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Department of Environmental Conservation
Drinking Water and Groundwater Protection Division

Vermont's Drinking Water System Capacity Development Program Annual Report 2016

Helping public drinking water systems improve their technical, managerial, and financial capabilities so they can provide safe, affordable drinking water to their customers.

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Table of Contents

Introduction

Vermont's public drinking water systems face significant challenges as they try to comply with regulations, manage aging infrastructure, and achieve financial viability. To help address these challenges and to meet the requirements of the federal Safe Drinking Water Act's (SDWA) 1996 Amendments, the Drinking Water and Groundwater Protection Division (DWGPD) created a Capacity Development Program. The program's objectives are:

- To ensure that new community (CWSs) and non-transient non-community (NTNCs) systems demonstrate the technical, managerial, and financial capacity to provide a sufficient quantity of safe water in a cost-effective manner now and into the future; and
- To help existing systems become more sustainable by improving their technical, managerial, and financial capabilities.

Technical capacity *refers to a system's physical and operational abilities.*

Managerial capacity *refers to a system's administrative and organizational abilities.*

Financial capacity *refers to a system's abilities to generate or obtain enough money to maintain the system and pay for future improvements.*

There are three types of public water systems:

Community water systems serve 25 or more year-round residents or have 15 or more year-round residential connections;

Non-transient non-community water systems serve 25 or more of the same people at least six months per year. Examples include daycares, schools and office buildings; and

Transient non-community water systems serve 25 or more people per day at least 60 days per year. The persons served need not be the same people. Examples include delis, hotels, campgrounds and restaurants.

This annual report is required by the Environmental Protection Agency (EPA). It provides a summary of the Capacity Program's efforts during state fiscal year 2016 (July 1st, 2015 thru June 30th, 2016). The first section briefly describes the state's legal authority to ensure that all new CWSs and NTNCs demonstrate the capacity to comply with drinking water regulations. It also lists the compliance status of the systems that began providing water within the past three years. The next section of the report focuses on the Capacity Program's strategy to help existing systems improve their technical, managerial, and financial capabilities. It describes how the program identifies systems that need assistance and some of the tools used to help build capacity. The last part of the report describes the program's plans for the near future.

EPA will use this report to help determine whether Vermont's Capacity Development Program meets the SDWA's statutory requirements. Failure to meet the requirements would result in a 20% withholding from our Drinking Water State Revolving Fund (DWSRF) Capitalization Grant. The grant for federal fiscal year 2016 is $8,312,000, so failure to comply would result in a $1,662,400 penalty.

Capacity Development for New Public Water Systems

Section 1420(a) of the Safe Drinking Water Act requires the state to ensure that all new Community (CWSs) and Non-transient non-community (NTNCs) drinking water systems beginning operations after October 1st, 1999, demonstrate the capacity to comply with regulations. Vermont's legal authorities to implement this requirement are in statute (10 V.S.A. § 1685) and rule (Environmental Protection Rules, Chapter 21 Water Supply Rule). There were no changes to these legal authorities during the year.

Figure 1. Control points to ensure that new CWSs and NTNCs have adequate capacity.

- *Source Protection Plan Approval*
- *Source Permit Issuance*
- *Long Range Plan Approval*
- *Construction Permit Issuance*
- *O&M Manual Approval*
- *Sampling Plan Approvals*
- *Operator Certification*
- *Operating Permit Issuance*

Control Points

The Water Supply Rule (Environmental Protection Rules Chapter 21) prohibits a new CWS or NTNC from operating before demonstrating that it has adequate technical, managerial, and financial capacity. The rule also outlines the criteria to demonstrate capacity, and includes several control points – places where the Drinking Water and Groundwater Protection Division (DWGPD) can exercise its authority to ensure a new system will have adequate capacity (see Figure 1). Each control point marks a significant milestone in demonstrating capacity. The DWGPD makes a formal determination as to whether a system has adequate capacity at two points – before issuing the construction and operating permits. During the year, there were no changes to the criteria used to demonstrate capacity.

Capacity Determinations for New Public Water Systems

The table below lists new systems for which a capacity determination was completed during state fiscal year 2016. It also lists proposed systems for which an evaluation is underway, but not yet completed, and a note regarding their status.

Table 1. Capacity evaluation status for new CWSs and NTNCs.

WSID	Water System Name	PWS Type	Date Activated	Capacity Review Status
VT0021062	MSCVT Water System	NTNC	9/8/2016	Capacity determination completed
VT0021202	Berlin Municipal Water System	CWS	2/22/2016	Capacity determination completed
VT0021448	Westminster Public Safety Building	NTNC	8/2/2016	Capacity determination completed
VT0021272	Timber Creek at Okemo	CWS	Proposed	Construction permit issued
VT0021454	Heartbeet Community Center	NTNC	Proposed	Construction permit issued
VT0021010	Valley Water System	CWS	Proposed	Source and Construction permit reissued
VT0020376	Killington Village Water System	CWS	Proposed	Construction permit issued
VT0021005	Sundance Subdivision	CWS	Proposed	Construction permit issued
VT0021460	Battenkill Valley Health Center	NTNC	Proposed	Source permit issued
VT0021345	Daniels Construction	NTNC	Proposed	Source permit application received
VT0021429	Smuggler's Notch Development	CWS	Proposed	Source permit application received
VT0021446	The Binding Site VT	NTNC	Proposed	Source permit application received
VT0021490	KCOS Holdings LLC	NTNC	Proposed	Source permit application received
VT0021376	Carinthia at Mount Snow	CWS	Proposed	Source permit application received
VT0021512	Highgate Methodist Church	NTNC	4/5/2016	Source permit issued. No construction or operating permit.
VT0021520	Camp Precast	NTNC	Proposed	Source permit application received
VT0021557	Tata Harper Skin Care	NTNC	Proposed	Source permit application received

