Area Wide Optimization Program

Individual Program Background Information 2019

Name of Agency:

Official Recognition of AWOP

Please provide the AWOP start date and describe any official recognition of AWOP in agency newsletters, web pages, awards programs, annual meetings, etc.

The Region 6 AWOP began in 1999 and has been recognized at regional drinking water meetings, the 2015 EPA Administrator's Aim High Campaign, and in the ASDWA newsletters. In 2014, the Region 6 AWOP program combined with the Region 7 AWOP program and became the Region 6/7 AWOP.

Official Adoption of AWOP Goals

Please describe when and how AWOP goals were adopted by your agency and communicated to the water systems.

The Region adopted the optimization goals prior to becoming an AWOP Region in 1999 and has adopted newer goals as the AWOP expanded into other areas of drinking water optimization. The goals are communicated to the Region 6 /7 states as part of the ongoing AWOP meetings.

EPA Region 6's Office has direct implementation over public water systems on tribal lands and only has one water system that has conventional surface water treatment. While the goals have been conveyed to the water system, they are not being implemented. There is currently no AWOP for the Region 6 DI program on tribal lands.

National Optimization Goals adopted by your PWSS Program – Check all that apply:

(refer to Attachment I for descriptions of the NOLT optimization goals.)

Water Treatment Plants

Microbial (Turbidity): Raw Water_X__ Individual Settled_X___ CFE_X___ IFE__X__
Post BW w/FTW_X___ Post BW wo/FTW_X__ Disinfection (CT) _X___

DBPs (TTHM/HAA5): Plant Effluent_X___ Enhanced Coagulation_X___ Disinfection_X___

Chloramine Application: Ammonia Control_X___ Dosing (Chlorine & Ammonia) _X__

Distribution Systems

Individual Site DBPs _X___ Long Term System DBPs_X___ Tank Operations_X___
Secondary Disinfection, Free Chlorine _X__
Secondary Disinfection, Chloramines (monochloramine, Ammonia & Nitrite) __X___

Modifications to the national goals or other optimization goals utilized by your Agency:
Please describe any modified AWOP goals and/or any additional optimization goals adopted by your agency and communicated to the water systems.

As part of the NOLT, no modifications have been made to the National goals.

Description of *Current* AWOP Team Members and Responsibilities

Please provide the name, position/title, description of AWOP duties and approximate FTE that each team member spends on AWOP. Also indicate who serves as the AWOP team lead/point of contact.
Example: Nevel O. Meter, District Engineer, PBT trainer, ~ 0.3 FTE

(Note that if you submitted this information in 2017, that information is being provided and if there are no changes, simply indicate "no change" in this section.)

1. AWOP Team Leader: José G. Rodriguez, Environmental Engineer, ~0.2 FTE
2. Jatin Mistry, Life Scientist, AWOP POC, ~ 0.2 FTE
3. José Lugo-Figueroa, Environmental Engineer, Team Member, ~0.1 FTE
4. Mark McCasland, Chemical Engineer, Team Member, < 0.1 FTE (Retiring on August 31, 2019)
5. Kim Ngo, Supervisor, Team Member, < 0.1 FTE
6. John Baker, SEE, Team Member, < 0.1 FTE
7. Meaghan Bresnahan, Life Scientist, Team Member, < 0.1 FTE
8. Alison Fontenot, Team Member, < 0.1 FTE
9. Loribeth Tanner, Team Member, < 0.1 FTE
10. Brian Dye, Team Member, < 0.1 FTE
11. Andrea Abshire, Team Member, < 0.1 FTE

Description of *Former* AWOP Team Members:

Please provide the name of former AWOP team members, and their reason for leaving the team. This information is for historical purposes and also to support networking as AWOP continues to expand.

(Note that if you submitted this information in 2017, that information is being provided and if there are no changes, simply indicate "no change" in this section.)

1. Nancy Ho, Environmental Scientist, Accepted another position within EPA
2. Nichole Foster, Environmental Engineer, Accepted another position within EPA
3. Andrew Waite, Environmental Engineer, Retired
4. Amy Camacho, Environmental Scientist, Accepted another position within EPA
5. Angela Restivo, Environmental Scientist, Accepted another position within EPA

Inventory of State-Wide Treatment Facilities[1]	Number
Rapid rate filtration treatment plants[2,3]	1
Utilizing static settling without tubes or plates	
Utilizing static settling with tubes or plates	
Utilizing sludge blanket clarification (upflow, pulsator)	
Utilizing contact adsorption clarification	
Utilizing sludge recirculation (including ballasted clarification)	
Utilizing DAF, or other alternative clarification process	
Utilizing direct/in-line filtration	
Utilizing packaged filtration (package plants)	1
Slow sand filter plants	1**A**
Diatomaceous earth filter plants	
Membrane treatment plants	
Bag or cartridge filtration plants	3**A**
Primary disinfectant	
Free chlorine	5
Chloramines	
Ozone	
UV	
Secondary disinfectant	
Free chlorine	
Chloramines	

[1]Limited to surface water treatment plants (includes surface, GUDI, blended sources).
[2]All surface water treatment plants, except cartridge, membrane and slow sand.
[3]When a plant utilizes multiple treatment processes or configurations identified below, please include them all in this inventory, e.g., a package plant that utilizes a CAC will be included as a rapid rate plant using CAC and packaged filtration.

