Nevada's Capacity Development Program:
Report to the Governor

Abstract

This report covers initiatives and accomplishments for State Fiscal Years 2015 through 2017 in fulfillment of the requirements of United States Codes Section 1420(c)(3) of the Safe Drinking Water Act to ensure protection of public health.

NDEP

Nevada Division of Environmental Protection

Bureau Safe Drinking Water & Office of Financial Assistance

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Executive Summary

This report describes how the Nevada Division of Environmental Protection (NDEP) assists water systems in the State to acquire and maintain technical, managerial and financial (TMF) capacity. Requirements detailed in Section 1420(c) of the Safe Drinking Water Act are designed to ensure protection of public health and meeting the requirements allows the State receives its full Drinking Water State Revolving Fund allotment. NDEP has taken steps to broaden its approach in building public water system capacity to ensure safe drinking water production and delivery to the citizens of Nevada in a responsible and sustainable manner.

Multiple entities, both internal and external to NDEP, work collaboratively to assist Nevada's public water systems achieve capacity development in all three of its components. This report illustrates Nevada's efforts in building public water system capacity and ensuring safe drinking water supplies under multiple NDEP programs and resources. The report highlights activities and accomplishments for Nevada's Public Water System Capacity Development Program from State Fiscal Years (SFY) 2015 through 2017.

As the capacity development program grows and evolves, lessons learned have resulted in a program that continues to improve and better serve the needs of Nevada's water systems. The goal is to empower businesses to take ownership and be proactive in managing their drinking water systems responsibly. Although this takes ongoing education, it is imperative that we look at existing and alternative methods to engage the regulated community and create partnerships in protecting public health.

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Introduction

In accordance with requirements of the federal Safe Drinking Water Act (SDWA), the Nevada Division of Environmental Protection (NDEP), is responsible to submit to the Governor, and make available to the public, the strategy and progress made toward improving the technical, managerial and financial capacity of public water systems (PWS) in the state. This report is intended to fulfill those requirements and to demonstrate how multiple programs and activities administered through NDEP support statewide implementation of Nevada's capacity development strategies.

Background

In the 1996 Amendments to the SDWA, Congress ratified a philosophy that capable water systems are better positioned to consistently comply with applicable standards and provide safe and reliable water service. Congress recognized that protection of the public's drinking water supply requires ongoing vigilance in the operation and maintenance of public water system facilities.

The term "capacity development" was coined by Congress to describe capability. Capacity has three components: technical, managerial and financial (TMF) as shown in Figure 1. Adequate performance in all three areas is necessary for a system to have "capacity."

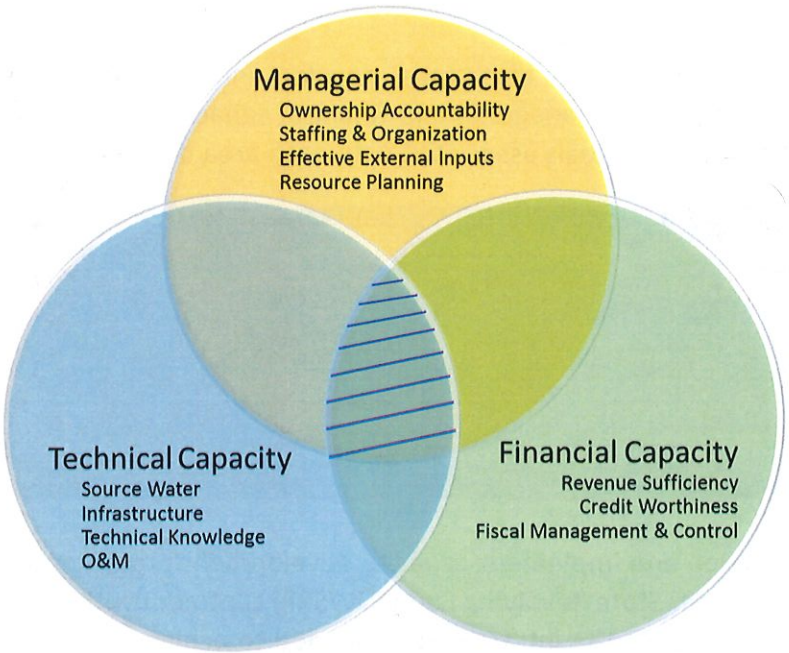
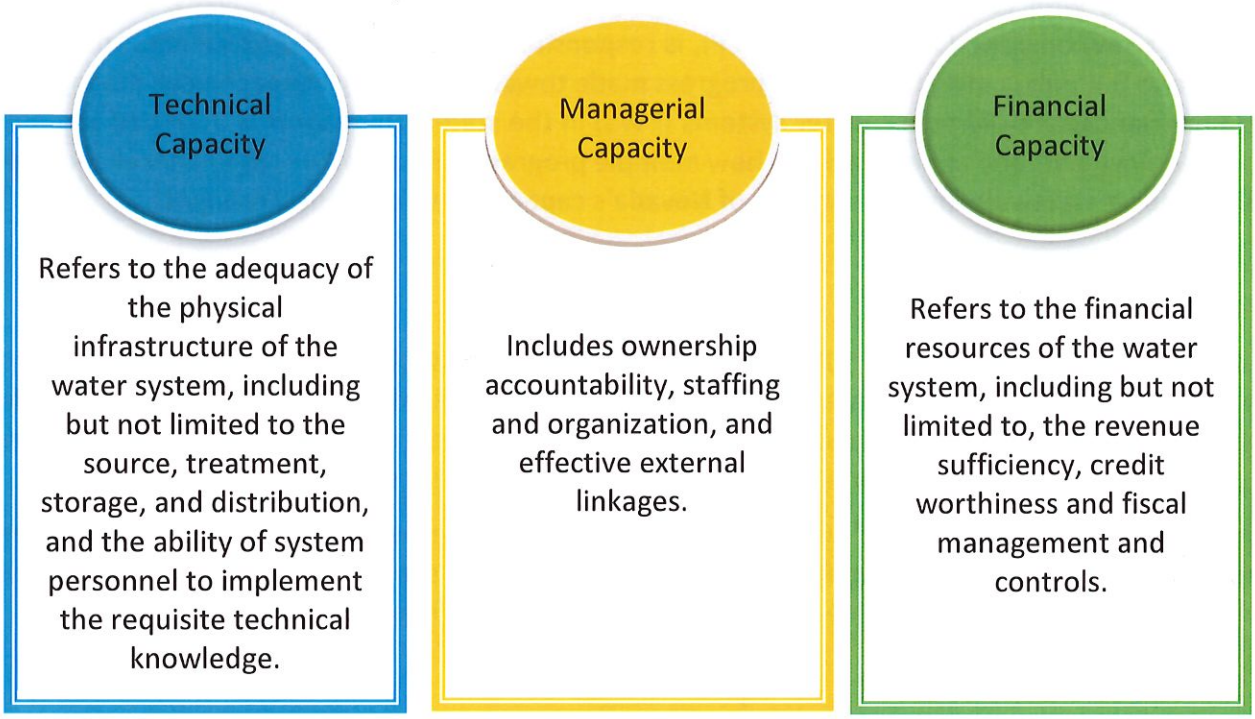


Figure 1. TMF Capacity Interrelationship

Capacity Development Requirements



Section 1420 of the SDWA requires that states develop and implement a strategy for PWSs to acquire and maintain technical, managerial and financial capacity. The Environmental Protection Agency (EPA) identified specific goals associated with each area of capacity.