New System Compliance

If a public water system does not comply with a federal or state drinking water regulation, the DWGPD notifies them of the violation. The notification requires the system to inform the public of the violation and to return to compliance. The Division also offers the system technical assistance to help them return to compliance. If the system still does not comply, the Division takes appropriate enforcement actions.

The DWGPD uses the Drinking Water Enforcement Tracking Tool (ETT) to help prioritize enforcement actions. EPA requests that the state include in this annual report the ETT status of CWSs and NTNCs activated during the past three years (see Table 2, below). Systems that exceed a score of ten become an immediate enforcement priority. Those with scores of ten or less are tracked closely. No systems activated in the past three years has a score of more than ten.

Table 2. Compliance status of CWSs and NTNCs activated within the last three years that had capacity determinations.

WSID	Water System Name	PWS Type	Date Activated	On ETT list? Score?
VT0021062	MSCVT Water System	NTNC	9/08/2016	No
VT0021448	Westminster Public Safety Building	NTNC	8/02/2016	No
VT0021512	Highgate Methodist Church	NTNC	4/05/2016	Yes - 1
VT0021202	Berlin Municipal Water System	CWS	2/22/2016	No
VT0021493	Pad Print Machinery of VT Inc.	NTNC	4/15/2015	Yes - 1
VT0020964	Alburgh Fire District #2	CWS	7/25/2014	No
VT0021405	Gifford Medical Kingwood Building	NTNC	1/17/2014	Yes – 4
VT0021368	Burr and Burton Academy Mountain Campus	NTNC	1/17/2014	No

Capacity Development for Existing Public Water Systems

Section 1420(c) of the Safe Drinking Water Act requires the state to develop and implement a strategy to help existing public water systems acquire and maintain technical, managerial, and financial capacity. On July 28th, 2000, the DWGPD published its "Existing Public Water System Capacity Strategy". The strategy's five major components are listed in Figure 2. Over the years, the DWGPD has used some tools not listed in the strategy to help systems improve their capacity. The DWGPD started revising the strategy, and plans to finalize it by the end of 2017.

There are 1,388 public water systems in Vermont, including:

- 417 community systems (CWSs),
- 250 non-transient non-community systems (NTNCs), and
- 721 transient non-community systems (TNCs).

Figure 3 shows a breakdown of the CWSs in Vermont by population served. Vermont is unique in that 72% of its CWSs are very small (i.e., serve 500 or fewer people). According to EPA, only about 56% of CWSs nationwide are this small (EPA Document 816-R-10-022, July 2011).

Figure 3. Number of CWSs by population served

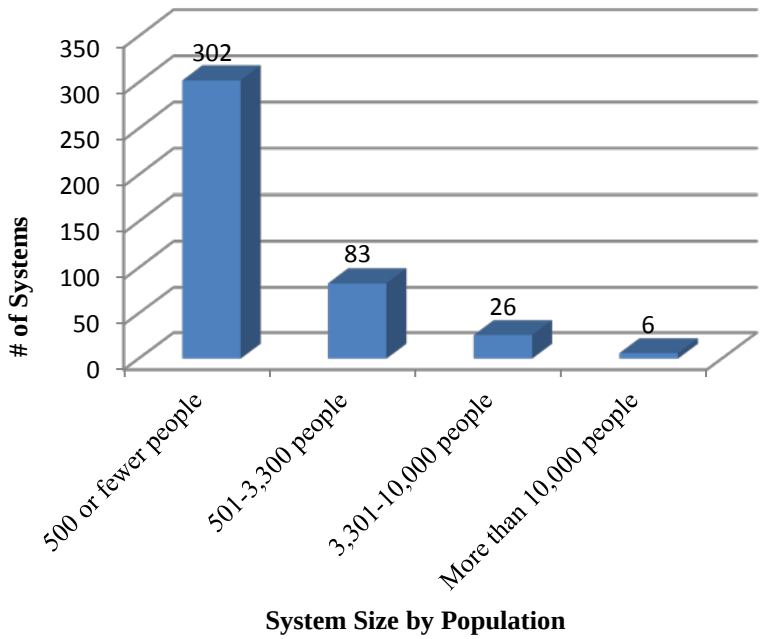

Figure 2. The *Existing Public Water System Capacity Strategy* describes:

- The methods or criteria used to identify and prioritize systems in need of capacity development assistance.
- The factors (e.g., legal, regulatory, or institutional) at the federal, state, or local level that encourage or impair capacity development.
- The ways the state uses its authorities and resources to help systems comply with regulations, encourage the development of partnerships between systems, and train and certify water system operators.
- The methods used to establish a baseline and measure improvements in capacity.
- The ways to involve interested parties in developing and implementing the capacity development strategy.

