VERMONT

**Department of Environmental Conservation**
**Drinking Water and Groundwater Protection Division**

# Vermont's Public Drinking Water Systems Capacity Development Program Triennial Report to the Governor 2023

*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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Capacity Development Program

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DRINKING WATER
CAPACITY DEVELOPMENT PROGRAM
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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## Executive Summary

The Capacity Development Program's mission is to help Vermont's public drinking water systems improve their technical, managerial, and financial capabilities (TMF) in order for them to continue to provide safe drinking water to the public. The overall goals of capacity development strategy are to determine the reasons for lack of TMF capacity within Vermont's water systems, identify solutions, and effectively allocate resources to improve the TMF capacity of those systems most in need. The Drinking Water Groundwater Protection Division(DWGPD) has been helping systems increase their capabilities for years by working with our water systems and responding to their specific needs.

The Capacity Development Program uses a number of tools to fulfill its mission, including: source permits and source protection plans, construction permits, operating permits, operator training and certification, capacity evaluations, long range plans, compliance monitoring, sanitary surveys, Drinking Water State Revolving Fund (DWSRF), and direct technical, operational, and compliance assistance from staff. This triennial report provides an overview of the program, the effectiveness of its strategies, and the recent progress made towards improving the capacity of Vermont's public water systems.

The services public drinking water systems provide are vital to the health, safety, and economies of communities throughout Vermont. The people managing these 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., per- and polyfluoroalkyl substances (PFAS), blue-green algae, pharmaceuticals, and personal care products), and complying with new and more stringent regulatory requirements.

In the past three years, the Capacity Development Program helped many public water systems improve their capabilities and comply with drinking water regulations. The program has been busy revitalizing itself with a new Program Strategy, implementing new projects to help Vermont public water system's reach TMF capacity, and implementing programs to ensure the monies from the Bipartisan Infrastructure Law (BIL) are utilized to support Vermont's small and disadvantaged water systems.

In 2021, the Division went through a reorganization and the Operator Certification Program was moved into the Capacity Development Program. By moving the Operator Certification Program within the Capacity Development Program, the Division added an additional staff member to focus on strengthening and expanding the Operator Certification Program. In 2022, following the passing of the BIL, the Division added 11 additional positions and created the Sustainable Infrastructure and Management (SIM) Program. The SIM Program includes the Infrastructure Sustainability Section, which focuses on Service Line Inventories (SLI) and Lead Service Line Replacement Plans; and the Capacity Development Section, which focuses on improving the TMF Capacity of Vermont's Water Systems, including support for water systems responding to emerging contaminants, such as PFAS.

As drinking water infrastructure continues to age and degrade, systems will struggle to comply with regulations and meet their customers' expectations. Feeling pressure to keep rates low, many public water systems are not making the investments needed to properly maintain, repair, rehabilitate, and replace their assets. The Environmental Protection Agency (EPA) estimates that Vermont needs to invest more than $1.779 billion in public drinking water infrastructure in the next twenty years to ensure the health, security, economic viability, and well-being of our communities (Drinking Water Infrastructure Needs Surveys and Assessment, Seventh Report to Congress, September 2023).

Given that the monies from BIL are "once in a generation", the Capacity Development Program continues to encourage systems to create and use Asset Management Plans (AMP). An AMP can help systems operate more efficiently, prolong asset life, plan and pay for future repairs and replacements, make informed decisions, justify system needs and decisions, set and gain support for appropriate user rates, meet service expectations and regulatory requirements, improve emergency response, make the best of use of limited resources, reduce vulnerability to hazards (e.g., flooding), and become more resilient. By emphasizing AMPs, the Division encourages Water Systems to use the once in a generation funding to make lasting improvements that they will be able to maintain and financially support now and into the future.

**Availability to the Public**

This report will be made available to the public, by hosting a downloadable copy of the report on the Vermont Drinking Water Capacity Program website. A copy of the report may also be obtained by requesting one from any Drinking Water staff.

# 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, or Division) created a Capacity Development Program (Program). The Program's objectives are:

- To ensure that new public community (CWSs) and non-transient non-community (NTNCs) drinking water 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;
- To help existing systems become more sustainable by improving their technical, managerial, and financial capabilities; and
- To ensure long term compliance with Vermont's Safe Drinking Water Standards as specified under Chapter 21 of the Environmental Protection Regulations, Water Supply Rule.

When the Safe Drinking Water Act was amended in 2018 (via the AWIA, America's Water Infrastructure Act) it required: A description of how the state will, as appropriate (i) encourage development by public water systems of asset management plans that include best practices for asset management; and (ii) assist, including through the provision of technical assistance, public water systems in training operators or other relevant and appropriate persons in implementing such asset management plans.

***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.*

***Figure 1. There are three types of public drinking water systems (PWSs):***

***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 triennial report provides an overview of Vermont's Capacity Development Program, the effectiveness of its strategies, and the progress made toward improving the technical, managerial, and financial capacity of Vermont's public water systems during the past three years. 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.

## Capacity Development for New Public Water Systems

Section 1420(a) of the SDWA requires the state to ensure that all new CWSs and NTNCs 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.

### *Vermont's Regulatory Program Application*

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 DWGPD can exercise its authority to ensure a new system will have adequate capacity (see Figure 2).

*Figure 2. 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*

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 for new NTNC or CWS systems.

In addition, the Capacity Program requires the PWS owner and consulting engineer to meet with the Capacity program and submit requested documentation, including a 5-year budget, prior to receiving *any* drinking water permits from DWGPD. This step in the Capacity Review Process ensures that an owner does not become financially committed to becoming a public water system before the DWGPD is convinced that, upon receiving all permits, the Water System

can maintain over the long term adequate technical, managerial, and financial 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 2023. It also lists proposed systems for which an evaluation is underway, but not yet completed, and a note regarding their Capacity Review Status.

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

| WSID | Water System Name | PWS Type | Date Activated | Capacity Review Status |
|---|---|---|---|---|
| VT0021005 | Sundance Subdivision | CWS | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021654 | Farm Developing Hotel and Restaurant CTR | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021732 | Red Fox School | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021704 | Green Mountain National Forest Office | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0002603 | Butternut Properties | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021010 | Valley Wells Water System | CWS | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021739 | New Hope Church Day School | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021720 | Bear Mountain Base Camp | CWS | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021588 | 17 Black Walnut LLC | CWS | Proposed | Source permit application received; capacity review process started |
| VT0021646 | Bromley Best Farm | CWS | Proposed | Source permit application received; capacity review process started |
| VT0020866 | Middlebury College Breadloaf Campus | NTNC | Proposed | Source permit application received; capacity review process started |
| VT0020729 | Enterprise Center | NTNC | Proposed | Source permit issued; Construction permit application received; capacity review process ongoing |
| VT0021748 | Faith's Ford Westminster | NTNC | Proposed | Source and Construction permit issued; capacity review process ongoing |
| VT0021750 | Copley Health Systems Inc | NTNC | Proposed | Source permit issued; capacity review process ongoing |
| VT0021747 | MSI Airport Industrial Park | NTNC | Proposed | Source permit application received; capacity review process started |
| VT0021756 | Galaxy of Yes | NTNC | Proposed | Source permit application received; capacity review process started |
| VT0021771 | Next Generation Daycare | NTNC | Proposed | Source permit issued; Construction permit application received; capacity review process ongoing |
| VT0004644 | Manchester Estates | CWS | Proposed | Source permit application received, capacity review process started, project on hold by Water System |

***New System Compliance***

The best measure of the capacity development strategy's effectiveness for new water systems is whether they are in compliance with drinking water regulations, especially the health-based standards. If a public water system does not comply with a federal and state drinking water regulation, the DWGPD notifies the water system's owner(s) and operator(s) of the alleged violation. The Division's notification of violation letter requests that the system informs the public of the alleged violation, provide corrective action as necessary, and return the water system to compliance with safe drinking water standards. The DWGPD also offers the system technical assistance to help them return to compliance (on-site inspections, written determinations, meeting discussion, engineering assistance, and permitting). If the system still does not make significant effort and progress to comply with established safe drinking water standards, the DWGPD takes necessary and appropriate enforcement action.

Another important compliance and capacity measure is the Environmental Protection Agency's (EPA's) Drinking Water Enforcement Targeting Tool (ETT) score. The ETT score measures noncompliance across all federal rules, placing higher weight on the health-based standards. A violation of an acute MCL, for example, carries more weight than that of a reporting violation. A score is calculated for each system based on violations occurring within the past five years and any older open-ended violations. It does not include violations for which the system has returned to compliance, or has been issued an enforceable directive to return to compliance (e.g., a schedule in an operating permit).

The DWGPD uses the Drinking Water ETT to help prioritize enforcement actions. The ETT status of CWSs and NTNCs activated during the past three years is listed in Table 2, below. Systems that exceed a score of ten become an immediate enforcement priority. Those with scores of nine or less are tracked closely. No system activated in the past three years is on the ETT list.

*Table 2. Compliance status of CWSs and NTNCs activated within the last 3 years that had capacity determinations.*

| WSID | Water System Name | PWS Type | Date Activated | On ETT list? Score? |
|---|---|---|---|---|
| VT0021689 | Peak Building | NTNC | 9/29/2020 | No |
| VT0021722 | North Branch Condo Assoc. | NTNC | 9/30/2021 | No |
| VT0021396 | Daniels Construction | NTNC | 3/14/2022 | No |

## Capacity Development for Existing Public Water Systems

### *Capacity Development Strategy*

Section 1420(c) of the SDWA requires the state to develop and implement a strategy to help existing public water systems acquire and maintain technical, managerial, and financial capacity. In 2020, the Capacity Program submitted Vermont's updated Capacity Development Strategy to EPA for review and approval. It was approved by EPA in June 2021 and was the first state in the Country to have the updated strategy approved. The strategy's major components are listed in Figure 3.

The overall goals of the Division's capacity development strategy are to determine the reasons for lack of TMF capacity within our water systems, identify solutions, and effectively allocate resources to improve the TMF capacity of those systems most in need. The DWGPD has been helping systems increase their capabilities for years by working with our water systems and responding to their specific needs.

In 2014, the Capacity Program conducted a survey of its CWS's to identify areas of need and areas of system interest in achieving TMF capacity. The results of this survey identified "creating or updating an Asset Management Program…or other tool to help manage the water system" as a top priority.

Figure 3. 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

In 2022, the Capacity Program conducted an updated survey of its CWS's. Fifty-three (53) percent of CWS's responded to the survey. The survey results show that the current Capacity Development Strategy is having a positive impact on the TMF Capacity of Vermont's water systems. More water systems have an asset management plan, are performing active customer and stakeholder outreach and education, and have a budget that represents the full cost of the services they provide. New topics that emerged as a top priority are assistance with funding sources and coordination, and fiscal planning and rate setting.

### *Existing Public Water Systems*

During Fiscal Year 2023, there were 1,355 active public water systems in Vermont, including:

- 408 Community systems (CWSs),
- 251 Non-Transient Non-Community systems (NTNCs), and
- 696 Transient Non-Community systems (TNCs).

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

**Figure 4. Number of CWSs by population served**

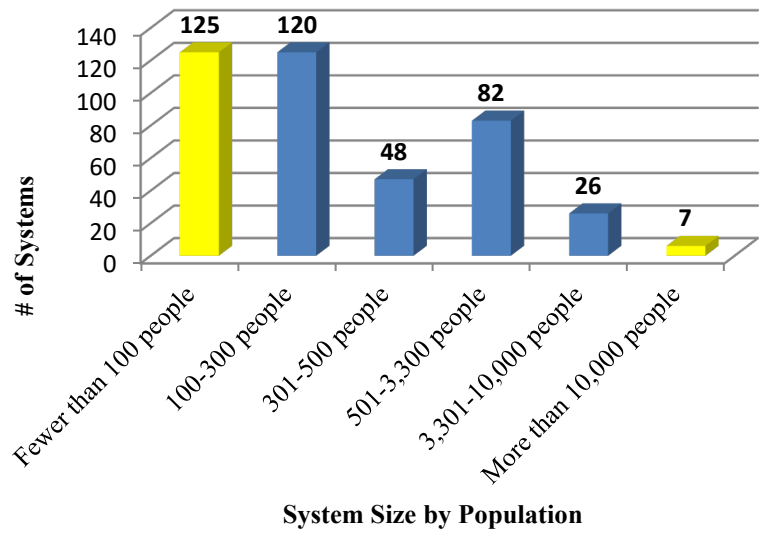



Figure 4. shows a breakdown of the CWSs in Vermont by population served. As this figure depicts, the number of very small water systems far outweighs the number of large systems. Most small systems in Vermont were created when regulatory standards were less stringent than they are today. For example, most of Vermont's small CWSs were created between 1975 and 1987. The smallest systems are often run by part-time or volunteer staff with limited time and limited budgets. Many do not generate enough revenues to cover the system's full cost of service because they have a very small customer base and inadequate water rates. Too often water service rates have been kept low by relying on volunteers or underpaid staff, and deferring infrastructure maintenance, repairs, and replacement.

Lacking strong capacity, specifically managerial and financial capacity, these systems need the tools and training to help them operate in a more sustainable manner. Water systems need assistance to identify their infrastructure needs and the resources available to assist them in completing necessary and required improvements. While the Capacity Development Program provides its assistance to all Vermont's public water systems, extra focus is on the smallest, and frequently the most non-compliant, community systems.

### *Identifying Systems that Need Assistance*

The Capacity Development Program uses compliance data and sanitary survey findings to help identify systems in greatest need of technical assistance. DWGPD staff conducts a sanitary survey at each system every three years for Community systems and every five years for NTNC and TNC systems. During each survey, DWGPD staff reviews the system's compliance with regulatory standards and provides the water system with guidance on how to improve operations and management. If the system is identified as needing technical, managerial, and/or financial capacity assistance, the surveyor refers them to the Capacity Development Program.

Information from capacity determinations for systems applying for DWSRF loans is also used to direct systems that need technical and managerial assistance to the Program. The DWSRF Program

Lead completes most of the capacity determinations for loan applicants, while Capacity Development Program staff complete the eligibility determinations related to loans that involve a change in ownership of the water system. During the capacity assessment, staff ensures that the improvements project that is being proposed for DWSRF loan funding is designed to address technical deficiencies that have been identified by DWGPD. For systems lacking managerial capacity, staff prepares a list of tasks that, if completed, will improve the water system's capacity. These tasks are either provided as recommendations to the system, included as a compliance improvements schedule activity within an operating permit, or as a requirement for loan approval or forgiveness. The DWSRF Program Lead and/or the Capacity Development Program staff work with systems that request help completing the tasks.

Beginning in 2020, the DWSRF program made some changes to the capacity determination process. At this time, the Vermont Bond Bank and the Vermont Economic Development Authority's underwriting review serves as the Financial capacity evaluation. Technical and Managerial capacity evaluations are conducted by the DWSRF Program Lead using information in state permitting, inspection, and enforcement databases, information submitted as part of the loan application, and through a phone call with the applicant. The state does not award DWSRF monies to systems that lack adequate capacity unless the funds will improve the system's capabilities and address chronic non-compliance issues.

### *Helping Improve Technical, Financial and Managerial Capacity*

During the past three years, 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 loans; technical assistance consultations; and source water assessments.

In addition, in response to the BIL funding, the Division hired 11 new positions in order to help meet the goals of BIL to "maximize the impact of these funds in addressing urgent water challenges facing communities" and support capacity development, with a focus on Service Line Inventories and Lead Service Line Replacement Plans, addressing Emerging Contaminants, and increasing Asset Management Plans at Vermont's existing public water systems.