A - These systems are ground water under the direct influence of surface water systems.

AWOP Vision:

Please describe the vision for your AWOP

The overall vision of the Region 6/7 AWOP program is to build the knowledge base of the AWOP team by enhancing skills, being current on state-of-the-science treatment technologies and issues present at water treatment plants, and to educate staff to utilize AWOP components into their everyday work activities.

Status Component Implementation:

Please describe status component activities that are implemented in your agency, e.g., (are water systems ranked according to public health risk and how is this information used; how is water system data integrity ensured):

Because there is only one surface water treatment plant regulated by Region 6, a ranking component is not necessary. Data integrity has been an issue and training and technical assistance has been provided to the operators.

Targeted Performance Improvement (TPI) Implementation:

Please list all activities that are implemented as TPI activities in your state, e.g., CPEs, PBT, Enhanced Sanitary Surveys, technical assistance, other): Five Region 6 AWOP Team members participated in a Multi-State CPE. In addition, a filter assessment and a second mandatory CPE was conducted at the Region's only surface water treatment plant as a result of continued turbidity violations and trigger exceedances.

AWOP Maintenance Component Implementation:

Integrate

Please check the following areas where AWOP has been integrated into the PWSS Program:
Plan Reviews_X___ Permitting_____ Capacity Development_____ Operator Training_X____
Technical Assistance_X__ DWSRF Prioritization___ Enforcement___ Sanitary Surveys__X__
Other(identify)_____

Enhance

Please describe any AWOP enhancements that have been implemented in your program. One example could include modifying status component criteria.

No enhancements have been made to AWOP.

Sustain

Please describe any activities that you implement to sustain your agency's AWOP. Some examples could include efforts to promote and incentivize AWOP (e.g., publish regular newsletter, awards program, AWOP participation = higher ranking for grant/loan funding, etc.).

New staff are introduced to AWOP and training is provided as needed. All section members are invited to participate in AWOP. Periodic meetings to present the status of the Regional AWOP are held. In addition, training sessions on the technical topics discussed during the quarterly meetings are presented to the staff.

Lessons Learned:

Please list "lessons learned" that you feel would be helpful to other programs, e.g., how to build and maintain internal support, how to integrate AWOP into your PWSS program, etc). If you are new to AWOP, please list a question or concern you'd like to know more about.

A successful AWOP program must have redundancy and management support to sustain itself. Incorporating AWOP into outreach activities (sanitary survey training, rule reviews, and compliance assistance) with states and tribes proves to be a success.

Attachment I: Optimization Goals Adopted by the NOLT

Category	Goal	Applies to	Description
Microbial	Minimum Data Monitoring Goal Raw Water Turbidity	Rapid Rate Filtration Plants	— Record maximum daily raw water turbidity.
Microbial	Individual Sedimentation Basin Performance and Monitoring Goals	Rapid Rate Filtration Plants	— Settled water turbidity ≤ 2 NTU in 95% of readings when the annual average raw turbidity is > 10 NTU. Optimization is based on the daily maximum values recorded from all readings. — Settled water turbidity ≤ 1 NTU in 95% of readings when the annual average raw turbidity is ≤ 10 NTU. Optimization is based on the daily maximum values recorded from all readings. — Record individual sedimentation basin effluent turbidity readings at intervals of 4-hours or less if taking grab samples, or 15 minutes or less for continuous monitoring.
Microbial	Individual and Combined Filter Performance and Monitoring Goals	Rapid Rate Filtration Plants	— Combined filter effluent turbidity ≤ 0.10 NTU in 95% of readings. Optimization is based on the daily maximum values recorded from all readings. — Individual filter effluent turbidity ≤ 0.10 NTU in 95% of readings (excluding 15-minute period following filter backwash). Optimization is based on the daily maximum values recorded from all readings. —Post backwash individual filter effluent turbidity for filters <u>without</u> filter-to-waste capability: Maximum individual filter effluent turbidity following backwash ≤ 0.30 NTU and achieve ≤ 0.10 NTU within 15 minutes. —Post backwash individual filter effluent turbidity for filters <u>with</u> filter-to-waste capability: Minimize individual filter effluent turbidity during filter-to-waste period and record maximum value. Return the filter to service at ≤ 0.10 NTU. — Record individual and combined filter effluent turbidity readings at intervals of 1-minute or less for continuous monitoring.
Microbial	Disinfection Performance and Monitoring Goals	Rapid Rate Filtration Plants	—Meet CT requirements to achieve inactivation of *Giardia* and viruses plus a system-specific factor of safety. — Record disinfectant residual, temperature, and pH at maximum daily flow for CT calculations.
Disinfection By-Product	Plant Effluent Disinfection Byproducts (DBPs) Performance and Monitoring Goals	Surface Water and Groundwater Under the Direct Influence of Surface Water Plants	—System Specific Targets: Could be a discrete value or range that is based on a running annual average. Recommended goal value/range should be 30% to 50% of long term LRAA goals (e.g., 20-30 ppb for TTHM, 15-20 ppb for HAA5). —Collect quarterly TTHM and HAA5 samples at the plant effluent and distribution system compliance sites.
Disinfection By-Product	Enhanced Coagulation Performance and Monitoring Goals	Surface Water and Groundwater Under the Direct Influence of Surface Water Plants	—Meet Stage 1 D/DBP Rule TOC removal requirements for enhanced coagulation, which are based on source water alkalinity and TOC levels, or an alternative compliance criterion, as a running annual average (RAA) of the performance ratio (actual TOC removal/required TOC removal) plus a factor of safety of 10% (or performance ratio ≥ 1.1). —Collect monthly total organic carbon samples for raw and treated water (only applies to parent systems).
Disinfection By-Product	Disinfection Performance and Monitoring Goal	Surface Water and Groundwater Under the Direct Influence of Surface Water Plants	—Meet CT requirements to achieve inactivation of *Giardia* and viruses plus a system-specific factor of safety. —Record disinfection residual, temperature, and pH at maximum daily flow for CT calculations (only applies to parent systems).