Most small systems in Vermont were created when regulatory standards were less stringent than they are today. The smallest systems are often run by part-time or volunteer staff with limited time and experience. And many do not generate enough revenues to cover the system's full costs because they have a small customer base and inadequate rates. Too often rates have been kept low by relying on volunteers or underpaid staff, and deferring infrastructure maintenance, repairs and replacement.

Lacking strong capacity, these systems need the tools and training to help them operate in a more sustainable manner. They also need help identifying infrastructure needs and the resources to make improvements. So while the Capacity Development Program provides assistance to all types and sizes of public water systems, extra focus is on the smallest community systems.

The people managing and operating Vermont's water systems face significant challenges as they try to provide their customers a sufficient amount of safe, affordable water. Challenges include managing, repairing, and replacing aging and inadequate infrastructure; achieving financial viability; increasing resiliency to climate related events; recruiting and retaining qualified staff; responding to emergencies; adjusting to changes in demand for services; overcoming resistance to rate increases; adapting to changes in source water quality and quantity; addressing emerging contaminants (e.g., blue-green algae, pharmaceuticals, and personal care products), and complying with new and more stringent regulatory requirements.

Identifying Systems that Need Assistance

The Capacity Program uses compliance data and sanitary survey findings to help identify systems in need of assistance. DWGPD staff conducts a sanitary survey at each system every three to five years, depending on the system's type (i.e., CWS, NTNC, or TNC), treatment, and water source. In state fiscal year 2016, staff surveyed 164 CWSs, 88 NTNCs, 73 TNCs, and 2 in-state bottled water systems.

During each survey, division staff reviews the system's compliance with regulatory standards and provides them guidance on how to improve operations and management. If the system wants or needs more technical, managerial, or financial assistance, the surveyor refers them to the Capacity Development Program.

Information from capacity determinations for systems applying for Drinking Water State Revolving Fund (DWSRF) loans is also used to direct assistance. The DWSRF Program Development Specialist completes most of the capacity determinations for loan applicants. Capacity Development Program staff does the determinations related to loans that involve a change in ownership. During the capacity assessment, staff ensures that the proposed project is designed to address any technical deficiencies. For systems lacking managerial or financial capabilities, staff prepares a list of tasks that, if completed, will improve capacity. Depending on their importance, these tasks are either made as recommendations to the system, included as a compliance activity in an operating permit, or as a requirement for loan approval or forgiveness. The DWSRF Development Specialist and/or the Capacity

Development Program staff work with systems that request help completing the tasks. The state does not award DWSRF monies to systems that lack adequate capacity unless the funds will improve the system's capabilities and address any chronic non-compliance issues.

Providing Assistance to Improve Capacity

During the year, the state continued to use tools identified in the capacity development strategy to help systems improve their technical, managerial, and financial capabilities. These tools include source, construction, and operating permits; sanitary surveys; financial assistance programs, including low interest and negative interest loans; technical assistance consultations; and source water assessments. And we also continued to develop newer capacity development initiatives, with an emphasis on Asset Management and Water Loss Control Programs. Some highlights are described below.

Asset Management Programs - Grants, Workshops, and Other Assistance

In a 2014 capacity questionnaire, Vermont's community water systems identified "creating or updating an Asset Management Program…or other tool to help manage the water system" as a top priority. So to help systems develop an Asset Management Program, the Capacity Program hosted two workshop series in 2015, and offered grants at the beginning of 2016.

Each workshop series consisted of four full-day workshops spread over a three-month period. During the workshops, participants learned how to develop the components of an Asset Management Program to help solve a problem with their drinking water utility. Between each of the four workshops, the participants applied what they learned by working on portions of an Asset Management Program for their system. So by the end of the series they had developed a program for part of their system, and gained the knowledge and confidence to grow the program over time. Two more workshop series began in September 2016. By the end of the 2016 workshops, representatives from 35 community water systems will have completed the trainings.

*An **Asset Management Program** uses level of service goals, a detailed asset registry, risk assessments, risk and cost reduction strategies, and financial planning to help set priorities and meet customers' expectations in a cost-effective manner. It can help systems:*

- *Operate more efficiently,*
- *Prolong the life of assets,*
- *Make informed decisions,*
- *Justify needs and decisions,*
- *Plan and pay for future repairs and replacements, and*
- *Become more resilient and sustainable.*

An up-to-date map and asset registry are the backbone of a successful Asset Management Program – but with limited staff time, inventorying everything a system owns can take years. And although systems can benefit from an Asset Management Program before the registry is complete, the

time and effort needed to create one often prevents systems from starting. So in 2016, the Capacity Development Program offered systems grants of up to $20,000 to help develop and implement an Asset Management Program.