### Sanitary Surveys

A sanitary survey is an on-site inspection of a system's water source, facilities, equipment, operation, and maintenance. During a survey, the Division's surveyor identifies sanitary deficiencies and assesses a system's capability to supply safe drinking water. A compliance schedule to address any deficiencies is then incorporated into the system's operating permit. Table 3 lists the number of sanitary surveys conducted during the past three years.

*Table 3. Number of sanitary surveys conducted during the past three state fiscal years*

| PWS Type | State Fiscal Year 2021 | State Fiscal Year 2022 | State Fiscal Year 2023 |
|---|---|---|---|
| CWSs | 213 | 127 | 156 |
| NTNCs | 38 | 36 | 58 |
| TNCs | 105 | 156 | 149 |
| ***Total*** | ***356*** | ***319*** | ***363*** |

## Operator Certification

All public water systems are required to have a certified operator. The operators are responsible for protecting public health by operating and maintaining drinking water infrastructure in a safe, optimal, and reliable manner. Currently, there are 913 certified operators and 33 operators-in-training that operate the 1,355 Public Water Systems in the State.

Systems without a qualified, accountable operator lack the capacity to provide safe drinking water. When the Division is made aware that a water system is lacking a certified operator, a letter is sent to the water system notifying them that if they do not obtain a certified operator within 30-days, they will be issued a notice of alleged violation and subject to enforcement activities. As of August 30, 2023, 8 CWS, 4 NTNC, and 63 TNC drinking water systems did not have a certified operator.

The DWGPD's Operator Certification Program helps ensure that operators receive the training necessary to fulfill their duties. The DWGPD has an active contract with the Vermont Rural Water Association to conduct trainings. A total of 4,442 training credit hours were awarded in 2022 and 5,587 were awarded in 2021. The number of credit hours for 2023 will be complied and included in the next Operator Certification Program Annual Report, which will be available on July 1st, 2024.

## Drinking Water State Revolving Fund

The 1996 Amendments to the SDWA created the DWSRF. The fund establishes a financial mechanism to help states achieve the SDWA's public health protection goals. Each year the EPA gives Vermont a grant to capitalize the fund. Typically, the State must match at least 20 percent of the federal grant. Sixty-nine (69) percent of the money is used to provide public water systems planning and capital improvements loans, while the other thirty-one (31) percent of the money is used to implement the regulations of Safe Drinking Water Act through employee salaries and to implement Capacity Development Initiatives to improve the TMF Capacity of Vermont's Water Systems.

The amount of funding for drinking water infrastructure that Vermont receives has increased greatly thanks to the Bipartisan Infrastructure Law. For five years, beginning in 2022, Vermont will receive a total of four capitalization grants each year - the General DWSRF Grant, the General Supplemental DWSRF Grant, the Lead Service Line DWSRF Grant, and the Emerging Contaminant DWSRF Grant.

Unfortunately, due to Congressional Directed Spending (CDS), also known as congressional earmarks, the amount of the General DWSRF Grant has decreased dramatically.

Table 4, see below, lists the federal grant monies and state match added to the fund for the past three years.

*Table 4. Federal grant monies and state match added to the Drinking Water State Revolving Fund the last three years.*

| Federal Fiscal Year | Federal Capitalization General Grant Amount | State Match (20% of Federal General Grant) | BIL General Supplemental Grant Amount | State Match (10% of Federal General Supplemental Grant) | BIL Lead Service Line Grant Amount | BIL Emerging Contaminant Grant Amount | Total Capital Added to the Fund |
|---|---|---|---|---|---|---|---|
| 2021 | $11,001,000 | $2,200,200 | - | - | - | - | $13,201,200 |
| 2022 | $7,008,000 | $1,401,600 | $17,992,000 | $1,799,200 | $28,350,000 | $7,555,000 | $64,105,800 |
| 2023 | $4,938,000 | $987,600 | $21,650,000 | $2,165,000 | $28,650,000 | $7,640,000 | $66,030,600 |
| ***Total*** | ***$22,947,000*** | ***$4,589,400*** | ***$39,642,000*** | ***$3,964,200*** | ***$57,000,000*** | ***$15,195,000*** | ***$143,337,600*** |

The reduction in the DWSRF General Grant will have a huge impact on staffing levels, Capacity Building efforts and support at public water systems, as well as infrastructure upgrades. In the short term, while BIL funds are available until 2027, the State of Vermont will be able to cover the employee salaries, **but it will mean less money available for disadvantaged communities to access these "transformational funds".** While shifting funding for core staff positions to "temporary" BIL funding is possible, these positions are not intended to address short-term needs. These core staff have been and continue to be essential for Vermont to administer the Federal and State regulations. Unpredictable funding levels as we approach 2027 will lead to widespread uncertainty and staffing issues. A reduction in the core staffing funding will result in the State's inability to properly implement the applicable regulations, including protection from lead, PFAS, and other contaminants in drinking water.

- From 2016-2021 (pre-CDS), DEC utilized the 31% Set-asides from the DWSRF Grant to fund an average of **22 Full Time Employees and $486,000** in Technical, Managerial, and Financial Capacity building Initiatives each year.
- 2022 (post-CDS)- DEC utilized the 31% Set-Asides from the General DWSRF Grant to fund **10.5 Full Time Employees and $143,000** in Technical, Managerial and Financial Capacity Building Initiatives
- 2023 (post-CDS)- DEC utilized the 31% Set-Asides from the General DWSRF Grant to fund **9 Full Time Employees and $98,760** in Technical, Managerial and Financial Capacity Building Initiatives
- Estimated 2024 (post-CDS)- DEC will be utilizing the 31% Set-Asides from the General DWSRF Grant to fund **less than 1 Full Time Employee and less than $100,000** in Technical, Managerial and Financial Capacity Building Initiatives.

Monies from Vermont's DWSRF are critical to helping public drinking water systems achieve and maintain technical, managerial, and financial capacity. The SDWA requires the state to prepare an Intended Use Plan each year that describes how the DWSRF monies will be spent. Most of the monies are used to fund loans to public water systems for capital improvement projects. Systems serving disadvantaged communities are often eligible for some principal forgiveness and more favorable loan conditions. The CDS bypass the priority ranking process that the State of Vermont has implemented, **therefore disadvantaged communities can suffer due to lack of available funds for infrastructure upgrades.**

To date, loans of more than $318 million have been awarded through the DWSRF. The table below lists the number of executed loans and the amounts for each of the past three state fiscal years.

*Table 5. Loans from the Drinking Water State Revolving Fund executed in the last three years.*

| State Fiscal Year | Number of Loans Executed | Dollar Amount of Loans* |
|---|---|---|
| 2021 | 37 | $36,054,458 |
| 2022 | 20 | $16,405,803 |
| 2023 | 20 | $21,869,982 |
| ***Three Year Total*** | ***77*** | ***$74,330243*** |

* The loans executed in a given year may include funds from the current year's federal grant and state match, as well as monies from interest earnings, loan repayments, and uncommitted funds from previous years.

## DWSRF Set-Asides

As stated above, while the vast majority of the DWSRF monies are used for planning and construction loans, 31% is earmarked for "set-aside" activities that include implementing the SDWA and Capacity Building Initiatives. Some of the more recent Capacity Building Initiatives are described below.

## Asset Management Programs (AMP) - Workshops, Grants, and Loans


The 2018 AWIA provisions to the SDWA include that states must amend their state capacity development strategies to include a description of how the state will encourage the development of asset management plans. The Vermont Capacity Development Program has been incorporating Asset Management into its program for 8 years now. In the 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.

In order to help community water systems develop an Asset Management Program, the Capacity Program has hosted multiple Asset Management training workshops each year since 2015. 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 workshops, the participants apply what they learned by working on portions of an Asset Management Program (i.e. Level of Service Goals, Asset Management Inventory and Condition Assessment, Maps, Life Cycle Cost Analysis, Risk Assessment, Risk and Cost Reduction Strategies, Funding Strategies) for their system By the end of the workshop series each water system has developed a program for part of their system and gained the knowledge and confidence to grow their water system's Asset Management Program over time. To date, a total of 70 water systems have attended these trainings.

In October 2019, an Asset Management Roundtable discussion was held for participants of the past training workshops. They were invited to share their successes and challenges in implementing asset management. It was not a training, but rather, an opportunity for dialog and sharing between systems. These valuable Roundtables continue, and this year's Roundtable included representatives of 8 VT water systems.

In 2016 and 2017, the Division's Capacity Development Program offered systems grants of up to $20,000 to assist with the development and implementation of an Asset Management Program. These grants were used by the community water systems to develop portions or complete Asset Management Plans, depending on the size of the water system.

In 2018, the Division's Capacity Development Program transitioned from grants to 100% forgivable planning loans for Asset Management Plans for up $50,000. To receive 100% forgiveness for these DWSRF Planning Loans, the Water System Operator and a Board Member must attend training in asset management and a complete approved Asset Management Plan must be developed.

From 2018 through 2021, the Capacity Development Program limited the number of forgivable Asset Management Planning Loans issued to 5 a year to allow Division staff the time to help the recipients and ensure the Asset Management Plans developed are robust and meet the needs of the individual water system. With the additional BIL monies, the Division was able to hire an additional capacity development position and expand the Asset Management Program to support the development of 10-15 AMPs each year. Applications are now accepted on a rolling basis and to date, 10 water systems have applied for an Asset Management Planning Loan to date in 2023.

*An **Asset Management Program** uses level of service goals, a detailed asset registry, system maps, life cycle cost analysis, 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*

Including both grants and loans, 79 water systems are working on or have completed approved Asset Management Plans. This represents 40% of Vermont's municipal water systems.

*Table 6. Number of systems with funding to complete an Asset Management Program.*

| Year | Number of systems |
|---|---|
| 2016 | 27 (Grants) |
| 2017 | 20 (Grants) |
| 2018 | 5 (Forgivable Loans) |
| 2019 | 4 (Forgivable Loans) |
| 2020 | 4 (Forgivable Loans) |
| 2021 | 5 (Forgivable Loans) |
| 2022 | 4 (Forgivable Loans) |
| 2023* | 10 (Forgivable Loans) |

*Beginning FY23, applications are now on a rolling basis

**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. Often the cost of leak detection services prevents water systems from finding these leaks until they become disruptive, so an initiative that the Capacity Development Program offers is free Leak Detection services to CWSs.

Leak Detection is a very popular program and is offered annually. Thanks to the BIL funding the Capacity Development Program was able to double the funding for Leak Detection in 2023. Thirty-Three (33) water systems were selected out of 37 applications to receive leak detection service in 2023. Once leaks are identified, Capacity Development Program staff follow up with the systems to ensure that the leaks were fixed or there is a plan to do so.

*Table 7. Summary of leak detection surveys.*

| 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 | 24 | 359 | 89 | 1,731,960 |
| 2016 | 32 | 257 | 117 | 936,720 |
| 2017 | 17 | 55 | 19 | 110,880 |
| 2018 | 14 | 94 | 37 | 89,640 |
| 2019 | 20 | 79 | 48 | 217,800 |
| 2021* | 35 | 102 | 52 | 254,880 |
| 2022 | 17 | 64 | 21 | 83,520 |
| 2023** | 33 | | | |

*Due to the Covid-19 Pandemic, Leak Detection services were suspended in 2020, so the 2021 data includes a Spring and Fall survey period

****as of the date of this report,** 2023 leak detection services are still being conducted

## Valve Locating and Exercising

Waterline distribution valves are rarely used, and the need for operation (opening and closing) often comes at times of critical importance. In an emergency, sections of a water distribution system may need to be completely shut down without delay. It is not uncommon for valves to rest idle for many years, even decades between operation, and records of the location of these valves can be lost. If a valve is not used or properly exercised, it can seize-up from corrosion and make the valve inoperable. Valve exercising programs can help maintain the useful life, safety and operation of water system valves.

The Capacity Development Program offers one-time free valve locating and exercising services to public water systems on an annual basis. The program's popularity continues to grow as word spreads about the service. Thanks to BIL, the Capacity Development Program was able to double the funding for Valve Locating and Exercising in 2023. Seventeen (17) water systems were selected out of 25 applications to receive these services in 2023. Valve data is collected during the program and this data is incorporated into the water system's asset management plan. The valve data collected includes: GPS coordinates, right or left turning, number of turns to open and close, and the position of the valve as it was found.

*Table 8. Summary of Valve Exercising Program.*

| Year | Days Awarded | Number of Systems | Total Number of Valves Exercised |
|---|---|---|---|
| 2019 | 30 | 7 | 303 |
| 2021 | 30 | 16 | 417 |
| 2022 | 30 | 10 | 469 |
| 2023* | 40 | 17 | |

***as of the date of this report**, 2023 valve exercising services are still being conducted

## Revised Total Coliform Rule – Level 2 Assessments

To meet the goals of the Revised Total Coliform Rule, the Drinking Water and Groundwater Protection Division's Compliance Section offers free Level 2 Site Assessments to CWSs and NTNCs following the triggers identified in the Rule, including an *E. coli* maximum contaminant level violation, or certain repeated total coliform or compliance issues. The goal of the assessments is to help identify sanitary defects or issues that triggered the assessment or led to the compliance issues and recommend corrective actions to resolve the issue. This will lead to a better understanding of the water system by the operator, increased compliance with drinking water regulations, and greater protection of public health. Twenty one (21) RTCR Level 2 Assessments were completed at CWSs and NTNCs during FY2023, nine (9) by contractors and twelve (12) by Division staff.

**Service Line Inventory and Lead Service Line Replacement Plan Development**

Under the Lead and Copper Rule Revisions (LCRR), every CWS and NTNC water system must complete a service line inventory (SLI) and a lead service line replacement plan no later than October 16, 2024. The inventory of this vital infrastructure will help systems find and remove harmful lead service lines that deliver water to Vermonters. DEC is using $140 million of Bipartisan Infrastructure Law funding over the next five years to support public water systems with service line inventories, replacement plans, and replacement projects.

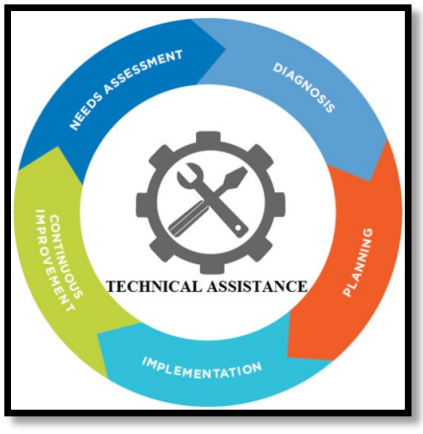
To help water systems meet the SLI requirement, the Division formed the Infrastructure Sustainability Section. This section reviews and approves all service line inventories and lead service line replacement plans. Staff also offer outreach and educational activities about the section's programs.

Utilizing the set-asides, DEC is funding contractors for water systems serving 1,000 or fewer people. In addition, staff from this section are directly developing the SLIs at schools and day care facilities.

As of September 1, 2023:

- 121 water systems have completed inventories
    - 104 are NTNCs
- 905 total service lines inventoried
- 0 lead service lines identified
- 28 galvanized requiring replacement service lines identified
- 82 water systems have been assigned a contractor

**Technical Assistance at Public Transient Non-Community Drinking Water Systems**




The DWGPD has a contractor available to provide technical assistance, conduct contamination investigations, and RTCR assessments at TNC water systems. Assistance includes determining the possible causes of contamination, identifying sanitary defects, making recommendations on how to improve the system and comply with regulations. This service has helped educate owners and operators at TNCs on drinking water regulations, protect public health, and assist systems with staying in compliance or returning to compliance more quickly. The contractor visited 29 TNC systems during FY2023.

