Commonwealth of Virginia
Capacity Development Annual Implementation Report

October 1, 2021 through September 30, 2022

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Office of Drinking Water
Safe Drinking Water for a Healthy Virginia

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This report is available to the public on the VDH Office of Drinking Water website at:
https://www.vdh.virginia.gov/drinking-water/capacity-development/

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Introduction

In accordance with § 1420(a) of the *Safe Drinking Water Act* (SDWA) Amendments of 1996 (42 USC § 300g-9(a)), this report serves as evidence of the Commonwealth of Virginia's commitment to and implementation of a Capacity Development Program. This report documents Virginia's assistance to waterworks[1] owners and operators in the Commonwealth and covers federal fiscal year 2022, from October 1, 2021, through September 30, 2022. This program is based on and is compliant with Virginia's Capacity Development Strategy. The United States Environmental Protection Agency (EPA) approved Virginia's revised Strategy on January 19, 2022. The Office of Drinking Water (ODW) revised the strategy according to the requirements of the America's Water Infrastructure Act. It includes Virginia's strategy for supporting, encouraging, training, and assisting waterworks with Asset Management Planning. Stakeholders in Virginia reviewed the revised Strategy.

PART 1: NEW SYSTEMS PROGRAM

1.1 Legal Authority

The VDH, though the ODW, is the primacy agency for implementation of the SDWA and National Primary Drinking Water Regulations in the Commonwealth of Virginia. Legal authority for Virginia's new systems program is provided in §§ 32.1-169 and 32.1-172 of the *Code of Virginia* (1950, as amended in 1994). Virginia's legal authority has not changed from the previous reporting year.

1.2 Control Points

In Virginia, all proposals to create a new waterworks must meet statutory and regulatory requirements that serve as control points for ensuring the capacity of new waterworks. There have been no modifications to Virginia's control points from the last reporting year.

Section 32.1-172 of the *Code of Virginia* states: "No owner shall establish, construct or operate any waterworks or water supply in the Commonwealth without a written permit from the Commissioner, except for the extension of water distribution piping having a diameter of eight inches or less and serving less than fifteen equivalent residential connections" and "the [permit] application also shall include a comprehensive business plan detailing the technical, managerial, and financial commitments to be made by the owner in order to assure that the system performance requirements for providing the water supply will be met over the long term."

To implement § 32.1-172 of the *Code of Virginia*, ODW requires owners to prepare and submit a business plan, called a "Waterworks Business Operation Plan (WBOP)," for the development of new waterworks, or the purchase or transfer of an existing waterworks by a first-time owner of a waterworks in Virginia. In addition, ODW requires a WBOP when an owner has a poor

[1] In Virginia, public water systems are called "waterworks." The definition of a waterworks, "a system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year…" (*Code of Virginia* § 32.1-167) is equivalent to the federal definition of a public water system, which means "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals." 42 USC § 300f(4)(A).

compliance history with Virginia's *Waterworks Regulations*. ODW published the WBOP template on the VDH–ODW webpage:

https://www.vdh.virginia.gov/drinking-water/capacity-development/waterworks-business-operations-plan/

Section 32.1-172 E of the *Code of Virginia* states: "If the proposed waterworks is not in compliance with all regulations of the Board [of Health] but, in the opinion of the Commissioner, the public health will not be jeopardized, the Commissioner may issue a temporary permit for such a period of time and subject to such conditions as the Commissioner may deem appropriate for the owner to achieve compliance with such regulations." ODW staff utilize temporary permits most commonly for waterworks that do not fully comply with the *Waterworks Regulations.* These tend to be previously unpermitted waterworks that ODW identifies, called "newly-discovered waterworks" and waterworks with a change in ownership.

In addition, prior to receiving a permit to establish, construct, expand, or modify a waterworks, plans and specifications must comply with the *Waterworks Regulations* "Part III – Manual of Practice for Waterworks Design" (12VAC5-590-640 through 12VAC5-590-1235) to ensure new and modified waterworks are properly designed and physical facilities will be operated in a safe, reliable, and appropriate manner. The design shall provide the engineering basis to meet the drinking water standards under the SDWA.

Effective June 23, 2021, ODW completed the process for amending the *Virginia Waterworks Regulations* (Regulations). The Regulations establish requirements and procedures for the issuance of permits; minimum standards for water quality (including requirements for waterworks owners to submit regular analytical results of sampling for biological, chemical, radiological, physical, and other tests); requirements for recordkeeping, reporting, public notice, and consumer confidence reports; requirements for inspections; and criteria for the siting, design, and construction of waterworks. The regulatory action is a comprehensive update of the Regulations, including Part I – General Framework for Waterworks Regulations, Part II – Operation Regulations for Waterworks, and Part III - Manual of Practice for Waterworks Design. Part IV – Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III) was incorporated into Part III, and the appendices were incorporated into the body of the Regulations or, where they are no longer relevant, deleted. Many of the changes simply refine and provide further clarity to existing regulations.

During the reporting period, ODW worked to update policy documents to reflect changes to the Regulations. These updates included work on the *Field Operations Manual, Project Review & Permit Procedures Manual,* and the *Sampling Manual.* In addition, ODW developed training materials covering the updated regulated requirements for cross connection control and developed cross connection control program templates for use by the regulated community.

The ODW relies on a holistic approach to capacity development and emphasizes the role of long-established programs to enhance the technical, managerial, and financial (TMF) capabilities of waterworks. In addition to the permitting process already described, additional programs include sanitary surveys, technical assistance contacts by field staff, operator certification requirements, compliance and enforcement, and training courses offered by ODW, contractors, partners, and other technical assistance providers. The capacity building elements of these and other programs are described in more detail in Part 2 of this report, "Existing System Strategy" which summarizes

activities in these areas for both new and existing waterworks. It is important to note that new systems also benefit from these longstanding programs.

1.3 New Systems

Appendix A lists community and nontransient noncommunity (NTNC) waterworks that have become active during the period October 1, 2019, through September 30, 2022. Newly constructed facilities, previously unpermitted facilities that meet the definition of a waterworks (newly discovered waterworks), and existing facilities under new ownership are included. ODW may not have issued operation permits for all new waterworks listed in Appendix A. However, staff is working to ensure all new waterworks obtain the required permitting.

Newly discovered waterworks are typically businesses or small community water systems (*e.g.*, a restaurant, mobile home park, or group of single-family homes) that have operated for years without being aware of the requirement to comply with the Regulations. Once discovered, ODW field staff gather information from the owner to determine whether these systems meet the definition of a waterworks. If systems meet the waterworks definition, ODW notifies the owner and begins the process to issue an operation permit. Owners may challenge the determination under Virginia's Administrative Process Act (APA), *Code of Virginia* §§ 2.2-4000 through 2.2-4031, but most agree to regulatory oversight by ODW. The majority of newly discovered waterworks are transient noncommunity (TNC) waterworks; however, ODW has identified some NTNC and community waterworks.

The ODW provides technical assistance, makes site visits, provides templates for the WBOP, and sends reminders of sampling requirements and due dates to both new and existing waterworks. Examples of field office efforts to assist new waterworks owners and operators are included in Appendix F. Nevertheless, many newly discovered waterworks and waterworks with ownership changes continue to experience managerial and financial challenges while attempting to comprehend and comply with state and federal requirements. As a result, these waterworks tend to experience more compliance issues than other water systems.

As new waterworks incur violations (see Appendix B), ODW addresses their need by providing timely technical assistance, surveillance, and enforcement until the waterworks either returns to compliance or is issued a formal enforcement action.[2] ODW couples compliance and enforcement activities with corrective action technical assistance; therefore, violations reported for new waterworks are typically of short duration.

During the three-year period from October 1, 2019, through September 30, 2022, ODW identified 29 community and NTNC waterworks as "new." Not all of these waterworks are actually new systems. The list includes waterworks that have transferred ownership or ones that ODW reactivated in the State Drinking Water Information System (SDWIS) according to the "Status Activity Date" in the electronic waterworks record. Of those systems, 10 of them incurred violations. There has been no net change in the number of systems with violations since the last

[2] EPA defines formal enforcement action in Water Supply Guidance 26 "… as one which requires specific actions necessary for the violator to return to compliance, is based on a specific violation, and is independently enforceable without having to prove the original violation." A consent order, issued by the State Health Commissioner, on behalf of the State Board of Health, to a waterworks owner, with the owner's consent, is one example of a formal enforcement action. Consent order are authorized by §§ 32.1-26 and 32.1-27 of the *Code of Virginia*.

reporting period in which 10 new waterworks had violations. There was a decrease in the number of new systems, down from 37 new systems to 29. The one new system in the preceding year (October 1, 2021, to September 30, 2022), had no violations. New waterworks may have initial violations of the Revised Total Coliform Rule (RTCR) due to the inadequate sources; some require rehabilitation. New waterworks also struggle with sampling protocols and techniques. ODW will continue to contact waterworks with violations and provide technical assistance to resolve the violations. None of these new systems are on the EPA's Enforcement Targeting Tool (ETT).

EPA designed the ETT to identify waterworks with violations that rise to significant noncompliance by focusing on those systems with health-based violations and those that show a history of violations across multiple rules (see Appendix C). The ETT formula calculates a score for each waterworks based on open-ended violations and violations that have occurred over the past five years but does not include violations that have returned to compliance or are on the "path to compliance" through a specified enforceable action. In calculating the ETT score, health-based violation criteria are weighted.

According to EPA's Office of Enforcement and Compliance Assurance's July 2022 ETT, 2 waterworks were identified as a "priority system." This represents a substantial decrease from the prior year in which 18 waterworks were on the ETT.

The ODW promotes the use of temporary operation permits with specific requirements for newly discovered waterworks not in compliance with the Regulations. Staff issue temporary permits with an expiration date not to exceed 24 months. To address critical issues promptly, staff include benchmark deadlines. The purpose of an expiration date is to provide a period for the waterworks to achieve compliance and, in doing so, demonstrate adequate TMF capacity prior to the issuance of a standard operation permit. ODW field staff prefer to complete an operation permit when possible; however, the use of temporary operation permits is a viable option.

Temporary operation permits protect public health while providing time for a new waterworks to make the changes required for meeting regulatory requirements. If a newly discovered waterworks does not demonstrate adequate TMF and does not meet requirements of the temporary operation permit prior to the expiration date, the waterworks would then be operating without a permit and would be subject to enforcement action. Enforcement generally begins by providing the owner written notice and may include meetings with ODW enforcement staff, a warning letter, a consent order, or possibly informal administrative proceedings that may result in the issuance of a special order directing actions required to return to compliance. This report provides more information about compliance and enforcement in Section 2.10 of this report.

PART 2: EXISTING SYSTEM STRATEGY

2.1 Programs, Tools, and Activities

ODW continues its surveillance program to identify waterworks with emerging compliance issues. Capacity Development staff monitor waterworks that appear to be having compliance issues for violations, and when violations occur, ODW Capacity Development staff consult with field staff to develop an informal plan of action. Staff use this consultation to provide a plan to improve the waterworks' TMF capacity and ultimately prevent additional violations. Effective assistance includes:

- Regular sampling reminders by automated messaging, phone, email, or letter
- Site visits
- Referral to formal or informal training resources
- WBOP development or review
- Notifications and reminders of upcoming funding opportunities
- Direct one-on-one assistance by Sustainability Coordinators
- Referral to other technical assistance providers
- Warnings from the ODW's enforcement staff, and/or
- Issuance of Consent Orders
- Assessment of Civil Penalties and Charges

2.2 System Identification

ODW utilizes three common indicators to assess, identify, and prioritize waterworks in need of capacity development assistance: compliance, infrastructure condition, and managerial and financial capability. Compliance utilizes the data tools of the ETT score, compliance monitoring results, monthly operations reports, SDWA reports, and technical assistance fee payments. Infrastructure condition uses tools such as plan reviews and sanitary surveys to evaluate the waterworks' conformity to design standards and best practices for sources, treatment, storage, and distribution. The concepts of managerial and financial capacity are uniquely associated with each other and include indicators such as:

- The WBOP
- Customer complaints
- Staff licensure qualifications
- Status of programs, e.g. (safety, water accountability, and cross connection control)
- Responsiveness to correcting deficiencies
- Declaration of bankruptcy

The EPA requires ODW to conduct a triennial capacity assessment. Since July 2001, ODW has used an electronic tool to complete a capacity baseline assessment of all community and NTNC waterworks. The scoring system accounts for compliance status, infrastructure condition, managerial and financial indicators, and preparedness to comply with regulations. The higher the assessment score means that the system's capacity is more robust. Staff conducts this "triennial capacity assessment" once every three years and ODW uses the results to identify specific waterworks needing assistance as well as programmatic adjustments or efforts to address regional or statewide need. Staff conducted the last assessment in 2020. Details about how ODW conducts the assessment, and its findings were provided in the 2020 Report.

Review of the data showed that waterworks in southeast Virginia, roughly bounded by Route 29 to the west and I-64 to the north, and generally encompassing "Southside Virginia" tend to have lower TMF capacity scores than those in other geographic areas of the state.

The ODW has prioritized deploying training, funding workshops, technical assistance, and financial resources in south-central Virginia to address this trend. Staff has been working with waterworks in that region. Specific efforts are included in the ODW success stories in Section 3.6.

Capacity Development continues to provide management training that includes an emphasis on asset management and rate adjustments. Customer service at waterworks remains an opportunity area. Waterworks with clear customer service policies and practices enhance customer experience and trust, which help the waterworks support needed improvements with rate and policy adjustments. Small waterworks can benefit from improved customer service. A written customer service plan codifies actions that ensure a similar response to each customer. ODW continues to provide system-by-system help to address specific challenges, no matter the size of the waterworks, its location, or its financial condition.