Twenty-seven systems received a grant - 19 of which either completed the Asset Management workshops in 2015, or are attending the workshops this year. Systems are using funding to develop level of service goals and performance measures; create an asset inventory and assess the condition of assets; map assets; analyze asset life cycle costs; conduct a risk assessment to identify priority assets; develop risk and life cycle cost reduction measures; and create funding strategies (see Table 3).

Table 3. Number of systems with grant funding to complete each component of an Asset Management Program.

Asset Management Program Components	Number of Systems with Grant Funding for Component
Level of Service Agreement (Goals and Performance Measures)	19
Asset Inventory and Condition Assessment	27
Maps	19
Life Cycle Cost Analyses	12
Risk Assessments	23
Risk and Cost Reduction Strategies	21
Funding Strategies	19

Leak Detection Surveys

Finding and repairing leaks in a timely fashion can minimize wasteful water withdrawals, reduce treatment costs, capture lost revenue, prevent disruptions to the water system, and protect public health. So for the third consecutive year, the Capacity Development Program offered free leak detection services to CWSs.

To be considered for the services, systems had to submit a project request including the results from a basic water audit, the miles of pipe they want to be surveyed, the pipe's age and material type, and any additional information demonstrating why the system would benefit from the project (e.g., water pipe break history, or examples of system water shortages or low pressure events thought to be caused by leaks). The system also had to agree to assist with the survey (i.e., preparing maps, locating listening points, exercising valves, etc.), and fix any leaks found.

In fiscal year 2015, twenty-three public community drinking water systems received leak detection services. About 359 miles of pipe were surveyed and 105 leaks were identified. An estimated 1,202 gallons per minute (1,730,880 gallons per day) of drinking water was being lost through these leaks. Capacity Development Program staff followed up with the systems to ensure that they fixed the leaks or had a plan to do so. Because leak detection is not an exact science, some leaks were likely not found. Table 4 below provides a summary of the leak detection surveys conducted in fiscal years 2014 and 2015.

Table 4. Summary of leak detection surveys completed in fiscal years 2014 and 2015.

Fiscal Year	Number of Systems	Miles of Pipe Surveyed	Number of Leaks Identified	Estimated Losses from Leaks Identified (Gallons per Day)
2014	25	155	51	519,840
2015	23	359	105	1,730,880

This year, twenty-six systems were awarded a leak detection survey. And two systems that were surveyed last year were awarded additional time for some follow up work. The surveys are being conducted in accordance with the American Water Works Association's "Water Audits and Loss Control Programs" manual (Manual of Water Supply Practices M36, 3rd Edition, 2009). They are scheduled to be completed by the end of October 2016. A final project report will be prepared once the surveys are done.

The Capacity Development Program plans to offer leak detection services again next year. And we also plan to help systems develop more comprehensive water loss programs by offering trainings and technical assistance on conducting and validating water audits. Comprehensive water loss programs will likely be required for some systems in the future.

Revised Total Coliform Rule – Level 2 Assessments

To help implement the new Revised Total Coliform Rule, the Drinking Water and Groundwater Protection Division's Compliance and Support Section is offering free Level 2 Site Assessments to CWSs and NTNCs following an *E. coli* maximum contaminant level violation, or certain repeated total coliform or compliance issues. The goal of the assessments is to help identify defects that likely triggered the assessment, and corrective actions to resolve the issue.

The table below describes some other on-going capacity development initiatives. Appendix A includes a list of capacity development projects completed in previous years.

Table 5. Some on-going capacity development initiatives for existing systems.

Initiative	Target Audience	Description
Drinking Water State Revolving Fund (DWSRF) Program Changes	Potential DWSRF loan recipients	Recent changes to the program include a requirement for loan recipients to create an asset replacement reserve fund, and incentives to implement asset management programs. Also, Preliminary Engineering Reports will be required to include a short-term asset replacement table.
Training and Assistance	Public water system (PWS) owners and operators	Contract with Vermont Rural Water Association to provide technical assistance and conduct group and one-on-one trainings. Appendix B includes a summary of the training provided during the year. The Capacity Development Program also hosted two intensive Asset Management workshop series.
Legal Assistance	Community (CWSs) and non-transient non-	Pays for legal services associated with DWSRF loan closings. Also pays for legal reviews for systems

	community (NTNCs) DWSRF loan recipients	using DWSRF monies to purchase land or to acquire, merge with, or purchase another system.
User Rate Reviews and Budgeting/Assisting in the Development of Financial Capacity	CWSs	Systems have contacted the Capacity Development Program for assistance in establishing an equitable user rate structure.
By-laws and Ordinance Development and Updates	CWSs	Several water systems requested help with creating or updating by-laws and ordinances. Developing a checklist of items to include in a municipal ordinance.
Ownership restructuring	CWSs	Providing guidance while undergoing restructuring (e.g., forming a Fire District to acquire a privately owned system, assisting with a merger between two municipal entities)
Technical Assistance, RTCR Assessments, and Contamination Investigations for transient non-community (TNCs) water systems.	NTNCs and TNCs	The DWGPD has contractors available to conduct contamination investigations and RTCR assessments at TNCs. Assistance includes determining the possible causes of contamination, making recommendations on how to improve the system and comply with regulations. This service has helped systems protect public health and come back into compliance more quickly.
Board Member Owner Manual	CWSs	The manual outlines the responsibilities and liabilities for PWS board members and includes information on relevant laws, regulations, and policies, and a list of resources. A draft has been prepared.
Flood Vulnerability Assessments	CWSs	FED hired a temporary employee to help CWSs 1) assess the vulnerability of their infrastructure to natural disasters (focus mainly on flood and erosion hazards); and 2) identify ways to reduce risks and improve resiliency to natural disasters.