**The table below summarizes other on-going capacity development initiatives.**

*Table 9. On-going capacity development initiatives for existing systems.*

| Initiative | Target Audience | Description |
|---|---|---|
| Drinking Water State Revolving Fund (DWSRF) Program Priority List Ranking | Potential DWSRF loan recipients | Changes were made to the Priority List ranking criteria in December 2016. These changes attempt to streamline the deficiency point categories, preserving award of the highest points to the most serious public health risks, elevating projects that will address lead and copper issues, and refining how aged infrastructure is addressed. For the aged infrastructure issue, three new categories were created to better reflect what the funding and regulating programs are witnessing: inadequacy of critical components, system vulnerability to contamination, and improvements to/redundancy of system components. |
| 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. Since 2015, the Capacity Development Program has also hosted intensive Asset Management workshop series. |
| User Rate Reviews and Budgeting/Assisting in the Development of Financial Capacity | CWSs, NTNCs | Systems have contacted the Capacity Development Program for assistance in establishing an equitable user rate structure. The Capacity Development Program hosts Rate Setting workshops yearly. |
| By-laws & 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, NTNCs | 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) |

### *Effectiveness of the Capacity Development Strategy for Existing Public Water Systems*

As with new systems, the best measure single measure of the effectiveness of the capacity development strategy for existing water systems is whether they are in compliance with federal and state drinking water regulations, especially the health-based standards.

*Table 10. Percentage of systems in compliance with the health-based standards in the past three state fiscal years.*

| PWS Type | FY2021 | FY2022 | FY2023 |
|---|---|---|---|
| CWSs | 99% | 97% | 98% |
| NTNCs | 99% | 99% | 99% |
| TNCs | 94% | 94% | 95% |

The ETT scores are another compliance measure used to gauge capacity development efforts. An ETT score is calculated for each public water system as a measure of noncompliance across all federal rules. Systems that exceed a score of ten lack the capacity to comply with regulations and become an immediate enforcement priority. Those with scores of ten or less are tracked closely.

*Table 11. Number of systems with a Drinking Water Enforcement Targeting Tool score of more than ten.*

| PWS Type | ETT Report Date Jan 2021 | ETT Report Date Jan 2022 | ETT Report Date Jan 2023 |
|---|---|---|---|
| CWSs | 12 | 6 | 9 |
| NTNCs | 0 | 0 | 0 |
| TNCs | 8 | 11 | 10 |

*Table 12. Community Systems with a Drinking Water Enforcement Targeting Tool score of more than ten as of August 2023.*

| WSID | Water System Name | PWS Type | ETT Compliance Score |
|---|---|---|---|
| VT0005589 | Christmas Tree Sundown Condominium | CWS | 46 |
| VT0005043 | Ryegate Fire District 2 | CWS | 35 |
| VT0005397 | Battleground Condominium | CWS | 30 |
| VT0020760 | East Mountain MHP | CWS | 20 |
| VT0020031 | Vernon Hall | CWS | 16 |
| VT0020796 | Chambers Mobile Home Village | CWS | 15 |
| VT0005577 | Mountain Side Condominium | CWS | 13 |
| VT0005280 | Butternut Hill | CWS | 12 |
| VT0005268 | Sugar Run Association Inc | CWS | 11 |
| VT0005385 | Mansfield View Water Corp | CWS | 11 |

While compliance with the drinking water standards is a useful measure of capacity, it does not indicate whether a system will have adequate capacity in the future. Any system could quickly fall out of compliance due to a number of factors, including changing water quality, degrading infrastructure, increasing regulations, or changes in staff.

The updated Capacity Development Strategy includes many ways to evaluate and enhance a system's technical, managerial, and financial capabilities, including the Capacity Survey that will be sent out every few years. The results will be used to monitor the changes in the TMF capacity of our water

systems and allow the Capacity Development Program to develop targeted programs to help Vermont water systems improve their TMF capacity.

Table 13 lists a few highlights of results from the 2014 and 2022 survey, which shows large strides in the number of water systems with Asset Management Plans, increased financial capacity, and increased resiliency to climate related events, such as stand-by generators.

*Table 13. Capacity Survey Results*

| **Survey Results of Large Systems (population over 500)** | **2014** | **2022** |
|---|---|---|
| Percent of respondents that have an Asset Management Plan | 35% | 61% |
| Percent of respondents that had income produced from their current rate structure exceed operating expenses (including debt service) | 45% | 56% |
| Percent of respondents that actively engage with local decision makers to build support for its goals, resources, and the value of the services it provides | 39% | 61% |
| Percent of respondents that review the rate structure on a routine basis | 67% | 82% |
| | | |
| **Survey Results of Small Systems (population under 500)** | **2014** | **2022** |
| Percent of respondents that have Drinking Water Ordinances | 29% | 36% |
| Percent of respondents that have a budget that represents the full cost of the services they provide | 70% | 86% |
| Percent of respondents that have stand-by generator(s) | 30% | 45% |

## Capacity Development – Looking Forward

Vermont's Capacity Development Program centers on the overall goals of the 2020 Capacity Development Strategy: to determine the reasons for lack of TMF capacity within our water systems, identify solutions, and effectively allocate resources to improve the TMF capacity of those systems most in need.

The results of the Capacity Survey distributed to Vermont's Community Water Systems in early 2022 indicate the desire for continued support with Asset Management, and the help with fiscal planning and rate setting along with funding sources and coordination.

As drinking water infrastructure continues to age and degrade, public water systems will continue to struggle to be sustainable and remain in compliance with safe drinking water standards and regulations. The EPA estimates that Vermont needs to invest more than $1.779 billion 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, Seventh Report to Congress, September 2023). This estimated infrastructure expense does not include sufficient revenue for on-going operations and maintenance, expenses incurred to comply with new regulations, or expenses associated with expanding water systems.

Vermont will receive a total of four Federal Fiscal Year (FFY) 2023 capitalization grants. These grants total $62,283,000. The monies will be used for infrastructure improvements, service line inventories, and addressing emerging contaminants. The Capacity Development Program has hired additional staff to manage expanded and brand-new set-aside programs, specifically, NTNC and TNC Asset Management Initiatives, Community Engagement with Disadvantaged Communities, and Water Rates Media Campaign.

## “When the well is dry, we’ll know the worth of water.” — Benjamin Franklin

With additional DWSRF loan funding for new infrastructure, the Capacity Development Program’s focus will continue to be asset management to ensure that water systems use this is once in a generation funding wisely. This is vital as Vermonters rely on drinking water infrastructure for disease protection, fire protection, basic sanitation, economic development, and to support quality of life.

Due to Vermont’s small size and community-minded approach to everyday life, the commitment to individual attention and support is a high priority for the DWGPD. Public water systems in Vermont know that the best way to get technical, managerial, or financial assistance is by reaching out to Division staff. Whether it is water quality monitoring compliance questions, different treatment approaches available, or long-term planning options, the Division staff consistently offer high quality, one-on-one support to water systems. This tradition of an “open-door” policy allows for honest communication and reminds the water systems that DWGPD wants what is best for Vermont’s citizens and their water systems.

# 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. |
| 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. |
| 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. 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 Water Line Extensions | CWS | Successful passage of H806 to Act 156 An Act Relating to Public Water Systems. |
| Asset Management Pilot | CWS | The DWGPD 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://dec.vermont.gov/water/drinking-water/capacity-dev/publications-and-resources/archived-documents |
| Determination of non-profit status | Loan Applicants | The DWGPD 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. |
| 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. |
| Legal Assistance | Community (CWSs) and non-transient non-community (NTNCs) DWSRF loan recipients | Pays for legal services associated with DWSRF loan closings. Also pays for legal reviews for systems using DWSRF monies to purchase land or to acquire, merge with, or purchase another system. |
| 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. |
| Stand-by Power | CWSs and NTNCs that have been designated emergency shelters | In 2018, the Division, in conjunction with DWSRF Program, offered standby power evaluations to CWSs, as well as NTNCs that have been designated emergency shelters. This initiative was split into two phases. For the first phase, the DWGWPD assigned contractor provided free sizing, design, and benefit-cost analysis for auxiliary power supplies to operate water system infrastructure during interruptions to the main electrical supply. Ten water systems received free stand-by power evaluations.<br><br>In Phase Two, as follow-up to the evaluations, the DWGWPD combined four of the standby power evaluations into a single application for a grant offered by the Federal Emergency Management Agency's (FEMA's) Hazard Mitigation Grant Program to assist those public drinking water systems with the purchase and installation of standby power. Unfortunately, almost two years later the Division still had not gotten approval of the FEMA grant. So, in 2020 the Division decided to move ahead in a different direction. Using DWSRF funds, the Division set up a procedure for all ten systems to receive up to 100% principal loan forgiveness for Standby Power installations associated with the approved Standby Power |

| | | |
|---|---|---|
| | | evaluation plans performed in 2018. Six of the ten systems came in for financial assistance on installation of emergency generators. |
| Lead Reductions Strategies Grants | CWSs | In 2017, the Capacity Development Program offered $125,000 in grants to help public CWSs reduce the risks of exposure to lead in drinking water. Two community water systems were awarded the Lead Reduction Strategies Grants, Springfield Water Department and Bennington Water Department. Both water systems were able to use the grant money to map, inventory and sample connections, and develop a "plan of attack" to address the lead in their distribution system, whether it is on the water system owned side, or the customer owned side.<br><br>Recognizing the tremendous public health effects from lead exposure, and the great value of lead service line removal, the Capacity Development Program offered the Lead Reduction Strategies Grant again in 2021. After two rounds of solicitation, no systems applied so the Capacity Development Program reallocated the funds to other capacity development initiatives. |
| Water and Sewer User Rates Dashboard | CWSs | In 2020, the Capacity Development Program sought proposals from contractors to create a digital Water Rates Dashboard. A contractor was selected, and a Vermont water system rates survey took place starting in 2021. The contractor received a response rate of 89%. The dashboard was completed in the fall of 2021. A webinar training took place in Feb 2022 on how to utilize the rates dashboard and was attended by over 80 people. The rates dashboard continues to be a powerful tool and is the first place to check when rates conversations develop. |

Appendix B.

# Vermont Drinking Water and Groundwater Protection Division
# Public Water Operator Certification Program

## Annual Report for Calendar Year 2022

June 20, 2023

This 2022 Public Water Operator Annual Report documents Vermont's program compliance with the EPA Public Water Operator Certification Guidelines for the calendar year ending December 31, 2022.

Appendix B of this document is extracted from the March 17, 2020 Vermont Water Supply Rule (Chapter 21 of the DEC Environmental Protection Rules). Section 12.1 of the Vermont Water Supply Rule (Rule) requires that all public water systems shall be operated by a certified operator of the appropriate class. This includes Public Community, Non-Transient Non-Community, Transient Non-Community drinking water systems and Domestic (in-state) Bottled Water Systems. Section 12.2 of the Rule establishes the responsibilities and duties of the owner of the water system. Under Section 12.2.1.2 the owner shall be a certified operator or shall designate a certified operator to carry on the daily operations of the system.

Beginning in 2021, the program was moved out of the Compliance and Certification Section (now just the Compliance Section) and moved into the Capacity Development and Operator Certification Program. Meagan Cummings has become the new Capacity Development and Operator Certification Program Specialist. Meagan is the new point of contact for the Vermont Operator Certification Program and can be reached at 802-636-7222 or meagan.cummings@vermont.gov.

This 2022 Annual Report provides information for the 9 baseline standards described in the 1999 EPA guidelines.

### 1. Authorization

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. The Vermont Public Water Operator Certification Program (the Program) continues to be implemented at the same level as previous years. No statutory or regulatory changes were made to the Program in 2022. In 2019 and 2020 there were revisions to the Vermont Water Supply Rule, they were targeted updates for state programmatic reasons. There were no changes to the operator certification requirements in the Rule following these revisions.

### 2. Classification of Systems, Facilities, and Operators

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 Section 12 of the Rule. This section includes the method for determining each of the five classes (Class 1, 2, 3, 4 & D) of public water systems and drinking water facilities, requirements for operator certification and operator certification renewal. See Section 12.8 in Appendix B for the methods to determine a Public Water System class. Tables 1 and 2 below identify the number of operators per each class and the number of water systems per each class respectively as of 12/31/2022.

**TABLE 1**

| Certification Class | 1A | 1B | 2 | 3 | 4A1 | 4A | 4B | 4C | D | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Fully Certified Operators | 341 | 94 | 213 | 149 | 3 | 13 | 49 | 88 | 62 | 1012 |
| Operators in Training | - | - | 8 | 11 | 1 | - | 6 | 12 | - | 38 |
| Grandfathered Operators | - | - | - | - | - | 1 | - | - | - | 1 |

**TABLE 2**

| Water System Class | Total Number of Water Systems Per Class | Number of Water Systems by Type |
|---|---|---|
| 1A | 484 | All TNC |
| 1B | 134 | All TNC |
| 2 | 474 | NTNC – 214<br>CWS - 260 |
| 3 | 194 | TNC – 57<br>NTNC – 35<br>CWS - 102 |
| 4A1 | 7 | TNC - 7 |
| 4A | 9 | TNC – 2<br>CWS - 7 |
| 4B | 18 | TNC – 1<br>NTNC – 1<br>CWS – 16 |
| 4C | 14 | All CWS |
| D | 9 | All CWS |

The Rule requires all Public Community, Domestic Bottled, and Public Non-Transient Non-Community water systems to have a designated certified operator in responsible charge available at all times. "Available" means based on size, complexity, and source water quality, a certified operator must be onsite or able to be contacted as needed to initiate the appropriate action in a timely manner. Per Section 12.2 of the Rule, the owner of any CWS or NTNC is required to place the direct supervision of the water system under the responsible charge of the designated certified operator. The owner shall place the certified operator in responsible charge of all quality, quantity, process control, and system integrity decisions involving public health, treatment, storage, distribution, and standards compliance. The certified operator is required to hold a valid certification equal to or greater than the classification of the treatment facility and distribution system. A Provisional Certification may be issued when a specific public water system has exhausted all reasonable efforts in recruiting a fully certified operator, and the applicant for the Provisional Certification has obtained a passing grade on the operator examination for the particular water system class. An operator with a Provisional Certification can only operate the specific water system applied for. There are currently no operators with a Provisional Certification in Vermont. Vermont uses the Safe Water Operator Certification System (SWOCS) to track operator certification details, including

which public water systems each operator is identified as the designated operator in responsible charge. We have created a public website (https://anrweb.vt.gov/DEC/DWGWP/Search.aspx) where operators can check on their certification status including the certification expiration date and how many TCH's we have on file for them towards recertification.

The Operator Certification Specialist runs a report monthly to identify community, non-transient non-community systems and TNC water systems without a certified operator and will reach out to those systems. Table 3 identifies the number of public water systems without a certified operator in responsible charge as of December 31, 2022.

**TABLE 3**

| System Type | Number of Systems | Number of Systems With No Certified Operator as of 12/31/22 |
|---|---|---|
| Community | 408 | 15 |
| Non-Transient Non-Community | 250 | 1 |
| Transient Non-Community* | 685 | 86 |

* TNC certification is not mandated by EPA.