2.3 Approach to Assistance

Staff direct programs, tools, and activities that support Virginia's existing system strategy efforts to 1,077 community, 497 NTNC, and 1,238 TNC waterworks during the reporting period. These systems collectively serve approximately 7.71 million consumers--about 89% of the total population of Virginia (8.6 million people).

2.4 On-site Inspection: Sanitary Surveys and Site Visits

Relationship to TMF Capacity: On-site inspections of waterworks are a significant component of the sanitary survey program and provide opportunities for ODW staff to assess TMF capacity. During the course of a sanitary survey, staff conduct thorough evaluations of waterworks' infrastructure and treatment processes, in part by reviewing water quality monitoring records, examining operational practices and controls, and assessing operators' qualifications.

Staff utilize the sanitary survey process to identify waterworks' capacity needs and prioritize targeted guidance and assistance. The culmination of the sanitary survey is a written report that serves as a roadmap for waterworks owners to follow for correcting a waterworks' deficiencies or improving a waterworks' operation. ODW has implemented GEC SWIFT Surveys software to utilize electronic sanitary surveys to improve the efficiency of sanitary surveys, and to improve the consistency of our evaluations of waterworks and follow up on issues identified.

Staff conduct special site visits to evaluate waterworks new construction, investigate consumer complaints, provide guidance to waterworks required to conduct Level 1 Revised Total Coliform Rule (RTCR) assessments, conduct Level 2 RTCR Assessments, and respond to specific requests for assistance. Staff make site visits between sanitary surveys to confirm waterworks' progress in addressing sanitary survey comments and correcting significant deficiencies. Staff also make site visits to perform source water assessments and evaluate locations of proposed new wells for approval. These visits provide an opportunity for face-to-face interaction with waterworks owners and operators, allowing immediate technical assistance to improve TMF capacity.

Performance: During the reporting period, ODW staff performed 927 routine sanitary surveys, provided guidance to waterworks in completing 141 Level 1 RTCR Assessments, conducted 32 Level 2 RTCR Assessments, and performed 28 well site assessments**.**

2.5 Technical Assistance Contacts by Field Staff

Relationship to TMF Capacity: In addition to site visits, ODW staff interact with waterworks owners and operators and provide assistance through a variety of informal contacts including meetings, telephone calls, letters, and emails. Assistance covers a full range of TMF concerns. For instance, staff may assist with water quality sampling or follow up on corrective measures from a sanitary survey report. Staff notify waterworks operators of upcoming training opportunities or assist with water treatment dosage calculations. ODW notifies owners of pending regulatory impacts or requirements for consumer education.

Performance: During the reporting period, VDH–ODW staff received and responded to 20,387 assistance requests from waterworks owners and operators. They communicated with waterworks using a variety of methods as described in the previous paragraph. Technical assistance success stories are included in Appendix F.

2.6 Operator Certification

Relationship to TMF Capacity: In Virginia, the Department of Professional and Occupational Regulation (DPOR) regulates licensed waterworks operators through the *Code of Virginia* §§ 54.1-2300 through 54.1-2302. DPOR bases licensure on operators having applicable experience and education as well as demonstrating minimum required knowledge, skills and abilities through an examination; 18VAC160-30-10 *et seq.* Experience is limited to operation and maintenance of waterworks, laboratory work, and treatment plant maintenance. Experience level varies depending on the waterworks' classification. The minimum education requirement for an operator's license is a high school diploma or General Educational Development certificate. However, there are licensure regulation provisions for candidates without high school diplomas to substitute more operator-in-training experience for education.

Performance: The total number of licensed waterworks operators in Virginia was 2,254 as of September 2022. In June 2021, there were 2,212 licensed operators, reflecting an increase of 42 operators. Staff attributes this increase to operators taking advantage of training courses and passing the licensure exam. To keep this trend moving upward, VDH-ODW is continuing to offer low-cost education solutions, which are now more important than ever due to an aging workforce. Staff also continues to collaborate with and provide referrals to technical assistance providers to assist individuals with exam preparation. Detailed information regarding the status of Virginia's Operator Certification Program is in the Annual Report on Operator Certification in Virginia, submitted to Region III EPA on June 30, 2022.

2.7 Training: Continuing Professional Education

Relationship to TMF Capacity: ODW facilitates the development of TMF competencies for waterworks owners and operators by offering and sponsoring on-going training opportunities. The curricula for these programs include technical topics such as equipment operation and maintenance, drinking water chemistry and microbiology, water treatment technologies, and operational math. The program addresses managerial aspects of waterworks operation through course offerings on the Regulations, financial planning, asset management, waterworks administration, source water protection, emergency planning, and waterworks security.

Performance: In March 2020, ODW canceled all in-person courses due to COVID-19 pandemic health risks. ODW and Virginia Tech transitioned some courses to webinar-based platforms via

the Zoom conferencing platform. Now that the state of emergency has been lifted VDH-ODW and Virginia Tech have started transitioning back to face to face courses. These courses have been well attended and participants are providing positive feedback. A listing of the courses is provided in Table 1.

Water Operators Short School: Virginia Tech offered synchronous and asynchronous online classes this year. ODW actively participates in the Short School by volunteering as course instructors at this weeklong course held annually since the 1930s. Historically, there have been three levels to the course: introductory, intermediate, and advanced. Each level provides approximately 15 sessions and focuses on a variety of waterworks operations topics. The curricula for the intermediate and advanced courses build on the preceding year's course. Starting in August 2018, Virginia Tech offered an additional level, "Year 4," for supervisors or operators looking to move into management. The Year 4 sessions include asset management, communications, human resources, as well as new technologies. In 2020, Virginia Tech moved the course online to allow students to participate during the COVID-19 pandemic. Virginia Tech held the Short School online from August 1-12, 2022; 95 people attended.

Table 1: Classes offered by ODW and Virginia Tech

Program Date	Program Name	Participants
Sept 22, 2021	Broadcast: Disinfection Practice	150
Sept 27–Oct 1, 2021	Operation and Maintenance of Distribution Systems	9
Oct 1, 2021	Broadcast: Coagulation, Flocculation & Residuals	149
Oct 18-22, 2022	Contaminants of Concern: Chemistry, Toxicity, and Treatment	7
Oct 25-Nov, 2021	Water Treatment Process at Full Scale Water Plants	6
Nov 10, 2021	Broadcast: Hydraulic Transients	145
Feb 8-10, 2022	Basic Groundwater Course for Small Systems	29
Feb 16, 2022	Broadcast: Membrane Technology in Drinking Water Treatment	101
March 16, 2022	Broadcast: American Recovery Plan Act, Coronavirus State Fiscal Recovery Fund	118
March 14-28, 2022	Water Operations Math	25
March 24-25, 2022	Hands-on Training at a Full Scale Water Plant	18
April 13, 2022	Broadcast: Successful Engineer and Owner Navigation of Traditional and Alternate Delivery Construction Projects	119
May16-27, 2022	Operation and Maintenance of Distribution Systems	16
May 18, 2022	Broadcast: Water, Wastewater, Utility Management	172
June 15, 2022	Broadcast: Leadership and Effective Utility Management	164
July 13, 2022	Broadcast: Environmental Contaminants & Drinking Water in Virginia- Challenges and Opportunities	174
July 19-21, 2022	Management, Methods, and Money: Understanding Concepts in Capacity Development	14
Aug 30 - Sept 1, 2022	Establishing a Successful and Sustainable Waterworks: Revenues, Rates and Funding	21

Sept 21, 2022	Broadcast: Cross Connection Control: Regulation and Best Management Practices	161

2.8 Construction Plans and Permit Review

Relationship to TMF Capacity: ODW uses authority in §§ 32.1-169 & 32.1-172 of the *Code of Virginia*, and 12VAC5-590-190 of the *Waterworks Regulations* to prohibit the construction or change in the manner of transmission, storage, purification, treatment, or distribution of water (including the extension of water pipes for the distribution of water) at any waterworks or water supply without a written construction permit. Construction and operation permitting authority is a control point to prevent the creation of waterworks lacking sufficient TMF capacity to sustain operations. After construction, the waterworks owner must submit a statement by a licensed professional engineer. The engineer's statement confirms completion of the construction work in accordance with the approved plans and specifications, based on inspections of the waterworks during and after the construction, and for complicated projects, ODW confirms this with a final inspection. Upon receipt of the statement, and satisfactory completion of a final inspection if required, ODW issues a new or updated operation permit. The permit also establishes the classification of the waterworks for the purpose of licensure requirements for personnel.

Performance: During the reporting period, ODW issued 219 construction permits through the review of plans and specifications for new construction, expansion, or changes in the manner of transmission, storage, purification, treatment, or distribution of water (system improvements). In April 2022, ODW initiated a pilot centralized plan review program with a goal of improving consistency, efficiency, and permitting turn-around time over the current regionalized program. Initial results indicate that the pilot program achieved the goals, and ODW initiated hiring three engineering positions to form a permanent centralized plan review program.

2.9 Water Loss and Evaluation Assistance

Relationship to TMF Capacity: Distribution system water loss is a TMF capacity concern. Water loss may include impacts to hydraulic source capacity, reduction in pressure, negative pressure resulting in contamination from cross connections and leaks, increased treatment, and risk to public health. Financial impacts include loss of potential revenue and increased operation costs (e.g. electricity, chemicals, unbilled water, and staff time). These factors affect management decisions and capital outlay necessary to correct significant water loss in the distribution system.

Performance: ODW staff does not conduct leak detection, as leak detection requires extensive training and expensive equipment. Instead, ODW continues to support our technical assistance partners by funding applications for leak detection equipment under the Drinking Water State Revolving Fund (DWSRF) set-asides. The Virginia Rural Water Association (VRWA) received grant funds for leak detection equipment. They provide the services through ODW referral and direct contact from waterworks. VRWA reported delivery of 636.75 hours of leak detection technical assistance service to several waterworks in Virginia during the reporting period. Information about leak detection services is included in Appendix D of this report.

Table 2, "Virginia Rural Water Association Leak Detection Program" summarizes VRWA circuit riders' water loss assistance hours provided through routine leak detection technical assistance.

Table 2: Virginia Rural Water Association, Leak Detection- Waterworks Assisted

Hours of Leak Detection	Water System	Hours of Leak Detection	Water System
58.5	Appalachia, Town of	17.25	Goshen, Town of
5.25	Appomattox, Town of	8	Grayson Co. PSA
2.25	Augusta Co. Service Auth.	3.5	Hamilton, Town of
27.5	Big Stone Gap, Town of	3	Millboro Water Association
11.5	Bland Co.	19.5	Montvale Water
84.75	Buchanan, Town of	5.75	Pembroke, Town of
16.75	Buena Vista, City of	1	Pound, Town of
17.5	Cedar Bluff, Town of	1	Quantico, Town of
13.75	Chatham, Town of	7.25	Rocky Mount, Town of
6	Coeburn, Town of	8.5	Shenandoah Crossing
21.25	Covington, City of	5.5	Stony Creek, Town of
4.5	Drakes Branch, Town of	2.75	Stuart, Town of
132.75	Dungannon, Town of	3.5	Thomas Bridge Water Corp.
4.5	Eagles Eyrie	13.75	Warsaw, Town of
6.5	Exmore, Town of	65.25	Wise Co. PSA
58	Gate City, Town of		

2.10 Compliance and Enforcement Program

Relationship to TMF Capacity: ODW routinely reviews water quality data submitted by waterworks and issues Notices of Alleged Violation (NOAVs) for sample results that do not meet the standards contained in the Regulations. ODW issues NOAVs for monitoring infractions, improperly licensed staff, recordkeeping, reporting failures, or other conditions that deviate from standards established by the SDWA and the Regulations. These notifications include recommendations on a course of action for waterworks to follow to return to compliance.

In addition, ODW can issue warning letters to waterworks that fail to comply with the Regulations or are on the verge of becoming priority systems on the ETT. ODW utilizes warning letters to encourage waterworks owners to take actions necessary to ensure compliance. Warning letters summarize current conditions: the waterworks' noncompliance, request owners take corrective action within a specified timeframe, and define the possible consequences for failure to take action.

The State Health Commissioner, acting on behalf of the Board of Health, has the authority to issue binding bilateral consent orders (*Code of Virginia* §§ 32.1-26 and 32.1-27) and unilateral special orders (*Code of Virginia* § 32.1-175.01) to waterworks owners who have violated the Regulations. ODW uses consent orders and special orders to address situations where a waterworks has not returned to compliance in a timely fashion following issuance of an NOAV and/or a warning letter.

As required by the Virginia Administrative Process Act, ODW enforcement staff conduct an informal fact-finding conference and/or formal administrative hearing to give waterworks owners their due process rights under the law before issuing an adverse decision that could lead to a unilateral special order. Both consent orders and special orders establish timelines and direct corrective measures that will lead to compliance. ODW focuses these enforcement efforts on priority systems identified in the ETT. Quarterly ETT reports are used to prioritize assistance to waterworks with numerous or especially serious compliance failures.

ODW's enforcement approach is highly focused on identifying solutions to the underlying causes of a waterworks' noncompliance with state and federal drinking water regulations. ODW enforcement utilizes various tools to direct attention and provide guidance to waterworks owners on ways to correct deficits in their TMF capabilities. For instance, during the course of an administrative hearing it may be determined that inadequate waterworks revenues are the ultimate cause of chronic monitoring failures. ODW may ask a waterworks owner to submit a WBOP as a budgeting tool. ODW may provide the waterworks owner with rate-setting assistance to address the underlying lack of financial capacity.