Capacity Development Goals		
To protect public health by ensuring consistent compliance with drinking water standards	To enhance performance beyond compliance through measures that bring about efficiency, effectiveness and service excellence	To promote continuous improvement through monitoring, assessment and strategic planning

States that fail to develop and implement capacity development programs could risk having up to 20% of their Drinking Water State Revolving Fund (DWSRF) allotment withheld. The DWSRF is a loan program to help PWSs finance the infrastructure needed to achieve or maintain compliance with SDWA requirements and to achieve the public health protection objectives of the Act. It is important to note that Section 1452(a)(3) of the SDWA requires that "... no assistance ... shall be provided to a public water system that ... does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this title ... or is in significant noncompliance with any requirement of the national primary drinking water regulation or variance." However, a public water system not meeting these standards"... may receive assistance ... if the use of the assistance will ensure compliance."

Capacity Development Considerations

One certainty in public water system management is that ever-changing regulations, aging infrastructure, growth and economics, political climate and a variety of other factors impact the ability of a public water system to operate at a level of capacity that provides a sense of adaptable sustainability. A public water system may meet water quality regulations and provide excellent service but still face financial and managerial difficulties. The problems may include the cost of replacing aging equipment, planning for additional treatment, looking for new well sites to accommodate a growing population, protecting drinking water supplies at the source (rivers, streams, wells, etc.) where land use planning is out of their sphere of influence, and adapting to impacts of local planning or policy making which may not consider water quality protection strategies.

With these issues in mind, and considering the goals of the EPA's vision for public water system capacity development, NDEP implements the State's Capacity Development Program (https://ndep.nv.gov/water/financing-infrastructure/state-revolving-fund-loans/drinking-water/capacity-development). The primary focus is to ensure all PWSs comply with safe drinking water regulations thereby protecting public health in a forward thinking, sustainable and adaptable manner. However, to build technical, managerial and financial capacity, NDEP must prioritize its resources to ensure PWSs can adapt to changing circumstances while concurrently maintaining compliance with the SDWA requirements.

NDEP has taken steps to broaden its approach to build public water system capacity and ensure safe drinking water production and delivery to the citizens of Nevada in a responsible and sustainable manner. This report describes Nevada's capacity development program efforts that involve coordination between multiple NDEP programs and resources.

Currently, multiple entities (listed below) both internal and external to NDEP, work collaboratively to assist Nevada's PWSs achieve capacity in all three of its components.

- NDEP Office of Financial Assistance (OFA), Bureau of Administrative Services
- NDEP Bureau of Safe Drinking Water (BSDW)
- NDEP Bureau of Water Pollution Control (BWPC)
- Nevada Rural Water Association (NvRWA), EPA and NDEP Contractor
- Environmental Finance Center (EFC), EPA Contractor
- Resource Concepts Inc. (RCI), NDEP Contractor
- Rural Community Assistance Corporation (RCAC), EPA Contractor
- Washoe County Health District (WCHD)
- Southern Nevada Health District (SNHD)

The NDEP oversees approximately 600 PWSs with diverse service populations. This requires a multi-faceted approach towards achieving compliance. Many regulated water systems are not in the business of supplying water. Rather, their business requires that they have water for drinking and hygiene purposes. Examples of businesses include schools, food establishments, campgrounds and mines (Figure 2). These businesses are not driven by being a water system; however, their ability to operate does depend on serving water. Therefore, it is critical that routine conversation and support be provided to them to ensure their businesses remain viable.

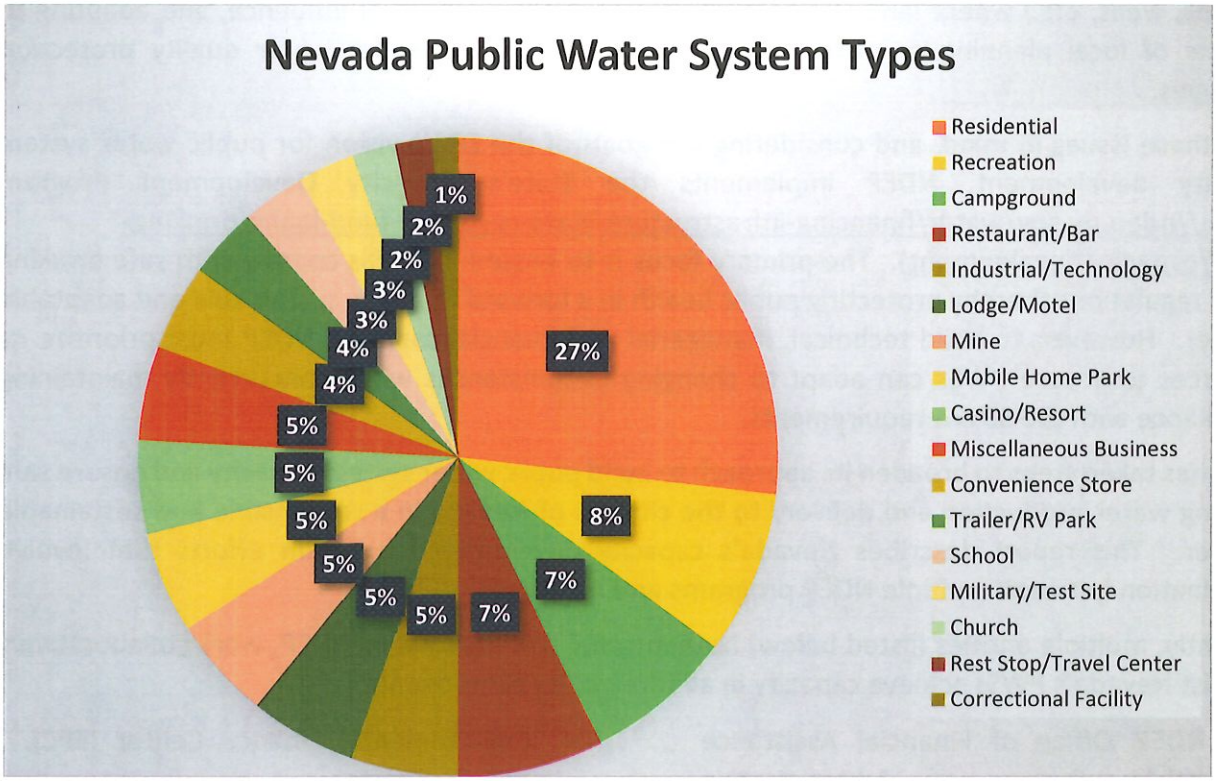


Figure 2. Nevada Public Water System Types

The capacity development program is executed considering the complex needs of the many different types of PWSs that operate in Nevada. Multiple considerations motivate the capacity development assistance approach, including:

- Population served
- Geographic location
- Business and operational plans (where applicable)
- Operational knowledge and expertise
- Staffing characteristics (e.g. volunteers, paid, certified staff...)
- Political climates (local support and planning momentum)
- Available financial resources

Nevada's Strategy

Nevada's Capacity Development Strategy was approved by EPA in September 2000. NDEP's framework for a comprehensive approach is to first identify and prioritize PWSs most in need of assistance and begin working with them to develop technical, managerial and financial capacity through various community planning initiatives, water system management training and by providing financial and technical assistance. The program objectives (shown in Figure 3) are the basis for how NDEP determines the most effective approach to provide water systems with individual support. NDEP has developed programs specifically for implementation of the Capacity Development Program and coordinates existing programs and processes to maximize our ability to build a public water system's TMF capacity. Thus, NDEP is able to provide assistance in a meaningful and cost effective manner.

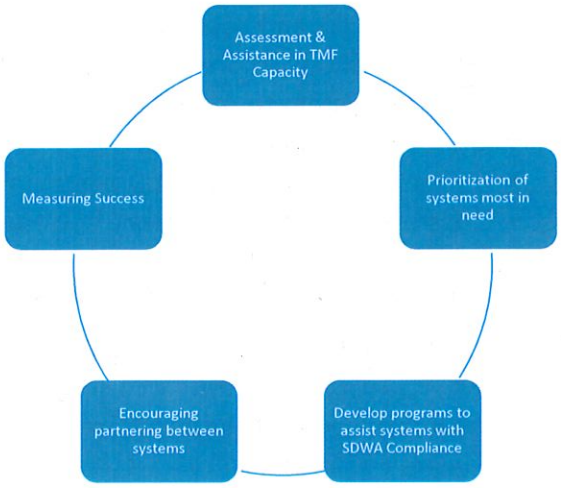


Figure 3. Capacity Development Strategy Objectives

How does NDEP assess and prioritize systems most in need?

Nevada has used various approaches over the years to perform TMF assessments for PWSs. These assessments are conducted by third party contractors and have been used to determine where to focus funding and technical assistance and to prioritize systems most in need (Figure 3). Capacity assessments are useful tools for water systems to measure their strengths and identify weaknesses and to assist NDEP staff and technical assistance (TA) providers to identify the most appropriate strategies to help PWSs. Over the years, capacity assessments have revealed the following common deficiencies among small water systems:

- Limited maps of water system infrastructure;
- Lack of Operation & Maintenance, Emergency Response, Cross Connection Control and Capital Improvement Plans;
- Lack of routine maintenance; and
- Under-staffed and under-funded operations.

In addition, PWS compliance oversight is a routine process that enables staff to assess and prioritize assistance needs. NDEP currently utilizes multiple reporting mechanisms (routine water system monitoring results, site inspections, non-compliance reports, certified operator status reports, EPA's Enforcement Targeting Tool [ETT], etc.) to help identify water systems facing challenges and require training, resources, and/or technical expertise to achieve compliance and/or develop operating and managerial capacity. NDEP is able to use this information to target resources and leverage

appropriate programs that can assist these systems to achieve and maintain compliance with drinking water regulations.

Of particular note, NDEP uses EPA's ETT list that is designed to highlight the extent of a water system's non-compliance and provide regulatory agencies with a tool to prioritize technical assistance and formal enforcement. This list enables staff to weigh PWS compliance through a point system associated with unaddressed violations. The higher the points, the greater the need for assistance. If a public water system has less than 11 points, NDEP identifies resources to return it to compliance. Oftentimes, scores of 11 or greater require a unique prioritization and approach to compel the water system to return to compliance. Targeted technical assistance resources such as technical education, guidance on funding options, engineering services resources and training can assist these water systems return to compliance. This point system provides NDEP with a basis to measure progress, prioritize assistance and focus resources.

What programs assist with SDWA Compliance?

NDEP manages multiple programs that provide an opportunity to help communities and PWSs develop TMF capacity for sustainable compliance with SDWA requirements and to protect public health. Below are some of the programs and initiatives that NDEP has been working on over the past three years:

- ***Communication with Public Water Systems and Stakeholders***

One of the quickest ways to increase a PWSs capacity is to open up all lines of communication and build relationships with owners/operators. The BSDW is structured so that compliance staff are assigned specific water systems to oversee and manage. This system was developed to provide PWSs one point of contact at NDEP, creating trust and consistent communication. When a water system is found to be out of compliance, NDEP staff will have direct knowledge about the water system to better facilitate compliance.

NDEP staff routinely communicate with water system owners and operators to address water quality reports and deficiencies found during site inspections. This provides opportunities to educate water system staff about regulatory requirements and ensure they are aware of reporting and compliance due dates.

When appropriate, other permitting agencies are informed of public water system non-compliance. This initiates communication among more parties, resulting in greater awareness and improvements to managerial capacity. NDEP is working to build bridges and reach out to more agencies to leverage other program authorities, including state and local health departments, Manufactured Housing, the Department of Education, and local county building departments. These agencies are informed of PWS non-compliance, allowing for better coordination, awareness and again – improving managerial capacity.

- ***Found Water Systems Program***

In past years, BSDW became aware that there may be businesses and communities that operate water systems in Nevada without the required oversight. NDEP developed internal procedures to review the status of these "potential" water systems in Nevada. In 2015, NDEP issued a Request for Proposal to contract the review of identified "potential" water systems to determine if they met the

requirements to be a regulated PWS. In August of 2015, NDEP entered into a contract with NvRWA to determine if approximately 150 "potential" water systems required regulatory oversight. Approximately 25% of the water systems were identified as requiring regulatory oversight and 40% are regularly reviewed because they have the potential to meet the criteria to be a regulated PWS in the future.

From a capacity development perspective, 43 PWSs identified through this program require technical assistance to understand the basics of managing a PWS. Training and education are being provided related to monitoring and reporting, financial and managerial management, operator certification and source water protection.

- ***Formal Enforcement***

Formal enforcement is a last resort effort to compel a PWS to comply with the SDWA requirements. This approach has a dual benefit in protecting public health and garnering the attention of the owner that building TMF capacity in the water system is a critical component to their business. The program includes multiple steps, including initial violation notification with a requirement to provide a schedule to comply, second notice if no response, notice of formal enforcement in continuing non-compliant situation, and ultimately issuance of a Finding of Alleged Violation and Administrative Order.

During the last three years, the Formal Enforcement program has been more fully developed by BSDW using the 2013 legislative enhancements to Nevada law. This process is another avenue for NDEP to initiate assistance with non-compliance and help PWSs access training and resources, which ultimately build TMF capacity to operate in accordance with regulations.