### 3. Operator Qualifications

In order to be eligible to obtain an Operator Certification in Vermont, the applicant must complete the following:

(a) Submit a complete operator certification application form;
(b) Have a high school diploma or a general equivalency diploma (GED);
(c) Obtain the minimum years' operating experience required for the class certification applied for (see Table 4);
(d) Classes 2, 3, 4 and D must pass the corresponding examination for the class. A minimum score of 70% or higher is required to pass;
(e) Pay the required fee (class 1A and 1B are $45 and all other classes are $80); and
(f) Satisfy all other state mandated requirements for professional licensing and certification.

Substitutions with related schooling or courses can be made for operating experience as described in Section 12.9.4 of the Rule with the limitation that 50 percent of the required experience must be met by onsite operating experience in a plant, system, or facility.

**TABLE 4**

| Class of Operator | Years Operating Experience Required |
|---|---|
| Operator in Training (OIT) | NONE |
| Provisional | NONE |
| 1A | NONE |
| 1B | NONE |
| 2 | 1.5 |
| 3 | 1.5 |
| 4A1 | 2 |
| 4A | 2 |
| 4B | 2.5 |
| 4C | 3 |
| D | 1.5 |

In 2020 the restrictions in place due to Covid-19 and the demand for the examinations served as a catalyst for the program to establish a computer-based exam option with the Association of Boards of Certification (ABC)

and PSI to create and begin offering computer-based exams starting in 2021. 43 computer based exams were administered in 2022. In 2022, Vermont held an in person exam in the Fall and in the Spring and a total of 64 exams were administered. The program anticipates continuing to use both in person and computer-based examination options moving forward.

**Table 5**

| Total Exams Administered | 2022 |
|---|---|
| Class 2 | 29 |
| Class 3 | 29 |
| Class 4 | 28 |
| Class D | 21 |

It is our goal to complete an internal review of the customized exam for each operator classification every three to five years. These reviews may not warrant changes but will ensure the exams are still fair and accurate. As part of the review, the certification team consults with subject matter experts such as Division scientists and operations specialists to validate existing questions and/or develop new questions as necessary. A detailed review of the Class 2 exam occurred in the winter of 2016. During 2017 a couple minor revisions were made to the Class 2 Exam. After reviewing the updated ABC standardized exams for Classes 3, 4, and D, a determination was made that they are not a good fit for the Vermont certification program and therefore, a Vermont customized ABC exam is used for these certification classes. The Vermont state-specific Class 3, 4, and D exams were revised in 2017 and into 2018 to be more aligned with the Vermont program and to reflect regulatory updates since the last time the exams were reviewed.

Vermont has not grand parented operators since 1992 when we adopted the initial operator certification rules with the exception of three operators who own TNC's in 2016, two of which did not renew their certification in 2019. The circumstances regarding these three individuals were described in the *Vermont Drinking Water and Groundwater Protection Division Public Water Operator Certification Program Annual Report for Calendar Year 2018*. The goal of grand parenting was to assist those operators already operating public water systems at the time of implementation of the governing regulations to become certified. All grand parented operators are required to maintain their renewal credits for their class each renewal cycle and may only operate those water systems they were linked to as of 1992; they may not operate other water systems. We currently have 10 grand parented operators in our certification database (SWOCS).

**4. Enforcement**

The Operator Certification Specialist runs a report monthly to identify systems without a certified operator. The Division's Operator Certification Specialist continues to work closely with new and delinquent water systems to help them obtain a certified operator. The Operator Certification Specialist will contact 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. If the system still does not obtain a certified operator, we will refer the system to the Agency of Natural Resources Office of General Council, Enforcement and Litigation Section for further action.

Most community and non-transient non-community water systems without certified operators have this status because their operators fail to renew their certification on time, an operator leaves the system, they are actively working to obtain a new operator, or the system is making changes and will be inactivated as a public water system. Table 6 summarizes the number of no operator letters and NOAVs sent to water systems, in addition to the number of systems that obtained an operator following receipt of an NOAV in 2022. Table 3 above summarizes the total number of water systems without a certified operator as of the end of 2022.

**TABLE 6**

| Water System Type | Number of Systems Which Received A No Operator Letter | Number of Systems Which Received an NOAV for Failure to Have an Operator | Number of Systems Which Obtained an Operator Following NOAV |
|---|---|---|---|
| CWS | 9 | 6 | 5 |
| NTNC | 8 | 4 | 3 |
| TNC | 85 | 27 | 15 |

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. The Agency will determine what requirements, if any, will need to be taken in order to reapply for a certification after revocation. Applicants have the right to appeal a revocation or suspension as provided in 10 V.S.A., § 1680. In calendar year 2022 no operator's certification was revoked or suspended.

## 5. Certification Renewal

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, 2020 through June 30, 2023. The current renewal cycle for Class 3 and D operators is July 1, 2022 through June 30, 2025. Operator Classification 1 (includes 1A and 1B) also have a three-year renewal cycle which, unlike the other classifications, is on a rolling basis with the certification period beginning the date issued and expiring on June 30$^{th}$ of the third year.

It is the responsibility of the operator seeking renewal to submit an application to renew their certification at least 30 days prior to the expiration date. This allows time for review of the application and to either approve it or to notify the applicant of any deficiencies prior to their current certification expiring. Documentation of continuing education must be provided prior to the certification being renewed. Acceptable documentation consists of individual course completion certificates or formal course sign-in sheets containing the signature of the applicant confirming attendance. The courses must have been pre-approved for drinking water operator certification in order to be given credit towards the renewal. There are currently 10 grandfathered operators, all who must meet the continuing education requirement for their certification class in order to renew. Table 7 summarizes the continuing education required for each certification class. There are no operators in Vermont who the State requires additional training to recertify other than what is required in the Rule.

**TABLE 7**

| Class of Certification | Duration of Certification (years)* | Recertification Requirement |
|---|---|---|
| 1A | 3 | Recommended 3 TCH |
| 1B | 3 | 3 TCH |
| 2 | 3 | Retesting or 10 TCH |
| 3 | 3 | Retesting or 20 TCH |
| 4 (A1, A, B, C) | 3 | Retesting or 20 TCH |
| D | 3 | Retesting or 20 TCH |

*certifications may be for fewer than 3 years in order to stagger the renewal dates for more efficient administration of the program.

Any operator who fails to renew their certification within ninety days following the expiration may not receive a new certificate until they have successfully passed the qualifying examination and meet the requirements set forth in Section 12.3.1 of the Rule. A total of 3 operators renewed after failing to renew or qualify for renewal within the state specified time period, but no more than two years. There were 225 renewals in 2022. 30 Class 1A, 9 Class 1B, 132 Class 3 and 54 Class D.

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 were provided online and at locations in Vermont by other training providers including Earth Water Specialists, New England Water Works Association (NEWWA), RCAP Solutions, the Vermont Department of Environmental Conservation, At Your Pace Online (AYPO), National Rural Water Association (NRWA), New Hampshire Water Works Association (NHWWA) CEU Plan, McWane Ductile, Vermont Department of Health, Suncoast Learning Systems, Grundfos, Vermont League of Cities and Towns, Environmental Protection Agency, Center for Disease Control and Prevention, 360 Training, Alpha Analytical, ACC Training Hub, and the Sunset Learning Institute.

Courses for Vermont Water Operators are publicized on our website, http://dec.vermont.gov/water/drinking-water/pwso/operator-training and training provided by VRWA is publicized quarterly in print and is regularly-updated on their website: http://vtruralwater.org/training/. This includes both in-class and online training courses. In calendar year 2022, approximately 4442 training contact hours were awarded to water professionals through classes provided by VRWA. Details of the training provided by Vermont Rural Water Association in 2022 are listed in Appendix A. Note that not all training contact hours in Appendix A were awarded to water professionals.

Review and approval of 13 training courses occurred throughout the year except for VRWA, GMWEA, NEWWA, Earth Water Specialists, and NEIWPCC which have "blanket approval" for in-class courses they provide.

On-line training courses by the following training providers have historically been approved for water system operator TCHs.

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

Most renewal credits obtained in 2022 were through various online platforms. Prior to Covid, no more than 50% of water system operator renewal credits could be earned from on-line courses per renewal cycle. Beginning in 2022, the Division changed the requirements to stipulate that only 50% of the renewal credits can be earned from online *self paced courses*, while the rest must be earned from in person or "live" virtual courses.

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 operation or management of water systems. We accept a wide spectrum of topic areas from basic 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 prior to those operators taking their respective certification exam.

## 6. Resources Needed to Implement the Program

Vermont continues to adequately fund and sustain the operator certification program. There is no single full-time staff person dedicated to the operator certification program and at times, several Division staff are contributing to the certification program. Work is primarily performed by two staff including the Operator Certification Specialist and an Environmental Technician. In 2022, the Operator Certification Specialist spent

approximately 50% of her time on communicating to current and potential operators about and updates on exam opportunities, technical review of certification applications, approval of classes for TCH credit, coordination of computer-based exams issues, training contract management and general outreach. The Environmental Technician spent approximately 50% of his time providing various administrative services and general outreach. Other staff in the Division contributed to, proctoring/administrating exams, developing and providing trainings and providing outreach including the Drinking Water Program Manager, Operations Program staff, Compliance Program staff, as well as other staff in the Capacity Development and Operator Certification Program. .

There is no charge for operators to take the in-person Class 2 Exam since the exam is owned by the State. There is a $42 fee for class 3, 4, and D exams to cover the cost for ABC to provide the Vermont customized exams. A fee of $45 for Class 1 (both 1A and 1B) and $80 for all class 2, 3, 4, and D is required for all initial and renewal certifications. There is a fee for the computer-based exam paid directly to PSI, the service provider. More information on Vermont's computer-based exams can be found at https://dec.vermont.gov/water/drinking-water/pwso/operator-exams. The Division continues to use DWSRF set-aside money to fund operator training provided by the Vermont Rural Water Association (VRWA). More information regarding the training provided by VRWA under this contract is identified in the *certification renewal* section above. A list of courses provided by VRWA in 2022 is included in Appendix A.

Due to the limited functionality of SWOCS, the Division worked with State IT staff to develop a replacement database referred to as SWOCS Elite. The new database was custom-built to meet the needs of the Vermont certification program and will be modified/added to as necessary. The Division has already increased public access to operator information by creating the public website as discussed in the *Classification of Systems, Facilities, and Operators* section above.

**7. Recertification**

Any operator who fails to renew their certificate within sixty days following the expiration date of the certificate, will not receive a new certificate until they successfully pass the qualifying examination and meet all the requirements in Section 12.3.1 of the Rule (see 3. Operator Qualifications above for the list of requirements).

**8. Stakeholder Involvement**

Vermont meets the stakeholder involvement standard through ongoing meetings with the Operator Certification Advisory Committee. The committee is made up of Agency staff, Vermont certified water operators, VRWA staff, and RCAP Solutions staff. The committee met on June 6, 2022 and November 30, 2022. The focus of the meetings has been on generating draft revisions to Subchapter 21-12 – Water System Classification and Operator Certification of the Vermont Water Supply Rule. The focus of the November30$^{th}$ meeting was the decision to update the requirement on on-line trainings to allow operators to complete their training 50% through either in person or online courses and 50% self-paced trainings.

Committee meetings will continue moving forward as we work to revise the Rule and to address other operator-related issues as they arise. Any changes to the operator certification program will be discussed in advance with EPA Region 1 Operator Certification Contact to ensure that our program continues to meet the baseline standards and implement EPA's Final Guidelines for the Certification and Recertification of Operators of Community and Non-Transient Non-Community Public Water Systems.

**9. Program Review**

The program review occurs during the ongoing meetings with the Operator Certification Advisory Committee. The committee is made up of both internal and external individuals which help steer the direction of the state's operator certification program. The focus of the committee over the last several years is the comprehensive revision to Subchapter 21-12 – Water System Classification and Operator Certification of the Vermont Water Supply Rule.

## Appendix A – Water Operator Training provided January 1, 2022 – December 31, 2022

| Month | Vermont Rural Water Association Training Sessions January 1, 2022 – December 31, 2022 Course Title | TCH | # of attendees | TCHs Awarded |
|---|---|---|---|---|
| Jan | Water Distribution/Boil Water Orders | 3 | 3 | 9 |
| | Basic Math for Water and Wastewater Operators | 4 | 22 | 88 |
| | Small Water System Operations | 4 | 22 | 88 |
| | Advanced Math for Water and Wastewater Operators | 4 | 30 | 120 |
| | Source Inspection and PFAS | 2.5 | 1 | 2.5 |
| | Lead Service Line Identification, Inventory, and Replacement | 3 | 29 | 87 |
| | TNC Operations | 3 | 25 | 75 |
| | Water System Sampling | 3 | 25 | 75 |
| | Water Distribution Leak Detection | 3 | 7 | 21 |
| | | | | |
| Feb | Chlorine Basics/Trench and Excavation Safety | 4 | 3 | 12 |
| | Board Training | 3 | 17 | 51 |
| | Microbiology/Climate Change/Corrosion Control | 4 | 3 | 12 |
| | Keep Your System Sustainable | 4 | 25 | 100 |
| | Corrosion Control and Polymers | 3 | 22 | 66 |
| | How to Perform a Level 1 Assessment on Your Water System | 3 | 29 | 87 |
| | Operator Safety Refresher | 4 | 4 | 16 |
| | | | | |
| Mar | Issuing a Boil Water Notice | 3 | 25 | 72 |
| | TNC Operations | 3 | 8 | 23 |
| | Recruiting and Hiring New Water & Wastewater Workers | 3 | 25 | 65 |
| | Control Valves | 3 | 21 | 63 |
| | Cross Connection Control | 3 | 22 | 65 |
| | Surface Water Treatment Exam Preparation | 6 | 6 | 36 |
| | Water Treatment Plant Operator Refresher | 6 | 3 | 18 |
| | Water Distribution Exam Preparation | 6 | 8 | 48 |
| | Coliform Sampling and RTCR Sampling Plan | 2.5 | 1 | 2.5 |
| | Microbiology, Chlorine Chemistry, and Electrical Safety | 6 | 4 | 24 |
| | Keep Your Water and Wastewater Systems Sustainable | 4 | 1 | 4 |
| | | | | |
| Apr | Lead Service Line Identification, Inventory, and Replacement | 3 | 24 | 66 |
| | Water and Wastewater Ethics | 3 | 21 | 63 |
| | Chemical Feed Pumps | 3 | 17 | 51 |
| | Traffic Control Certification | 4 | 21 | 84 |
| | Basic Math for Water and Wastewater Operators | 4 | 26 | 104 |
| | Advanced Math for Water and Wastewater Operators | 4 | 23 | 92 |
| | Cross Connection Control | 4 | 7 | 28 |
| | Water Operator Safety Refresher | 5 | 2 | 10 |
| | Distribution System Operation and Maintenance Overview | 2.25 | 1 | 2.25 |
| | Asset Management—Fire Hydrants | 4 | 6 | 24 |
| | | | | |
| May | Water Distribution Exam Preparation | 5 | 5 | 25 |
| | Class 3 & 4 Exam Preparation Course | 4 | 8 | 32 |
| | Line Location | 2.25 | 1 | 2.25 |