Performance: During the October 1, 2021, through September 30, 2022 reporting period, ODW issued 1,013 NOAVs and 64 Warning Letters. Additionally, the State Health Commissioner issued eight consent orders. Four waterworks satisfied the requirements in their consent orders and those orders were terminated, including three community waterworks and one transient non-community waterworks.

2.11 Waterworks Advisory Committee

Relationship to TMF Capacity: ODW collaborates with the Waterworks Advisory Committee (WAC), which is comprised of a diverse group of waterworks stakeholders throughout the state. The WAC provides input into the ongoing development of ODW policies and procedures. ODW consults the WAC frequently regarding the implementation of specific programs, including those related to capacity development. *Virginia Waterworks Regulations* 12VAC5-590-45 provides requirements related to the WAC.

Performance: The WAC and ODW staff met five times during the reporting period: December 15, 2021, February 16, 2022, April 20, 2022, July 20, 2022, and September 22, 2021. Meeting minutes are available on the Virginia Town Hall website.

2.12 Drinking Water State Revolving Fund – Construction Funding

Relationship to Technical, Managerial, and Financial Capacity: The ODW Financial Construction Assistance Program (FCAP) administers the Virginia Drinking Water State Revolving Fund (DWSRF) and provides financial assistance to waterworks owners in the form of low-interest loans and principal forgiveness. FCAP can use financial assistance to resolve health-related issues, for infrastructure improvement, and to refinance debt. Training, Capacity Development and Outreach (TCDO) staff assess all qualified waterworks applying to receive DWSRF construction fund assistance to determine if the waterworks has sufficient TMF capacity before disbursement of funds. Waterworks that do not appear to have adequate TMF capacity are required to submit a WBOP or take advantage of technical assistance provided by Capacity Development staff. ODW also coordinates through its financial partner, Virginia Resource

Authority (VRA), to set requirements for waterworks restructuring as part of the funding process (rate increases or completion of annual audits).

The ODW implements outreach efforts to increase awareness of the opportunities available through the DWSRF program. ODW staff post information on the ODW website and on Town Hall. The DWSRF solicitation package includes eligibility information, application information and deadlines, program workshop dates, contact information, as well as other useful information. ODW utilizes the ETT to identify non-compliant waterworks that would most benefit from the DWSRF funding. FCAP can then notify these waterworks by letter of the DWSRF opportunities available through the year, rather than a couple months before the application deadline. FCAP continues to solicit eligible applicants for each DWSRF Construction funding cycle.

To promote sustainable programs FCAP requires water systems that receive funding through the DWSRF to either have an active asset management plan or prepare one before completion of the awarded project. Up to $15,000 in principal forgiveness is available to assist with the costs of developing or updating an asset management plan for those who do not have an active or up-to-date plan.

Performance: During the reporting period, ODW received applications for both FY 2022 Bipartisan Infrastructure Law (BIL) and FY 2023 funding. The Intended Use Plan (IUP) and the Project Priority List (PPL) have been drafted for all FY 2022 funding (Base + BIL). The highest scoring FY 2022 BIL project on the PPL is the Town of Hurt, with 30 chronic points and 60 points overall. The proposed project will benefit 612 residential connections and the total project cost is $1,698,000. For FY 2022 BIL applications, the TMF assessment is being conducted and after it is finalized funding offer letters will be drafted and sent out to the funding applicants. As part of the TMF review, ODW staff identify issues regarding low TMF capacity and recommend corrective actions in the funding offers. For FY 2023 funding, FCAP is in the process of developing the PPL. After this, a TMF review will be complete for these applicants.

2.13 Planning and Design Funded Projects

Relationship to TMF Capacity: ODW awards planning and design funds annually to small, financially challenged, community waterworks. The program provides up to $35,000 per project. The beneficiaries of this program are primarily waterworks that would not have the TMF capacity to evaluate drinking water problems, identify solution alternatives, and make recommendations for correction. Eligible projects may include preliminary engineering planning, design of plans and specifications, performance of source water quality and quantity studies, drilling test wells to determine source feasibility, or other similar technical assistance projects. The submission of a preliminary engineering report (PER) is a requirement for both ODW's DWSRF construction program and the US Department of Agriculture's Rural Economic Development Loan & Grant Program. However, FCAP will accept applications without a PER, and can fund engineering services as part of a construction project.

Waterworks can submit Planning and Design Grant applications year-round. Staff reviews the applications upon receipt and makes funding offers for complete applications with acute or chronic health points. ODW will hold applications without acute or chronic health points until around September 1st of each year. If funds are still available, staff will review and score the remaining applications.

Outreach efforts by ODW increase awareness of the opportunities available through the Planning and Design Grants. Staff post information on the VDH–ODW website and in the *Virginia Register* during January of each calendar year. The information includes eligibility information, application information and deadlines, program workshop dates, contact information, as well as other useful information.

Performance: Waterworks owners submitted seven applications totaling $240,000 to the Planning and Design Fund to-date during calendar year 2022. ODW receives applications on a rolling basis during the year, so there may be more to come in before end of year. ODW has made an offer to five waterworks totaling $175,000; two were ineligible. ODW continues to reimburse projects cost for offers from previous years with approximately $70,000 expended on prior year projects. Five projects from prior years remain active with two from 2020 and three from 2021. TCDO staff continue to follow-up on these projects to ensure completion.

2.14 Emergency Preparedness

Relationship to TMF Capacity: Preparedness, response, and recovery for/from natural disasters and technological incidents are emerging as a capacity concern for Virginia waterworks. Waterworks preparedness leads to resilient waterworks capable of continuing operations, meeting state and federal requirements, and ensuring public health protection during these incidents. ODW provided a variety of training, exercises, and planning tools to assist waterworks' preparedness.

Performance: ODW Emergency Preparedness and Security personnel provided assistance across the state through direct technical assistance, participation in training and tabletop exercises, and support of emergency response agencies as described below:

Staff assisted a waterworks that had electrical equipment damaged and resulted in loss of water and fire flow by securing bottled water through the Virginia Department of Emergency Management and issuing a Boil Water Advisory. Staff monitored runoff from fire suppression at a hardware fire that had the potential to affect a surface water source. ODW provided coordination and deployment of containment tools that prevented contamination. ODW monitored impacts from a junkyard fire that could have impacted local private and regulated water supplies for contamination, none was detected.

The ODW assisted a regional water utility with preparation for potential impacts from a dam that was about to breach and would have released coal ash. Coordination and cooperation amongst ODW and the vested parties ensured that the dam did not fail.

Staff responded to a large-scale multi-day power outage in January 2022 resulting from heavy snow. They provided technical assistance and access to resources for waterworks to return to operation following the outage.

ODW responded to a request from the Virginia Fusion Center to alert waterworks of a potential cybersecurity threat to waterworks.

The Emergency Coordinator assisted two utilities with responses to detections of PFAS in private wells and a surface water supply.

They assisted waterworks that are having difficulty procuring treatment chemicals due to supply chain disruptions.

The ODW participated in three exercises: Occoquon River Spill exercise, EPA Cybersecurity exercise, and the Virginia Emergency Support Team exercise.

The Coordinator presented at the Annual Virginia HAB Taskforce meeting and the Flood Emergency Response Plan (FERP) Workshop. She assisted with planning for the May 2022 Flood Resilience Training, continued participation in the Virginia Drought Monitoring Task Force and served as a resource for the Virginia Water and Wastewater Response Network (VAWARN).

2.15 Source Water Assessments

Relationship to TMF Capacity: Source water assessments serve as a tool for water supply resource planning and, specifically, to support waterworks' managerial capabilities. ODW performs assessments on new waterworks and updates existing assessments resulting from routine sanitary surveys and other technical assistance opportunities offered by the agency.

Performance: ODW field staff provided 484 preliminary or updated source water assessments. ODW continuously refines the source water assessment procedures and the agency's Geospatial Information System database layers and toolset. This work helps to improve the source water assessment reporting to waterworks.

2.16 Source Water Protection Program

Relationship to TMF Capacity: The Source Water Protection Program (SWPP) utilizes contract services, Wellhead Protection Implementation Projects Grants, and ODW staff technical assistance to help small community waterworks and localities (serving less than 50,000 persons) with development and implementation of source water protection plans. The resulting plans enable the participating waterworks to take steps to safeguard their drinking water sources by managing and controlling activities near the source that could compromise water quality and quantity. Additionally, ODW participates in interagency environmental reviews that serve as a barrier of protection in Virginia's multi-barrier approach to safe drinking water. These reviews minimize environmental impact from proposed projects to protect Virginia's waters and public health.

Performance: During the 2022 reporting period, the collective efforts of VDH contractors and Virginia Rural Water Association (VRWA) produced source water protection plans (SWPPs) for 40 community water systems (CWS). According to the results of the annual survey, there were 78 systems that meet the definition of having a strategy in place (SIP), including 50 "Yes Coastal Plain Construction" (YCPC) systems. All YCPC systems were assumed to not need a SIP change, regardless of the response from the system, because their classification is based on construction requirements. For all systems, we attempted to determine if they meet both the 2014 and 2021 definitions of substantial implementation (SI). Of the systems providing a response, 78 appear to meet the 2014 definition. This includes 26 systems with a SIP, 50 YCPC systems; and 2 systems where their documentation could not be considered a SIP, but an implementation action was reported. Success stories from two VRWA projects are in Appendix D.

The following charts summarize Virginia's FY21 results pertaining to EPA's Strategic Targets SDW-SP4a (Community Water Systems covered by Substantial Implementation) and SDW-SP4b (Population covered by Substantial Implementation).

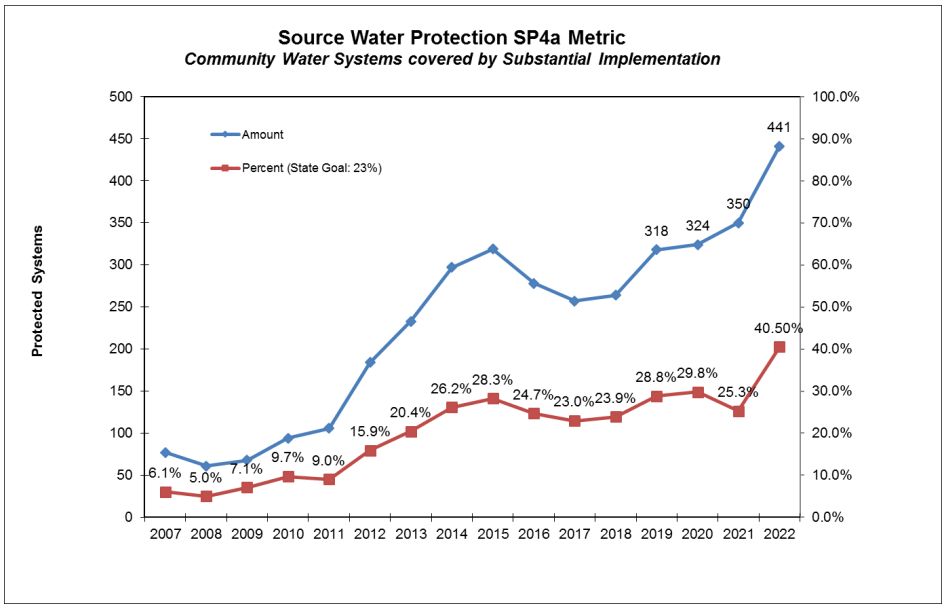

Figure 1: Source Water Protection SP4a Metric: CWSs covered by substantial implementation

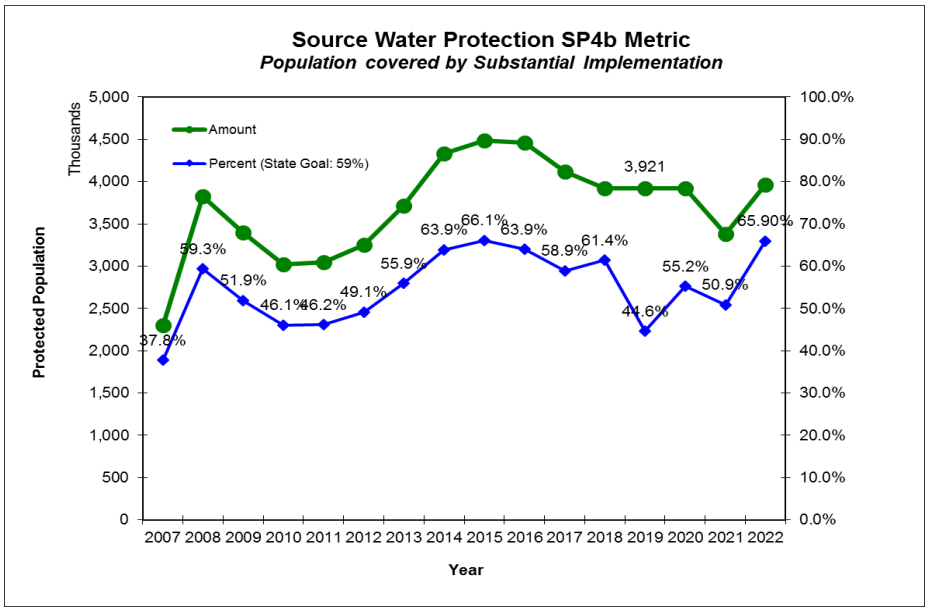

Figure 2: Source Water Protection SP4b Metric: Population covered by Substantial Implementation

The VDH issued the 2022 Wellhead Protection Implementation Projects Request for Applications on April 2, 2022. The grant panel has a budget of $100,000 to fund source water protection grant

projects. After evaluating each application, the panel came to the conclusion to fully fund the Town of Purcellville's project to fence five wells and partially fund Middleburg's design, construction and contingency plans; excluding their Availability Fees.