- ***Additional Subsidy***

Financial management is often the greatest challenge for small drinking water systems. As part of the DWSRF, Nevada has a "disadvantaged community" program to provide loans with additional subsidy to address low income areas or areas where the small number of customers make some projects unaffordable. Loans with additional subsidy have also been extended to planning documents for necessary rate studies, capital improvements and system consolidations. Additional subsidy has been offered in the form of Principal Forgiveness Loans or extended financing.

Over the past 3 fiscal years, five DWSRF principal forgiveness project planning loans were awarded to Nevada communities and two mobile home park water systems were eliminated through consolidation with larger municipal systems at no cost to the owners through DWSRF principal forgiveness funding.

- ***Financial Reviews for Funding Opportunities***

The DWSRF provides financial review and assistance to both public and privately owned water utilities seeking low interest loans from the SRF program. User rates, capital replacement reserve funds and unrestricted cash are reviewed to assess the community's ability to maintain its system financially and the PWS's ability to take on more debt. Approximately five (5) communities have evaluated their water rates, making needed adjustments for fiscal sustainability.

- ***Financial reviews of previously funded projects***

The DWSRF began assisting water systems to refinance their existing SRF and/or eligible non-SRF

debt in September 2014. The NDEP Office of Financial Assistance believes refinancing existing debt helps recipients remain fiscally sustainable by taking advantage of better market conditions. The water systems may then utilize refinancing savings on needed capital related infrastructure. The program assisted five (5) Nevada communities with refinancing of 10 existing water infrastructure loans totaling almost $30M. The savings to these communities amounted to nearly $3M.

- ***Drinking Water Operator Certification Program***

Nevada requires PWSs to have certified operators. Nevada currently has 2,029 active operator certifications. Compliance with the operator certification requirements for all water systems statewide is at 99.13 percent.

NDEP works closely with TA providers to help train operators and water system managers to improve technical and managerial capacities. NDEP also engages volunteers from the Water and Wastewater Operator's Forum and California-Nevada American Water Works Association to assist in performing regular and comprehensive reviews for program improvements. These assessments also ensure consistent and effective implementation of the Operator Certification program by addressing training and certification needs for Nevada water system operators.

In addition, regular production of certified operator status reports from the program database informs NDEP of PWSs that need a certified operator, resulting in initiation technical assistance. Assistance includes transitional services, finding new operators and training to prepare for operator certification exams.

- ***Sanitary Surveys***

In combination with routine monitoring, sanitary surveys (on-site inspections) allow for in depth communication between BSDW Compliance staff and the PWS owners/managers and operators. The goal of routine communication is to address concerns before a PWS incurs a violation and provide for open channels of communication when problems arise. These activities provide invaluable assistance and help bolster the knowledge of the PWS owners and operators.

- ***Implementation of Nevada's ISWPP/VA Program***

PWSs and local communities throughout Nevada are working to protect drinking water supplies from contamination due to various land use activities. NDEP leads this effort by implementing the State's Integrated Source Water Protection Program (ISWPP). It is NDEP's belief that effective source water protection must be developed and administered by the local planning community, in conjunction with water suppliers. A local plan is a long-term commitment on the part of the community to protect its drinking water sources from becoming contaminated or polluted by various land use activities, thereby reducing treatment costs. Source water protection is an economical strategy for ensuring safe drinking water supplies.

The ISWPP's multi-jurisdictional approach provides opportunities for PWSs ranging from very small taverns and mobile home parks to larger districts and municipalities to combine resources and promote community-wide awareness and implementation of the plan. This ultimately increases opportunities for small PWSs with limited resources and/or capacity to be included under a more comprehensive, county-wide source water protection plan (CSWPP) and implementation effort. This contributes to a unified approach to protecting the water resources on a regional basis. The

opportunity to be a part of the CSWPP allows PWSs to develop tools, maps and strategies that build technical and managerial capacity.

The Vulnerability Assessment (VA) Program also helps PWSs to identify potential contamination sources (PCS), evaluate risks to contamination and provide vulnerability ranking to PWSs based on the presence and proximity to individual contaminant source(s)/activities and water quality data. The VA reports, compiled by BSDW, document PCS and rank them for the potential to adversely impact a water supply source. PWSs, with a completed VA report, may apply for a chemical monitoring waiver if the source is not at risk, thereby reducing monitoring expenses. The BSDW VA Program and ISWPP share information collected under these efforts and leverage resources to assist PWSs to prioritize strategies to manage community drinking water supplies more efficiently and effectively.

How does NDEP encourage partnering between systems?

NDEP understands the benefits of PWSs in the same geographical area sharing resources and partnering on multiple projects. Partnering among stakeholders and PWSs at the local level brings people together in Nevada communities where they can work together and leverage resources and tools, including technical expertise, equipment, regional planning initiatives, local policy making, geographic information system mapping and outreach and education plans. In addition, NDEP encourages PWSs facing various funding challenges, limited administrative resources and other limitations in capacity to turn to each other, sharing information and resources to build operational and managerial capabilities.

These partnerships are facilitated through the capacity development coordinators in NDEP's OFA, BSDW and ISWPP programs and outside TA providers. Typical outcomes include consolidation of water systems to address non-compliance and TMF capacity shortfalls, sharing of operation and maintenance resources, sharing of emergency response personnel and equipment to address short-term needs and coordination of source water protection.

How does NDEP measure success?

NDEP's successes in assisting PWSs to build and sustain TMF capacity require the collaborative coordination efforts among multiple NDEP programs and external entities. The primary focus is to ensure PWSs achieve and maintain compliance with the SDWA requirements to protect public health.

In addition to measuring success on a system-by-system basis, NDEP utilizes tools and calculations to determine the percentage of PWSs that serve compliant water and of the population receiving compliant water. In addition, review of program specific initiatives also provides a window to view success.

Community water system (CWS) compliance is a measure that is routinely reviewed and reported to EPA. NDEP has observed an increase in the percent of CWSs that are compliant with federally mandated maximum contaminant levels (MCLs) for drinking water (Table 1) and the Nevada population receiving compliant water remains over 99 percent.

State Fiscal Year	% CWS Compliant with MCLs	% population receiving MCL compliant water
2015	90.6	99.6
2016	90.7	99.5
2017	94.0	99.2

Table 1. Community Water System Statistics

The EPA ETT statistics provides data that can be measured regarding overall water system compliance for all types of water systems. Only non-compliant PWSs are on the ETT list. Analyzing available ETT data, Nevada has observed an increase in the number of PWSs that have been compliant with the regulatory requirements during the last three years (Table 2). Overall PWS compliance has increased, as demonstrated in Table 2, with 76% of PWSs in compliance in Fiscal Year 2017. Four-hundred fifty-six (456) of the five-hundred nighty-eight (598) PWSs serving residents, employees and visitors in Nevada did not incur drinking water violations in SFY 2017.

