
Oklahoma

SFY14 Capacity
Development
Program
Annual
Progress Report
to EPA

September 23rd, 2014

1. Introduction

With the Safe Drinking Water Act (SWDA) Amendments of 1996, Congress put in place a variety of initiatives designed to assist public water systems in providing safe drinking water and complying with the terms of the Act. One of these was the capacity development (CD) initiative, established with the intent of focusing on those systems most in need of assistance, primarily very small systems serving populations of 3,300 or less. CD is the process by which the State of Oklahoma assures that drinking water systems acquire and maintain the *technical, managerial, and financial (TMF)* capabilities to successfully operate.

All States are currently implementing state-specific CD programs tailored to meet water systems' needs. As required in Section 1420 of the Safe Drinking Water Act Amendments of 1996, the Department of Environmental Quality (DEQ) must submit an annual report of CD activities to the Environmental Protection Agency (EPA). This report reflects the efficacy of the State's CD Strategy by detailing improvements in the *TMF* capabilities of the State's public water systems. The annual CD progress report is available on the DEQ website at <http://www.deq.state.ok.us>.

A public water system (PWS) is defined as a system that provides water via piping or other constructed conveyances for human consumption to at least 15 service connections or serves an average of at least 25 people for at least 60 days each year.

There are three types of PWSs:

1. Community (such as towns);
2. Non-transient non-community (such as schools or factories); and
3. Non-community systems (such as rest stops or parks).

Of the 1,692 active PWSs in Oklahoma:

- 190 systems use surface water as their primary source;
- 792 use groundwater as their primary source;
- 566 purchase from surface water systems;
- 7 use groundwater under the direct influence of surface water as their primary source
- 126 purchase from groundwater systems; and
- 11 purchase from groundwater under the direct influence of surface water systems;

Of the 1,692 PWSs in Oklahoma:

- 1,079 are community water systems;
- 103 are non-transient non-community; and
- 510 are non-community water systems.

DEQ has the statutory authority to ensure that all water supply systems have adequate *TMF* capabilities prior to the construction of a public water facility in Oklahoma.

These capabilities are partly assessed via two DEQ regulatory directives. One directive derives from OAC 252-626 Public Water Supply Construction Standards [reference <http://www.deq.state.ok.us/rules/626.pdf>], which states that a PWS must receive a "Permit-to-Construct" from DEQ prior to initiating construction. Another directive requires all operators of a PWS to be licensed by DEQ, according to OAC 252:710 Waterworks and Wastewater Works Operator Certification [reference <http://www.deq.state.ok.us/rules/710.pdf>].

DEQ's CD program relies on the success of its enforcement and compliance programs. These two programs are partially funded through the Drinking Water State Revolving Fund (DWSRF) Public Water System Supervision program (10% State Program Management Set-

Aside) and the 15% Local Assistance and Other State Programs Set-Aside. Funding information is detailed in DEQ's 2015 DWSRF *Intended Use Plan*. Note that State's fiscal year is from July 1st to June 30th the following calendar year.

2. Enforcement and Compliance Mechanisms

DEQ maintains a strong enforcement program that particularly addresses systems with multiple violations of SDWA requirements. Such systems are referred to DEQ enforcement staff for analysis of the circumstances of the violations. When it is determined that enforcement is needed, there are three main legal tools available to the agency to bring about system compliance: a Notice of Violation, a Consent Order, and an Administrative Compliance Order. Boil Advisories, while not official enforcement actions, also play a role in addressing SDWA violations.

A *Notice of Violation* (NOV) is the first formal enforcement document issued to facilities upon failure to comply with DEQ rules or regulations. Violations address matters such as monitoring failures, improper operating procedures, or construction deficiencies. An NOV typically has a short deadline for compliance, typically fifteen days from receipt of the document by the water system.

If it is determined that the system is not likely to regain compliance by the NOV's deadline, DEQ's PWS District Engineer (DE) prepares a *Consent Order* (CO). The CO is a mutual agreement between DEQ and the affected system that cites the system's responsibilities, establishes a longer deadline for returning to compliance (with milestones and deadlines for major steps towards compliance), and specifies fines that may be levied against the system as a result of non-compliance.