| | | | | |
|---|---|---|---|---|
| | Small Systems Class 2 Exam Preparation Course | 3 | 5 | 15 |
| | Distribution Exam Preparation Course | 4 | 3 | 12 |
| | Traffic Control Certification | 4 | 9 | 36 |
| | Distribution System Components: Pipe, Valves, Tanks | 3 | 1 | 3 |
| | LMI Rebuilding & Fire Hydrant Maintenance | 5 | 4 | 20 |
| | Basic Computer Operations | 2 | 1 | 2 |
| | Basic Excel Course | 3 | 21 | 62 |
| | Issuing a Boil Water Notice | 3 | 14 | 42 |
| | Water Distribution Exam Preparation | 6 | 4 | 24 |
| | Traffic Control Certification | 4 | 11 | 43 |
| | TNC Operations | 3 | 15 | 45 |
| | Laboratory Inspection Training | 6 | 7 | 42 |
| | | | | |
| June | Control Valves | 3 | 7 | 21 |
| | Preparing for a Sanitary Survey | 3 | 11 | 33 |
| | Chemical Feed Pumps | 3 | 13 | 39 |
| | Creating and Updating your Operation and Maintenance Manual | 3 | 10 | 30 |
| | Refresher Class for Water Operators | 4 | 18 | 68.5 |
| | Corrosion Control and Polymers | 3 | 8 | 24 |
| | Traffic Control Certification | 4 | 15 | 60 |
| | Cyanotoxin Course | 2.5 | 18 | 44 |
| | Metering in the 21st Century | 3 | 11 | 31 |
| | Utility Location with Ground Penetrating Radar | 2 | 2 | 4 |
| | Emerging Contaminants: PFAS, PFOA AND PFOS | 3 | 8 | 24 |
| | | | | |
| July | Emergency Response Equipment Demonstration | 2 | 17 | 34 |
| | Emergency Response Equipment Demonstration | 2 | 29 | 58 |
| | Creating and Updating your Operation and Maintenance Manual | 3 | 5 | 15 |
| | Preparing for a Sanitary Survey | 3 | 4 | 12 |
| | Traffic Control Certification | 4 | 12 | 48 |
| | Valve Exercising and Hydrant Flushing | 2.5 | 1 | 2.5 |
| | | | | |
| August | Creating and Updating your Operation and Maintenance Manual | 3 | 10 | 30 |
| | Water and Wastewater Ethics | 3 | 25 | 75 |
| | Basic Math for Water and Wastewater Operators | 4 | 11 | 44 |
| | Advanced Math for Water and Wastewater Operators | 4 | 9 | 36 |
| | Ground Penetrating Radar for Utility Location | 1 | 2 | 2 |
| | Confined Space Training | 3 | 16 | 48 |
| | Distribution System Flushing | 4 | 13 | 52 |
| | Flow Check Training | 4 | 9 | 35 |
| | | | | |
| September | Cybersecurity Training for the Water Sector | 5 | 39 | 175.5 |
| | | | | |
| October | Service Line Inventory Overview | 2 | 30 | 60 |
| | Proper Laboratory Sampling Procedures for Water and Wastewater | 4 | 24 | 96 |
| | Comprehensive Water & Wastewater Chemistry with Jar Testing Basics | 6 | 9 | 54 |
| | Basic Math for Water and Wastewater Operators | 5 | 7 | 35 |
| | | | | |
| | Class 3 & 4 Exam Preparation Course | 4 | 6 | 24 |

| | | | | |
|---|---|---|---|---|
| November | Small Systems Class 2 Exam Preparation Course | 3 | 6 | 18 |
| | Distribution Exam Preparation Course | 4 | 5 | 20 |
| | Water Treatment: Chemical Addition | 3 | 4 | 12 |
| | Water Treatment: Filtration Processes | 3 | 6 | 18 |
| | Optimize Your Water and Wastewater Pump Stations | 3 | 12 | 36 |
| | Water Treatment: Filtration Processes | 3 | 14 | 42 |
| | Service Line Inventory Overview | 2 | 31 | 62 |
| | Line Locating, Leak Detection, and Mapping Training | 2 | 5 | 10 |
| | Breweries and Your WWTF | 4 | 19 | 76 |
| | | | | |
| December | Water Distribution: Operation and Maintenance | 3 | 24 | 71 |
| | History of Water Treatment | 3 | 19 | 57 |
| | OSHA: Environmental Awareness and Workplace Violence | 3 | 24 | 70 |
| | Service Line Inventory Overview | 2 | 27 | 54 |
| | Chemical Feed Pumps | 3 | 12 | 36 |
| | Service Line Inventory Overview | 2 | 17 | 34 |
| | Operator Certification Introduction | 3 | 3 | 9 |
| | Confined Space Entry | 4 | 28 | 112 |
| | Boil Water Notices | 2 | 8 | 16 |
| | Chlorination and Water Distribution O&M | 5 | 6 | 30 |
| | Introduction to Wastewater Treatment | 5 | 5 | 25 |
| | Vermont Wastewater Treatment Facilities and PFAS | 3 | 20 | 60 |
| | | | | |
| | VRWA 2022 Total: | 360.5 | 1342 | 4442 |

*Some attendees did not attend all classes

# Appendix B

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ENVIRONMENTAL PROTECTION RULES
CHAPTER 21
WATER SUPPLY RULE
REVISION DATE: March 17, 2020

## Introduction

This subchapter applies to the following **Public** water systems:
(a) **Public Community** water systems;
(b) **Public Non-Transient Non-Community** (NTNC) water systems;
(c) **Public Transient Non-Community** (TNC) water systems; and
(d) **Domestic Bottled** water systems.

## 12.1 General

All **Public** water systems shall be operated by a certified operator of the appropriate class as defined in this subchapter. A certified operator is one who has met the requirements of this subchapter and has a current, valid certification from the Secretary.

All **Public Community, Domestic Bottled,** and **Public Non-Transient Non-Community** water systems must have a designated certified operator in responsible charge available at all times. "Available" means based on system size, complexity, and source water quality, a certified operator must be on site or able to be contacted as needed to initiate the appropriate action in a timely manner.

For purposes of certifying **Public** water system operators, each **Public** water system shall be classified according to degree of treatment, and in the case of Class 4, according to size of population served. The class of operator certification required is dependent upon the classification of such facility.

There are five classes of water systems. Classes 1, 2, 3, and 4 apply to water systems with their own source(s) of supply, and Class D applies to systems which distribute water.

## 12.2 Responsibilities and Duties

12.2.1 Owner's Responsibilities

12.2.1.1 The owner shall be responsible for compliance with the federal Safe Drinking Water Act, Vermont statutes, and the regulations developed pursuant to both.

12.2.1.2 The owner shall be a certified operator or shall designate a certified operator(s) to carry on the daily operations of the system. Such designation shall be in writing and shall be signed by both the certified operator and the owner. A copy of the written designation shall be made available to the Secretary upon request.

12.2.1.3 The owner of any **Public Community** or **Non-Transient Non-Community** water system shall place the direct supervision of the water system under the responsible charge of the designated certified operator(s) (see Subsection 12.2.1.2). The owner shall place the certified operator(s) in responsible

charge of all quality, quantity, process control, and system integrity decisions involving public health, treatment, storage, distribution, and standards compliance. The certified operator shall hold a valid certification equal to or greater than the classification of the treatment facility and distribution system.

12.2.2 Certified Operator's Responsibilities

The certified operator shall comply with the following requirements as a condition of his or her certification:

(a) The certified operator(s) in responsible charge must hold a valid certification equal to or greater than the classification of his or her water system, including each treatment facility and distribution system, as determined by the Secretary.

(b) The operator in responsible charge shall perform the following duties:

1. Conduct visual inspections of the system's source, source water protection area, storage facilities, and chemical addition systems at an appropriate frequency giving consideration to the system's design , location, vulnerability, Operations and Maintenance Manual (see Appendix D), and other relevant factors.
2. Be familiar with all aspects of the treatment and distribution system operation of the water system.
3. Oversee all bacterial monitoring, chemical monitoring, and other monitoring required under this Rule.
4. Review the sample monitoring schedule and locations quarterly.
5. Ensure that all samples are delivered to a certified laboratory in a timely manner.
6. Inspect system within 24 hours of any positive fecal coliform result, positive Total Coliform repeat sample result, or other water system failures that threaten public health.
7. Notify owner of any violation(s) of this Rule.
8. Ensure the accuracy of water meters and other flow measuring devices.
9. Be responsible for measuring, and recording chemical additions.
10. Operate and maintain chemical feed and all treatment systems.
11. Keep abreast of changes in the drinking water regulations and safety regulations.
12. Fulfill certification and certification renewal requirements.
13. Operate and maintain system in accord with the Operation & Maintenance Manual.
14. Attend all inspections as requested by state personnel.
15. Oversee source water protection, watershed protection, and other activities associated with chemical waivers or otherwise required by this Rule.
16. Keep complete and accurate water system records.
17. Carry out all required reporting requirements including submitting a complete monthly report to the Secretary by the 10th day of the following month.
18. Develop and maintain an accurate site plan showing the water source and distribution system.
19. Respond to consumer complaints promptly.
20. Comply with all applicable state and federal statutes, rules and orders governing water system regulation.
21. Conduct all duties with reasonable care and judgment for the protection of public health, public safety, and the environment.

## 12.3 Operator Certification

12.3.1 To be eligible for operator certification, each applicant must:

(a) Submit an application on a form provided by the Secretary;
(b) Meet the educational and experience requirements set forth in Section 12.9;
(c) Classes 2, 3, 4 and D shall obtain a passing grade on the certification examination approved by the Secretary (Class 1 operators need registration only);

(d) Pay any required fee; and
(e) Satisfy all other state mandated requirements for professional licensing and certification.

12.3.2 When replacing an operator, the water system owner shall notify the Secretary in writing within ten (10) days following the date an operator ceases operation of a plant or system, and within ten (10) days after a new operator commences operation of a **Public** water system.

12.3.3 Whenever a new **Public** water system is constructed, the water supplier shall employ or contract with an operator certified in the corresponding class for the new facilities.

12.3.4 When significant modifications are made to an existing **Public** water system which change the system's classification, the operator(s) shall obtain a new certificate as required by the improvements.

12.3.5 An operator holding a certification in any class is permitted to operate all facilities in that class and any lower class. Class 4C is the highest Vermont water operator class. This paragraph does not apply to Class D (distribution only).

12.3.6 A certified operator may move from any **Public** water system class to the next higher one if he or she satisfies all of the following:
(a) the operator has obtained a passing grade on the examination of the higher class; and
(b) he or she has worked as an operator-in-training for six months in the next higher class. One year as an operator-in-training shall be required before advancing two or more classes.

12.3.7 Applicants who did not obtain a passing grade on a written certification examination for a class may be retested at any scheduled examination for the particular class.

12.3.8 In the event an operator's certification is denied, the Secretary will provide the applicant with written notification of the reasons for such denial. Applicants may appeal the denial in accordance with the provisions of 10 V.S.A., §1680.

12.3.9 The operator's certification shall be displayed in the office or plant of the system, and provided for inspection upon reasonable request.

### 12.4 Revocation or Suspension of Operator Certification

(a) The Secretary may suspend or revoke a certificate granted under this section, after notice and opportunity to be heard, if the Secretary finds that the certificate holder has:
(1) submitted or contributed to the submission of materially false or inaccurate information; or
(2) violated any material requirement, restriction, or condition of the certificate including:
(i) the violation of any applicable statute, rule, or order governing water system regulation; and
(ii) the failure to use reasonable care and judgment in the performance of the operator's duties.

The Secretary shall set forth what steps, if any, may be taken by the certificate holder to reapply for certification if a previous certificate has been revoked.

(b) The applicant may appeal a revocation or suspension as provided in 10 V.S.A., §1680.

## 12.5 Recertification of Expired Certificates

Any operator who fails to renew his or her certificate within sixty days following the expiration date of the certificate may not receive a new certificate until he or she successfully passes the qualifying examination and meets the requirements set forth in Section 12.3.1.

## 12.6 Operator-in-Training (OIT)

12.6.1 An Operator-in-Training (OIT) certification is required to operate a **Public** water system under the direct supervision of a certified operator and may be granted by the Secretary. Application must be made on a form supplied by the Secretary.

12.6.2 Upon written notification by the OIT's supervisor that the OIT has completed the minimum required operational experience for full certification in the appropriate water system, the Secretary may issue the appropriate operator certificate provided the OIT has satisfied all operator certification requirements of this part.

## 12.7 Provisional Certification

12.7.1 A Provisional Certificate may be issued by the Secretary to an applicant for the operation of a specific water system when the applicant has not met the full certification requirements for experience in that water system class. A Provisional Certificate may be issued provided the specific water system has exhausted all reasonable efforts in recruiting a fully certified operator, and the applicant has obtained a passing grade on the operator examination for the particular water system class.

12.7.2 The Provisional Certificate Application shall be co-signed by the applicant and the owner for the water system which will be served by the provisionally certified operator. The owner of the water system shall certify that the applicant has had operator training by the manufacturer, consultant, or other certified operator and is capable of operating the specified water system. The Provisional Certificate has the following restrictions:

(a) It shall be issued for operation of a single, specific water system;
(b) It shall be valid only for a time period equal to the minimum operating experience requirements identified in Table 12-1 of Section 12.9; and
(c) It shall be non-transferable.

12.7.3 To convert from a Provisional to a Full Certificate, applicants must:

(a) present evidence of having been employed in a particular water system for a specific amount of time, to include all time in training with equipment manufacturers, consultants, or other certified trainers/operators (see Table 12-1, of Subsection 12.9; and
(b) present evidence of having obtained a passing grade on an examination for the particular classification being sought and evidence that all other certification requirements have been met (see Subsection 12.2.1).

## 12.8 Classification of Public Water Systems and Drinking Water Facilities

Each **Public** water system is to be classified by the Secretary as set forth in this rule. There will be five classes, 1 through 4 and D.

12.8.1 Class 1A

This class of **Public** water system includes **Transient Non-Community** water systems with distribution and using any of the following technologies

(a) No treatment;
(b) Ion exchange for water softening; or
(c) Limestone contactors.

12.8.1.1 Class 1B

This class of **Public** water system includes **Transient Non-Community** water systems with distribution and using any of the following technologies:
(a) Disinfection with chlorine or UV, including standby capability.

12.8.2 Class 2

This class of **Public** water system includes **Public Community**, **Bottled,** and **Public Non-Transient Non-Community** water systems with distribution and any of the following technologies:
(a) No treatment;
(b) Disinfection with chlorine or UV; includes systems with standby chlorination;
(c) Ion exchange for softening; or
(d) Limestone contactors.

12.8.3 Class 3

This class of **Public** water system includes **Public Community**, **Bottled**, **Public Non-Transient Non-Community**, and **Public Transient Non-Community** water systems with distribution and any of the following technologies:
(a) Disinfection by other than chlorine or UV;
(b) Sequestering or filtration of manganese or iron;
(c) Fluoridation;
(d) Corrosion control;
(e) pH control;
(f) Air stripping;
(g) Granular activated adsorption;
(h) Ion/anion exchange;
(i) Aeration; or
(j) Membrane filtration.

This class also includes all **Public** water systems using groundwater determined to be under the direct influence of surface water and which *have* a filtration waiver.

12.8.4 Class 4

This class of **Public** water system includes all **Public Community**, **Bottled**, **Public Non-Transient Non-Community**, and **Public Transient Non-Community** water systems which use surface water, or which have groundwater determined to be under the direct influence of surface water with respect to which a filtration waiver has not been issued.

12.8.4.1 Class 4A1

This class includes distribution plus any of the following treatment technologies:
(a) Bag filtration;
(b) Cartridge filtration;
(c) Membrane filtration;
(d) Slow sand filtration; or

(e) Other similar technologies, as approved by the Secretary, which do not use coagulants.