State Fiscal Year	% Compliant PWS
2015	65
2016	72
2017	76

Table 2. Percent of PWS in compliance

The increase in compliance is directly related to efforts made and itemized throughout this report. The following programs have shown measurable success.

- ***Found Water Systems Program*:** Forty-three (43) PWSs, identified through this process, are now monitoring and reporting to their customers in parity with other water systems. This provides Nevada residents and visitors with assurance that the water they are consuming and using for hygiene purposes meets regulatory requirements.
- ***Formal Enforcement:*** Enforcement actions have resulted in thirteen (13) PWSs taking significant steps to address non-compliance associated with arsenic, uranium or a lead action level exceedance. Six (6) of these PWSs are now serving water that meets compliance requirements. Six (6) PWSs successfully addressed treatment plant failures and unapproved construction.
- ***Encouraging Partnerships and Consolidations:*** State-local partnerships and local planning momentum helped to consolidate seventeen (17) PWSs in the last three years.
  - ✓ Four PWSs were consolidated with nearby systems to address MCL violations.
  - ✓ Two smaller PWSs consolidated with larger municipal systems in SFY 2017 using the DWSRF's subsidized loans. One "found" system received technical and financial assistance to consolidate into a larger utility; this was achieved through a coordinated effort among the TA provider, NDEP and the respective county.
  - ✓ A larg merger was completed in SFY 2016 that resulted in the consolidation of eleven (11) county operated water systems in the Reno-Sparks area, driven locally by planning efforts in the region.

While many successes highlighted in the following section cover specific examples of TMF assistance

that helps PWSs build capacity and/or achieve MCL compliance, multiple NDEP programs have been enhanced to educate water system operators and managers, promote strategic planning and encourage collaboration among local, state and federal stakeholders. NDEP's goal is to empower the PWS and local decision-makers to take proactive measures to effectively manage their resources.

TMF Accomplishments

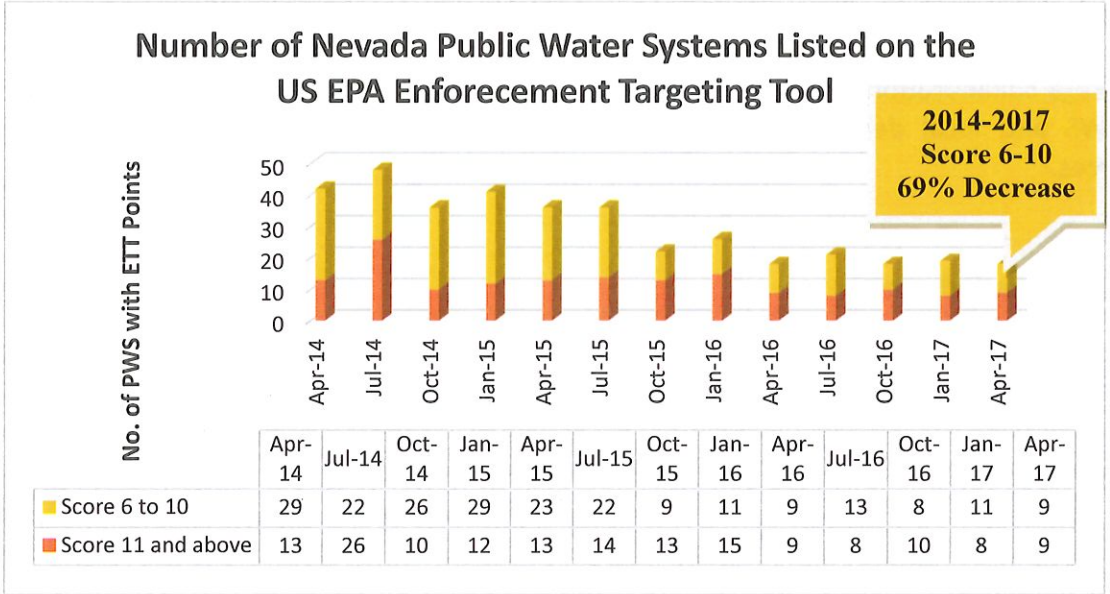
Capacity development occurs on a routine basis and as a result, PWS compliance has increased. Prioritization for providing resources is driven by the nature of the PWS need and its impact to public health—emergencies, contaminant exceedances, increasing contaminant levels, monitoring violations, sanitary survey deficiencies, financial constraints and lack of certified operators.

The following sections will highlight a few of the many project accomplishments that resulted from NDEP's multiple programs and program resources that provide targeted assistance to PWSs to increase and sustain capacity.

ETT, Routine monitoring results & Quarterly Exceedance Report

The number of PWSs in Nevada on the quarterly ETT list (i.e., water systems with unaddressed violations) has decreased from a high of 48 PWSs in 2014 to 18 PWSs in April 2017, resulting in a net reduction of 62% fewer water systems on the list (See Figure 4 below). The EPA pays particular attention to PWSs with a score of 11 or higher, under a federal policy for the State to issue formal enforcement within 6 months. In addition to working with those systems, NDEP staff make a concerted effort to provide technical assistance to systems with a score of 6 to 10 points in order to prevent them from becoming a federal formal enforcement priority. A benefit to use of the ETT List to target and focus technical assistance has been a successful measurable approach to TMF capacity building.

As an example, one PWS on the ETT list is a restaurant that was not responding to monitoring violations and requisite water system repairs. The PWS had accrued 6 points on the ETT list and had unresolved site visit deficiencies. This system was prioritized to receive assistance and investigate for challenges. NDEP assigned the contracted TA provider, NvRWA, to investigate and determine how to best help the PWS return to compliance. It was determined that the onsite manager was unavailable and correspondence was not being managed effectively. A district manager was contacted, and working with NDEP and a contracted certified operator, the PWS resolved the violations. Focus on this system has resulted in compliance over the past year.



	Apr-14	Jul-14	Oct-14	Jan-15	Apr-15	Jul-15	Oct-15	Jan-16	Apr-16	Jul-16	Oct-16	Jan-17	Apr-17
Score 6 to 10	29	22	26	29	23	22	9	11	9	13	8	11	9
Score 11 and above	13	26	10	12	13	14	13	15	9	8	10	8	9

Figure 4. EPA ETT Nevada PWS Trend

Technical Assistance Providers

During state fiscal years 2015 - 2017, with funding provided through the DWSRF small systems TA contract, NvRWA made a concerted effort to address common deficiencies while also continuing to provide assistance for compliance issues, distribution and treatment training and other TMF capacity development. Figure 5 presents a summary of instances of TMF capacity assistance provided by NvRWA since 2015.

