimeter calibration records	TCEQ record documenting calibration was performed	Maintained within turbidimeter. Can be downloaded and saved in electronic format if needed.

B1 Sampling Process

Not applicable. Samples are not collected. Turbidity measurements are collected *in situ* as described in Section B4.

B2 Sampling Methods

Not applicable. Samples are not collected. Turbidity measurements are collected *in situ* as described in Section B4.

B3 Sample Handling & Custody

Not applicable. Samples are not collected. Turbidity measurements are collected *in situ* as described in Section B4.

B4 Analytical Methods

During the Process Control part of the CPE, the TOP Core Team members take measurements to compare results produced by plant operators. On day one, the CPE team sets up online turbidity monitoring equipment and begins collection of continuous turbidity measurements during the course of the evaluation. The online turbidity meters are calibrated and operated according to *Hatch 1720E Set-up SOP*.

B5 Quality Control

TCEQ staff ensures adherence to the quality control (QC) objectives described in Section A7 for TOP evaluations by a combination of management oversight; peer review and management review of letters and reports, staff training, experience and coordination; standardized evaluation processes; evaluation checklists; and strict adherence to schedules and allotted timeframes.

The QC described in this section applies to the turbidity measurements that are taken during the TOP evaluations to check operator performance and to ensure treatment tests are performed correctly using approved methods according to state and federal rules and regulations. TOP evaluators conduct online turbidity monitoring according to 30 TAC §290.111 and confirm that equipment used by operators for compliance measurements is maintained and calibrated in accordance with 30 TAC §290.46(s) relating to Minimum Acceptable Operating Practices (MAOP) for PWSs. TOP evaluators compare continuously monitored (every 15 minutes) turbidity levels with plant performance data to ensure turbidity levels that are reported to the TCEQ are both accurate and compliant with standards.

B6 Instrument/ Equipment Testing, Inspection, and Maintenance

Equipment inventory and maintenance procedures for the TOP are addressed in the *TCEQ SOP Texas TOP Inventory and Maintenance*. TOP Team Members follow equipment manual procedures to perform routine equipment maintenance. A TOP Core Team Member reviews equipment manuals during the first quarter of each calendar year, generates a schedule for yearly routine maintenance, and records any items that require repair. A list of equipment is included in the SOP. Also during the first quarter of the calendar year, the TOP Program Manager or a TOP Core Team member prints a copy of the lists of equipment and performs a physical inventory, verifying the location and condition of each piece of equipment and all chemicals and appurtenances. Orders may be placed for new equipment required to replace outmoded or inoperable equipment. All State Comptroller, TCEQ, and WSD protocols are followed for ordering equipment.

B7 Instrument/Equipment Calibration and Frequency

All equipment used by the TOP Core Team members for CPEs and SPEs is calibrated in accordance with 30 TAC §290.111. It is a general rule that the means and frequency of calibration recommended by manufacturers of the equipment are followed. Documentation of the standard's certification, lot number, or other method of traceability is maintained by the TOP Core Team Members. Turbidimeters are calibrated at each new installation before use during the plant evaluation. The turbidimeters are calibrated according to the *TCEQ 1720E Set-Up SOP*.

B8 Inspection/Acceptance of Supplies & Consumables

During the first quarter of the calendar year, a TOP Core Team member reviews reagents, discards those that have expired, and orders replacements as stated in the *TCEQ SOP TOP Equipment Inventory and Maintenance*.

B9 Data Acquisition Requirements for Non-Direct Measurements

Not applicable

B10 Data Management

Comprehensive Performance Evaluations

Data are collected in several formats during a CPE to aid in the identification of performance-limiting factors. Standard forms are utilized for the collection of administrative, interview, design, operations, filter assessment, and maintenance data as described in the TOP document *Technical Guidance for Conducting Mandatory Comprehensive Performance Evaluations (mCPEs)*. Microsoft Excel spreadsheets are used to consolidate and evaluate plant performance data that have been reported to the TCEQ in SWMORS. The regulatory treatment capacities of the major unit processes in a treatment plant are calculated in a Microsoft Excel spreadsheet and compared with historical treatment flow rates. A plant schematic is generated in Microsoft Visio or Microsoft Excel. CPE team members typically collect written field notes and take photographs to document CPE activities. A Microsoft PowerPoint presentation is often created for the CPE exit meeting that summarizes the activities and results of the evaluation. After the completion of the on-site evaluation, the data that have been gathered and generated are compiled into a CPE report.

Prior to conducting a CPE, a CPE team member is selected to manage and consolidate all of the blank forms, filled forms, meeting notes, and field notes handled during the evaluation into a single binder or folder, often referred to as the "Den Mother's Book". The Den Mother's Book is turned over to the CPE Team member assigned to compile the CPE report at the completion of the evaluation. The CPE report writer is responsible for scanning and saving copies of the report, forms, notes, and electronic files for the evaluated SWTP to a CPE report folder to a limited access network drive. Hard copies of the CPE report are transmitted to the PWS under a letter of transmittal from the TOP Core Team. Except for the SWTP staff and administrator interview forms which are considered confidential, the hard copies of materials in the Den Mother's Book are usually returned to the plant at the completion of the CPE project. Copies of interview forms are destroyed.

Special Performance Evaluations

SPE data is managed as described in Chapter 6 of the *Guidance Manual for Conducting Surface Water Treatment Plant Special Performance Evaluations*. Microsoft Excel is used to document the data collected during the SPE. The main portion of the electronic report is contained in a file identified as *SPE_Report.xlsx*. Two supporting files identified as *RSF_Chart.xlsx* and *IFE_Chart.xlsx* are used to transfer turbidity data from the electronic SWMORS into performance charts in the *SPEReport* file.