Capacity Development – Looking Forward

The Capacity Development Program's goal is to help ensure that Vermont's public water systems are sustainable. Sustainable drinking water systems have the technical, managerial, and financial capabilities to provide their customers a sufficient quantity of clean, safe water in a cost-effective manner - now and into the future.

"You cannot have a first rate community…with third rate infrastructure" *– Source unknown*

Feeling pressure to keep user rates low, many communities have not been making the investments needed to properly maintain, repair, rehabilitate, and replace their drinking water infrastructure. So more pipes, pumps, storage tanks, and water treatment plants have exceeded their useful life, or will so soon. The Environmental Protection Agency estimates that Vermont needs to invest more than $510 million in public drinking water infrastructure in the next twenty years to ensure the health, security, and economic well-being of our communities (Drinking Water Infrastructure Needs Surveys and Assessment, Fifth Report to Congress, April, 2013). This estimate does not include money for on-going operations and maintenance, complying with new regulations, or expanding systems.

As drinking water infrastructure continues to age and degrade, public water systems will struggle to be sustainable. And money from utility reserves and public financing will likely not be enough to address Vermont's drinking water infrastructure needs. This financial shortfall presents the greatest challenge for most public community water systems. We have been encouraging systems to develop and implement Asset Management Programs to help address this shortfall, and meet the other challenges they face (e.g., emerging contaminants, retaining the knowledge of retiring staff, adjusting to changes in demand for services, and complying with new and more stringent regulations). Building on momentum from the Asset Management Workshops and Grants, we will continue to help systems by offering more training and assistance.

Vermont's systems need to invest more money in drinking water infrastructure and use better financial and management practices to operate, maintain, repair, rehabilitate, and replace assets. And the state and federal governments need to invest more too. In 2016, the federal capitalization grant and state match that fund Vermont's Drinking Water State Revolving Loan Program decreased by six percent. But funding needs for infrastructure and operations and maintenance continue to grow. Without proper funding we will not be able to continue to rely on our drinking water infrastructure for disease protection, fire protection, basic sanitation, economic development, and to support our quality of life.

Appendix A. Capacity Development Initiatives Completed in Previous Years

Capacity Initiative	Target Audience	Notes
Transient non-community (TNC) Water Quality Monitoring Project	TNCs	In 2002, the program developed a cost estimate for conducting quarterly compliance monitoring for all TNCs in the state. At the time, TNCs were only taking annual coliform samples. The goal of the project was to help TNCs transition to quarterly monitoring. Using the cost estimate, the TNC Program hired contractors to collect quarterly samples during 2004 and 2005, prepare a sampling plan for each system, and teach staff how to take samples properly. The samples were analyzed at the Department of Environmental Conservation's laboratory.
Engineering Technical Assistance	CWS, NTNC	DWGPD had several engineering firms under contract to provide operational troubleshooting assistance to small public water systems.
Small System Templates and Self-Assessment	CWS, NTNC	Templates for O&M manual and long range plan, and a capacity assessment form was developed. These documents form the basis for some of the individual on-site and group-training sessions provided. Capacity assessments are completed for all loan applicants and are a prerequisite for both planning and construction loan eligibility. Additionally, a customer complaint policy form and *How to Form a Fire District* guidance document were developed.
Public Service Board (PSB) Technical Assistance	Private, for-profit CWS (regulated utilities)	Beginning in early summer of 2009, DWGPD met with representatives from the PSB and DPS to discuss better coordination between the three entities. The aim is to help the very smallest of regulated public water systems with rate review, tariffs, and reporting. This coordination is still in its early stages, but just starting the conversation is a significant milestone. Additionally, a guidance manual was developed to assist small systems in the rate approval process.
Consolidation Study	CWS	Consolidation Study was replaced with a Facilitation and Mediation contract beginning in June 2008.
Communication Workgroup	All PWSs	A workgroup was formed to evaluate and develop recommendations on mass mailing procedures, newsletters, use of the Electronic Bulletin Board, electronic communication with water systems, and general publicity issues. A number of those recommendations were implemented.
Reservoir Water Quality Study	Surface water CWS	The study collected and analyzed data on changes in source water characterization during the year for two small surface water bodies used by public community water systems in Vermont. Field data collection occurred between April 2002 and May 2003 for the Town of Brattleboro and City of St. Albans Water Systems. Data was analyzed and results evaluated and communicated to the participating water systems.
Comprehensive Performance Evaluation Program	CWS	Comprehensive performance evaluations were conducted on three surface water systems.
Small System Engineering Evaluations	CWS, NTNC	An extremely successful initiative and may resume in the future for those systems that did not already receive an evaluation.
Regulation of Consecutive Water Systems and New	CWS	Successful passage of H806 to Act 156 *An Act Relating to Public Water Systems.*