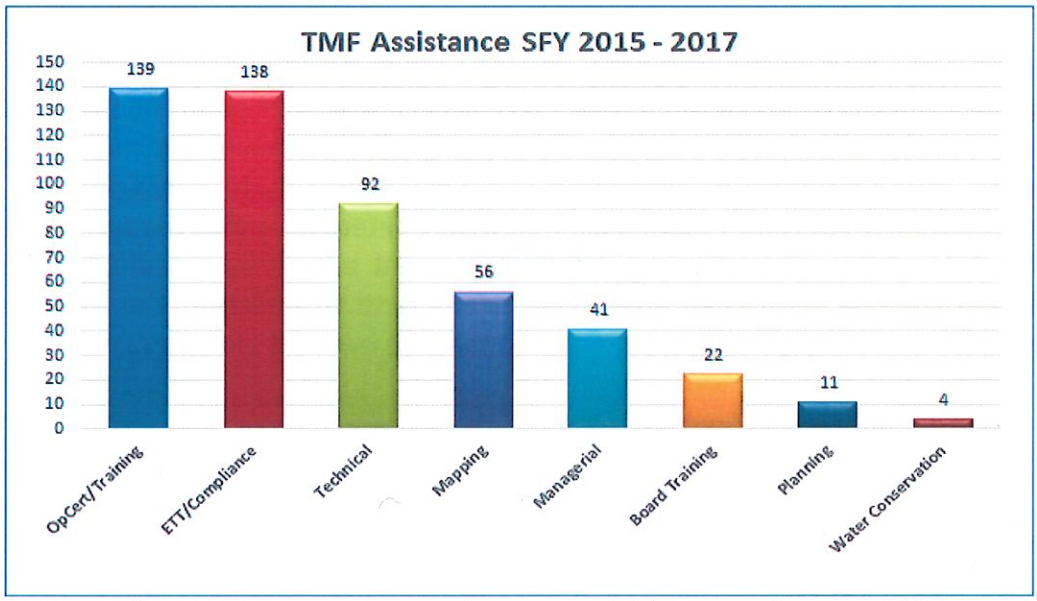


Figure 5. NvRWA TMF Assistance Activities – SFY 2015 to 2017

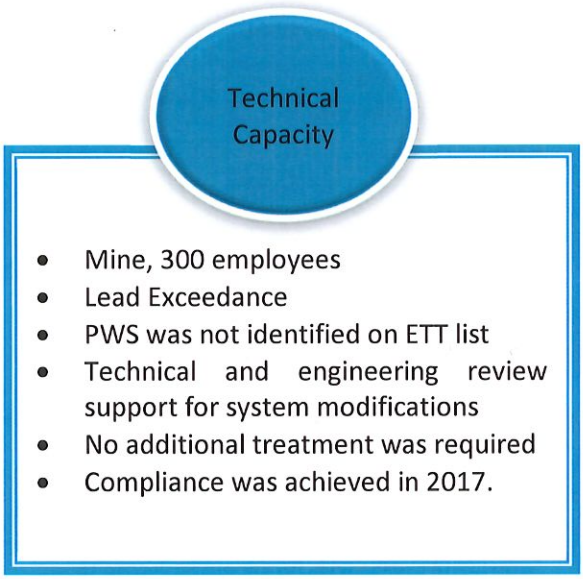
The TMF assistance categories shown in Figure 5 include a variety of activities as described in Table 3 below:

Operator Certification Training	•Operator assistance to achieve & maintain certification •Video-conference for small, rural water systens •Annual Spring Conference in Reno •Group or individual operator on-site training
ETT Compliance	•Sanitary Survey corrective action plans and asistance with addressing deficiencies •Development of operating and maintenance manuals, emergency response plans, cross-connection control plans, and sampling plans
Technical	•General or specfic operations •Hands-on assistance to troubleshoot & address problems •Maintenance to extend asset life •Water quality testing •Leak detection & water loss
Mapping	•System mapping in GIS •Documentation of assets for asset management
Managerial	•All aspects of administering a PWS to comply with applicable safe drinking water standards •TMF capacity •Consumer confidence reports •System maintenance & record keeping •Asset management & capital improvement planning
Board Training	•All aspects of governing a water system •Member participation & responsibilities •Open meeting law •Communications with staff, customers, & the public •Record keeping •Budgeting
Planning	•Review of preliminary engineering reports •Project funding availability & applications
Water Conservation	•Plans & updates as required by Nevada statutes

Table 3. TMF Categories and Activities Performed by NvRWA

Project Highlights

The TMF program assists numerous PWSs with a variety of projects. Highlighting all of them would be impractical due to the large universe. However, a few notable projects described below provide examples of how NDEP and supporting programs assist PWSs to build TMF capacity and comply with regulations. These examples were chosen to highlight success in the program and to provide a better understanding of how different PWS characteristics (type, size, location, etc.) require unique strategies to successfully target assistance.



Mine, Communication with Public Water Systems and Stakeholders

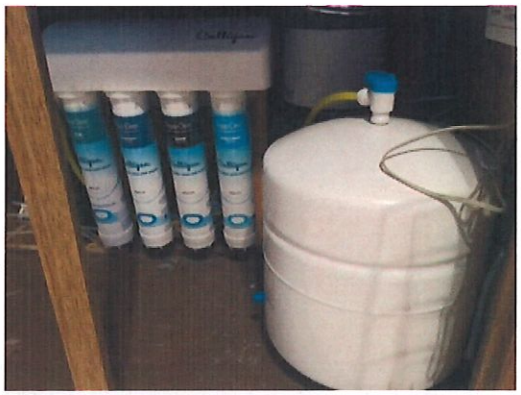
In 2014, a mine operation in Humboldt County serving approximately 300 employees began exhibiting lead levels above the action level. The PWS was not on the ETT list. Lead issues persisted despite numerous efforts to resolve the situation. Technical knowledge was provided by NDEP, and in cooperation with the PWS, including numerous meetings and a visit to the site, modifications were made to the water system infrastructure. As of April 2017, the mine has successfully reduced the lead levels in its system to below the action level and is compliant with EPA standards without the need for costly chemical addition or treatment.

Homeowners Association, Principal Forgiveness Loan

In this example, the water system is a homeowners association (HOA) serving 26 homes. The system was struggling to comply with the arsenic standard. Financial accounting had to be created to pay for the appropriate water treatment requirements. At the suggestion of the TA providers, a professional management company was hired to manage billings and other financial matters. Water rates were raised to cover the increased costs for treatment and maintenance. In addition, results from an income survey demonstrated the water system serves a disadvantaged community. The DWSRF loan program provided a principal forgiveness loan for the treatment installation. Agreement from all homeowners was obtained to install point-of-use (POU) treatment devices and keep the capital costs and on-going maintenance to a minimum. After five years of significant efforts, the PWS is now in compliance with the arsenic drinking water standard.

Financial Capacity

- HOA with 26 homes
- Arsenic non-compliance
- Financial accounting, income survey and rate increase were implemented
- DWSRF principal forgiveness loan was provided to install treatment
- Compliance was achieved in 2016.



Under-the-sink POU treatment system with dedicated dispenser on kitchen sink

Technical Capacity

- Mobile Home Park, 70 users
- *E. coli* detection
- Emergency response provided & portable showers installed
- Utility Partnership helped ensure temporary provision of safe drinking water
- Long-term consolidation is being discussed.