Due to a limited budget, the panel was not able to include both applications from New Kent in awards because Purcellville and Middleburg scored higher on their evaluations. Award decisions include:

The Town of Purcellville - Fully fund $45, 437.00
The Town of Middleburg - Partially fund $54,563
The Town of New Kent Preliminary Engineering report - Unable to fund
The Town of New Kent Phase I & II study - Unable to fund

Both projects fully use the $100,000 budgeted for this grant program. There were 4 applicants in total; staff distributed a total of $100,000 between 2 awardees. The performance cycle for these awards ends on June 30, 2023. Performance information about the Wellhead Protection Implementation Projects Request for Applications is available at:

https://www.vdh.virginia.gov/drinking-water/source-water-programs/source-water-protection-assistance-funding-opportunities/

2.17 Small Engineering Projects Program

The Small Engineering Projects Program utilizes the services of three engineering consulting firms for small projects at financially stressed waterworks serving typically fewer than 3,300 consumers. These projects include design and specifications for small construction at a waterworks that may not qualify for a DWSRF planning and design funded project. The program is now in its eighth year. During this reporting period, two new projects were initiated which involved plans and specifications for corrosion control at two schools. The Small Project Engineering program supports small waterworks in complying with the engineering requirements of the Regulations and facilitates the resolution of public health issues in drinking water systems.

2.18 Staffing

Capacity Development staff are part of the TCDO Division of the Office of Drinking Water. The Capacity Development team reports to the TCDO Director and consists of three full-time regional sustainability coordinators with one serving as supervisor, one non-community sustainability coordinator who works with systems across the state, primarily with TNCs, and a part-time assistant (this position is currently vacant). TCDO additionally includes an Operator Training Coordinator in the Operator Certification Program. The Division considers field office staff time technical assistance; however, the time tracked for staff did not identify specific tasks that the field offices conduct which should be included in the technical assistance category. This report highlights some efforts that the field office staff conducted during the reporting year in Appendix F. This is not a comprehensive list of activities but shows the types of assistance provided by field office staff.

2.19 Financial Capacity Building

The Virginia Resources Authority (VRA) provides direct technical assistance to waterworks on financial capacity on behalf of ODW. VRA charges their time and effort to the Drinking Water

State Revolving Fund Program. They provide financial analysis and guidance to waterworks that are potential DWSRF construction loan candidates.

2.20 Receivership Program

Section 32.1-174.3 of the *Code of Virginia* authorizes the State Health Commissioner to petition the circuit court of the jurisdiction for the appointment of a receiver. Although the Code authorizes the process, there are currently no existing state funds for this program. ODW intends to utilize DWSRF 15% set-aside funds to meet the needs of this "program." ODW will request funds be paid to third-party service providers to manage the receivership as ordered by the court system. This management will constitute direct technical assistance under the 15% set-aside provisions of the DWSRF. ODW limits this assistance to a specified period not to exceed 24 months. Technical assistance will address technical, managerial, and financial factors throughout the waterworks organization. ODW cannot utilize these funds for the renovation, expansion, or operations and maintenance of the waterworks. ODW anticipates conducting emergency procurements for technical assistance to specific waterworks as described in the 2022 revision of the EPA approved Capacity Development Strategy. This year, ODW initiated receivership proceedings in order to bring stability to waterworks whose owner effectively abandoned the systems. Details are in Appendix F.

2.21 Implementation Review

ODW utilizes the sanitary survey program as a means to assess waterworks' TMF capacity. During sanitary surveys, ODW field staff conduct thorough evaluations of waterworks infrastructure and water treatment processes. Staff reviews water quality-monitoring records, operational practices and controls, and assesses waterworks staff qualifications. ODW performs sanitary surveys more frequently than required by EPA, from once every six months to once every three years; staff base the frequency on the population served by the waterworks and its facilities. ODW inspects larger waterworks more frequently. The sanitary survey process identifies, prioritizes, and targets waterworks' capacity needs. If a waterworks demonstrates little or no capacity, ODW addresses the issues very similarly to the methods utilized for new systems by providing the following:

- Follow-up sanitary surveys and increased frequency of future sanitary surveys,
- Regular reminders of compliance requirements (*i.e.*, monitoring, reporting, etc.),
- Development or update of a WBOP,
- Referral to upcoming formal and informal training,
- Direct one-on-one assistance by Capacity Development staff,
- Referral to other technical assistance providers,
- Notifications and reminders of upcoming funding opportunities,
- Warnings from ODW's enforcement staff, and/or,
- Initiation of enforcement action.

2.22 Update on Waterworks with an ETT ≥ 10

The July 2022 ETT report is included in Appendix C. The July 2022 ETT includes one community waterworks and one transient non-community waterworks with a score of more than 10. In the July 2021 ETT, 15 community waterworks, two transient non-community waterworks, and one

non-transient non-community waterworks had a score of more than 10. These scores reflect an 88.9% decrease in the number of waterworks with an ETT of more than 10 from the July 2021 ETT to the July 2022 ETT.

The use of the EPA's ETT will continue to serve as a tool to measure the improvement in a waterworks' TMF capabilities. As shown in Figure 3, below, the number of waterworks with a July ETT score greater than 10 has decreased since 2019. The numbers have shown a general downward trend to 2022. Between 2021 and 2022, Field Office staff have worked closely with waterworks owners and operators to bring waterworks back into compliance. Compliance and Enforcement staff support the Field Office staff to improve the focus on out-of-compliance systems and enforcement efforts across the state. Capacity Development staff provide funding assistance and work with out-of-compliance waterworks with Waterworks Business Operation and Asset Management Plans. Capacity Development engages in Field Office staff and Compliance and Enforcement staff monthly meetings and contribute to discussions to reduce waterworks noncompliance.

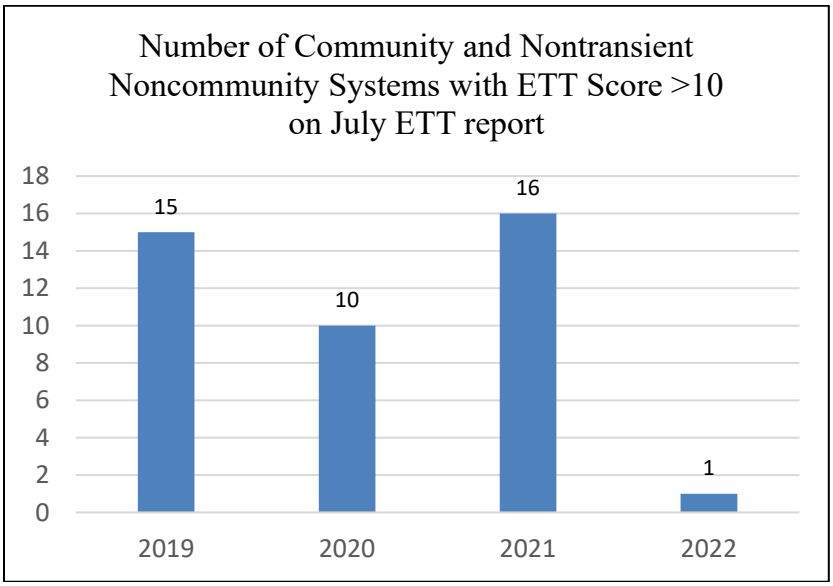

Figure 3: Number of Community and Nontransient Noncommunity Systems with ETT Score >10 on July ETT report

2.23 Program Progress and Performance Measures

Community and nontransient noncommunity waterworks are required to have licensed operators. Since 2008, there has been a gradual increase in waterworks fulfilling this requirement, with compliance exceeding 99% for the last seven years.

Table 3, below, shows the breakdown of operators by system type as of Sep 27, 2022, based on information gathered from SDWIS. Since DPOR does not track by type of system served but only tracks operators by class, these numbers may differ slightly from other reported percentages of operators. In addition, this data does not count more than one operator per system, only if the system had an active designated operator during the reporting period.

Table 3: Percent of Waterworks with Licensed Designated Operators as of September 27, 2022

Percent of Waterworks with Licensed Designated Operators As of September 27, 2022			
System Type	**# of Systems**	**# of Systems with Assigned Designated Operator**	**% of Systems with Active Designated Operator**
C	1078	1073	99.54%
NTNC	496	490	98.79%
Total	***1574***	***1563***	***99.30%***

Further information regarding licensure of operators in Virginia is located in the "Annual Report on Operator Certification in Virginia" for the reporting period of October 1, 2021, to September 30, 2022. Table 4, below, depicts the number of licenses in Virginia by class, and the net gain or loss. The total number of licensed waterworks operators in Virginia is 2254 as of September 27, 2022. This reporting period revealed a gain of 42 operators in total. Staff attributes this increase to operators taking advantage of education opportunities. VDH-ODW will continue offering low-cost education solutions, which are now more important than ever. Data obtained from DPOR on Sept 27, 2022.

Table 4: Number of Operators by Class as of September 27, 2022

Number of Operators by Class as of September 27, 2022			
Class License	Number of 2021 Licensees	Number of 2022 Licensees	Net Gain (Loss)
6	222	224	2
5	240	248	8
4	321	324	3
3	369	382	13
2	334	340	6
1	726	736	10
Total	***2212***	***2254***	***42***

2.24 Projected Activities

As described in previous sections of this report, ODW has increased partnership efforts with technical assistance providers and other organizations. These efforts increase waterworks' TMF capacity by providing training, outreach materials, and field services. Capacity Development partnerships have included organizations such as Virginia Tech, VRWA, SERCAP, Environmental Finance Center Network (EFCN), planning district commissions, USDA-RD, and others. ODW will look to expand and improve partnerships with other organizations. The expected benefit will be to reduce noncompliance and extend Capacity Development Program initiatives. ODW collaborated with partners at SERCAP and VRWA, connecting them with

waterworks that needed leak detection. ODW continues to contract Virginia Tech for training seminars and workshops for waterworks staff including operators.

2.25 Modifications to Strategy

Virginia has an approved, revised Capacity Development Strategy to EPA that incorporates the requirements of America's Water Infrastructure Act of 2018 (AWIA) Section 2012, which amends the SDWA to require Virginia to amend its Capacity Development Strategy to describe how Virginia will encourage the development and use of Asset Management Plans (AMPs). Asset management planning is an important part of long-term prioritization of the maintenance, repair, improvement, and sustainability of waterworks. This is reflected in the revised Strategy. It includes Virginia's strategy for supporting, encouraging, training, and assisting waterworks with Asset Management Planning. This reporting period, as indicated in other sections, has seen the deployment and implementation of most of the initiatives contained within the existing Strategy.

ODW began to formalize a process to use AMPs in Virginia prior to the enactment of AWIA. ODW and participating organizations are continuing to train staff on AMPs and encouraged their use as a sustainability tool. ODW provides funding mechanisms for waterworks to develop AMPs that include the five core components: (1) Asset Inventory, (2) Life Cycle Costs, (3) Level of Service, (4) Criticality, and (5) Long-term Funding. ODW can fund AMPs through the Planning and Design Fund Program, the Small Project Engineering Program, and as an additional engineering cost associated with a DWSRF-funded construction project. ODW requires an AMP as part of a DWSRF project when a waterworks does not already have a current plan or has not updated it within the last 5 years. To encourage asset management planning, ODW will make available the lesser of the actual cost of an AMP or $15,000 as principal forgiveness when requested as part of a construction funding offer.

ODW staff trains waterworks staff on AMPs through one-on-one discussions and also through the "Money, Management and Methods" and "Establishing a Successful, Sustainable Waterworks" classes. Staff also refers water utilities to technical assistance partners for assistance completing AMPs. ODW is continuing to provide in-person and virtual training to waterworks owners and operators on this important tool to enhance TMF capacity and move towards waterworks sustainability.

PART 3: ADDITIONAL REPORTING REQUIREMENTS AND OTHER CONCERNS

3.1 Documentation of Ongoing Implementation

ODW submits this report to EPA as evidence of the Commonwealth of Virginia's commitment and implementation of the Capacity Development Strategy for waterworks owners and operators in the Commonwealth. This report covers the federal fiscal year 2022, from October 1, 2021, through September 30, 2022. Appendix D contains information regarding technical assistance providers contracted through EPA. ODW provides this information as supplemental documentation to any required reporting from SERCAP, VRWA, Virginia Section of the American Water Works Association (AWWA), and EFCN.

3.2 Report to the Governor

The Commonwealth of Virginia, Department of Health submitted the report "Efficacy of Virginia's Waterworks Capacity Development Strategy" on September 21, 2020, to the Governor of Virginia. Additionally, ODW submitted the report to EPA and published the report on the VDH–ODW website at: https://www.vdh.virginia.gov/content/uploads/sites/14/2020/09/2020-Final-Governors-Report-with-Letterhead.pdf

The next Triennial Report is due by September 30, 2023.