An *Administrative Compliance Order* (ACO) is issued when time is limited and there is a

significant health hazard, or a water system refuses to agree to the terms of the CO. In an ACO, DEQ determines what tasks need to be completed and sets deadlines for the completion of these tasks. Both the CO and the ACO stipulate the penalties for failing to meet the required deadlines.

Boil Advisories, while not enforcement actions themselves, are an additional tool to achieve compliance. These notices are issued to systems that have "acute" or "fecal positive" bacteriological violations. Boil Advisories require immediate notice to all consumers in order to inform the public of how to produce water that is safe for human consumption.

In calendar year 2013, DEQ issued 1,890 enforcement actions, which consisted of:

- 1,473 informal enforcement letters;
- 402 NOVs and COs;
- 2 ACOs; and
- 14 Boil Advisories.

A total of 897 systems were returned to compliance during calendar year 2013.

3. Capacity Development Program Coordinator

The Capacity Development Coordinator (CDC) facilitates efforts of the CD program in Oklahoma. The CDC is responsible for fostering the relationship between the various DEQ drinking water programs in the directive to increase *TMF* capabilities, and between DEQ and other state agencies and organizations that are involved with supporting and assisting public water supplies.

Inside the agency, the CDC chairs the Capacity Development Team, consisting of members from the PWS Enforcement Section, PWS Compliance Tracking Section, Operator Certification Section and the DWSRF Section. The Team's main goal is to implement DEQ's

Capacity Development Strategy and focus on those systems that have made the Enforcement Targeting Tool (ETT) list and scored 10 points or greater.

Externally, the CDC coordinates with the Oklahoma Rural Water Association (ORWA), Community Resource Group (CRG), Southwest Environmental Finance Center (SWEFC), Oklahoma Municipal League (OML) and other agencies and organizations that provide *TMF* training and assistance to water systems. This ensures that open lines of communication exist between the entities and promotes cooperative and complimentary efforts towards achieving water system sustainability.

Table 1 lists the tools currently in use in Oklahoma to assess and enhance *TMF* capabilities.

Tool	<i>Technical</i>	<i>Managerial</i>	<i>Financial</i>
Construction Permitting	X		
PWS Enforcement	X	X	
Operator Certification	X		
SWAP	X	X	
AWOP	X	X	X
DWSRF	X	X	X
CDC <i>TMF</i> Assistance	X	X	X
Sanitary Survey	X		
CUPSS		X	X
Regionalization	X	X	X
FACT		X	X
Rate Studies			X
Water Loss Auditing	X	X	X

Table 1 – Oklahoma’s Capacity Development tools.

4. Water Quality Efforts and Participation

A. **Regionalization/Consolidation** - DEQ continues its efforts to identify new and existing water systems that may benefit from regionalization/consolidation into larger water systems. Systems will be considered for regionalization/consolidation that:

- Have source water capacity limitations (drought);
- Are undergoing DEQ enforcement proceedings;
- Are considering giving away, selling, or abandoning the system; or
- Have expressed interest in regionalization or consolidation.

In SFY14, eight (8) water systems consolidated into neighboring water systems. Several of these were non-community water systems that were incorporated into neighboring community water systems, including:

- Chandler Senior Citizens Center - now a part of Chandler community water supply (CWS);
- Corps of Engineers Salt Creek North campground – now a part of Mannford CWS;
- Okie Express – now a part of Oklahoma City CWS;
- D & M Grocery – now a part of Oklahoma City CWS; and
- Colonial Motel – now a part of Spencer CWS.

Incorporating non-community water supplies into CWSs enhances public health by providing the former non-community systems with water that is more thoroughly tested and often more plentiful and reliable than they were able to produce on their own.

Also in SFY14, the DWSRF offered principal forgiveness for entities agreeing to regionalize

or consolidate. This satisfies EPA's requirement that at least 20%, but no more than 30% of the capitalization grant must be utilized as additional subsidies. Subsidization will be given as principal forgiveness for projects that regionalize or consolidate water systems that meet specific requirements. In SFY 2014, four (4) water systems were offered principal forgiveness for consolidation or regionalization:

- Mayes County Rural Water District (RWD) #6 to upgrade its treatment plant to also serve the Town of Adair and Mayes County RWD #8;
- Longtown Rural Water & Sewer District #1 to upgrade its distribution system and consolidate with Pittsburg County RWD #4;
- Delaware County RWD #11 to extend its distribution system to serve the Town of Colcord; and
- Fairmont Public Works Authority to discontinue use of its wells and connect its distribution system to the Salt Fork Water Authority.