Water Line Extensions		
Asset Management Pilot	CWS	The DWGWPD and Village of Waterbury, a small drinking water system, collaborated on an asset management pilot project that ended in Spring 2013. The goal of the pilot was to populate CUPSS, the EPA-developed asset management program, using ArcGIS for a more efficient way to enter many hundreds to thousands of assets. The use of GIS to spatially locate and attribute assets for use in CUPSS had never been done successfully. The Village now has the frame work for an Asset Management Program. A report describing the project is available on our website at http://drinkingwater.vt.gov/capdev/pdf/waterburypilotproject.pdf
Determination of non-profit status	Loan Applicants	The DWGWPD was given the authority to determine if a water system was not-for-profit without being a tax-exempt (through the IRS) entity. This distinction is beneficial in it reduces a potentially significant time and money delay in the DWSRF loan process
WaterSense Pilot	NTNC	The Orange Center School has a history of seasonal water outages. It appeared that the problem might be solved through water conservation efforts. So the school was awarded a grant in 2012 to purchase and install new WaterSense labeled toilets and faucet aerators, and a new dishwasher. The fixtures helped significantly reduce water use and the school was able to stop hauling water temporarily. But shortages resumed, so the system is now planning to develop another water source. A report describing the project is available on our website.
Drinking Water & Groundwater Protection Division Newsletter- *Waterline*	All PWSs, Consultants, interested organizations	This is an effective means for communicating to a broad audience interested in hearing from the state on issues affecting public water systems. We have received feedback from readers that is highly supportive of the newsletter.

Appendix B. Public Water Operator Certification Program Annual Report 2014

July 1, 2016

This Annual Report documents Vermont's program compliance with the EPA Public Water Operator Certification Guidelines for the calendar year ending December 31, 2015. The US Environmental Protection Agency published guidelines for the "Certification and Recertification of the Operators of Community and Non-Transient Non-Community Public Water Systems" in February 5, 1999. Vermont adopted revised rules in the Vermont Water Supply Rule on December 29, 2000 to comply with the EPA guidelines. EPA approved the State of Vermont Operator Certification Program on February 14, 2001 and awarded the Operator Certification Expense Reimbursement Grant (ERG) which was full utilized by 12/31/2009.

Operator Certification Program Overview and Enforcement Efforts

Public water systems in Vermont are classified based on indicators of potential health risk which include complexity, size, source water for treatment facilities and size for distribution systems. Specific operator certification and renewal requirements have been developed for each level of water system classification. System Classification and Operator Certification requirements are addressed in Subchapter 21-12 of the Vermont Water Supply Rule. This Subchapter includes the method for five classes (Class 1, 2, 3, 4 & D) of public water systems and drinking water facilities, requirements for operator certification and operator certification renewal. Details of Subchapter 21-12 are provided in Appendix B of this report.

Vermont has a fixed three-year cycle of renewals for Operator Classifications 2, 3, 4 and D. The current renewal cycle for Class 2 and 4 operators is July 1, 2014 through June 31, 2017. The current renewal cycle for Class 3 and D operators is July 1, 2013 through June 31, 2016. Operator Classification 1 also have a three-year renewal cycle which, unlike the other classification, is on a rolling basis with the certification period beginning the date issued and expiring ending on June 30th of the third year.

The total number of certified operators for Community, Non-Transient Non-Community, and Transient Non-Community systems is 1213. Vermont has not grand parented operators since 1992 when we adopted the initial operator certification rules. The goal was to assist those operators already operating public water systems to become certified. All grand parented operators are required to maintain their renewal credits for their class each renewal cycle. We currently have 534 grand parented operators in our certification database (SWOCS).

Vermont offers Operator-in-Training and Provisional Certification to help new water systems and operators become fully certified. Our database currently lists 35 individuals with Operator-in-Training Certification and 1 operator with Provisional Certification.

The number of systems without certified operators is listed in the table below:

System type	Number of systems	Number of systems with no certified operator
Community	419	5
Non-Transient Non-Community	251	3
Transient Non-Community*	715	54

* TNC certification is not mandated by EPA.

The Division Operator Certification Officer continues to work closely with new and delinquent community and non-transient non-community water systems to help them obtain a certified operator. The Operator Certification Officer runs a report monthly to identify community and non-transient non-community systems without a certified operator. The Operator Certification Officer will call these systems and follow up with an initial warning letter, if necessary. The water system has thirty days to notify the Drinking Water and Groundwater Protection Division in writing of their certified operator. If the system does not obtain a certified operator, we will issue a Notice of Alleged Violation (NOAV) shortly after the thirty-day period. At this stage, most water systems comply with the NOAV. For the few remaining, a Department attorney may contact the water system and warn the system of a potential enforcement action. If the system still does not obtain a certified operator, we will refer the system to the Agency of Natural Resources Environmental Compliance Division (ECD Division) for further action.