3.3 DWSRF Assistance to Non-Complying Waterworks

The Commonwealth of Virginia's Financial and Construction Assistance Program requires that applicants meet eligibility requirements. Program eligibility includes the following criteria:

- An owner of a community waterworks or nonprofit non-community waterworks is eligible, except the state and federal government. 42 USC § 300j-12(a)(2).
- Section 1452 of the SDWA (42 USC § 300j-12(a)(3)) states "…no assistance… shall be provided to a public water system that– (i) does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this subchapter; or (ii) is in significant noncompliance with any requirement of the national primary drinking water regulations or variance." However, a waterworks may receive assistance if use of funds will ensure compliance and the owner agrees to undertake appropriate changes in operations (including ownership, management, accounting, rates, maintenance, consolidation, alternative water supply, etc.) to assure compliance over the long term.
- Section 32.1-172 of the *Code of Virginia* requires that a waterworks owner obtain a permit from the State Health Commissioner before establishing, constructing, or operating a waterworks. ODW's permitting process includes a WBOP, which addresses the waterworks owner's ability to supply safe drinking water over the long term by identifying sufficient technical, managerial, financial, and operational abilities.

3.4 Evaluation of TMF Capacity for Waterworks Seeking DWSRF Assistance

ODW requires documented criteria be submitted with construction, and planning and design fund applications to ensure that applicants have TMF capacity prior to obtaining assistance through the DWSRF. Specific program criteria follow:

Financial

- ODW collaborates with VRA to ensure that all potential recipients of DWSRF assistance have adequate financial capacity. VRA reviews annual audits, tax records, analyzes rate structures, cash flow, and completes a comprehensive credit review.
- Financial requirements of the program include:
  - Compliance with the *Virginia Public Procurement Act*,
  - Compliance with *Office of Management and Budget Circular A – 102,*
  - Compliance with the *Uniform Financial Report Manual* and the *Single Audit Act.*

Technical

- ODW completes a comprehensive technical evaluation of all potential recipients of DWSRF funds. Individual evaluations include review of compliance with the Regulations, ETT review, routine sanitary survey review, and an evaluation completed by the ODW Field Office staff. This review ensures that ODW provides no assistance to waterworks that do not have TMF capacity to ensure compliance with the SDWA, unless the assistance resolves the noncompliance.
- Technical requirements of the program include:
  - An environmental review to include environmental impacts as well as measures (alternatives, prevention, or mitigation) which could minimize adverse impacts from the construction of the project.
  - Section 32.1-172 B of the *Code of Virginia* requires a person to apply to the ODW field office for a permit prior to the establishment, construction, or operation of a waterworks.
  - A Preliminary Engineering Conference is required. This provides for an exchange of information between all parties and ensures adherence to health protection and compliance objectives.
  - A Preliminary Engineering Report (PER) is required and must be prepared under the supervision of a Virginia licensed professional engineer. Information required for the PER, as referenced in 12VAC5-590-200 A of the *Waterworks Regulations*, will be determined during the Preliminary Engineering Conference. The DWSRF reserves the right to fund only the lowest cost alternative or the feasible options.
  - Plans, specifications, and construction documentation are required. Plans and specifications must comply with 12VAC5-590-200 of the Regulations. Construction documents must include:
    - Compliance with *Equal Employment Opportunity Act of 1972*
    - Certification on *Prohibition of Segregated Facilities* (1998, as amended in 2015)
    - Compliance with minority and women's business enterprise goals
    - Compliance with the *Civil Rights Act of 1964*
    - Compliance with *Age Discrimination Act of 1975, Rehabilitation Act of 1973*, and the prohibition against sex discrimination; and,
    - Utilization of small businesses in rural areas.
  - A permit is required prior to the construction or operation of any waterworks in accordance with 12 VAC 5-590-190 of the *Waterworks Regulations*.

Managerial

- ODW completes a general managerial review of all potential DWSRF recipients. Staff conducts this review using compliance information, review of sanitary surveys, review of budget and rate information, and other information provided with each DWSRF application.
- Managerial requirements of the program can include a WBOP when additional information is required. Recipients are required to submit the WBOP and receive approval prior to DWSRF assistance.

  The WBOP includes eight parts, as follows:

- Parts 1 through 4 consist of written statements, charts, or tables that describe the waterworks and its history, staffing arrangements, management and operations policies and procedures, and facility planning,
- Part 5 consists of financial worksheets that summarize the waterworks' budget and financial resources,
- Part 6 summarizes any sustainability improvements identified in the previous sections that would improve TMF capacity,
- Parts 7 and 8 include a checklist of WBOP submittal attachments, and a certification statement,
- The WBOP handbook is available to the public at: https://www.vdh.virginia.gov/drinking-water/capacity-development/waterworks-business-operations-plan/ ,
- The WBOP web resources consist of the following:
    - Instructions for completing the WBOP for community and non-transient noncommunity waterworks
    - Companion financial worksheets in Excel format
    - A simplified worksheet for transient noncommunity WBOPs.

3.5 DWSRF Success Stories

The DWSRF Annual Report was deferred for this year. Instead, it will be submitted to EPA next year by September 30, 2023, and it will contain two highlighted projects.

3.6 Capacity Development Success Stories

Capacity Development – Staff Achievements

Capacity development staff is part of the Training, Capacity Development, and Outreach Division of ODW. Five full-time staff actively support the Capacity Development Strategy for the reporting period. Four of the full-time positions are "Sustainability Coordinators." The Sustainability Coordinators came from backgrounds as ODW Environmental Health Specialists (Inspectors). They provide direct technical assistance to both waterworks and other ODW staff. During the reporting period, staff:

- initiated, coordinated, and provided instruction at training events for waterworks
- made marketing efforts to increase the number of waterworks personnel attending training events
- collaborated with the Financial Construction and Assistance Program to host funding workshops for waterworks in Virginia.
- worked with utility boards and staff to provide regulatory insight, discuss technical issues, and offer suggestions for funding options
- reviewed 30 applications in the first round and are reviewing 18 applications in the second round of DWSRF and BIL Construction Applications for TMF capacity. The process involves making recommendations for improvements to TMF as requirements for funding offers.
- collaborated with the Eastern Research Group to present a Funding and Asset Management Training in rural Southside Virginia.

Capacity Development staff works with waterworks across the state on complex issues that often take a long time to resolve. What follows are a few progress reports and success stories from the past year:

Kempsville Mennonite Church School is a Nontransient Noncommunity (NTNC) waterworks in Virginia Beach. In 2016 and 2019, the school exceeded the action level for lead and was subsequently required to install corrosion control treatment. FCAP and TCDO staff worked together, with information provided by Southeast Virginia Field Office (SEVFO), to formulate the best course of action for the school to take to apply for funds for the required remediation of their waterworks. Ultimately, it was decided that the school was a perfect candidate for the Small Project Engineering Services Grant. TCDO requested a task order from the firm contracted to serve that area. The firm was asked to do a mini-preliminary engineering report to evaluate options for remedying the lead issue and the design of an treatment system for the school, including possible removal and replacement of all premise plumbing containing lead. At this time, the project task order has been approved and notice to proceed issued to the consulting engineer. They are working directly with the school to evaluate and design an optimal remedy.

Windy Hill Sports Complex is a Transient Noncommunity (TNC) waterworks in Chesterfield County. Beginning in the spring of 2022, the waterworks had multiple positive routine and follow-up bacteriological samples. Prior to the aforementioned positive samples, the waterworks had over a decade of clean sampling history. The positive samples triggered Level One and Two Revised Total Coliform Rule (RTCR) assessments. The assessments yielded no likely cause of the unexplained positive bacteriological samples. Flushing, shock chlorination, and resampling yielded the same positive results. ODW required the owner to install disinfection treatment if the problem could not be identified and addressed. The owner of the waterworks reached out to TCDO for possible funding assistance for the instillation of disinfection. After speaking with the owner, one of TCDO's Sustainability Coordinators informed them that there was no funding available for TNC waterworks, but he did offer to stop by and put one more set of eyes on their system before they went forward with the expense of installing disinfection treatment. During the visit, staff noticed that the overflow line on their water softener was connected to an open-air drain with no back flow prevention. The overflow line was routed to an open-air p-trap, and the line was at a lower elevation than the bottom of the p-trap, which could allow for back siphonage from the drain. Staff informed the owner and their district engineer of his findings. Following the visit, ODW required the owner to have the drain line properly plumbed with a backflow prevention device installed between the softener and drain. Once clean, bacti samples were submitted, the ODW amended the requirement for disinfection treatment and the system returned to quarterly sampling.

The Town of Keysville, located in Charlotte County, received multiple NOAVs for exceedances of disinfection byproducts (DBP). The town water supply is a surface water reservoir, and the surface water plant has an inadequate aeration system. They struggle with water age and DBP problems. Keysville applied for and was awarded two Planning and Design Grants. One is for engineering plans and specifications to allow for the necessary construction of the connections of the wells to the water supply. The other is for a Preliminary Engineering Report (PER) for a 5-year plan of the operations and construction at the waterworks. The detailed report will include contingency planning for a failed well(s) and/or surface water plant. It will provide multiple options for accomplishing the town's goals for the rehabilitation of the surface water plant. Addition of well water to the source supply is expected to result in a decrease in DBPs due to lower organic matter that will interact with chlorine disinfection. The wells will provide additional

supply if the surface water treatment plant is unable to meet demand. The wells will be able to be used while the surface water plant is taken offline for long overdue maintenance to the plants aeration and intake systems. Lastly, they will net a cost savings of around $100,000 per year on water production which will be used to pay for the updates to the surface water plant. This plan will serve as a solid foundation for sustainable growth and operations of the waterworks moving forward.

The Meadows Apartment Complex is a community waterworks in Franklin County. As part of a standard operations permit requirement, the owner was required to submit waterworks business operations plan (WBOP). TCDO staff met with the owner to in July of 2022 to provide technical assistance on the outstanding portions of the draft plan. During the meeting, staff helped the owner develop a budget and the foundation of an asset management plan. Staff also discussed ways to improve the technical, managerial, and financial capacity of the water system. One initiative the waterworks plans to undertake is to individually meter apartment buildings. None of the buildings are currently metered. Following the meeting, the owner worked with their operator to develop standard operations procedures and safety protocols at the waterworks. The waterworks owner attended the Money, Methods, and Management (MMM) in Richmond the following week, which also helped increase their capacity to run a sustainable waterworks. TCDO is pleased with progress that has been made thus far.

E. L. Goddard Inc. owns seven small, rural, regulated waterworks in Northumberland County, in addition to other smaller systems that do not meet the definition of a waterworks. The owner has been under a Consent Order to correct problems at the systems that largely revolved around failure to complete compliance sampling. Over the past year, the owner has continued to pursue sale of the systems and, as an intermediary step, contracted with the purchaser to operate the systems. This has resolved sampling issues and brought the systems back into compliance.

TCDO staff assisted the Field Office staff during a routine inspection for the Town of Goshen. This past winter, the Town experienced a water shortage along with reduced system pressure issues that were due to a distribution main valve being only partially open. The Town is fed by an unfiltered, grandfathered spring and has a contracted operator that is on-site about once a month while the Town clerk and a maintenance employee run the daily system chlorine checks, meter readings, and log pump hours and do routine repairs to the chlorine feed pump and maintain chlorine solution tanks. The Town clerk is currently working on obtaining the required Class 6 Waterworks Operators License from the Department of Professional and Occupational Regulation. They will receive money directly from the Virginia General Assembly to address the repairs that were made during that time, and they are currently working on a Planning and Design Grant Application to complete a whole system inventory and identify improvements that would address the Town's deficiencies. Discussed during the inspection was the need to develop an Asset Management Plan, Waterworks Business Operations Plan and a Capital Improvement Plan.

The Four Winds Campground, located in Caroline County, is required to complete a WBOP in order to satisfy a Special Order. This rural community waterworks serves approximately 1,000 connections with around 50 year-round residents. Over the past year, Capacity Development staff has been working with them to complete a Waterworks Business Operations Plan. Since the system has lacked leadership in the past, records for the waterworks have not been in good order and finances were unclear. Throughout this process, Four Winds has developed a waterworks budget, assessed additional fees to lot owners to cover waterworks expenses, gathered maps and

utility records, begun developing standard operations procedures, and found information on an old easement for their elevated storage tank across the street. They received assistance from the Community Engineering Corps (CEC) to begin developing an asset inventory. That inventory is being used for a Preliminary Engineering Report (PER) funded through DWSRF Planning and Design Funds. They also received $100,000 in ARPA funds to address critical distribution system issues and add a generator. The progress here is indicative of what can happen when waterworks have engaged leadership.

Early in 2022, TCDO staff met virtually with a representative with the Dickenson County Public Service Authority to discuss ongoing Disinfection Byproduct (DBP) issues. The Honey Camp section of the Dickenson County PSA receives water from the Town of Clintwood, which receives water from the John Flannagan Water Treatment Plant (WTP). The Honey Camp section of the PSA has experienced elevated Total Trihalomethanes (TTHM) results and has now exceeded the Operational Evaluation Level (OEL) due to multiple factors including increased water age from the WTP location, large storage tanks that provide fire protection but with decreasing daily water usage, and post chlorinating to meet the residual regulations. The PSA has installed tank mixing in a different location due to similar issues with water age and that has provided some help with reducing the DBP issue, but they are still struggling to control the DBPs to an optimal level. They are exploring the option of completing a Planning and Design Grant Application to investigate different ways of reducing the TTHMs in their system. In mid-2022, the Dickenson County PSA applied for and was awarded a Planning and Design Grant to start evaluating their distribution system in order to alleviate their ongoing DBP exceedance issues. Thompson & Litton plans to work with the DCPSA to identify the problems and offer solutions to reducing the TTHM and HAA5 levels in the distribution systems, which is extensive, starting at the John Flannagan Water Treatment Plant through the Town of Clintwood and then to the Honey Camp sections. The DCPSA population benefit is approximately 813 customers.