Regionalization/consolidation efforts will continue in the State, aimed at achieving the best and most reliable service at reasonable rates for the long-term benefit of the customers. There are at least five (5) water systems listed in the DWSRF priority list that might be eligible for consolidation/regionalization.

B. The *Funding Agency Coordinating Team (FACT)*, hosted by the Oklahoma Rural Water Association (ORWA), is comprised of the following state and federal water and wastewater project funding agencies:

- Oklahoma Department of Environmental Quality;
- Oklahoma Department of Commerce;
- Oklahoma Water Resources Board (OWRB);
- Indian Health Service;
- U.S. Department of Agriculture – Rural Development;

- Oklahoma Association of Regional Councils;
- Community Resource Group;
- EPA; and
- Cherokee Nation.

FACT meets quarterly to discuss the status of Oklahoma community water supplies identified in DEQ's enforcement list. Invitations are extended to water systems from across the state that are contending with the most urgent problems and have the greatest *financial* need, with the purpose of providing help to them as quickly and effectively as possible.

With every public financing agency present at FACT, communication barriers are reduced and application processes are streamlined, resulting in rapid assistance. FACT provides a single uniform method for requesting funding and regulatory approvals, and it offers guides, checklists, and forms that are accepted by all FACT-participating agencies. DEQ has been a member of FACT since its inception in the early 1990s and has been instrumental in crafting an organization that helps to correct some of Oklahoma's most difficult to solve public water supply issues.

The assistance provided by FACT has been universally praised by invited water systems, which provide feedback by voluntarily completing a brief survey immediately following the FACT meeting and a follow-up survey a few months later. Survey responses are used to fine-tune the assistance provided by FACT and help plan the direction of subsequent FACT meetings.

5. Water Quality Programs

A. The *Construction Permitting Program* assures *technical* adequacy by reviewing water system construction plans and specifications. This *technical* review helps determine the sufficiency of the source water and the water system infrastructure.

B. The **PWS Enforcement Program** also assures the *technical* capabilities of water systems by reviewing engineering reports on proposed construction projects, and by providing *technical* training to water systems. This assistance encompasses *technical* operation and security and addresses *managerial* capabilities by providing training to water system managers. It is the role of the CDC to coordinate and document the efforts of all of DEQ's drinking water programs and ensure *TMF* capabilities statewide.

C. The **Operator Certification Program** is charged with training and licensing persons working in water and wastewater facilities in the State. Programmatic oversight helps to ensure that operators have the training to properly treat and monitor drinking water supplied to the public. With oversight from the DEQ Operator Certification Section, ORWA is revising the water and wastewater operator licensing study guides, and provides study material and training for operators of all classifications of water facilities. The examinations for operators are administered by the ORWA by means of a DEQ contract. During SFY14, all 1,692 public water supply systems had available an appropriately licensed operator in responsible charge.

In addition to the training offered by ORWA, training is available in classroom settings and online from Rose State College, the state's environmental training center. On line classes and exams for operators and other environmental professionals are available at any place with an internet connection at several times during the year.

D. The **Source Water Assessment Program (SWAP)** provides a focus on water quality anti-degradation and protection of beneficial uses for both surface and ground waters.

The SDWA Amendments require development and implementation of a SWAP to analyze existing and potential threats to the quality of the public drinking water throughout the state. DEQ maintains approval from the EPA to administer the SWAP program. The SWAP program in Oklahoma was developed utilizing EPA's *Source Water Assessment and Protection Programs Guidance*, and SWAP assessments include the following:

- Delineation of the source water protection area;
- Inventory of the potential contaminant sources within the area;
- Determination of the susceptibility of the PWS to contamination from the inventoried sources; and
- Release of the results of the assessments to the public.