This class serves all water system populations of 25 or greater.

12.8.4.2 Class 4A, 4B, and 4C

This class includes distribution plus rapid sand filtration technology and is further differentiated by population served by the system:
4A, for served populations between 25 and 500;
4B, for served populations between 501 and 3,300; and
4C, for served populations greater than 3,300

12.8.5 Class D

This class of **Public** water system includes **Public Community** water systems serving 3,300 people or more and that have only a distribution system. A Class D system purchases its water and does not have any source or treatment associated with it.

## 12.9 Experience and Education

12.9.1 In determining whether an applicant has the operating experience required for certification in a particular water system class, the Secretary may consider the following:
1) the period of satisfactory experience as a system operator or OIT; and
2) operating experience accrued in another jurisdiction.

All satisfactory experience as noted above shall be credited toward the total experience required for certification in the particular class for which application is made. Operating experience is defined as time spent at a facility, plant, or system in satisfactory performance of operational duties.

12.9.2 All applicants shall have a high school diploma or a general equivalency diploma (GED). The Secretary may allow experience and relevant training to be substituted for a high school diploma or GED.

12.9.3 Table 12-1, below, contains the minimum experience requirements for certification.

**Table 12-1 - OPERATOR CLASSIFICATION REQUIREMENTS**

| Public Water System Class(s) | Class of Operator | Operating Experience Required (Yrs) |
|---|---|---|
| ALL | Operator-in-Training(OIT) | NONE |
| ALL | Provisional | NONE |
| 1A | Operator Class 1A | NONE |
| 1B | Operator Class 1B | NONE |
| 2 | Operator Class 2 | 1.5 |
| 3 | Operator Class 3 | 1.5 |
| 4A1 | Operator Class 4A1 | 2 |
| 4A | Operator Class 4A | 2 |
| 4B | Operator Class 4B | 2.5 |
| 4C | Operator Class 4C | 3 |
| D | Operator Class D | 1.5 |

12.9.4 Substitutions for Experience Requirements

(a) Substitutions with related schooling or courses may be made for required experience for Classes 2, 3, 4A1, 4A, 4B, 4C, and D but with the limitation that 50 percent of any stated experience requirement must be met by actual on-site operating experience in a plant, system or facility.

(b) Formal Education

(1) High School education cannot be substituted for any experience requirement.

(2) Approved relevant formal academic education at the post high school or college level may be substituted for experience requirement on a year for year basis, subject to the 50 percent limitation described in Subsection 12.9.4(a) above. Thirty (30) semester hours or equivalent educational hours of credit are considered to represent 1 year of formal education.

(c) Operator Training

(1) Specialized operator training courses, seminars, workshops or approved technical conferences may be substituted for experience requirements subject to the 50 percent limitation previously described. Continuing Education Units (CEUs) totaling 30 are considered equal to 1 year.

(d) Partial credit toward operating experience may be given for experience in plant or system maintenance, in a laboratory, in a different certification category than that which is being applied for, and in related (allied) trades, as determined or approved by the Secretary.

## 12.10 Certification Renewal

12.10.1 A certified water system operator shall submit to the Secretary, at least 30 days before the expiration date of the certificate, a completed application on the form approved by the Secretary, including any fee due. The Secretary shall review the application and shall promptly notify the applicant of any deficiencies. If the application is complete, the continuing education requirements of Section 12.11 have been fulfilled, and the Secretary finds no cause under Section 12.3 to deny the application, a renewed certificate shall be issued.

The Secretary intends to provide written notice to operators of their certification renewal date approximately 6 months prior to that date. However, the burden of certification renewal is assumed by the applicant and failure of the Secretary to provide notice shall not constitute a basis for contesting the expiration of an operator certificate.

12.10.2 Certification renewal shall occur on a schedule as shown below and shall be based on various methods of recertification depending on water system class.

| Class of Certificate | Duration of Certificate, Years | Method of Certification |
|---|---|---|
| 1A | 3 | Registration |
| 1B, 2 | 3 | Continuing Education or Retesting |
| 3 | 3 | Continuing Education or Retesting |
| 4A1,4(A,B,C) | 3 | Continuing Education or Retesting |
| D | 3 | Continuing Education or Retesting |

12.10.3 Certifications issued under the rule may be for fewer years than shown above, in order to stagger the renewal dates for more efficient administration of the program.

## 12.11 Continuing Education

12.11.1 Continuing education requirements for certification renewal are as follows.

(a) Water System Class 1A operators are encouraged to attend at least 3 hours of state approved seminar or other approved instruction each 3 year renewal period.

Water System Class 1B operators shall attend at least 3 hours of a state sponsored seminar or other approved instruction each 3 year renewal period.

(b) Water System Class 2 operators shall attend at least 10 hours of a state sponsored seminar or other approved instruction each 3 year renewal period.

(c) Water System Class 3, 4, and D operators shall attend 20 hours of state sponsored seminars or other approved instruction each 3 year renewal period.

12.11.2 Documentation of continuing education shall be reviewed by the Secretary to determine compliance with the continuing education requirements. Documentation will be provided by the applicant for renewal or by the Secretary. Acceptable documentation shall consist of individual course completion certificates (pre-approval of course required) or formal course sign-in sheets for pre-approved courses containing the signature of the applicant confirming attendance.

Appendix B.

# Vermont Drinking Water and Groundwater Protection Division
# Public Water Operator Certification Program

## Annual Report for Calendar Year 2022

June 20, 2023

This 2022 Public Water Operator Annual Report documents Vermont's program compliance with the EPA Public Water Operator Certification Guidelines for the calendar year ending December 31, 2022.

Appendix B of this document is extracted from the March 17, 2020 Vermont Water Supply Rule (Chapter 21 of the DEC Environmental Protection Rules). Section 12.1 of the Vermont Water Supply Rule (Rule) requires that all public water systems shall be operated by a certified operator of the appropriate class. This includes Public Community, Non-Transient Non-Community, Transient Non-Community drinking water systems and Domestic (in-state) Bottled Water Systems. Section 12.2 of the Rule establishes the responsibilities and duties of the owner of the water system. Under Section 12.2.1.2 the owner shall be a certified operator or shall designate a certified operator to carry on the daily operations of the system.

Beginning in 2021, the program was moved out of the Compliance and Certification Section (now just the Compliance Section) and moved into the Capacity Development and Operator Certification Program. Meagan Cummings has become the new Capacity Development and Operator Certification Program Specialist. Meagan is the new point of contact for the Vermont Operator Certification Program and can be reached at 802-636-7222 or meagan.cummings@vermont.gov.

This 2022 Annual Report provides information for the 9 baseline standards described in the 1999 EPA guidelines.

### 1. Authorization

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. The Vermont Public Water Operator Certification Program (the Program) continues to be implemented at the same level as previous years. No statutory or regulatory changes were made to the Program in 2022. In 2019 and 2020 there were revisions to the Vermont Water Supply Rule, they were targeted updates for state programmatic reasons. There were no changes to the operator certification requirements in the Rule following these revisions.

### 2. Classification of Systems, Facilities, and Operators

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 Section 12 of the Rule. This section includes the method for determining each of the five classes (Class 1, 2, 3, 4 & D) of public water systems and drinking water facilities, requirements for operator certification and operator certification renewal. See Section 12.8 in Appendix B for the methods to determine a Public Water System class. Tables 1 and 2 below identify the number of operators per each class and the number of water systems per each class respectively as of 12/31/2022.

**TABLE 1**

| Certification Class | 1A | 1B | 2 | 3 | 4A1 | 4A | 4B | 4C | D | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Fully Certified Operators | 341 | 94 | 213 | 149 | 3 | 13 | 49 | 88 | 62 | 1012 |
| Operators in Training | - | - | 8 | 11 | 1 | - | 6 | 12 | - | 38 |
| Grandfathered Operators | - | - | - | - | - | 1 | - | - | - | 1 |

**TABLE 2**

| Water System Class | Total Number of Water Systems Per Class | Number of Water Systems by Type |
|---|---|---|
| 1A | 484 | All TNC |
| 1B | 134 | All TNC |
| 2 | 474 | NTNC – 214<br>CWS - 260 |
| 3 | 194 | TNC – 57<br>NTNC – 35<br>CWS - 102 |
| 4A1 | 7 | TNC - 7 |
| 4A | 9 | TNC – 2<br>CWS - 7 |
| 4B | 18 | TNC – 1<br>NTNC – 1<br>CWS – 16 |
| 4C | 14 | All CWS |
| D | 9 | All CWS |

The Rule requires all Public Community, Domestic Bottled, and Public Non-Transient Non-Community water systems to have a designated certified operator in responsible charge available at all times. "Available" means based on size, complexity, and source water quality, a certified operator must be onsite or able to be contacted as needed to initiate the appropriate action in a timely manner. Per Section 12.2 of the Rule, the owner of any CWS or NTNC is required to place the direct supervision of the water system under the responsible charge of the designated certified operator. The owner shall place the certified operator in responsible charge of all quality, quantity, process control, and system integrity decisions involving public health, treatment, storage, distribution, and standards compliance. The certified operator is required to hold a valid certification equal to or greater than the classification of the treatment facility and distribution system. A Provisional Certification may be issued when a specific public water system has exhausted all reasonable efforts in recruiting a fully certified operator, and the applicant for the Provisional Certification has obtained a passing grade on the operator examination for the particular water system class. An operator with a Provisional Certification can only operate the specific water system applied for. There are currently no operators with a Provisional Certification in Vermont. Vermont uses the Safe Water Operator Certification System (SWOCS) to track operator certification details, including

which public water systems each operator is identified as the designated operator in responsible charge. We have created a public website (https://anrweb.vt.gov/DEC/DWGWP/Search.aspx) where operators can check on their certification status including the certification expiration date and how many TCH's we have on file for them towards recertification.

The Operator Certification Specialist runs a report monthly to identify community, non-transient non-community systems and TNC water systems without a certified operator and will reach out to those systems. Table 3 identifies the number of public water systems without a certified operator in responsible charge as of December 31, 2022.

**TABLE 3**

| System Type | Number of Systems | Number of Systems With No Certified Operator as of 12/31/22 |
|---|---|---|
| Community | 408 | 15 |
| Non-Transient Non-Community | 250 | 1 |
| Transient Non-Community* | 685 | 86 |

* TNC certification is not mandated by EPA.

### 3. Operator Qualifications

In order to be eligible to obtain an Operator Certification in Vermont, the applicant must complete the following:

(a) Submit a complete operator certification application form;
(b) Have a high school diploma or a general equivalency diploma (GED);
(c) Obtain the minimum years' operating experience required for the class certification applied for (see Table 4);
(d) Classes 2, 3, 4 and D must pass the corresponding examination for the class. A minimum score of 70% or higher is required to pass;
(e) Pay the required fee (class 1A and 1B are $45 and all other classes are $80); and
(f) Satisfy all other state mandated requirements for professional licensing and certification.

Substitutions with related schooling or courses can be made for operating experience as described in Section 12.9.4 of the Rule with the limitation that 50 percent of the required experience must be met by onsite operating experience in a plant, system, or facility.

**TABLE 4**

| Class of Operator | Years Operating Experience Required |
|---|---|
| Operator in Training (OIT) | NONE |
| Provisional | NONE |
| 1A | NONE |
| 1B | NONE |
| 2 | 1.5 |
| 3 | 1.5 |
| 4A1 | 2 |
| 4A | 2 |
| 4B | 2.5 |
| 4C | 3 |
| D | 1.5 |

In 2020 the restrictions in place due to Covid-19 and the demand for the examinations served as a catalyst for the program to establish a computer-based exam option with the Association of Boards of Certification (ABC)

and PSI to create and begin offering computer-based exams starting in 2021. 43 computer based exams were administered in 2022. In 2022, Vermont held an in person exam in the Fall and in the Spring and a total of 64 exams were administered. The program anticipates continuing to use both in person and computer-based examination options moving forward.

**Table 5**

| Total Exams Administered | 2022 |
|---|---|
| Class 2 | 29 |
| Class 3 | 29 |
| Class 4 | 28 |
| Class D | 21 |

It is our goal to complete an internal review of the customized exam for each operator classification every three to five years. These reviews may not warrant changes but will ensure the exams are still fair and accurate. As part of the review, the certification team consults with subject matter experts such as Division scientists and operations specialists to validate existing questions and/or develop new questions as necessary. A detailed review of the Class 2 exam occurred in the winter of 2016. During 2017 a couple minor revisions were made to the Class 2 Exam. After reviewing the updated ABC standardized exams for Classes 3, 4, and D, a determination was made that they are not a good fit for the Vermont certification program and therefore, a Vermont customized ABC exam is used for these certification classes. The Vermont state-specific Class 3, 4, and D exams were revised in 2017 and into 2018 to be more aligned with the Vermont program and to reflect regulatory updates since the last time the exams were reviewed.

Vermont has not grand parented operators since 1992 when we adopted the initial operator certification rules with the exception of three operators who own TNC's in 2016, two of which did not renew their certification in 2019. The circumstances regarding these three individuals were described in the *Vermont Drinking Water and Groundwater Protection Division Public Water Operator Certification Program Annual Report for Calendar Year 2018*. The goal of grand parenting was to assist those operators already operating public water systems at the time of implementation of the governing regulations to become certified. All grand parented operators are required to maintain their renewal credits for their class each renewal cycle and may only operate those water systems they were linked to as of 1992; they may not operate other water systems. We currently have 10 grand parented operators in our certification database (SWOCS).

**4. Enforcement**

The Operator Certification Specialist runs a report monthly to identify systems without a certified operator. The Division's Operator Certification Specialist continues to work closely with new and delinquent water systems to help them obtain a certified operator. The Operator Certification Specialist will contact 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. If the system still does not obtain a certified operator, we will refer the system to the Agency of Natural Resources Office of General Council, Enforcement and Litigation Section for further action.

Most community and non-transient non-community water systems without certified operators have this status because their operators fail to renew their certification on time, an operator leaves the system, they are actively working to obtain a new operator, or the system is making changes and will be inactivated as a public water system. Table 6 summarizes the number of no operator letters and NOAVs sent to water systems, in addition to the number of systems that obtained an operator following receipt of an NOAV in 2022. Table 3 above summarizes the total number of water systems without a certified operator as of the end of 2022.

**TABLE 6**

| Water System Type | Number of Systems Which Received A No Operator Letter | Number of Systems Which Received an NOAV for Failure to Have an Operator | Number of Systems Which Obtained an Operator Following NOAV |
|---|---|---|---|
| CWS | 9 | 6 | 5 |
| NTNC | 8 | 4 | 3 |
| TNC | 85 | 27 | 15 |

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. The Agency will determine what requirements, if any, will need to be taken in order to reapply for a certification after revocation. Applicants have the right to appeal a revocation or suspension as provided in 10 V.S.A., § 1680. In calendar year 2022 no operator's certification was revoked or suspended.

## 5. Certification Renewal

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, 2020 through June 30, 2023. The current renewal cycle for Class 3 and D operators is July 1, 2022 through June 30, 2025. Operator Classification 1 (includes 1A and 1B) also have a three-year renewal cycle which, unlike the other classifications, is on a rolling basis with the certification period beginning the date issued and expiring on June 30$^{th}$ of the third year.