Distribution System	Disinfection Byproducts Performance and Monitoring Goals	Parent and Consecutive Water Systems that Utilize any Secondary Disinfectant	—Individual Site Goal: Quarterly Maximum Locational Running Annual Average TTHM/HAA5 values not to exceed 70/50 ppb. —Long-Term System Goal: Average of Maximum Locational Running Annual Average TTHM/HAA5 values not to exceed 60/40 ppb (the average of the last 8 quarters cannot exceed 60/40 ppb). —For systems in compliance with the TTHM and HAA5 MCLs, collect quarterly DBP samples at all compliance locations; for systems not in compliance, collect monthly samples.
Free Chlorine Distribution System	Disinfection Performance and Monitoring Goals	Parent and Consecutive Water Systems that Utilize Free Chlorine as a Secondary Disinfectant	—Maintain ≥ 0.20 mg/L free chlorine residual at all monitoring sites in the distribution system, at all times. —Monitoring should be performed at least monthly, but more frequently at critical times (i.e., summer months). —Sample locations should include bacteriological and DBP compliance sites, all distribution system entry points (e.g., plant effluent, consecutive system connections), all tanks (preferably while draining), and identified critical sites base on investigative sampling (minimum of one critical site in each quadrant of the system, four sites total).
Plants that Utilize Chloramine	Disinfection: Ammonia Control Performance and Monitoring Goals	Parent and Consecutive Water Systems that Utilize Chloramine as a Secondary Disinfectant	—Maintain a detectable free ammonia residual in the plant effluent ≤ 0.10 mg/L as NH3-N. —Monitor free ammonia at <u>least</u> once per day in the plant effluent. • The monitoring frequency may be adjusted based on the variability observed over an extended period of time. • Free ammonia may be monitored in the source water periodically (e.g., once per week) to assess variability.
Plants that Utilize Chloramine	Operational Guideline Chlorine and Ammonia Dosing	Parent and Consecutive Water Systems that Utilize Chloramine as a Secondary Disinfectant	—Maintain a chlorine-to-nitrogen mass ratio between 4.5:1 and 5.0:1 (or chlorine-to-ammonia mass ratio between 3.7:1 and 4.1:1), which should result in a detectable free ammonia in the plant effluent that is ≤ 0.10 mg/L as NH3-N.
Chloramine Distribution System	Disinfection: Monochloramine and Nitrification-Related Parameters Performance and Monitoring Goals	Parent and Consecutive Water Systems that Utilize Chloramine as a Secondary Disinfectant	—Maintain ≥ 1.50 mg/L monochloramine residual at all monitoring sites in the distribution system, at all times, to provide a disinfection barrier against both microbial contamination and nitrification prevention. —Monitor monochloramine, free ammonia, and nitrite in the distribution system and at the entry points (to establish a baseline). • Monochloramine and free ammonia should be monitored at <u>all sample locations</u>. • Nitrite should be monitored at sample locations where monochloramine is ≤ 1.50 mg/L; nitrate may also be monitored, to further assess nitrification. • Sample locations should include bacteriological and DBP compliance sites, all distribution system entry points (e.g., plant effluent, consecutive system connections), all tanks (preferably while draining), and identified critical sites base on investigative sampling (minimum of one critical site in each quadrant of the system, four sites total). • Monitoring should be done at least monthly, but more frequently at critical times (e.g., summer months).
Distribution System	Operational Guidelines Tank Operations	Parent and Consecutive Water Systems that Contain Storage Tanks (any secondary disinfectant)	—Maintain an average turnover time < 5 days; or establish and maintain a water turnover rate at each storage facility. —Maintain good mixing (i.e., Performance Ratio ≥ 1) at all times; for tanks where the PR cannot be calculated, adequate mixing (i.e., uniform water quality) should be confirmed by alternate means (e.g., tank profiling/water quality sampling).