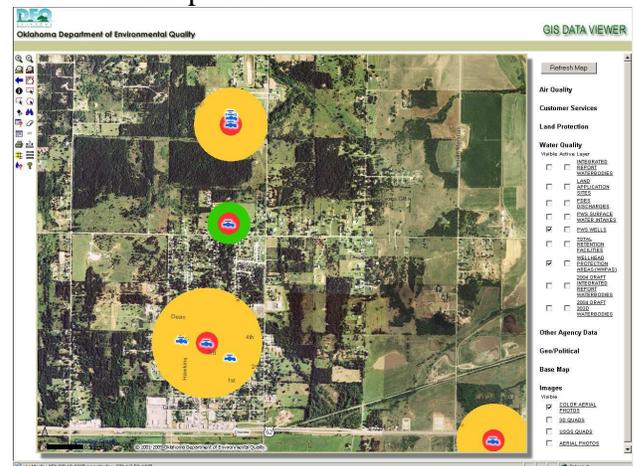


Figure 1 - Sample map indicating location of well and wellhead protection areas.

The data collected from a SWAP is summarized in the water system's annual Consumer Confidence Report, which identifies the system's vulnerability and susceptibility score. This report is available for public review.

Much of data found in a SWAP is also available via a geographic information system on the DEQ website. Currently, most regulated discharges, wells, surface intakes, and other planning information can be found here and is available through an interactive mapping system

that allows the user to view any combination of items on the map. A map may be viewed that includes the system’s water source (ground or surface) and all known contaminants located within a defined distance from the proposed well site.

The state of Oklahoma is among at least 43 other states currently participating in the Source Water Protection Program (SWPP). SWPP is a joint project by the U.S. Department of Agriculture’s Farm Service Agency and the nonprofit National Rural Water Association. It is designed to help prevent source water pollution through voluntary practices installed by producers at the local level. DEQ, as primacy agency for Source Water Protection in Oklahoma, attends and advises at the *Source Water Protection Workshop* hosted by the Oklahoma Rural Water Association. The primary objective of the workshop is to identify high priority Source Water Protection areas in the state and coordinate input from:

- DEQ
- OWRB
- Oklahoma Corporation Commission
- Oklahoma Department of Wildlife Conservation
- Rural Water Districts

E. The *Area-Wide Optimization Program (AWOP)* was piloted in April 1999 in Oklahoma for EPA Region 6. This program started as a multi-state effort to optimize particle removal and disinfection capabilities of filtration water treatment plants. The goal of AWOP is to maximize public health protection from disease-causing microbial contaminants by identifying performance problems in the water treatment and distribution system. Following the AWOP model is one of the most cost-effective, economical ways a CWS can improve their ability to produce safe drinking water. Water systems having the most trouble with their filtration treatment are identified and prioritized in terms of their need for assistance.

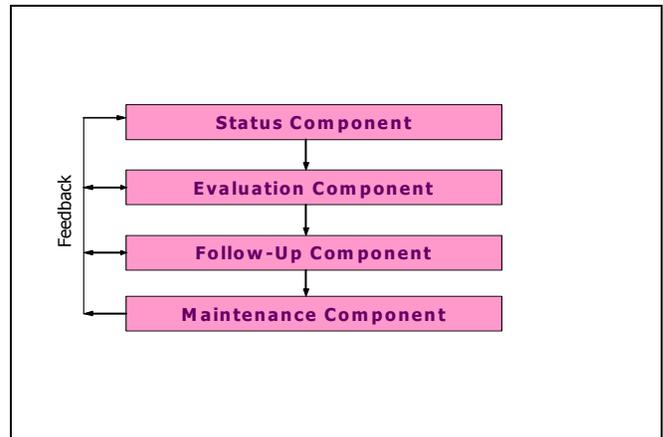


Figure 2 – AWOP model.

As demonstrated in *Figure 2*, the AWOP model consists of four components: status, evaluation, follow-up, and maintenance. The AWOP model provides a framework for each individual state to develop and sustain a meaningful optimization program. The national AWOP has modified this model to combine the Evaluation and Follow-Up components into one component called Targeted Performance Improvement.

As part of the follow-up component strategy of AWOP, Targeted Technical Assistance (TTA) is being implemented in Oklahoma. TTA is an approach designed to help water systems comply with the Disinfectant/Disinfection By-Products (DBP) Rule, which became effective in 2004. DBP ingestion by humans has been shown to cause cancer and to adversely affect the liver, kidney and central nervous system. TTA was piloted nationally in Nowata, OK in October of 2004. To-date, TTA has been conducted at twelve water systems in Oklahoma.

The most recent approach being promoted by AWOP in lieu of TTA is performance based training (PBT). PBT is a transfer of priority setting and problem solving skills to plant staff to initiate changes at a water plant.