When an SPE report is entered into the Consolidated Compliance and Enforcement Data System (CCEDS) by a PWS Investigator, the Letter of Transmittal may be an NOV with citations appropriate for any deficiencies. However, when the SPE Report is prepared and distributed by a TOP Core Team member, a Letter of Transmittal is used to transmit the report to the system. Unless the SPE report is forwarded to the water system by the Regional Office under an NOV, the Letter of Transmittal contains no statements pertaining to the possibility of subsequent actions by the TCEQ.

To help protect data integrity, the TOP Core Team members maintain CPE and SPE reports by PWS ID number on a network drive with access limited to Water Supply Division staff.

C1 Assessments and Response Action

Corrective Actions

In accordance with the *TCEQ QMP*, any person involved with work described in this Programmatic QAPP Addendum is responsible for reporting and correcting deviations from required or standard protocols specified in this document and/or referenced documents.

Most deviations are corrected by project staff using established procedures defined in SOPs that include documentation of problems, solutions, resolution implementation and follow-up. These deviations are documented at the point of origin and maintained with the applicable project records.

Unique problems that cannot be corrected by established procedures will require corrective action (CA) to be defined and documented in a CA report when the need arises. Upon detection of a unique deviation, staff are responsible for notifying supervisory staff in writing. Managers (or designees) are responsible for assuring that CA reports are prepared within 14 days and forwarded to the PWSS Program Lead Quality Assurance Specialist. Managers (or designees) are also responsible for assuring that CAs are selected and implemented that will most likely eliminate the problem and prevent recurrence. Managers (or designees) are also responsible for assuring that CA reports are prepared, reported, implemented, and tracked appropriately.

CA reports must include the following:

- Description of the problem - how it was identified and the date identified
- Programmatic or data impact(s)
- Root cause
- Corrective action taken
- Actions implemented to prevent recurrence
- Timelines for implementation of corrective actions and actions to prevent recurrence
- Individuals responsible for implementing actions, ensuring corrective actions are implemented, and verifying the effectiveness of actions
- Who prepared the report
- Signatures and dates that includes a manager

The PWSS Program Lead Quality Assurance Specialist determines whether the deviation is significant as defined by 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

CA reports documenting significant deviations must be forwarded to the WSD federal Grant Manager, the TCEQ QA Manager, and affected Deputy Directors within 30 days. The PWSS Program Lead Quality Assurance Specialist tracks and monitors the results of significant corrective actions to ensure effectiveness. Appropriate staff may be designated to implement and track corrective actions that are not deemed significant.

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, TCEQ QA Manager, or TCEQ Grant Manager may also request a work stoppage.

C2 Reports to Management

Status Reports

TOP Core Team Members provide status reports to the TOP Program Manager, who reports to the RCDT Leader, who then reports to the Section Manager. The Section Manager reports to the WSD Division Director.

SPE and CPE Reports

The CPE and SPE final reports referenced in Sections A6 and B10 contain a summary of findings related to the evaluation. In the case of mandatory CPEs, as applicable, the CPE report writer typically develops the CAP for addressing the performance-limiting factors after completion of the CPE Report first draft. The CAP is forwarded to the CPE team, WSD management, Region management, and Enforcement for review.

The CPE and SPE final reports with cover letters are distributed to the following:

- Water Section Manager in the Regional Office for inclusion in the water system's regional file
- TOP Program Manager who makes additional copies as appropriate, for:
 - Central Records Copy
 - TOP files
 - SWAP Folder
 - PDW Section Surface Water Treatment Rule Compliance Officer (SWTRCO)
 - Other persons and/or sections, as appropriate
- The authors of the report and the Team Leader

D1 Data Review, Verification, and Validation

The review of TOP evaluations involves the verification of reports and data to ensure they are complete, correct, and comply with regulatory and procedural requirements to determine acceptance. Validation does not apply to TOP evaluations. In general, validation extends the evaluation of data beyond regulatory and procedural requirements (i.e. data verification) to determine their quality so they can be qualified appropriately and issues can be communicated to the data

users. TOP data, letters, and reports are either deemed acceptable or unacceptable based on the verification of reports and data. Situations do not exist in which data or information is qualified by data users.

D2 Verification and Validation Methods

The preparation of both SPE and CPE final reports begins with the development of draft sections during the on-site evaluation activities. Following the exit meeting with the utility officials, the team members complete rough drafts of reports and data that will be included in the final report. Multiple versions are produced before a final report is completed. The goal of the rough draft is to create a document as complete and accurate as possible.

First and second drafts of reports are peer-reviewed by TOP Core Team members who review the technical data, findings, and conclusions. They also check for glaring omissions and style/spelling errors. Comments are returned to the evaluation Team Leader who compiles the third draft. The report is forwarded to the Water Section Manager in the applicable region for review before the report is finalized.

D3 Reconciliation with User Requirements

The “users” of CPEs and SPEs include both the TCEQ and the PWS. The final work products of CPEs and SPEs are the data and reports which are finalized when the verification steps described above are implemented.

The primary “user requirements” for TOP work products are,

- documents are coherent, logical, and correct
- conclusions and, if applicable, required corrective actions are supported by collected data

Adherence to the requirements of this Programmatic QAPP Addendum ensures that the TOP CPE and SPE evaluations and analyses meet both state and federal regulations.

Exhibit 1: Workflow for Conducting CPEs and SPEs