The Pine Hill Community Waterworks, located in Roanoke County, serves 21 rural connections. TCDO staff received a call from the Regional Field Office about the Pine Hill out of water. Staff began gathering information and went on site to investigate the situation. They found that the well pump and storage tank were fine but the booster pump that supplied pressure throughout the distribution system was inoperable. Due to the increased lead times in receiving parts, such as booster pumps, the waterworks owner ordered a new pump but could not get it quickly. Staff reached out to the Western Virginia Water Authority who was able to provide a properly sized pump within a few hours for Pine Hill to use until they could receive their ordered pump. Staff issued a precautionary Boil Water Advisory door to door for the residents, which was lifted following restoration of service and satisfactory bacti results.

A small waterworks owned by SESMA Utilities on Jerdone Island (Lake Anna in Louisa County) has been having difficulty maintaining water supply to the 35 customers. They had been working closely with staff from the Field Office who then reached out to TCDO for additional help. TCDO asked the Virginia Rural Water Association for assistance, including leak detection, to determine the main problems at Jerdone. VRWA went on site twice gathering information and doing leak detection. Their initial assessment was that it does not seem to be one single issue and will be going back to look into a few other possibilities. A compounding problem was that only about half of the connections are metered and those are not read. This is common among small waterworks and hampers efforts at addressing leakage. All parties met on-site for additional leak detection and discussion. During the visit, they discovered a well on a lot that had been drilled

without permission from the waterworks. The private well was connected to the house that was also served by the waterworks. Staff identified this as a cross connection and directed the owner to take prompt action, which they did. They also discussed impacts of staff shortages on customer service and responsiveness. The waterworks attended management training later in the year and expressed an interest in completing a Waterworks Business Operations Plan. Staff will continue working with this system to improve their sustainability.

Hillsboro, a town with only 29 residential water connections in Loudoun County, discovered their spring water source was under the influence of surface water and was required to begin a boil water notice in 2000. Beginning in 2001, the Town applied for Planning and Design Funds for a Preliminary Engineering Report to address the issues. The town worked for several years to secure approximately $4 million in affordable financing from various sources, including $737,000 in DWSRF assistance. Construction began in 2019 and consisted of connecting the town's new well to the existing water system and various other water system improvements. This project was completed in June 2020 and allowed the town to address a consent order and lift a 20-year boil water notice. In 2022, the Office of Drinking Water received an award from the Town of Hillsboro. The award letter states, "On behalf of the Hillsboro Town Council, the *ReThink9* project team and the residents of the Town of Hillsboro, we present this award with the utmost of gratitude to the Virginia Department of Health for your steadfast partnership and support to rebuild the Town of Hillsboro Water System and address the longstanding critical public health issues faced by our residences." The letter also states "…… the entire VDH team's extraordinary cooperation, innovativeness, guidance and commitment – over the course of many years – were crucial to the successful completion of the Town of Hillsboro's Safe Drinking Water Project..." and that "We are all fortunate to have such professional and hard-working public servants who are dedicated to ensuring the health and safety of all the citizens in the Commonwealth." Thanks to all who helped the Town of Hillsboro - the Culpeper Field Office, FCAP, Capacity Development, Compliance and Enforcement, and other groups from the "One ODW Team."

The success stories in the preceding paragraphs show the range of complexity of issues facing waterworks in Virginia. In its work to enforce state and federal drinking water laws and regulations, VDH uses a range of regulatory, compliance, and both technical and financial assistance tools to improve the capacity of the 2,789 waterworks in the state. VDH has found that while statewide programs and initiatives are able to ensure that most waterworks comply with the regulations, often VDH must take a case-by-case approach to affect lasting change at specific waterworks. In spite of many challenges facing the regulated waterworks community, VDH remains committed to its goal of protecting the health and promoting the well-being of all people in Virginia. Additional success stories are in Appendix F.

APPENDIX A
New Community and NTNC Waterworks
October 1, 2019 – September 30, 2022

Newly constructed facilities and existing facilities under new ownership are included. Please note that not all new waterworks listed have received operation permits.

County	PWSID	Waterworks Name	System Type	Activity Date
MONTGOMERY	VA1121230	FOUNTAIN WATERWORKS	C	1/1/2019
WESTMORELAND	VA4193702	OAK GROVE BAPTIST	NTNC	1/1/2019
NEW KENT	VA4127025	ALLIED PALLET COMPANY	NTNC	5/20/2019
RUSSELL	VA1167200	FINCASTLE ESTATES - RCPSA	C	6/1/2019
CUMBERLAND	VA5049110	ENVIGO – CUMBERLAND	NTNC	6/18/2019
AUGUSTA	VA2015195	GREENHOUSE CHRISTIAN LEARNING	NTNC	6/27/2019
ROCKINGHAM	VA2165580	MILL CREEK CHURCH OF THE BRETHREN	NTNC	7/24/2019
CHESTERFIELD	VA4041025	AL MADINA SCHOOL	NTNC	8/28/2019
HANOVER	VA4085930	WEE CARE	NTNC	9/17/2019
NOTTOWAY	VA5135178	MULLINS-STARK CAMP AND RETREAT	NTNC	9/19/2019
LOUISA	VA2109648	SALEM CHRISTIAN SCHOOL	NTNC	11/1/2019
NEW KENT	VA4127527	NEW KENT CHRISTIAN CENTER	NTNC	2/29/2020
SOUTHAMPTON	VA3175020	BELMONT PEANUTS	NTNC	4/4/2020
NORTHAMPTON	VA3131185	EASTVILLE COMMUNITY HEALTH CENTER	NTNC	4/30/2020
ACCOMACK	VA3001489	NANDUA MIDDLE SCHOOL	NTNC	5/4/2020
SCOTT	VA1169380	SCPSA-BIG MOCCASIN	C	5/13/2020
ALBEMARLE	VA2003450	LITTLE LEARNERS TRICOUNTY CHILDCARE	NTNC	6/8/2020
NORTHAMPTON	VA3131056	COASTAL PRECAST SYSTEMS	NTNC	7/24/2020
MADISON	VA6113184	MADISON COUNTY SCHOOL BOARD	NTNC	7/31/2020
PRINCE WILLIAM	VA6153082	PWCSA - CARTERS GROVE	C	9/30/2020
LOUDOUN	VA6107730	HAYDEN TECHNOLOGIES	NTNC	10/5/2020
ACCOMACK	VA3001016	ARCADIA MIDDLE SCHOOL	NTNC	12/9/2020
	VA3710850	NSA HAMPTON ROADS, MAIN BASE	C	1/5/2021
ARLINGTON	VA6013800	VIRGINIA HOSPITAL CENTER	NTNC	2/5/2021
RUSSELL	VA1167240	GLADE HOLLOW – RCPSA	C	8/10/2021
MADISON	VA6113130	FELLOWSHIP BAPTIST	NTNC	8/12/2021
PAGE	VA2139473	PAGE COUNTY HIGH SCHOOL	NTNC	8/16/2021
AUGUSTA	VA2015410	LIGHTHOUSE EARLY CHILDHOOD CENTER	NTNC	9/22/2021
ROCKINGHAM	VA2165620	NEW BEGINNINGS MONTESSORI SCHOOL	NTNC	1/31/2022

Appendix B

List of New Water Systems Violations

As of the July 2022 published ETT list, no "new" waterworks are priority systems according to EPA's Office of Enforcement and Compliance Assurance's Enforcement Targeting Tool (ETT).

PWSID	Waterworks Name	Violation No.	Violation Type	Violation Description	Analyte Name	Determination Date	Begin Date
VA1167200	FINCASTLE ESTATES - RCPSA	3	27	MONITORING, ROUTINE (DBP), MAJOR	CHLORINE	6/23/2021	4/1/2021
VA1167200	FINCASTLE ESTATES - RCPSA	4	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	6/23/2021	5/1/2021
VA1167200	FINCASTLE ESTATES - RCPSA	5	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	07/27/2022	06/01/2022
VA1167240	GLADE HOLLOW-RCPSA	1	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	06/03/2022	04/01/2022
VA2015195	GREENHOUSE CHRISTIAN LEARNING CENTER	1	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	11/15/2019	10/01/2019
VA2015195	GREENHOUSE CHRISTIAN LEARNING CENTER	3	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	4/20/2021	3/1/2021
VA2015195	GREENHOUSE CHRISTIAN LEARNING CENTER	2	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	2/19/2021	1/1/2021
VA2015195	GREENHOUSE CHRISTIAN LEARNING CENTER	5	1A	MCL, E. COLI, POS E COLI (RTCR)	E. COLI	09/08/2022	08/01/2022
VA2015195	GREENHOUSE CHRISTIAN LEARNING CENTER	6	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	05/06/2022	05/01/2022
VA2109648	SALEM CHRISTIAN SCHOOL	10	03	MONITORING, ROUTINE MAJOR	1,2,4-TRICHLOROBENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	11	03	MONITORING, ROUTINE MAJOR	CIS-1,2-DICHLOROETHYLENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	12	03	MONITORING, ROUTINE MAJOR	XYLENES, TOTAL	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	13	03	MONITORING, ROUTINE MAJOR	DICHLOROMETHANE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	14	03	MONITORING, ROUTINE MAJOR	O-DICHLOROBENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	15	03	MONITORING, ROUTINE MAJOR	P-DICHLOROBENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	16	03	MONITORING, ROUTINE MAJOR	VINYL CHLORIDE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	17	03	MONITORING, ROUTINE MAJOR	1,1-DICHLOROETHYLENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	18	03	MONITORING, ROUTINE MAJOR	TRANS-1,2-DICHLOROETHYLENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	19	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROETHANE	5/20/2021	1/1/2021

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VA2109648	SALEM CHRISTIAN SCHOOL	20	03	MONITORING, ROUTINE MAJOR	1,1,1-TRICHLOROETHANE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	21	03	MONITORING, ROUTINE MAJOR	CARBON TETRACHLORIDE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	22	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROPROPANE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	23	03	MONITORING, ROUTINE MAJOR	TRICHLOROETHYLENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	24	03	MONITORING, ROUTINE MAJOR	1,1,2-TRICHLOROETHANE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	25	03	MONITORING, ROUTINE MAJOR	TETRACHLOROETHYLENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	26	03	MONITORING, ROUTINE MAJOR	CHLOROBENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	27	03	MONITORING, ROUTINE MAJOR	BENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	28	03	MONITORING, ROUTINE MAJOR	TOLUENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	29	03	MONITORING, ROUTINE MAJOR	ETHYLBENZENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	30	03	MONITORING, ROUTINE MAJOR	STYRENE	5/20/2021	1/1/2021
VA2109648	SALEM CHRISTIAN SCHOOL	6	03	MONITORING, ROUTINE MAJOR	NITRATE-NITRITE	1/29/2021	1/1/2020
VA2109648	SALEM CHRISTIAN SCHOOL	32	66	LEAD CONSUMER NOTICE (LCR)	LEAD & COPPER RULE	12/15/2021	04/01/2021
VA2109648	SALEM CHRISTIAN SCHOOL	31	66	LEAD CONSUMER NOTICE (LCR)	LEAD & COPPER RULE	12/15/2021	09/29/2021
VA2109648	SALEM CHRISTIAN SCHOOL	33	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	12/13/2021	10/01/2021
VA3001489	NANDUA MIDDLE SCHOOL	2	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	5/17/2021	4/1/2021
VA3175020	BELMONT PEANUTS	1	34	MONITOR GWR TRIGGERED/ADDITONAL, MAJOR	E. COLI	1/4/2021	11/5/2020
VA3175020	BELMONT PEANUTS	2	03	MONITORING, ROUTINE MAJOR	NITRATE + NITRITE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	3	03	MONITORING, ROUTINE MAJOR	1,2,4-TRICHLOROBENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	4	03	MONITORING, ROUTINE MAJOR	CIS-1,2-DICHLOROETHYLENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	5	03	MONITORING, ROUTINE MAJOR	XYLENES, TOTAL	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	6	03	MONITORING, ROUTINE MAJOR	DICHLOROMETHANE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	7	03	MONITORING, ROUTINE MAJOR	O-DICHLOROBENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	8	03	MONITORING, ROUTINE MAJOR	P-DICHLOROBENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	9	03	MONITORING, ROUTINE MAJOR	VINYL CHLORIDE	3/2/2021	1/1/2020

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List of New Water Systems Violations

VA3175020	BELMONT PEANUTS	10	03	MONITORING, ROUTINE MAJOR	1,1-DICHLOROETHYLENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	11	03	MONITORING, ROUTINE MAJOR	TRANS-1,2-DICHLOROETHYLENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	12	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROETHANE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	13	03	MONITORING, ROUTINE MAJOR	1,1,1-TRICHLOROETHANE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	14	03	MONITORING, ROUTINE MAJOR	CARBON TETRACHLORIDE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	15	03	MONITORING, ROUTINE MAJOR	1,2-DICHLOROPROPANE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	16	03	MONITORING, ROUTINE MAJOR	TRICHLOROETHYLENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	17	03	MONITORING, ROUTINE MAJOR	1,1,2-TRICHLOROETHANE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	18	03	MONITORING, ROUTINE MAJOR	TETRACHLOROETHYLENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	19	03	MONITORING, ROUTINE MAJOR	CHLOROBENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	20	03	MONITORING, ROUTINE MAJOR	BENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	21	03	MONITORING, ROUTINE MAJOR	TOLUENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	22	03	MONITORING, ROUTINE MAJOR	ETHYLBENZENE	3/2/2021	1/1/2020
VA3175020	BELMONT PEANUTS	23	03	MONITORING, ROUTINE MAJOR	STYRENE	3/2/2021	1/1/2020
VA4041025	AL MADINA SCHOOL	14	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	8/30/2021	7/1/2021
VA4127025	ALLIED PALLET COMPANY	6	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	7/19/2021	6/1/2021
VA4127025	ALLIED PALLET COMPANY	9	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	09/19/2022	08/01/2022
VA4193702	OAK GROVE BAPTIST	6	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	08/22/2022	01/07/2022
VA5049110	ENVIGO - CUMBERLAND	27	01	MCL, SINGLE SAMPLE	NITRATE + NITRITE	6/3/2021	4/1/2021