PBT is presented in six sessions:

- Session 1: Performance Goals and Monitoring.
- Session 2: Problem Solving Skills Development & Total Organic Carbon (TOC) Removal.
- Session 3: Distribution System Assessment and Related Special Studies.
- Session 4: Performance Trending and Disinfectant/Disinfection By-Products (D/DBP) Control Strategies.
- Session 5: Application of D/DBP Control Strategies and Special Studies.
- Session 6: Reporting on Success.

The Oklahoma PBT program was conducted over a 12-to-15 month period with up to six systems meeting in a classroom setting each quarter. The goal of PBT is to address unique performance limiting factors in order to achieve optimized performance (i.e., better than regulations require). DEQ PWS district engineers (DEs) facilitate this program with individual plants to keep them on schedule and working on action items between training sessions. DEQ began DBP-PBT at 15 water systems in SFY07. The DBP-PBT six-session training was completed at the following six water systems in SFY09: Okmulgee, Henryetta, Okemah UA, Barnsdall, Pawhuska, and Osage County Rural Water District #20 (Hulah). The DBP-PBT six-session training was completed at the following four water systems in SFY10: Lone Chimney Water Association, Perry, Newkirk, and Noble County RWD #1. A total of ten water systems completed the DBP-PBT training sessions. The Oklahoma AWOP team was the only EPA Region VI AWOP participant that has elected to fully implement the DBP-PBT approach.

EPA Region 6 and Process Applications, Inc. in Fort Collins, CO, have assisted in the development of AWOP. The States of Arkansas, Louisiana, Texas, New Mexico, Iowa and Oklahoma are participants in the EPA Region 6 AWOP group. DEQ continues its involvement in AWOP by attending quarterly

regional and annual national meetings and by participating in and hosting multi-state comprehensive performance evaluations (CPEs).

Since 1997, DEQ has conducted CPEs of water systems in the state. The original scope of the CPE was to assist the community and to train engineers in understanding the intricacies of water treatment. A CPE provides analysis of the facility's design capabilities and a system's administrative, operational, and maintenance practices, leading to a report that addresses *technical, managerial, and financial* aspects of water system operation. Following the CPE, the participating water system receives a report within 60 days from DEQ that outlines factors that may influence the optimization of its treatment operations. From 1997 to the present, DEQ has performed 23 optimization CPEs and one mandatory CPE in the State of Oklahoma.

F. The ***Drinking Water State Revolving Fund Loan Program*** was established by the 1996 SDWA Amendments, which allowed EPA to make a capitalization grant to Oklahoma to fund the DWSRF loan program. This program, co-managed by DEQ and OWRB, is dedicated to providing low-interest loans to upgrade public water system infrastructures. It is designed to help those in greatest need based on a priority system that places a primary emphasis on drinking water quality. Along with PWS DEs, DWSRF Project Engineers assure the *technical* capabilities of water systems by reviewing engineering reports on proposed construction projects.

Currently, 32 water systems are on the DWSRF Project Priority List for a total of over \$295 Million in projects to be funded within the next few years. DWSRF applicants are assisted throughout the planning, design, bidding, contracting and construction phases of their project by DEQ engineers, environmental specialists, and the CDC. Applications for the DWSRF program are accepted at any time throughout the year.

From 1998 to the present, the program has entered into binding commitments totaling over \$769,697,000.00 to fund a total of 149 water system upgrades. In addition to funding infrastructure improvements, the program funds the CD, Small System Technical Assistance, and SWAP programs, and partially funds the PWS Program.

G. The PWS *Sanitary Survey Program* is implemented by DEQ, in cooperation with EPA Region 6. The ECLS and WQD field staff is trained to properly conduct sanitary surveys, as they are responsible for conducting PWS inspections. Using the knowledge gained from the training, ECLS staff inspects surface water systems quarterly and ground water systems semiannually. A total of 2,770 PWS monitoring inspections were performed by ECLS in SFY14.