Most community and non-transient non-community water systems without certified operators have this status because their operator(s) fail to renew their certification on time or an operator leaves the system and they are working to obtain a new operator. In calendar year 2015, three NOAV's were issued by the Division to water systems for failure to have a certified operator. Enforcement actions for failure to have a certified operator are still open for three water systems that were referred for enforcement prior to 2015. In 2015, enforcement actions for 2 water systems that were initiated are also still open.

The Agency of Natural Resources has the authority to revoke or suspend an operator's certificate. Failure to comply with the regulations may require revocation or suspension. In calendar year 2015 no operator's certification was revoked or suspended.

Training and exams

The Vermont operator training program is coordinated through a contract with the Vermont Rural Water Association (VRWA). Communication between the VRWA Coordinator and Drinking Water and Groundwater Protection Division Operator Certification staff occurred frequently throughout the year. Additional courses have been coordinated with the Green Mountain Water Environment Association (GMWEA) through a training grant and with New England Water Works Association (NEWWA). We continued to hold courses in various locations throughout the state to reach small water systems. The attendance for each class ranged from 10-20 participants (depending on location).

The state continued to contract with VRWA for the duration of 2015 first with renewal of a contract running from May 1, 2014 through April 30, 2015 and then with a new contract running from May 1, 2015 through April 30, 2016. The contract with GMWEA expired on December 31, 2015. A copy of the contracts with VRWA and GMWEA for 2015 are attached.

Courses for Vermont Water Operators are publicized on our web, http://dec.vermont.gov/water/drinking-water/pwso/operator-training . This includes both in-class and online training courses. In calendar year 2015, approximately 4556 training contact hours were awarded to 1040 water professionals through classes provided throughout the state by VRWA & GMWEA. Details are listed in Appendix A.

Review and approval of training courses occurred throughout the year with the exception of VRWA, GMWEANEWWA and Earth Water Specialists which have "blanket approval" for in-class courses they provide.

On-line training courses by the following training providers have been approved for water system operator TCHs. Note that only up to 50% of water system operator renewal credits may be earned from on-line courses.

- AYPO Tech, LLC
- CEUplan.com
- Michigan State University Water Management Courses
- Vermont Leagues of Cities and Towns, PACIF Online University

All other courses by training organizations and providers, including any distance learning training, must be pre-approved using a pre-approval form taking into account our pre-approval guidelines. Courses must be relevant to operations or management of water systems. We accept a wide spectrum of topic areas from basics to advanced topics. Training topic areas include a range of technical training including safety, capacity, equipment mechanics, and drinking water rules. We also provide training classes for new operators of small systems, systems with advanced treatment and system with distribution only.

Exams were again administered in the spring and fall (May 1, 2015 and November 6, 2015) at two different locations (Berlin and Rutland, VT) on the same day. There were 36 individuals who took the exam in May and there were 36 individuals who took the exam in November.

Stakeholder Involvement and Program Review

The Vermont Operator Certification Advisory Committee met on September 18, 2015 to discuss possible revisions to Subchapter 21-12 – Water System Classification and Operator Certification, an operator certification program evaluation with a possible future move of the administrative function to the Vermont Secretary of State Office of Professional Regulation, the possibility of offering computer base testing for the ABC exams that we currently administer (Class 2, 3,4 & D) and whether to use the standardized ABC exams rather than one customized by ABC for Vermont. Committee review, discussions and providing recommendations to the Division will continue at future meetings as evaluations of these topics continues or others come up. Any administrative changes to the operator certification will be discussed in advance with EPA Region 1 Operator Certification Contact to ensure that our program continues to meet the baseline and implement EPA's Final Guidelines for the

Certification and Recertification of Operators of Community and Non-Transient Non-Community Public Water Systems.

Our goal is to complete an internal review of the customized exam for each operator classification on a five-year cycle. A review of the 2 exam occurred in the winter of 2016. A review of the 3, 4 and D exam will occur as part of the evaluation of whether to use the standardized ABC exams. The advantage of using the standardized ABC exams is that ABC completes a review and updates the exams on a more frequent routine basis than the Division has been able to accomplish for the Vermont Customized 3, 4 & D exams. The current schedule for review of the exams for the 2, 3, 4 & D Operator Class is listed below.

Operator Class	Last reviewed and updated	Schedule for Review and Updating
Class 2	2007	Review completed – Winter of 2016. Revisions were made to some exam questions and revised exam was first used at the May 2016 exam.
Class 3	Prior to 2007	2016/2017
Class 4	Prior to 2007	2016/2017
Class D	2009	2016/2017

Expenditures

The Division continues to use DWSRF money to fund operator training provided by the Vermont Rural Water Association and Green Mountain Water Environment Association. The VRWA contract is funded by Technical Assistance Set-Aside Funds and the GMWEA grant is funded by Program Management Set-Aside Funds.