Appendix C

Enforcement Targeting Tool – July 2022

All ETT scores at or above 11 are highlighted in yellow					***July 2022 SDWIS/FED Freeze*** *(For most states, this includes data up to 3/31/2022)*				
PWSID	**PWS Name**	**ETT Score**	**Sys has HB viols?**	**PWS Type**	**Population Served**	**Priority Since Date**	**Total Unresolved Points**	**On Path to Compliance?**	**School or Childcare**
VA5143150	CRESTVIEW TRAILER COURT	14	N	CWS	40	6/30/2022	13	New >= 11	N
VA2069505	WINCHESTER BATTLEFIELDS VISITOR CENTER	11	Y	TNCWS	25	12/31/2021	10	Previously >= 11 Not on Path	N

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Southeast RCAP EPA Projects: Oct 2021 - Sep 2022
***ERP** - Emergency Response Plan; **SVA** - Security Vulnerability Assessment;*
***CCR**- Consumer Confidence Report*

Location	County	Summary	Population
Amherst Town	Amherst	Assist in completing ERP	2,231
Amherst Town	Amherst	Assist in completing SVA	2,231
Barkay Estates	Tazewell	Completed CCR	85
Bayside	Accomack	Assist in completing CDP DW Funding	120
Big Creek/Coaldan	Tazewell	Completed CCR	300
Big Hill	Lee	Completed CCR	188
Brown's Mobile Home Village	Franklin	Completed CCR	75
Buchanan Town	Botetourt	Assist in completing Emergency Response Plan	1,178
Buchanan Town	Botetourt	Assist in completing SVA	1,178
Charlotte Court House Town	Charlotte	Assist in completing ERP	543
Charlotte Court House Town	Charlotte	Assist in completing SVA	543
Craigsville Town	Augusta	Assist in completing ERP	923
Craigsville Town	Augusta	Assist in completing SVA	923
Curve Road	Giles	Completed CCR	31
Daw Road	Tazewell	Completed CCR	43
Dinwiddie Assisted Living	Dinwiddie	Completing grant funding application	35
Eastern Tazewell PSA (4 Systems)	Tazewell	Completed CCR	3,097
Fleenortown	Lee	Completed CCR	160
Fries Town	Grayson	Assist in completing Asset Management DW	484
Glen Lyn	Giles	Completed CCR	92
Grassy Creek	Buchanan	Completed CCR	440
Greater Tazewell County PSA (8 Systems)	Tazewell	Completed CCR	12,575
Gretna Town	Pittsylvania	Assist in completing ERP	1,267
Gretna Town	Pittsylvania	Assist in completing SVA	1,267
Halifax County SA	Halifax	Assist in completing ERP	9,451
Halifax County SA	Halifax	Assist in completing SVA	9,451
Hardy Road Trailer Park	Bedford	Assist in performing Corrective Action Plan updates	200
Hardy Road Trailer Park	Bedford	Assisting in construction management of WIIN project	200
Hardy Road Trailer Park	Bedford	Investigated opportunities for regionalization	200
Hardy Road Trailer Park	Bedford	Assist in applying for WIIN grant	200
Hardy Road Trailer Park	Bedford	Completed CCR	200
Kilmarnock, VA	Lancaster	Assist in completing ERP & SVA	1,487
Lurich Water System	Giles	Completed CCR	48
McKenney Town	Dinwiddie	Assist in completing ERP	483
McKenney Town	Dinwiddie	Assist in completing SVA	483
Montvale	Bedford	Assist in completing ERP	698
Montvale	Bedford	Assist in completing SVA	698
Osborne Mountain	Buchanan	Completed CCR	69
Page Water System	Page	Completed CCR	50
Powell Mountain Water	Giles	Completed CCR	487
Shortt Gap	Buchanan	Completed CCR	64

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Southeast RCAP EPA Projects: Oct 2021 - Sep 2022 ***ERP** - Emergency Response Plan; **SVA** - Security Vulnerability Assessment;* ***CCR**- Consumer Confidence Report*			
Location	County	Summary	Population
St. Charles	Lee	Completed CCR	1,959
Sugar Grove Elementary Water Station	Smyth	Installing water bottle filling stations in school	758
Cumberland Co. VA	Cumberland	Assist in completing SVA	447
Cumberland Co. VA	Cumberland	Assist in completing ERP	447
Pamplin, Town	Appomattox	Assist in completing ERP	79
Pamplin, Town Vul	Appomattox	Assist in completing SVA	79
Quantico,Town	Prince William	Assist in completing ERP	480
Quantico, Town Vul	Prince William	Assist in completing SVA	480
Washington, Town ERP	Rappahannock	Assist in completing ERP	135
Washington, Town Vul	Rappahannock	Assist in completing SVA	135
Troutville Town	Botetourt	Assist in completing ERP	431
Troutville Town	Botetourt	Assist in completing SVA	431
Victoria Town	Lunenburg	Assist in completing ERP	1,752
Victoria Town	Lunenburg	Assist in completing SVA	1,752
Willing Workers System Division	Isle of Wight	Procured funding and contractor to address significant deficiencies and dissolve community water system	31

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

Virginia Rural Water Association Training

October 1, 2021, through September 30, 2022

Date	Title	Location	Attendees
10/6/2021	Management in the Real World	Wise	11
10/14/2021	Preparation and Submission of Your ERP	webinar	4
10/25/2021	Basic VDOT Class	Fishersville	13
10/26/2021	Energy Efficiency for W/WW Plants	Fishersville	60
10/26/2021	Knowing the Law and the VA 811 Updates	Fishersville	67
10/26/2021	Live DEMOS - Pumps, Blowers	Fishersville	52
10/27/2021	Live DEMOS - HDPE Municipal Water & Drones	Fishersville	51
10/27/2021	Reducing Jobsite Disaters : An Introspective Look at Trench Safety and Shoring	Fishersville	57
10/27/2021	Tips and Tricks to Assess your Aeration Blower System	Fishersville	60
11/3/2021	Building a Collaborative Team	Woodstock	18
11/17/2021	Permit-Required Confined Space	Bridgewater	20
12/8/2021	Utility Ethics Training	webinar	2
12/9/2021	Basic Pump Training Class	South Boston	10
12/13/2021	Operational & Safety for Chlorine	Bluefield	13
12/14/2021	Management in the Real World	Bluefield	7
1/11/2022	Class 5&6 Exam Prep - very small systesm	Webinar	3
1/13/2022	Activated Sludge	Webinar	14
1/13/2022	Managing Job Performance	Webinar	3
2/1/2022	Management in the Real World	Abingdon	20
2/10/2022	Activated Sludge	Webinar	7
2/17/2022	Conflict Resolution	Webinar	9
2/23/2022	Pump Class	Big Stone Gap	27
2/23/2022	Pump Class	Orange	
3/2/2022	WW Cert Class for 3&4	Tappahannock	3
3/9/2022	WW Cert Class for 3&4	Drakes Branch	2
3/17/2022	Troubleshooting Activated Sludge & BNR	webinar	3
4/25/2022	Managing the Impact of PFAS and LCRR on Your Facility	Roanoke	53
4/25/2022	Wastewater Microbiology & Process Control	Roanoke	53
4/26/2022	Backflow Protection as a Risk Management Tool – Post COVID-19	Roanoke	51
4/26/2022	Concrete and Plant Rehabilitation Services: Coating Concrete Structures	Roanoke	54
4/26/2022	Do You Need SCADA or Just DA?	Roanoke	61

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

4/26/2022	Emergency Prevention: Rehabilitation of Martinsville's High-Hazard Dam Concrete Spillway	Roanoke	39
4/26/2022	Field Instrument Surveys in Municipal Water/ Wastewater Plants	Roanoke	52
4/26/2022	Finding Cinderella's Shoe: Performance Based Blower Procurement	Roanoke	26
4/26/2022	Fundamentals of Underground Utility Locating	Roanoke	66
4/26/2022	How Technology Can Help Your Facility	Roanoke	30
4/26/2022	Making Your Lagoon Better Through Enhanced Biological Treatment	Roanoke	18
4/26/2022	Mixing Zones and Diffusers	Roanoke	35
4/26/2022	Overview of PVC Pipe for Water & Wastewate	Roanoke	35
4/26/2022	Preparing Your Water System for Emergencies and Potential Supply Chain Disruption	Roanoke	54
4/26/2022	Pressure Sewers: A Viable Alternative for Wastewater Collection	Roanoke	31
4/26/2022	Project Procurement: Comparing Three Types of Procurement Methods	Roanoke	50
4/26/2022	The Working Genius Model: Improve Your Team's Productivity and Morale	Roanoke	88
4/26/2022	Ultrasonic Water Meters	Roanoke	49
4/26/2022	Vertical Plant / Process Equipment: Forgotten Children of the Asset Management Discussion	Roanoke	36
4/27/2022	A New Light in Turbidity Measurement	Roanoke	34
4/27/2022	Artificial Intelligence for Prioritizing Water Infrastructure	Roanoke	23
4/27/2022	Precast Manhole & Vault Installation: Best Practices	Roanoke	24
4/27/2022	Repair, Replace and Capital Improvement w/o System Shutdown with Insert Valve	Roanoke	50
4/27/2022	The Science of Manholes	Roanoke	34
4/27/2022	Transform Your Utility into the Digital World	Roanoke	43
4/27/2022	UDSA Rural Development Funding Opportunities	Roanoke	41
4/27/2022	Utilizing GIS for Water and Sewer System Evaluation, Design, and Asset Management	Roanoke	61
4/27/2022	VFD Reactive Maintenance	Roanoke	60
4/27/2022	Visually Enhancing Asset Management to Maximize Outcomes	Roanoke	35
5/11/2022	Best Practices for LCRR Inventory Development	webinar	5
5/17/2022	How to Fund LCR Compliance	webinar	13
5/19/2022	A Toolkit for Building an Effective Lead & Copper Rule Program	webinar	12

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

5/24/2022	Tackling LCRR Compliance	webinar	10
5/26/2022	Permit Required Confined Space Training (afternoon)	Purcellville	12
5/26/2022	Permit Required Confined Space Training (morning)	Purcellville	38
6/14/2022	Hands-on Process Control for a BNR Facility	Tazewell	17
6/28/2022	PFAS - What is it and Where is it Going?	Woodstock	15
7/21/2022	Water Storage and Distribution	Rocky Mount	9
8/25/2022	Emergency! Emergency! Emergency! Are you Ready?	Roanoke	50
8/25/2022	Leadership in the New Millenium	Roanoke	52
8/25/2022	Paying the Bills - Where is the Money Coming From?	Roanoke	51
8/25/2022	Workforce Development	Roanoke	53
8/26/2022	Cyber Security: Identifying & Responding to Current & Future Threats	Roanoke	55
8/26/2022	Leadership Roundtable Discussion	Roanoke	36
9/7/2022	ABC Certification Training	Big Stone Gap	10
9/20/2022	Asset Management & Rate Setting Team (Pt 1)	webinar	23
9/21/2022	Operation of Water Distribituion in Coal Mining Regions	Wise	7
9/22/2022	Diving Deeper into the Science of Manholes	Woodstock	6
9/28/2022	Pump Operation & Maintenance	Big Stone Gap	27
12/6-7/2021	Basic VDOT Class	Prince George	8
4/4-5/2022	Intermediate VDOT training	Duffield	14

VRWA Leak Detection 2021 - 2022

Town of Buchanan

On June 30, 2022, the Town of Buchanan was prepared to host 5,000 to 10,000 additional people per day during their annual carnival and an increase in water usage was expected. Everything seemed fine until Buchanan noticed an alarming increase in water production. Buchanan's average daily water production of 53,000 gallons per day was steadily increasing to over 150,000 gallons per day. Buchanan staff believed that there must be one or more leaks in the distribution system. This issue could leave the town with a potential disastrous water crisis. The water sources were under stress and the equipment at the plant was beginning to show its age while it attempted to produce the required volume of water. Worst of all, if the situation continued to deteriorate, the town would have to issue a Boil Water Notice in the middle of hosting 10,000 extra people per day. The Town contacted the Virginia Rural Water Association (VRWA) for assistance on July 5th, 2022. The following day a VEWA Circuit Rider Brian arrived on-site to provide assistance.