6. Challenges to Oklahoma’s Capacity Development Strategy

Mile for mile, Oklahoma offers the nation’s most diverse terrain. It is one of only four states with more than ten ecoregions, and has by far the most changes in ecoregions per mile in America. Oklahoma’s ecoregions – or, terrains/subclimates – include everything from Rocky Mountain foothills to cypress swamps, tallgrass prairies, and hardwood forests to pine-covered mountains. Each is graced with wide blue lakes, rivers and streams. Additionally, there is one man-made type of terrain: urban turf. This wide variety of ecoregions creates source waters with a correspondingly wide range of quality and conditions. This variability in source water quality creates a correspondingly wide variety of treatment challenges for public water supplies.

EPA sets national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption; these limits are known as maximum contaminant levels (MCLs). For some regulations, EPA establishes treatment

techniques (TTs) in lieu of an MCL to control unacceptable levels of contaminants.

Figure 3 shows the yearly trend in the percentage of systems in Oklahoma reporting no MCL or TT violations.

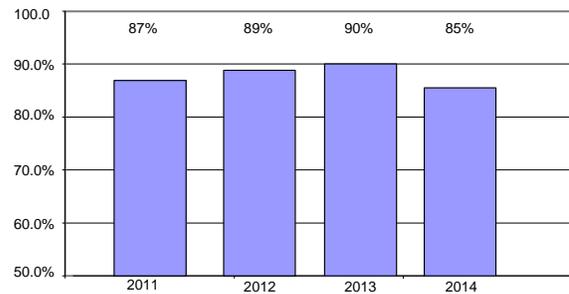


Figure 3 - Percent of Systems Reporting No Violations

The State of Oklahoma’s PWS Program currently oversees 1,692 active entities that meet the federal definition of a PWS. Of these, 1,443, or approximately 85%, reported no maximum contaminant level (MCL) violations or treatment technique (TT) violations.

Of the 1,692 PWSs in Oklahoma during the calendar year 2013:

- 10 systems had 28 violations for exceeding the MCL for arsenic.
- 1 system had 1 violation for arsenic monitoring.
- 1 system had 12 violations for exceeding the MCL of the Inorganic Chemical Contaminant (IOC) group.
- 1 system had 1 violation for IOC group monitoring.
- 29 systems had 72 violations for exceeding the nitrate MCL in at least one of their wells.
- 59 systems had 70 nitrate monitoring violations.
- No system had Synthetic Organic Contaminant (SOC) group MCL violations.

- 22 systems had 37 SOC group monitoring violations.
- 14 systems had 73 Radionuclide MCL violations.
- No system had violations for Radionuclides monitoring.
- 124 systems had 367 violations of the Disinfection Byproducts Rule (DBPR) MCL.
- 31 systems had 82 violations of the DBPR Treatment Technique requirement.
- 59 systems had 132 DBPR monitoring violations.
- 11 systems had 11 Total Coliform Rule (TCR) acute MCL violations, leading to 11 mandatory boil orders that were issued based on positive fecal coliform or E-coli test results.
- 91 systems had 115 TCR MCL violations that indicated a confirmed coliform positive sample.
- 384 systems had 707 routine monitoring violations for TCR.
- 103 systems had 138 repeat monitoring violations for TCR
- None of the 792 groundwater PWS systems were in violation of the Groundwater Rule (GWR) Treatment Technique requirement.
- 37 groundwater PWS systems had 45 GWR monitoring violations.
- None of the 190 surface water PWS systems were in violation of the Surface Water Treatment Rule (SWTR) monitoring and reporting requirements.
- 21 surface water PWS systems had 39 Interim Enhanced Surface Water Treatment Rule (IESWTR) Treatment Technique violations.
- 93 systems had 109 Lead and Copper Rule Monitoring violations.
- 33 systems failed to submit their Consumer Confidence Report (CCR) and/or their CCR certification.

The grand total number of violations for the calendar year of 2013 was 2,393. Some public water systems may be counted more than once if they incurred multiple violations. The actual total number of public water systems in violation for MCL was 249. There were 709 *public* water systems with violations (as opposed to privately owned).

Per Section I of The State of Oklahoma Capacity Development Strategy, DEQ ensures that new systems have *TMF* capabilities to provide safe and affordable drinking water. All new systems are referred to the CDC, who then assesses the system's *TMF* capabilities. The CDC then ensures that the system has an appropriately certified operator, notes the dates of sanitary surveys/inspections, determines if plans & specifications were submitted to and approved by DEQ, and makes TA referrals as indicated. A total of 21 new systems were identified by DEQ in SFY14.

