



Directed Assistance Modules (DAMs) for Public Water System Operators

- David Simons, P.E., Water Supply Division
- April 19, 2022 DWAWG Meeting

Overview

- DAMs are developed to be delivered onsite to public water system (PWS) operators.
- DAMs are typically a 1-day training event.
- DAMs are frequently delivered by TCEQ's Financial, Managerial, and Technical (FMT) Assistance providers.
 - However, TCEQ staff and Texas Optimization Program (TOP) Support Contract subcontractors sometimes deliver DAMs.

Background

- DAMs are created by TOP, often by TOP Support subcontractors.
- TOP provides “train-the-trainer” sessions to the FMT Assistance contractors for each new DAM and for refresher training.
- TOP staff and contractors occasionally observe the delivery of DAMs by FMT Assistance contractors for quality control purposes.
- Assistance providers will attempt to help but cannot “fix” the problems themselves.

PWS Prerequisites

- Licensed operator(s) who is available for the entire training.
 - Note that some DAMs are eligible for operator CEUs
- If applicable, access to instruments covered by the DAM and any necessary chemicals and reagents
- All relevant TCEQ approvals for the training
 - For example, an approved CT Study for the DAM that covers how to fill out a Surface Water Monthly Operating Report (SWMOR)

DAM 1

Performance Goals and a Monitoring Strategy at a SWTP

This DAM helps a surface water treatment plant (SWTP) to develop process monitoring strategies and goals to improve water treatment. It helps identify the specific monitoring locations, parameters, frequencies, methods, and goals.

- Includes discussion of compliance monitoring vs. process management monitoring.

DAM 2A Establishing Appropriate Chemical Feed Rates

After receiving this training, operators who need to dose chlorine, chloramines, fluoride, or other chemicals should be able to measure chemical feed rates; calculate chemical dose; and perform monitoring accurately. For a SWTP, DAM 2A is a prerequisite for DAM 2B.

- Differentiating chemical feed rates from chemical doses is a critical part of this DAM.
- Relatively math-heavy

DAM 2B

Jar Testing for a SWTP

This DAM helps SWTPs develop and optimize the jar testing processes used to ensure effective settling. When DAM 2B is scheduled, DAM 2A should be scheduled first.

- One of the keys for successful jar testing is getting the method to match the physical coagulation, flocculation, and clarification facilities.
- Conversion of jar test concentrations to plant feed rates
- Relatively math-heavy

DAM 3

Completing the SWMOR For a Conventional SWTP

After receiving this training, the staff of the SWTP should be able to establish an effective electronic file management system; customize the surface water monthly operating report (SWMOR) for the specific surface water treatment plant; save the customized SWMOR; create monthly files; enter daily data; print and submit the completed SWMOR; determine if the treatment plant is in compliance.

- This training provides in depth instructions for completing the SWMOR and developing appropriate reporting habits.
- Note that RG-211 (Surface Water Treatment Plant Requirements for Monthly Reporting and Public Notification) was revised January 2021.

DAM 3-Alt Completing the SWMOR-Alt for SWTPs with Alternative Treatment

All SWTPs with innovative treatment—such as membranes—must complete the SWMOR-Alt form. This DAM covers the similar material as DAM 3 but for SWTPs that must complete the SWMOR-Alt.

- This training provides in depth instructions for completing the SWMOR-alt and developing appropriate reporting habits.
- Note that RG-211 now includes SWMOR-Alt requirements.

DAM 4

Disinfection Byproduct (DBP) Control for SWTPs

Sometimes, DBP issues start in the SWTP. Participating in this DAM will help SWTP staff determine whether DBP formation occurs in the plant, and, if so, how to control it with chloramination. This DAM involves two visits: samples are collected on the first visit, they are analyzed, and on the second visit the results are interpreted and discussed.

- Please note we intend on updating this DAM in the near future.