It is the responsibility of the operator seeking renewal to submit an application to renew their certification at least 30 days prior to the expiration date. This allows time for review of the application and to either approve it or to notify the applicant of any deficiencies prior to their current certification expiring. Documentation of continuing education must be provided prior to the certification being renewed. Acceptable documentation consists of individual course completion certificates or formal course sign-in sheets containing the signature of the applicant confirming attendance. The courses must have been pre-approved for drinking water operator certification in order to be given credit towards the renewal. There are currently 10 grandfathered operators, all who must meet the continuing education requirement for their certification class in order to renew. Table 7 summarizes the continuing education required for each certification class. There are no operators in Vermont who the State requires additional training to recertify other than what is required in the Rule.

**TABLE 7**

| Class of Certification | Duration of Certification (years)* | Recertification Requirement |
|---|---|---|
| 1A | 3 | Recommended 3 TCH |
| 1B | 3 | 3 TCH |
| 2 | 3 | Retesting or 10 TCH |
| 3 | 3 | Retesting or 20 TCH |
| 4 (A1, A, B, C) | 3 | Retesting or 20 TCH |
| D | 3 | Retesting or 20 TCH |

*certifications may be for fewer than 3 years in order to stagger the renewal dates for more efficient administration of the program.

Any operator who fails to renew their certification within ninety days following the expiration may not receive a new certificate until they have successfully passed the qualifying examination and meet the requirements set forth in Section 12.3.1 of the Rule. A total of 3 operators renewed after failing to renew or qualify for renewal within the state specified time period, but no more than two years. There were 225 renewals in 2022. 30 Class 1A, 9 Class 1B, 132 Class 3 and 54 Class D.

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 were provided online and at locations in Vermont by other training providers including Earth Water Specialists, New England Water Works Association (NEWWA), RCAP Solutions, the Vermont Department of Environmental Conservation, At Your Pace Online (AYPO), National Rural Water Association (NRWA), New Hampshire Water Works Association (NHWWA) CEU Plan, McWane Ductile, Vermont Department of Health, Suncoast Learning Systems, Grundfos, Vermont League of Cities and Towns, Environmental Protection Agency, Center for Disease Control and Prevention, 360 Training, Alpha Analytical, ACC Training Hub, and the Sunset Learning Institute.

Courses for Vermont Water Operators are publicized on our website, http://dec.vermont.gov/water/drinking-water/pwso/operator-training and training provided by VRWA is publicized quarterly in print and is regularly-updated on their website: http://vtruralwater.org/training/. This includes both in-class and online training courses. In calendar year 2022, approximately 4442 training contact hours were awarded to water professionals through classes provided by VRWA. Details of the training provided by Vermont Rural Water Association in 2022 are listed in Appendix A. Note that not all training contact hours in Appendix A were awarded to water professionals.

Review and approval of 13 training courses occurred throughout the year except for VRWA, GMWEA, NEWWA, Earth Water Specialists, and NEIWPCC which have "blanket approval" for in-class courses they provide.

On-line training courses by the following training providers have historically been approved for water system operator TCHs.

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

Most renewal credits obtained in 2022 were through various online platforms. Prior to Covid, no more than 50% of water system operator renewal credits could be earned from on-line courses per renewal cycle. Beginning in 2022, the Division changed the requirements to stipulate that only 50% of the renewal credits can be earned from online *self paced courses*, while the rest must be earned from in person or "live" virtual courses.

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 operation or management of water systems. We accept a wide spectrum of topic areas from basic 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 prior to those operators taking their respective certification exam.

## 6. Resources Needed to Implement the Program

Vermont continues to adequately fund and sustain the operator certification program. There is no single full-time staff person dedicated to the operator certification program and at times, several Division staff are contributing to the certification program. Work is primarily performed by two staff including the Operator Certification Specialist and an Environmental Technician. In 2022, the Operator Certification Specialist spent

approximately 50% of her time on communicating to current and potential operators about and updates on exam opportunities, technical review of certification applications, approval of classes for TCH credit, coordination of computer-based exams issues, training contract management and general outreach. The Environmental Technician spent approximately 50% of his time providing various administrative services and general outreach. Other staff in the Division contributed to, proctoring/administrating exams, developing and providing trainings and providing outreach including the Drinking Water Program Manager, Operations Program staff, Compliance Program staff, as well as other staff in the Capacity Development and Operator Certification Program. .

There is no charge for operators to take the in-person Class 2 Exam since the exam is owned by the State. There is a $42 fee for class 3, 4, and D exams to cover the cost for ABC to provide the Vermont customized exams. A fee of $45 for Class 1 (both 1A and 1B) and $80 for all class 2, 3, 4, and D is required for all initial and renewal certifications. There is a fee for the computer-based exam paid directly to PSI, the service provider. More information on Vermont's computer-based exams can be found at https://dec.vermont.gov/water/drinking-water/pwso/operator-exams. The Division continues to use DWSRF set-aside money to fund operator training provided by the Vermont Rural Water Association (VRWA). More information regarding the training provided by VRWA under this contract is identified in the *certification renewal* section above. A list of courses provided by VRWA in 2022 is included in Appendix A.

Due to the limited functionality of SWOCS, the Division worked with State IT staff to develop a replacement database referred to as SWOCS Elite. The new database was custom-built to meet the needs of the Vermont certification program and will be modified/added to as necessary. The Division has already increased public access to operator information by creating the public website as discussed in the *Classification of Systems, Facilities, and Operators* section above.

**7. Recertification**

Any operator who fails to renew their certificate within sixty days following the expiration date of the certificate, will not receive a new certificate until they successfully pass the qualifying examination and meet all the requirements in Section 12.3.1 of the Rule (see 3. Operator Qualifications above for the list of requirements).

**8. Stakeholder Involvement**

Vermont meets the stakeholder involvement standard through ongoing meetings with the Operator Certification Advisory Committee. The committee is made up of Agency staff, Vermont certified water operators, VRWA staff, and RCAP Solutions staff. The committee met on June 6, 2022 and November 30, 2022. The focus of the meetings has been on generating draft revisions to Subchapter 21-12 – Water System Classification and Operator Certification of the Vermont Water Supply Rule. The focus of the November30$^{th}$ meeting was the decision to update the requirement on on-line trainings to allow operators to complete their training 50% through either in person or online courses and 50% self-paced trainings.

Committee meetings will continue moving forward as we work to revise the Rule and to address other operator-related issues as they arise. Any changes to the operator certification program will be discussed in advance with EPA Region 1 Operator Certification Contact to ensure that our program continues to meet the baseline standards and implement EPA's Final Guidelines for the Certification and Recertification of Operators of Community and Non-Transient Non-Community Public Water Systems.

**9. Program Review**

The program review occurs during the ongoing meetings with the Operator Certification Advisory Committee. The committee is made up of both internal and external individuals which help steer the direction of the state's operator certification program. The focus of the committee over the last several years is the comprehensive revision to Subchapter 21-12 – Water System Classification and Operator Certification of the Vermont Water Supply Rule.

## Appendix A – Water Operator Training provided January 1, 2022 – December 31, 2022

| Month | Vermont Rural Water Association Training Sessions January 1, 2022 – December 31, 2022 Course Title | TCH | # of attendees | TCHs Awarded |
|---|---|---|---|---|
| Jan | Water Distribution/Boil Water Orders | 3 | 3 | 9 |
| | Basic Math for Water and Wastewater Operators | 4 | 22 | 88 |
| | Small Water System Operations | 4 | 22 | 88 |
| | Advanced Math for Water and Wastewater Operators | 4 | 30 | 120 |
| | Source Inspection and PFAS | 2.5 | 1 | 2.5 |
| | Lead Service Line Identification, Inventory, and Replacement | 3 | 29 | 87 |
| | TNC Operations | 3 | 25 | 75 |
| | Water System Sampling | 3 | 25 | 75 |
| | Water Distribution Leak Detection | 3 | 7 | 21 |
| | | | | |
| Feb | Chlorine Basics/Trench and Excavation Safety | 4 | 3 | 12 |
| | Board Training | 3 | 17 | 51 |
| | Microbiology/Climate Change/Corrosion Control | 4 | 3 | 12 |
| | Keep Your System Sustainable | 4 | 25 | 100 |
| | Corrosion Control and Polymers | 3 | 22 | 66 |
| | How to Perform a Level 1 Assessment on Your Water System | 3 | 29 | 87 |
| | Operator Safety Refresher | 4 | 4 | 16 |
| | | | | |
| Mar | Issuing a Boil Water Notice | 3 | 25 | 72 |
| | TNC Operations | 3 | 8 | 23 |
| | Recruiting and Hiring New Water & Wastewater Workers | 3 | 25 | 65 |
| | Control Valves | 3 | 21 | 63 |
| | Cross Connection Control | 3 | 22 | 65 |
| | Surface Water Treatment Exam Preparation | 6 | 6 | 36 |
| | Water Treatment Plant Operator Refresher | 6 | 3 | 18 |
| | Water Distribution Exam Preparation | 6 | 8 | 48 |
| | Coliform Sampling and RTCR Sampling Plan | 2.5 | 1 | 2.5 |
| | Microbiology, Chlorine Chemistry, and Electrical Safety | 6 | 4 | 24 |
| | Keep Your Water and Wastewater Systems Sustainable | 4 | 1 | 4 |
| | | | | |
| Apr | Lead Service Line Identification, Inventory, and Replacement | 3 | 24 | 66 |
| | Water and Wastewater Ethics | 3 | 21 | 63 |
| | Chemical Feed Pumps | 3 | 17 | 51 |
| | Traffic Control Certification | 4 | 21 | 84 |
| | Basic Math for Water and Wastewater Operators | 4 | 26 | 104 |
| | Advanced Math for Water and Wastewater Operators | 4 | 23 | 92 |
| | Cross Connection Control | 4 | 7 | 28 |
| | Water Operator Safety Refresher | 5 | 2 | 10 |
| | Distribution System Operation and Maintenance Overview | 2.25 | 1 | 2.25 |
| | Asset Management—Fire Hydrants | 4 | 6 | 24 |
| | | | | |
| May | Water Distribution Exam Preparation | 5 | 5 | 25 |
| | Class 3 & 4 Exam Preparation Course | 4 | 8 | 32 |
| | Line Location | 2.25 | 1 | 2.25 |

| | | | | |
|---|---|---|---|---|
| | Small Systems Class 2 Exam Preparation Course | 3 | 5 | 15 |
| | Distribution Exam Preparation Course | 4 | 3 | 12 |
| | Traffic Control Certification | 4 | 9 | 36 |
| | Distribution System Components: Pipe, Valves, Tanks | 3 | 1 | 3 |
| | LMI Rebuilding & Fire Hydrant Maintenance | 5 | 4 | 20 |
| | Basic Computer Operations | 2 | 1 | 2 |
| | Basic Excel Course | 3 | 21 | 62 |
| | Issuing a Boil Water Notice | 3 | 14 | 42 |
| | Water Distribution Exam Preparation | 6 | 4 | 24 |
| | Traffic Control Certification | 4 | 11 | 43 |
| | TNC Operations | 3 | 15 | 45 |
| | Laboratory Inspection Training | 6 | 7 | 42 |
| | | | | |
| June | Control Valves | 3 | 7 | 21 |
| | Preparing for a Sanitary Survey | 3 | 11 | 33 |
| | Chemical Feed Pumps | 3 | 13 | 39 |
| | Creating and Updating your Operation and Maintenance Manual | 3 | 10 | 30 |
| | Refresher Class for Water Operators | 4 | 18 | 68.5 |
| | Corrosion Control and Polymers | 3 | 8 | 24 |
| | Traffic Control Certification | 4 | 15 | 60 |
| | Cyanotoxin Course | 2.5 | 18 | 44 |
| | Metering in the 21st Century | 3 | 11 | 31 |
| | Utility Location with Ground Penetrating Radar | 2 | 2 | 4 |
| | Emerging Contaminants: PFAS, PFOA AND PFOS | 3 | 8 | 24 |
| | | | | |
| July | Emergency Response Equipment Demonstration | 2 | 17 | 34 |
| | Emergency Response Equipment Demonstration | 2 | 29 | 58 |
| | Creating and Updating your Operation and Maintenance Manual | 3 | 5 | 15 |
| | Preparing for a Sanitary Survey | 3 | 4 | 12 |
| | Traffic Control Certification | 4 | 12 | 48 |
| | Valve Exercising and Hydrant Flushing | 2.5 | 1 | 2.5 |
| | | | | |
| August | Creating and Updating your Operation and Maintenance Manual | 3 | 10 | 30 |
| | Water and Wastewater Ethics | 3 | 25 | 75 |
| | Basic Math for Water and Wastewater Operators | 4 | 11 | 44 |
| | Advanced Math for Water and Wastewater Operators | 4 | 9 | 36 |
| | Ground Penetrating Radar for Utility Location | 1 | 2 | 2 |
| | Confined Space Training | 3 | 16 | 48 |
| | Distribution System Flushing | 4 | 13 | 52 |
| | Flow Check Training | 4 | 9 | 35 |
| | | | | |
| September | Cybersecurity Training for the Water Sector | 5 | 39 | 175.5 |
| | | | | |
| October | Service Line Inventory Overview | 2 | 30 | 60 |
| | Proper Laboratory Sampling Procedures for Water and Wastewater | 4 | 24 | 96 |
| | Comprehensive Water & Wastewater Chemistry with Jar Testing Basics | 6 | 9 | 54 |
| | Basic Math for Water and Wastewater Operators | 5 | 7 | 35 |
| | | | | |
| | Class 3 & 4 Exam Preparation Course | 4 | 6 | 24 |

| | | | | |
|---|---|---|---|---|
| November | Small Systems Class 2 Exam Preparation Course | 3 | 6 | 18 |
| | Distribution Exam Preparation Course | 4 | 5 | 20 |
| | Water Treatment: Chemical Addition | 3 | 4 | 12 |
| | Water Treatment: Filtration Processes | 3 | 6 | 18 |
| | Optimize Your Water and Wastewater Pump Stations | 3 | 12 | 36 |
| | Water Treatment: Filtration Processes | 3 | 14 | 42 |
| | Service Line Inventory Overview | 2 | 31 | 62 |
| | Line Locating, Leak Detection, and Mapping Training | 2 | 5 | 10 |
| | Breweries and Your WWTF | 4 | 19 | 76 |
| | | | | |
| December | Water Distribution: Operation and Maintenance | 3 | 24 | 71 |
| | History of Water Treatment | 3 | 19 | 57 |
| | OSHA: Environmental Awareness and Workplace Violence | 3 | 24 | 70 |
| | Service Line Inventory Overview | 2 | 27 | 54 |
| | Chemical Feed Pumps | 3 | 12 | 36 |
| | Service Line Inventory Overview | 2 | 17 | 34 |
| | Operator Certification Introduction | 3 | 3 | 9 |
| | Confined Space Entry | 4 | 28 | 112 |
| | Boil Water Notices | 2 | 8 | 16 |
| | Chlorination and Water Distribution O&M | 5 | 6 | 30 |
| | Introduction to Wastewater Treatment | 5 | 5 | 25 |
| | Vermont Wastewater Treatment Facilities and PFAS | 3 | 20 | 60 |
| | | | | |
| | VRWA 2022 Total: | 360.5 | 1342 | 4442 |

*Some attendees did not attend all classes

# Appendix B

AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ENVIRONMENTAL PROTECTION RULES
CHAPTER 21
WATER SUPPLY RULE
REVISION DATE: March 17, 2020

## Introduction

This subchapter applies to the following **Public** water systems:
(a) **Public Community** water systems;
(b) **Public Non-Transient Non-Community** (NTNC) water systems;
(c) **Public Transient Non-Community** (TNC) water systems; and
(d) **Domestic Bottled** water systems.