7. ETT Implementation

At the direction of EPA, DEQ has implemented a Enforcement Response Policy (ERP) and Enforcement Target Tool (ETT) aimed to identify PWSs with health-based violations as opposed to the previous approach, where all the significant non-compliance (SNC) were treated equally regardless of the severity of the violation.

This approach utilizes the ETT formula as a basis for determining a PWS's enforcement priority points. It will also be used to help identify and prioritize systems for enforcement response. In the formula, violations that pose a greater risk to public health are given greater importance. The formula calculates a score for each system based on open-ended violations and violations that have occurred over the past 5 years, but does not include violations that have returned to compliance or are on the "path to

compliance’’ through a specified enforcement action.

Under this policy, violation types are “weighted” with points being assigned for each violation type based on its threat to public health. Points for each “unaddressed” violation are added together to provide total score for each water system. Water systems whose scores exceed “11” are considered priority systems for enforcement unless the violations can be returned to compliance within six months.

ETT scores for PWS systems are available at <https://echo.epa.gov>.

Table 2 lists 9 community and nontransient noncommunity PWS systems that were created during the SFY 2011.

PWS ID Number	System Name
OK4001497	Dove Canyon MH and RV Park
OK3003631	Meadowbrook Village MHP
OK4001498	Terra Verde Discovery School
OK8005556	Leisure Time RV
OK3006049	South Gate MHP
OK3004949	Cannon MHP
OK4002666	Bridge Creek High School
OK2006757	Seminole Nation HS Konawa
OK3003206	Davis Correctional Facility

Table 2 – The three community and non-transient non-community systems that became active during SFY 2011.

Of the 9 PWS systems listed above, 3 were assessed ETT scores of greater than 11 during their first three years of operation: **South Gate MHP, Bridge Creek High School, and Davis Correctional Facility.** Each of these PWS systems faced unique challenges and circumstances which led to the high ETT scores, and each required assistance tailored to their specific circumstances in order to return to compliance, but the assistance provided to each shared a commonality of cooperation between

the facilities, DEQ inspectors, and personnel from adjacent facilities.

South Gate MHP

South Gate MHP is a small PWS that serves a mobile home community in Payne County. The system purchases water from the city of Stillwater, and was in existence for several years before being discovered by DEQ and classified as a PWS. Being new to the sampling and monitoring requirements of a public water supply led to several monitoring violations where the system operator failed to submit samples for coliform, lead/copper, and disinfection byproduct monitoring.

South Gate MHP was brought back into compliance through a cooperative effort between DEQ and the City of Stillwater where inspectors from both entities worked to educate and assist the owner in taking the required samples at the proper times. And although the water system was on the path to compliance, the facility has been purchased and will soon no longer be used for residential housing.

Bridge Creek High School

Bridge Creek High School operates a small, two-well groundwater PWS that serves approximately 457 students, faculty, and staff in northeastern Grady County. The water system became active in 2011 when the school drilled the wells to serve school facilities. The PWS system fell out of compliance with monitoring violations and MCL exceedances for coliforms and lead and copper soon after beginning operations. An investigation into the situation discovered that the violations were primary due to sampling errors and oversights resulting from the school’s maintenance department being understaffed and overwhelmed with keeping the facility operational.

In a similar fashion to the South Gate MHP, Bridge Creek High School’s compliance issues were resolved via a cooperative effort between

DEQ inspectors, the school, and staff from Blanchard, a nearby city that operates a PWS. An agreement was reached where a certified operator from Blanchard took over supervision of sampling and operations at the school's water system, which brought about resolution of the violations in short order. Future plans for the school's PWS are to discontinue use of the well and to become a purchase system served by Tuttle PWS, another nearby town with an adjacent distribution system.

Davis Correctional Facility

The Davis Correctional Facility is a 1,600-bed penitentiary located in western Hughes County that purchases water from Hughes County RWD #5. The facility was designated as a PWS system in 2011, although it had been in operation for several years. In the first year of operation as a PWS, the facility fell out of compliance with coliform monitoring issues and a total coliform MCL violation.

To resolve the violations, technical assistance from DEQ inspectors, in conjunction with enforcement actions, helped the operator to get back on track with a proper sampling schedule, which resolved the compliance issues. The operator for the correctional facility also serves as the operator for the PWS that provides the water to the facility, an arrangement that increases efficiency and allows both systems to share expertise.