Mobile Home Park, Encouraging Partnering Between Systems

In 2015, a mobile home park with approximately 70 users identified *E.coli* in a nearby spring it used for drinking water. The water system was placed on a "Do Not Use Order." Emergency response was initiated and managed by NDEP. The Nevada Water/ Wastewater Agency Response Network was activated. Under a county order, the mobile home park brought in portable showers. During the emergency event, other local water utilities from two counties assisted with water hauling and temporary construction of a waterline from a neighboring utility. The entire water system was disinfected and the "Do Not Use Order" was rescinded. In addition, the mobile home park was required to hire a professional engineer to oversee the construction of a drinking water well on the property and eliminate the use of the spring water. Dialogue continues regarding a long-term solution to consolidate with a nearby large utility as development expands in the area.

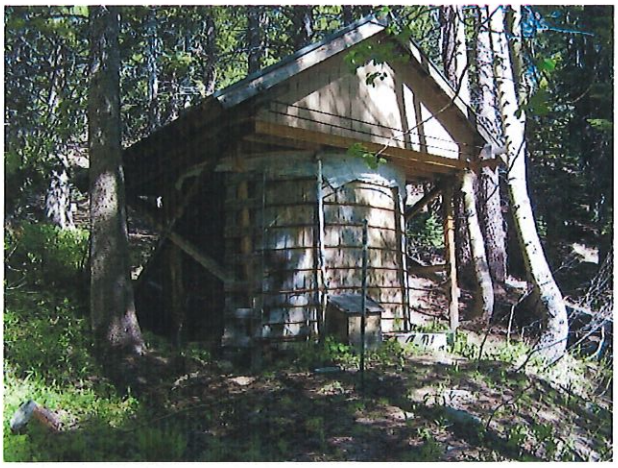
Park space for MHP with spring collection, treatment & storage in low-lying area subject to runoff from pollutants on grassy area & flooding from Truckee River

Homeowners Association, TMF Targeted Assistance

A small homeowners association in Washoe County with fifteen service connections was not responding to violations and requirements to mitigate corrosive water that was causing copper violations. Technical assistance, provided by NDEP and a contractor helped organize homeowners to create a responsible board, obtain proper insurance and contract with a certified operator. With board training, the board chairman was able to effectively organize a successful search for a qualified professional engineer to determine the best solution for the system challenges. The association obtained DWSRF funding to initiate planning and is actively involved in reviewing the potential solutions.

Managerial Capacity

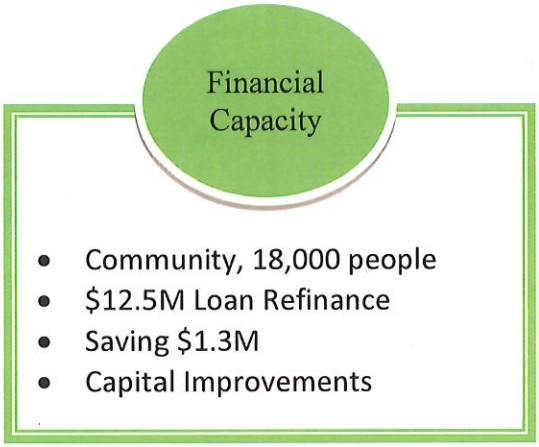
- Small HOA with 15 homes
- Corrosive water violations
- Board member received training
- Hired certified operator and engineering consultant to assist with operation and planning
- DWSRF funding was secured



Existing small storage tank with spring collection system on the hillside behind the tank.

Residential, TMF Targeted Assistance

In 2013, a community of 5,500 people was instructed to implement the required cross-connection control plan (CCCP) for installation of mechanical barriers that protect the water system from siphoning contaminated water from a customer's property into the main water supply. By 2015, the water system had not demonstrated progress. Communication between NDEP, respective TA providers and local community board members resulted in a realization that the board was not fully aware of the requirements and needed additional training. To resolve the challenges and return the system to compliance required the support and buy-in from local officials. The board and water system staff received training that resulted in awareness and support for the adoption of a municipal code requiring compliance with the CCCP. The water system staff continues to work with local businesses on installation of required backflow preventers and anticipates completion in 2017.



Community, Financial Reviews of Previously Funded Projects

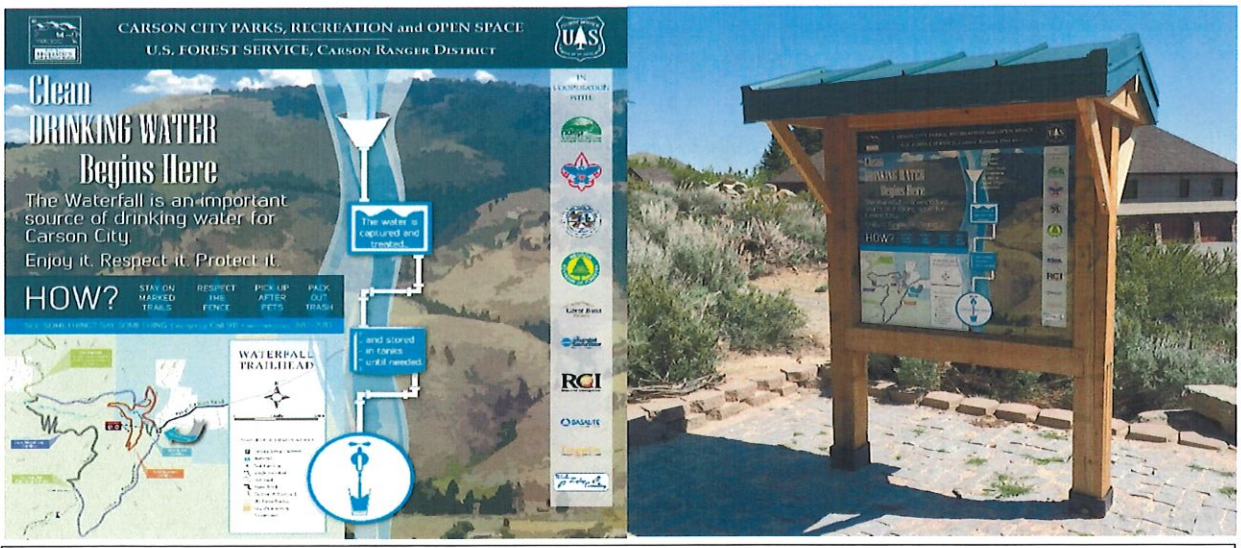
This public water system serves a community of 18,000 people. This project was one of the DWSRF's first efforts to assist a PWS with high debt service. The DWSRF was able to refinance $12.5M in existing debt. The interest rate was reduced by 50%, saving the PWS $1.3M in debt service. The PWS can now utilize the re-financing savings on necessary capital related infrastructure without major rate increases.