## 12.1 General

All **Public** water systems shall be operated by a certified operator of the appropriate class as defined in this subchapter. A certified operator is one who has met the requirements of this subchapter and has a current, valid certification from the Secretary.

All **Public Community, Domestic Bottled,** and **Public Non-Transient Non-Community** water systems must have a designated certified operator in responsible charge available at all times. "Available" means based on system size, complexity, and source water quality, a certified operator must be on site or able to be contacted as needed to initiate the appropriate action in a timely manner.

For purposes of certifying **Public** water system operators, each **Public** water system shall be classified according to degree of treatment, and in the case of Class 4, according to size of population served. The class of operator certification required is dependent upon the classification of such facility.

There are five classes of water systems. Classes 1, 2, 3, and 4 apply to water systems with their own source(s) of supply, and Class D applies to systems which distribute water.

## 12.2 Responsibilities and Duties

12.2.1 Owner's Responsibilities

12.2.1.1 The owner shall be responsible for compliance with the federal Safe Drinking Water Act, Vermont statutes, and the regulations developed pursuant to both.

12.2.1.2 The owner shall be a certified operator or shall designate a certified operator(s) to carry on the daily operations of the system. Such designation shall be in writing and shall be signed by both the certified operator and the owner. A copy of the written designation shall be made available to the Secretary upon request.

12.2.1.3 The owner of any **Public Community** or **Non-Transient Non-Community** water system shall place the direct supervision of the water system under the responsible charge of the designated certified operator(s) (see Subsection 12.2.1.2). The owner shall place the certified operator(s) in responsible

charge of all quality, quantity, process control, and system integrity decisions involving public health, treatment, storage, distribution, and standards compliance. The certified operator shall hold a valid certification equal to or greater than the classification of the treatment facility and distribution system.

12.2.2 Certified Operator's Responsibilities

The certified operator shall comply with the following requirements as a condition of his or her certification:

(a) The certified operator(s) in responsible charge must hold a valid certification equal to or greater than the classification of his or her water system, including each treatment facility and distribution system, as determined by the Secretary.

(b) The operator in responsible charge shall perform the following duties:

1. Conduct visual inspections of the system's source, source water protection area, storage facilities, and chemical addition systems at an appropriate frequency giving consideration to the system's design , location, vulnerability, Operations and Maintenance Manual (see Appendix D), and other relevant factors.
2. Be familiar with all aspects of the treatment and distribution system operation of the water system.
3. Oversee all bacterial monitoring, chemical monitoring, and other monitoring required under this Rule.
4. Review the sample monitoring schedule and locations quarterly.
5. Ensure that all samples are delivered to a certified laboratory in a timely manner.
6. Inspect system within 24 hours of any positive fecal coliform result, positive Total Coliform repeat sample result, or other water system failures that threaten public health.
7. Notify owner of any violation(s) of this Rule.
8. Ensure the accuracy of water meters and other flow measuring devices.
9. Be responsible for measuring, and recording chemical additions.
10. Operate and maintain chemical feed and all treatment systems.
11. Keep abreast of changes in the drinking water regulations and safety regulations.
12. Fulfill certification and certification renewal requirements.
13. Operate and maintain system in accord with the Operation & Maintenance Manual.
14. Attend all inspections as requested by state personnel.
15. Oversee source water protection, watershed protection, and other activities associated with chemical waivers or otherwise required by this Rule.
16. Keep complete and accurate water system records.
17. Carry out all required reporting requirements including submitting a complete monthly report to the Secretary by the 10th day of the following month.
18. Develop and maintain an accurate site plan showing the water source and distribution system.
19. Respond to consumer complaints promptly.
20. Comply with all applicable state and federal statutes, rules and orders governing water system regulation.
21. Conduct all duties with reasonable care and judgment for the protection of public health, public safety, and the environment.

## 12.3 Operator Certification

12.3.1 To be eligible for operator certification, each applicant must:

(a) Submit an application on a form provided by the Secretary;
(b) Meet the educational and experience requirements set forth in Section 12.9;
(c) Classes 2, 3, 4 and D shall obtain a passing grade on the certification examination approved by the Secretary (Class 1 operators need registration only);

(d) Pay any required fee; and
(e) Satisfy all other state mandated requirements for professional licensing and certification.

12.3.2 When replacing an operator, the water system owner shall notify the Secretary in writing within ten (10) days following the date an operator ceases operation of a plant or system, and within ten (10) days after a new operator commences operation of a **Public** water system.

12.3.3 Whenever a new **Public** water system is constructed, the water supplier shall employ or contract with an operator certified in the corresponding class for the new facilities.

12.3.4 When significant modifications are made to an existing **Public** water system which change the system's classification, the operator(s) shall obtain a new certificate as required by the improvements.

12.3.5 An operator holding a certification in any class is permitted to operate all facilities in that class and any lower class. Class 4C is the highest Vermont water operator class. This paragraph does not apply to Class D (distribution only).

12.3.6 A certified operator may move from any **Public** water system class to the next higher one if he or she satisfies all of the following:
(a) the operator has obtained a passing grade on the examination of the higher class; and
(b) he or she has worked as an operator-in-training for six months in the next higher class. One year as an operator-in-training shall be required before advancing two or more classes.

12.3.7 Applicants who did not obtain a passing grade on a written certification examination for a class may be retested at any scheduled examination for the particular class.

12.3.8 In the event an operator's certification is denied, the Secretary will provide the applicant with written notification of the reasons for such denial. Applicants may appeal the denial in accordance with the provisions of 10 V.S.A., §1680.

12.3.9 The operator's certification shall be displayed in the office or plant of the system, and provided for inspection upon reasonable request.

### 12.4 Revocation or Suspension of Operator Certification

(a) The Secretary may suspend or revoke a certificate granted under this section, after notice and opportunity to be heard, if the Secretary finds that the certificate holder has:
(1) submitted or contributed to the submission of materially false or inaccurate information; or
(2) violated any material requirement, restriction, or condition of the certificate including:
(i) the violation of any applicable statute, rule, or order governing water system regulation; and
(ii) the failure to use reasonable care and judgment in the performance of the operator's duties.

The Secretary shall set forth what steps, if any, may be taken by the certificate holder to reapply for certification if a previous certificate has been revoked.

(b) The applicant may appeal a revocation or suspension as provided in 10 V.S.A., §1680.

## 12.5 Recertification of Expired Certificates

Any operator who fails to renew his or her certificate within sixty days following the expiration date of the certificate may not receive a new certificate until he or she successfully passes the qualifying examination and meets the requirements set forth in Section 12.3.1.

## 12.6 Operator-in-Training (OIT)

12.6.1 An Operator-in-Training (OIT) certification is required to operate a **Public** water system under the direct supervision of a certified operator and may be granted by the Secretary. Application must be made on a form supplied by the Secretary.

12.6.2 Upon written notification by the OIT's supervisor that the OIT has completed the minimum required operational experience for full certification in the appropriate water system, the Secretary may issue the appropriate operator certificate provided the OIT has satisfied all operator certification requirements of this part.

## 12.7 Provisional Certification

12.7.1 A Provisional Certificate may be issued by the Secretary to an applicant for the operation of a specific water system when the applicant has not met the full certification requirements for experience in that water system class. A Provisional Certificate may be issued provided the specific water system has exhausted all reasonable efforts in recruiting a fully certified operator, and the applicant has obtained a passing grade on the operator examination for the particular water system class.

12.7.2 The Provisional Certificate Application shall be co-signed by the applicant and the owner for the water system which will be served by the provisionally certified operator. The owner of the water system shall certify that the applicant has had operator training by the manufacturer, consultant, or other certified operator and is capable of operating the specified water system. The Provisional Certificate has the following restrictions:

(a) It shall be issued for operation of a single, specific water system;
(b) It shall be valid only for a time period equal to the minimum operating experience requirements identified in Table 12-1 of Section 12.9; and
(c) It shall be non-transferable.

12.7.3 To convert from a Provisional to a Full Certificate, applicants must:

(a) present evidence of having been employed in a particular water system for a specific amount of time, to include all time in training with equipment manufacturers, consultants, or other certified trainers/operators (see Table 12-1, of Subsection 12.9; and
(b) present evidence of having obtained a passing grade on an examination for the particular classification being sought and evidence that all other certification requirements have been met (see Subsection 12.2.1).

## 12.8 Classification of Public Water Systems and Drinking Water Facilities

Each **Public** water system is to be classified by the Secretary as set forth in this rule. There will be five classes, 1 through 4 and D.

12.8.1 Class 1A

This class of **Public** water system includes **Transient Non-Community** water systems with distribution and using any of the following technologies

(a) No treatment;
(b) Ion exchange for water softening; or
(c) Limestone contactors.

12.8.1.1 Class 1B

This class of **Public** water system includes **Transient Non-Community** water systems with distribution and using any of the following technologies:
(a) Disinfection with chlorine or UV, including standby capability.

12.8.2 Class 2

This class of **Public** water system includes **Public Community**, **Bottled,** and **Public Non-Transient Non-Community** water systems with distribution and any of the following technologies:
(a) No treatment;
(b) Disinfection with chlorine or UV; includes systems with standby chlorination;
(c) Ion exchange for softening; or
(d) Limestone contactors.

12.8.3 Class 3

This class of **Public** water system includes **Public Community**, **Bottled**, **Public Non-Transient Non-Community**, and **Public Transient Non-Community** water systems with distribution and any of the following technologies:
(a) Disinfection by other than chlorine or UV;
(b) Sequestering or filtration of manganese or iron;
(c) Fluoridation;
(d) Corrosion control;
(e) pH control;
(f) Air stripping;
(g) Granular activated adsorption;
(h) Ion/anion exchange;
(i) Aeration; or
(j) Membrane filtration.

This class also includes all **Public** water systems using groundwater determined to be under the direct influence of surface water and which *have* a filtration waiver.

12.8.4 Class 4

This class of **Public** water system includes all **Public Community**, **Bottled**, **Public Non-Transient Non-Community**, and **Public Transient Non-Community** water systems which use surface water, or which have groundwater determined to be under the direct influence of surface water with respect to which a filtration waiver has not been issued.

12.8.4.1 Class 4A1

This class includes distribution plus any of the following treatment technologies:
(a) Bag filtration;
(b) Cartridge filtration;
(c) Membrane filtration;
(d) Slow sand filtration; or

(e) Other similar technologies, as approved by the Secretary, which do not use coagulants.

This class serves all water system populations of 25 or greater.

12.8.4.2 Class 4A, 4B, and 4C

This class includes distribution plus rapid sand filtration technology and is further differentiated by population served by the system:
4A, for served populations between 25 and 500;
4B, for served populations between 501 and 3,300; and
4C, for served populations greater than 3,300

12.8.5 Class D

This class of **Public** water system includes **Public Community** water systems serving 3,300 people or more and that have only a distribution system. A Class D system purchases its water and does not have any source or treatment associated with it.

## 12.9 Experience and Education

12.9.1 In determining whether an applicant has the operating experience required for certification in a particular water system class, the Secretary may consider the following:
1) the period of satisfactory experience as a system operator or OIT; and
2) operating experience accrued in another jurisdiction.

All satisfactory experience as noted above shall be credited toward the total experience required for certification in the particular class for which application is made. Operating experience is defined as time spent at a facility, plant, or system in satisfactory performance of operational duties.

12.9.2 All applicants shall have a high school diploma or a general equivalency diploma (GED). The Secretary may allow experience and relevant training to be substituted for a high school diploma or GED.

12.9.3 Table 12-1, below, contains the minimum experience requirements for certification.

**Table 12-1 - OPERATOR CLASSIFICATION REQUIREMENTS**

| Public Water System Class(s) | Class of Operator | Operating Experience Required (Yrs) |
|---|---|---|
| ALL | Operator-in-Training(OIT) | NONE |
| ALL | Provisional | NONE |
| 1A | Operator Class 1A | NONE |
| 1B | Operator Class 1B | NONE |
| 2 | Operator Class 2 | 1.5 |
| 3 | Operator Class 3 | 1.5 |
| 4A1 | Operator Class 4A1 | 2 |
| 4A | Operator Class 4A | 2 |
| 4B | Operator Class 4B | 2.5 |
| 4C | Operator Class 4C | 3 |
| D | Operator Class D | 1.5 |

12.9.4 Substitutions for Experience Requirements

(a) Substitutions with related schooling or courses may be made for required experience for Classes 2, 3, 4A1, 4A, 4B, 4C, and D but with the limitation that 50 percent of any stated experience requirement must be met by actual on-site operating experience in a plant, system or facility.

(b) Formal Education

(1) High School education cannot be substituted for any experience requirement.

(2) Approved relevant formal academic education at the post high school or college level may be substituted for experience requirement on a year for year basis, subject to the 50 percent limitation described in Subsection 12.9.4(a) above. Thirty (30) semester hours or equivalent educational hours of credit are considered to represent 1 year of formal education.

(c) Operator Training

(1) Specialized operator training courses, seminars, workshops or approved technical conferences may be substituted for experience requirements subject to the 50 percent limitation previously described. Continuing Education Units (CEUs) totaling 30 are considered equal to 1 year.

(d) Partial credit toward operating experience may be given for experience in plant or system maintenance, in a laboratory, in a different certification category than that which is being applied for, and in related (allied) trades, as determined or approved by the Secretary.

## 12.10 Certification Renewal

12.10.1 A certified water system operator shall submit to the Secretary, at least 30 days before the expiration date of the certificate, a completed application on the form approved by the Secretary, including any fee due. The Secretary shall review the application and shall promptly notify the applicant of any deficiencies. If the application is complete, the continuing education requirements of Section 12.11 have been fulfilled, and the Secretary finds no cause under Section 12.3 to deny the application, a renewed certificate shall be issued.

The Secretary intends to provide written notice to operators of their certification renewal date approximately 6 months prior to that date. However, the burden of certification renewal is assumed by the applicant and failure of the Secretary to provide notice shall not constitute a basis for contesting the expiration of an operator certificate.

12.10.2 Certification renewal shall occur on a schedule as shown below and shall be based on various methods of recertification depending on water system class.

| Class of Certificate | Duration of Certificate, Years | Method of Certification |
|---|---|---|
| 1A | 3 | Registration |
| 1B, 2 | 3 | Continuing Education or Retesting |
| 3 | 3 | Continuing Education or Retesting |
| 4A1,4(A,B,C) | 3 | Continuing Education or Retesting |
| D | 3 | Continuing Education or Retesting |

12.10.3 Certifications issued under the rule may be for fewer years than shown above, in order to stagger the renewal dates for more efficient administration of the program.

## 12.11 Continuing Education

12.11.1 Continuing education requirements for certification renewal are as follows.

(a) Water System Class 1A operators are encouraged to attend at least 3 hours of state approved seminar or other approved instruction each 3 year renewal period.

Water System Class 1B operators shall attend at least 3 hours of a state sponsored seminar or other approved instruction each 3 year renewal period.

(b) Water System Class 2 operators shall attend at least 10 hours of a state sponsored seminar or other approved instruction each 3 year renewal period.

(c) Water System Class 3, 4, and D operators shall attend 20 hours of state sponsored seminars or other approved instruction each 3 year renewal period.

12.11.2 Documentation of continuing education shall be reviewed by the Secretary to determine compliance with the continuing education requirements. Documentation will be provided by the applicant for renewal or by the Secretary. Acceptable documentation shall consist of individual course completion certificates (pre-approval of course required) or formal course sign-in sheets for pre-approved courses containing the signature of the applicant confirming attendance.