8. Program Initiatives

Of the four pillars of EPA's *Sustainable Infrastructure* effort, "Full Cost Pricing," is the pillar that continues to receive primary focus in SFY14. This approach helps utilities recognize the full costs for providing service over the long-term and promotes implementing pricing structures that effectively recover costs and promote environmentally sound decisions by customers. DEQ is promoting full cost pricing by emphasizing the importance of rate studies

and conducting rate studies at PWS systems that request assistance.

9. Success

OK Rural Water / Osage County RWD #21

In late 2000, OK Rural Water, Inc. entered into a Consent Order with the DEQ to resolve compliance issues with the water system. The system relied on 4 wells that drew water from a depth of approximately 25 feet, along the banks of the Arkansas River in Osage County. The water system had no further treatment for the extracted water besides chlorination, and was having issues with bacteriological contamination throughout the distribution system.

To resolve these issues, OK Rural Water, Inc. became Osage County RWD #21 and applied for funding with DWSRF. DWSRF engineers worked with an engineering firm hired by Osage RWD #21 to develop a plan that included the construction of a microfiltration membrane water treatment plant with two 150-gallon per minute microfiltration units, two 150-gallon per minute green sand pretreatment units, a surge tank strainer, two backwash lagoons, a decant pump station, and associated chemical feed equipment and laboratory gear. The existing wells were to be converted to shore wells and were to be used as the raw water source for the new plant. To fund this project, DWSRF was able to provide \$1,771,300 as a low-interest loan to the rural water district.

Construction is expected to be complete by the end of 2014. *Figures 4 and 5* show a newly rehabilitated shore well and the new water treatment plant, respectively.



Figure 4 – rehabilitated shore well, Osage RWD #21.



Figure 5 – construction of the new Water Treatment Plant for Osage RWD #21.

Longtown RWD #1 / Pittsburg RWD #4

Pittsburg County RWD #4 was a small surface water treatment plant serving 220 people near Lake Eufaula. The system utilized a slow-sand filter to treat lake water, and was suffering with numerous operational difficulties and violations due to age and limited capabilities of the system, primarily related to disinfection byproducts and turbidity.

Working through the DEQ DWSRF program, a solution was developed for Pittsburg RWD #4 that involved consolidating the small water system with nearby Longtown RWD #1, discontinuing use of the surface water plant, and building a connection between the two systems that would create a single, larger one. Customers of the former Pittsburg RWD #4 would receive water from the Longtown system, which was in compliance with the SDWA.

The project involved the construction of 10,800 linear feet of water line, standpipe modifications, automated water meters, a dual-pump booster station, a tank mixing system, and demolition of the old slow-sand filter plant. The total cost of the project was \$600,000, the total amount of which was resolved through principal forgiveness.

Project construction began in April 2014, and is expected to be complete by September 2014. *Figure 6* depicts the old slow-sand filter plant that was abandoned at Pittsburg RWD #4, and *Figure 7* shows the connection being installed between Longtown RWD #1 and the former Pittsburg RWD #4.



Figure 6 – old slow-sand filter system that was replaced with a connection to Longtown RWD#1.



Figure 7 – connection between Pittsburg RWD #4 and Longtown RWD #1 installation.

10. Summary and Future Plans

Enhancing the technical, managerial, and financial capacities of Oklahoma's water

supplies is a group effort. The continued success of ODEQ CD program is dependent on the efforts of the PWS Enforcement Section, Operator Certification Section, DWSRF staff, and the various agencies that represent FACT.

Developing TMF capacity is the primary method used by the agency to enhance PWS sustainability and climate change resilience. In the coming year, DEQ will add to this work by implementing a water loss auditing program statewide. At present, water losses across the state are estimated to be approximately 32% of produced potable water. With the tools that are currently available, water losses could potentially be reduced to less than 10%. The estimated 22% gain would be more than enough to meet the state's Water for 2060 Act

conservation goal, would reduce the need for mandatory rationing, would provide much needed relief to PWS systems hard hit by drought, and would generate substantial financial savings over the long term.

11. References

Oklahoma Capacity Development Strategy Document.

Revised Draft 2015 DWSRF Intended Use Plan.

2013 State of Oklahoma Public Water Supply Program Annual Compliance Report.

Oklahoma Water for 2060 Act.