Community Source Water Protection

The King's Canyon Waterfall is the primary source of drinking water for Carson City residents. The Board of Supervisors adopted the Carson City Source Water Protection Plan in 2015, and implementation resulted in a multi-agency King's Canyon Trail and Waterfall improvement project. The project facilitates public awareness associated with safe recreation activities in the watershed that do not negatively impact the city's drinking water supply. The project's success resulted largely from the collaboration between the community along with multiple federal, state and local partners. The recent completion of the city's SWPP provided an opportunity to coordinate and leverage resources among the agencies and include drinking water protection education messages for the public. The source water protection planning effort focuses heavily on relationship building with stakeholders in the community. As a result, more agencies are collaborating on projects in sensitive areas and the city has more managerial capacity to influence the improvement of land uses around the city's drinking water intake. The project involved multiple agencies participating to make trail improvements, extend public education and outreach in support for source water protection, and ultimately protect the city's drinking water supply.

Managerial Capacity

- Multi-Agency partnership and community planning
- Coordinated funding
- Planning influence
- Implemented protection strategies & outreach to the community



New informational kiosk located at the Kings Canyon trailhead, Carson City.

New stabilized trail leading to kiosk and new Firefighter Memorial at Kings Canyon trailhead (left). New "no climb" fence along a portion of the trail (right).

Mobile Home Park, Partnership/Consolidation Efforts

Technical Capacity

- A Mobile Home Park with 30 users
- A "found" water system in 2015
- Arsenic non-compliance and total coliform issues
- Implemented interim chlorination
- Received DWSRF loan to consolidate with the County public water system in 2017.

In November 2015, a mobile home park with approximately 30 customers was "found" to be a PWS requiring regulatory oversight. The PWS began to monitor its drinking water which provided results indicating the PWS was in noncompliance with arsenic and coliform water quality standards. NDEP coordinated with multiple agencies to resolve the public health risks. This included NDEP's OFA, NvRWA, RCAC technical assistance providers and the local county. After 18 months, the PWS is fully consolidated with the county for both water and wastewater services and the residents are receiving water that meets drinking water standards.

Before: original MHP well & pressure tank in small shed. After: New waterline from the municipal system water main in the road in front of the MHP enters the park through a master water meter, backflow prevention device & pressure regulator & ties into the existing distribution system where the old well house used to stand.

The Future

As the capacity development program grows and evolves, lessons learned have resulted in a program that continues to improve and better serve the needs of Nevada's PWSs. Efforts to increase opportunities for small PWSs with limited resources to implement more comprehensive planning and protection strategies, training and effective management of infrastructure will help water systems develop sustainable TMF capacities into the future.

Activities that will be reviewed for proactive, targeted training for PWSs include:

- Implementation of the Revised Total Coliform Rule
- Review of Sanitary Survey reports and mitigation of deficiencies
- Navigation of compliance data trends approaching non-compliance thresholds, with development of subsequent mitigation plans and schedules
- Production of dynamic documents, including Operation & Maintenance manuals, Emergency Response plans and Cross Connection Control plans

The goal is to empower businesses to take ownership and be proactive in managing their drinking water systems responsibly. Although this takes ongoing education, it is imperative that we look at existing and alternative methods to engage the regulated community and create partnerships in protecting public health.

While all systems are unique, and most are in regulatory compliance, the majority of PWSs in Nevada require assistance with managerial and financial principles and planning. Managing a utility effectively requires a proactive approach to managing infrastructure assets. The primary objective of asset management is to manage system assets in a way that meets long-term service requirements in a reliable and cost-effective manner. Future technical assistance efforts will include asset management training and assistance to:

- develop a record of assets and create a tailored asset management plan
- perform all required maintenance tasks
- maintain a clear understanding of the PWS's financial status and ensure correct rates are in place to keep the water system sustainable, providing the level of service necessary to protect the health of its customers.

Nevada will always need trained and certified water operators to operate and maintain nearly 600 of its PWSs. NDEP continues to look for opportunities to promote entry pathways in the drinking water sector by reaching out to high schools, community career fairs and other post-secondary career training centers. In addition, the Commission on Postsecondary Education (CPE) and the U.S. Department of Veterans Affairs (VA) recently agreed to reimburse the application fee to Nevada veterans who pay the fee to take the licensing and certification exam. Credit for applicable operating experience during military service is also given for drinking water distribution and treatment operations. NDEP tracks and reports military operating specialty (MOS) designations used by qualifying military applicants to determine Drinking Water Operating experience under the Governor's Executive Order# 2014-20. These initiatives help promote water sector careers to qualified veterans and create opportunities to help veterans transition into careers in the drinking water industry.

Building capacity is an on-going effort at NDEP as new people become owners and operators of Nevada's PWSs, or as board members turn over due to term limits. Expanding the breadth and depth of the Capacity Development Program provides the opportunities for NDEP staff and the regulated community to engage in collaborative problem-solving efforts and ongoing program improvements. NDEP will work towards identifying initiatives to help water systems build capacity and create new opportunities in order to enhance communication and coordination among internal and external stakeholders.

To ensure safe drinking water for Nevada, compliance with regulatory requirements will continue to be the primary focus for NDEP and building PWS capacity is at the forefront of much of the day to day efforts. Reviewing the Capacity Development Strategies and enhancing the programs to provide targeted technical assistance has proven to result in holistic compliance. NDEP will continue on this path, standing ready to assist PWSs obtain compliance with the ultimate goal of protecting public health.

Other Challenges and Opportunities

Throughout the summer of 2016, ongoing drought was leading to a drop in groundwater levels that affected operation of wells or reduced flow from springs. While a significantly wet winter in SFY 2017 improved both surface and groundwater levels, the history of drought periods in Nevada is well documented and improving system capacity includes discussions related to predicting potential drought impacts and planning responses before the situation becomes critical.

In April 2015, Governor Brian Sandoval signed an Executive Order establishing the Nevada Drought Forum. The Forum consisted of members of local water municipalities, state government, higher education and climate experts. It was tasked with examining water policies in effect at that time around the state and recommending changes. Information on the drought and activities related to the Forum are available at http://drought.nv.gov/.

The BSDW ISWPP is currently leveraging funding and technical assistance with the Bureau of Water Quality Planning's (BWQP) Non-Point Source (NPS) Program to assist the communities and PWSs within Washoe County to develop a regional Source Water Protection and Watershed Management plan. This type of coordination has been encouraged through a national initiative by the Association of State Drinking Water Administrators (ASDWA), the Association of Clean Water Administrators (ACWA) and the EPA to better integrate Clean Water Act and Safe Drinking Water Act programs.

This collaborative planning effort provides the opportunity to coordinate and leverage resources among local, state and federal agencies as well as other stakeholders. It includes efforts to educate the public on the importance of protecting the community's drinking water resources. Source water protection planning also promotes relationship building among stakeholders in the community. Ultimately, the outcome will help develop strategies and tools needed for water system managers and decision makers to evaluate water supply conditions and make informed decisions regarding water resource management and planning priorities.