Water Operator Training provided January 1, 2015 – December 31, 2015

Month	Course Title Training provided January 1, 2015 – December 31, 2015	TCH	# of attendees	TCHs Awarded
Vermont Rural Water Association Training Sessions:				
Jan	Sampling Seminar	3	13	39
	Leak Detection (St Albans)	4	25	96
	Leak Detection (Hartford)	4	20	80
	Preparing for Sanitary Survey	4.5	9	40.5
	Source Protection Plan (Essex Jct)	3	4	12
	Source Protection Plan (Newport)	3	5	15
	Utility Management Certification Training**	10	11	105
	* Four attendees received 3 TCHs			
	** One attendee received 5 TCHs			
Feb	Water System Treatment (St Albans)	4.5	12	54
	Water System Treatment (Rutland)	4.5	8	36
	TCR & Bacti Sampling Plan	3	10	30

	DWGWP Rule Update (postponed from 12/2014)	3.5	8	28
	Preparing for a Sanitary Survey	4.5	10	45
	Utility Management Certification Training*	10	14	130.5
	Basic Math for Water & Wastewater Operators	3	13	39
	Hydraulics	4.5	10	45
	Hands-on Mechanical Seals (Bennington)	4.5	4	18
	Hands-on Mechanical Seals (South Burlington)	4.5	16	72
	*Three attendees received 5, 7.5 & 8 training contact hours			
Mar	Basic Math	3	6	18
	Water System Hydraulics	4.5	17	76.5
	Distribution Certification Class D *	30	3	90
	Advanced Water Certification Class 3 & 4*	40	11	440
	*Both Courses were offered on Tuesday and Wednesday starting on 3/4 through 3/31			
Apr	Advanced Course*	5	10	50
	Small System Class 2 Certification (Essex Jct)**	18	4	67.5
	Small System Class 2 Certification (Springfield)	18	4	72
	Exam Review (Springfield)	4	5	20
	Exam Review (Essex Jct)	4	11	44
	Cyanobacteria Course	2	12	24
	*One Operator missed the last day of classes.			
	**One Operator missed one day of class.			
May	Cyanobacteria Course (Charlotte)	2	5	10
	Innovative Control Tools	1	50	50
	Sampling Seminar	1.5		112.5
	Funding Options	1	31	31
	Hot Topics' Update (EPA and DWGWP)	1	66	66
	Ten Key Areas in Effective Utility Management	1	13	13
	Cyanobacteria Course (Grand Isle)	2	14	28
	TNC Operations (Enosburg)	3	11	33
	TNC Operations (Rutland)	3	15	45
June	Lead and Copper Rule and Chemistry (Rutland)	3	12	36
	VLCT Flagger Course (Swanton)	3	23	69
	Lead and Copper Rule and Chemistry (Newport)	3	12	36
	VOSHA, Excavation and Traffic Hazards	3	14	42
	Pumps and Pumping (Enosburg)	3	12	36
	Pumps and Pumping (White River Jct)	3	9	27
	Effective Utility Management (Bennington)	6	8	48
July	Basic Math for Water and Wastewater	3	6	18
	How To Respond To Your Sanitary Survey	3	4	12
	Excavations and Traffic Hazds (Milton)	3	8	24
	Excavation and Traffic Hazards (Montpelier)	3	3	9
Aug	Source Protection Plans (w/ Scott Stewart DWGWP)	3	14	42
	Leak Detection and Pipe Locating (Milton)	4.5	9	40.5

	Leak Detection and Pipe Locating (Montpelier)	4.5	17	76.5
	Revised Total Coliform Rule for TNCs	3	13	39
	Exam Preparation (Swanton)	3.5	5	17.5
Sept	Advanced Water Op Class 3&4 *	45	8	355
	Distribution Water Op Class D	30	2	60
	Revised Total Coliform Rule (Comm/NTNC)-Montpelier	3	17	51
	Revised Total Coliform Rule (TNC)-Swanton	3	23	72
	Revised Total Coliform Rule (TNC)-Bennington	3	26	78
Oct	RTCR - Bennington	3	35	105
	21st Century Principles of Hypochlorite Disinfection	4	8	32
	How to Invite a Catastrophic Event	4	13	52
	Tips and Tools for a Better Process	4	15	60
	Small Systems Class 2 Certification - Rutland	18	3	54
	Effective Utility Management	6	10	60
	Small Systems Class 2 Certification - Hartford	18	6	108
	RTCR - Hartford	3	19	57
	RTCR - Rutland	3	24	72
Nov	Exam Review	4	6	24
	Exam Review	4	4	16
	Revised Total Coliform Rule - Newport	3	19	57
	Revised Total Coliform Rule - White River Jct	3	21	63
	Revised Total Coliform Rule - White River Jct	3	17	51
Dec	Revised Total Coliform Rule- Hartford	3	18	54
	Revised Total Coliform Rule - Rutland	3	19	57
	Revised Total Coliform Rule - Putney	3	20	60
	Affordable Control and Telemetry	3	16	48
	Rates and Assets and Loans, Oh My!	3	4	12
	Leak Detection and Line Locating	3	14	42
GMMWEA Training Sessions:				
4/22/2015	Motors and Emergency Generators - Champlain Water District	6	9	54
4/23/2015	Motors and Emergency Generators - Champlain Water District	6	3	18
10/29/2015	Importance of Metering in Drinking Water Systems	3	12	36
	TOTALS:	473.5	1040	4556