DAM 5

Process Management for Systems Using Chloramines

This training explains chloramine chemistry and how to successfully dose and maintain a chloramine residual. After receiving this training, a water system's staff should be able to explain how chloramines form and how to control operating conditions to minimize competing reactions. DAM 5 is a prerequisite for DAM 8.

- DAM 5 and DAM 8 are frequently requested.
- We think a basic understanding of chloramine chemistry is necessary to effectively manage nitrification (DAM 8).

DAM 6

Filter Assessment for a Conventional SWTP

A SWTP may be required to do a filter assessment because of turbidity trigger levels or may wish to do one in order to optimize the plant. In either case, this DAM will train operators on how to successfully perform filter assessments and analyze their results.

- Assessments require physical access to the filter(s) to take measurements and excavate some of the media.

DAM 7

Method 334—Approval of Non-DPD Online Chlorine Analyzers for Regulatory Use

In order to be allowed to use a non-DPD (N,N-diethyl-p-phenylenediamine) on-line chlorine analyzer for reporting regulatory chlorine residuals, the instrument's accuracy must be established using EPA Method 334. This DAM helps systems use that method.

- Delivered by TOP
- Typically applied to amperometric online analyzers
- Heavy on quality control
 - Proving that the PWS's benchtop chlorine analysis method is accurate
 - Comparing benchtop results with online analyzer

DAM 8

How to Create a Nitrification Action Plan (NAP) for a PWS

Every PWS that distributes chloramines must have a NAP to control or respond to potential nitrification—a biological process that can reduce the disinfectant residual. This DAM will help determine goals, baselines, triggers, and actions for the NAP. DAM 5 is a prerequisite for DAM 8.

- Very popular DAM
- Built around the guidance provided on TCEQ's nitrification web pages
- Creating a system-specific NAP takes time.
 - Baseline values for chloramine and nitrification parameters
 - A PWS usually has work to do after completing the DAM.

DAM 9

Special Studies in the Water Treatment Plant

Water treatment plant operators collect a lot of routine monitoring data and take actions to adjust treatment processes on a continuous basis. What should the operator do when the routine adjustments don't seem to be working, when there might be a better way to treat the water, or something just doesn't make sense? This DAM presents methods for conducting special studies in the plant using principles of troubleshooting and the scientific method that result in rational action plans to address the issues that fall outside routine plant operations.

- This DAM requires extensive critical thinking.
 - Troubleshooting
 - Scientific method
- **Very rarely delivered**
 - TOP personnel provide the training.

DAM 10

Turbidimeter Data Integrity

The data collected by turbidimeters is an important part of a SWTP's compliance record and is used to indicate the effectiveness of pathogen removal through the plant. This data can pass through a number of electronic processes before it is ultimately reported on the SWMOR. This DAM helps operators make sure that the data they collect and report is of the best and most accurate quality.

- DAM covers
 - Verifying that online and benchtop turbidimeters are generating accurate data
 - Potential SCADA data recording issues
 - Potential reporting issues
 - Turbidimeter calibration and maintenance

DAM 11

Level 1 Assessments under the Revised Total Coliform Rule (RTCR)

The federal RTCR took effect April 1, 2016. Under RTCR, systems must perform a Level 1 Assessment to find and fix any sanitary defects if they exceed trigger levels for total coliform presence. This DAM assists with that process.

- This DAM is rarely delivered anymore.
 - FMT Assistance now has an assignment task to help the PWS complete a Level 1 Assessment rather than this classroom training.

DAM 12

Establishing and Managing a Cross-Connection Control Program

This DAM helps systems without an existing cross-connection control programs create one or help systems with existing cross-connection control programs evaluate, modify, and improve their program.

- The DAM has been delivered after significant backflow events.
- Great opportunity for PWSs that are unaware of requirements for developing cross-connection control programs.

Additional Information

- WSD management often asks that TOP personnel deliver DAMs to PWSs after significant events, but these trainings can be helpful when a PWS identifies a gap or need so those events don't happen.
- We are always willing to consider proposed topics.

Questions?

David Simons, P.E.

david.simons@tceq.texas.gov

512-239-3154