During the first day that VRWA was on-site, the number and location of water sources, documents, and the changes that had occurred within the system were identified. By the end of the second day, the first potential leak location was excavated, but no leak was found. Almost ready to quit for the day, the crew started following another lead and a leak was found. After repairing a one-inch copper line on Lowe Street, it was determined that the leak accounted for about 24,000 gallons per day. A tremendous improvement, but somewhere the system was still losing an estimated 74,000 gallons per day and the water system was struggling to keep up. Later, a water leak started at a threaded connection leading to an air release valve in a manhole was discovered. The leaking water worked its way through the ground and slowly began to erode the soil until a sinkhole formed. Judging by the amount of water flowing out of the waterline and the flow of water in the sinkhole, this appeared to be the leak that Buchanan had been hoping to find. Luckily, the crew was able to replace the connection within the manhole and didn't have to excavate. The reported improvement from this repair totaled about 70,000 gallons of water per day. The cost savings associated with the assistance provided saved the town over $20,000 in outsourced services.

Town of Gate City
On July 30th a Circuit Rider for the Virginia Rural Water Association was contacted by the Superintendent of Water operations for the Town of Gate City. The town was having low water pressure issues in certain sections of town and suspected a possible leak. VRWA responded to Gate City on the morning of August 2, 2022. After consultation with the Town and referring to maps of the suspected areas, it was decided to take pressure readings at various fire hydrants to narrow down the search area.

Several hydrants were tested and it was decided that acoustic leak detection equipment would be utilized the next day to pinpoint the probable leak. After responding back the next day and using the acoustic equipment for several hours, a large leak on a 2 inch plastic service line below a 6 inch ductile iron main was located. The Town was extremely pleased that VRWA was able to respond so quickly and determine the leaks location.

Grayson County
A VRWA circuit rider was contacted by the Grayson County Water Authority on December 13, 2021 regarding a water leak which was hampering efforts to fill one of the system's elevated storage tanks. After rescheduling other projects, VRWA was able to respond to the request on the December 15 and met at a residence experiencing a great deal of water pooling in the yard. After taking a water sample from the puddle, a chlorine residual test was performed using a pocket colorimeter to measure the residual chlorine. The test did detect the presence of chlorine which ruled out a natural water source. The circuit rider spent several hours using a line locater and an acoustic locator and determined the leak was not in the same location as the water. Upon further consultation, it was decided to go up hill from the present location to listen on some service lines several hundred yards away. After approximately 45 minutes, the leak was detected on a section of main with a service line.

A repair crew respond the next day to fix the area of the distribution line that was leaking. The circuit rider returned to the area upon completion and found that the large puddle of water had

gone down significantly. It was determined the leak had flowed to that lower area. Grayson County Water Authority saved $3,000 in costs by utilizing the VRWA's assistance rather than hiring a private contractor for detection and repair.

Town of Cedar Bluff
The Town of Cedar Bluff spoke with a VRWA circuit rider in August, 2022 and requested a visit for leak detection due to a monthly thirty percent loss in water. The first week in September was scheduled to conduct the leak detection. The Town and the VRWA circuit rider started by checking the valves and subsequently the individual meters in each area of town. The entire town was canvased and three leaks in three separate areas were located. The leaks were found on two-inch galvanized lines. The Town and VRWA agreed that the leaks were of sufficient size to significantly reduce the water loss once repaired. The Town got help from a neighboring water system and a contractor to excavate and repair the leaks until the lines could be replaced.

The work the VRWA circuit rider performed saved the town $3,800 due to not having to hire a leak detection and engineering firm to locate valves and perform the leak detection. Future savings on treatment chemicals and lost water will be significant as well.

VRWA Source Water Protection 2021 - 2022

Town of Dungannon – District 9
The Town of Dungannon operates a microfiltration plant that is supplied by two wellheads. The system provides water within town limits as well as portions of Scott County. There is an interconnection with the Scott County Service Authority to provide additional water if needed. Since Dungannon utilizes wellheads for their drinking water, the plan focuses on preventing groundwater pollution. VRWA has successfully performed thorough leak detection services for the Town of Dungannon. Overuse of groundwater resources can lower the saturation zone and encourage the migration of pollutants in groundwater from distant sources. Leak detection is a simple and effective method to conserve the integrity of the water table and prevent migration of pollutants. The plan also provided the Town of Dungannon with educational materials regarding safe-septic practices and smart-wellhead practices. These materials can be distributed to help educate town residents on how they can help prevent groundwater pollution.

The plan also encourages the Town of Dungannon to contact the Scott County Soil and Water Conservation District. Virginia's Soil and Water Conservation Districts have many resources to assist communities with conservation of soil and water resources.

Town of Big Stone Gap – District 9
The Town of Big Stone Gap serves roughly 5,500 customers within town limits as well as portions of Wise County. Source water for the Big Stone Gap System comes from the Big Cherry Reservoir in Wise County. The reservoir is fed by the South Fork of the Powell River. Since Big Stone Gap utilizes a surface water source, the entirety of the watershed above the intake has to be considered in terms of source water protection. With such a large area of concern, the plan

encourages Big Stone Gap to work with the Lonesome Pine Soil and Water Conservation District. When dealing with a large portion of a watershed, it is critical to involve landowners within the watershed. The state soil and water districts specialize in working with landowners, particularly agricultural producers, to implement practices that can improve the integrity of soil and water resources. Upstream runoff containing sediment and agricultural/urban chemicals can severely damage the integrity of the Big Cherry Reservoir.

In terms of water conservation, using only as much as you need is a basic principle. With this in mind, VRWA performed a thorough leak detection survey of the Big Stone Gap water system. Subsequently, over a dozen leaks were found and repaired. This made a massive impact on the water loss percentage for the entire system. Thus, greatly reducing the withdrawal requirements at the source. This will help ensure that Big Stone Gap maintains a reliable drinking water system, even in times of drought.

Future Plans be completed in 2022 and 2023

- Town of Drakes Branch
- Gate City
- Town of Pound
- Thomas Bridge Water Corporation

Appendix D

EPA Grant Projects
Environmental Finance Center Network (EFCN)

For the period of October 1, 2021 through September 30, 2022, the Environmental Finance Center Network provided the following services to small systems in Virginia:

- The EFCN held a virtual workshop on 10/28/2021 called *Financial Resiliency for Virginia's Small Water Systems*.
- We also held a webinar on 3/24/2022 on *Assessing the Affordability of Drinking Water Rates* that was targeted to mid-Atlantic states.

They also held two additional in-person workshops in early October 2022 and will be included in next year's report.

Appendix E

2020 Triennial Capacity Assessment Questions

Technical	Is the waterworks score on the 2019 ETT ≤ 10?	Does the waterworks have sufficient operator coverage for sick leave and vacation?	Has the waterworks either not received significant deficiencies, or completed timely correction of all significant deficiencies?	Did the waterworks address recommendations from recent sanitary surveys?	Does the waterworks have a written policy for responding to customer complaints?	Are all plans and reports up to date and implemented (e.g. BSSP, LCR Plan, CCCP, CCR, WBOP, Sampling, etc.)?
Managerial	Did the waterworks consistently operate within 80% of its permitted capacity in the last 3 years?	Does the system meet Waterworks Regulations design and construction standards?	Are the waterworks facilities and appurtenances in good operating condition?	Are all service connections metered and is there a water accountability program in place?	Does the waterworks meet all established National Primary Drinking Water Standards?	Have all operators attended a technical training seminar or conference each year covered by this survey?
Financial	Did the waterworks pay the technical assistance fee?	Does the waterworks have at least 45 days cash on-hand to cover expenses?	Is the waterworks budget independent from subsidization by general funds, sewer funds or other funding sources?	Does the waterworks have a written Capital Improvement Plan?	Have the waterworks' rates been adjusted in the past three years?	Does the waterworks have an Asset Management Plan?

Appendix F

ODW Technical Assistance by Field Staff

The following Success Stories are a snapshot of assistance provided by staff posted at the six regional ODW Field Offices located across the state. Field Staff provide technical assistance on a variety of topics, with an emphasis on facilitating education of waterworks staff and ensuring compliance with the Safe Drinking Water Act and *Virginia Waterworks Regulations* requirements. Their work is important for improving TMF capacity at waterworks in Virginia through identification and resolution of deficits as well as on-site training and assistance.

Assistance to Waterworks during Enforcement Case

Jetty's Reach III, Greenfield Harbor II, and Spriggs Landing located in Northumberland County are systems owned by E. L. Goddard, Inc. The death of the system owner and operator left the wife to maintain the system. She was not keeping up with routine monitoring and temporary permit requirements for these systems. This led to compliance and enforcement issues and expired temporary operating permits. Staff provided assistance including meeting with the waterworks, communicating with potential operators and/or buyers of the systems, WBOP assistance, and providing information on requirements to resolve compliance issues. Virginia American Water has assisted in operating the systems and is looking to purchase all E. L. Goddard systems. All expired temporary permits were addressed, and standard operation permits were issued on August 5, 2022.

The Montgomery County Circuit Court issued an order on May 4, 2022, that appoints the Montgomery County Public Service Authority receivership of five New River Water Company waterworks in Montgomery County. The owner of the systems had moved out of state and effectively abandoned the systems, putting public health at risk. This solution is ensuring access to safe drinking water for the residents served by the five waterworks. The Order was a culmination of collaborative efforts across ODW, including Leadership, the Abingdon Field Office and the Divisions of, Compliance and Enforcement, Financial and Construction Assistance Program and the Training, Capacity Development and Outreach.

Emergency Response

Staff responded to a train derailment potentially impacting source water. Field staff communicated with the Department of Environmental Quality's Abingdon Office and waterworks in Tazewell County regarding a train derailment in Tazewell County in the early morning hours of January 31, 2022. Staff coordinated messaging from DEQ with the waterworks in the area to monitor for potential impacts to surface waters and treatment processes. DEQ determined later in the morning there was no impact to state waters.

Staff responded to flooding and declared State of Emergency. Buchanan County received approximately 5 inches of rain overnight on July 12, 2022 causing severe flooding in the Whitewood, Dismal and Clifton Fork areas of the County. Other areas downstream felt impacts of the floodwaters, including the Buchanan County Public Service Authority (BCPSA) shop and offices. The flooding caused erosion of roads, mudslides and damage to utility services. Approximately 1000 homes and businesses were without drinking water and electric power service. Approximately 100 homes were washed off foundations or destroyed and those connections may be permanently lost or may take months or years to rebuild. The Buchanan county PSA issued a Precautionary Boil Water Advisory to the 1000 connections via local media outlets and direct delivery. ODW Field Staff worked closely with BCPSA to assess and report the

initial extent of the issue. Staff communicated with the local health department, regional emergency coordinators and VDH Central Office to provide information as it became available. They advised the BCPSA in their efforts to return water service, to perform other actions to assist with emergency water sources, power and Boil Water Advisories actions. On July 13, 2022, Governor Glenn Youngkin declared a State of Emergency to help those affected by the heavy downpours and flooding. The Buchanan County Public Service Authority (BCPSA) requested assistance through the Virginia Water and Wastewater Response Network (VAWARN), a statewide mutual-aid organization. Augusta County, a VAWARN member utility, was able to donate materials to assist in recovery efforts. Other local Public Service Authorities (PSAs) contributed resources and two private contractors in the area also provided assistance. The regional ODW Field Director maintained daily contact with BCPSA and with VA WARN members, helping to report proper information and track committed and delivered materials to the PSA. Within 16 days, the BCPSA was able to restore all customers to service that could be restored.

Staff coordinated a response to an extended regional power outage from a winter storm. Several water systems were without power and lost system pressure during the winter storm on January 3, 2022. ODW issued Boil Water Advisories (BWA) as staff identified impacted waterworks. Many did not have emergency generators and at least one had an emergency generator but ran out of fuel. One system, Shenandoah Crossing in Louisa County, was without power for approximately five days and without water for six days. Staff assisted them by providing contacts for the local Emergency Coordinator and Virginia Rural Water. Those contacts helped bring the system online and supplied it with bottled water for distribution. When power was restored to the community, water supply was restored and ODW issued a BWA advisory on January 9, 2022, and lifted on January 12, 2022 after satisfactory bacti samples were collected. In response to the storm and after action discussions with staff, ODW will begin using the auto-dialer system to contact community water systems before and after storms to offer technical assistance and remind waterworks to contact the office as soon as they have issues with the water system.

Staff responded to the loss of power from a wind storm. The Homestead Water Company in Bath County has a membrane treatment plant for its surface-influenced spring water source. It serves a mixed-use area that includes the historic Homestead resort hotel and consecutive waterworks owned by the Bath County Service Authority (BCSA). The plant experienced a failure on Sunday February 20, 2022. The cause appeared to be power surges due to high winds, which damaged critical electrical components. ODW Field Staff and ODW Emergency Coordinator provided technical assistance and recommendations to the waterworks to protect public health. The affected service area included a 25-bed hospital and a small power plant. In an attempt to conserve available storage for the hospital, areas of the distribution system were initially isolated leaving some customers without water. The BCSA was also able to temporarily supply some customers with treated water from their Bath County Regional and Ashwood systems through emergency interconnections to buy time so they could get necessary repair parts. Hotel guests were sent home to reduce water demand. A Boil Water Advisory was issued for affected customers. Plant staff were instructed to closely monitor, and log finished water turbidity and chlorine levels during the crisis. Parts arrived early on Tuesday the 22nd and the plant returned to normal operations on Tuesday evening. Bacteriological sample collection began on January 23rd and were lifted after we received a second round of passing bacteriological sample results on Monday the 28th. We also

learned later in the week that some preliminary engineering is underway for upgrades to the Homestead Water Company system.

Loss of Water Pressure/Service and Issuance of Boil Water Advisory (BWA)
ODW Field Staff assisted the Bluefield Valley Waterworks with a Boil Water Advisory (BWA) resulting from a waterline break in the wholesaler's system, occurring 50 feet in West Virginia from the state border. An independent contractor performing road maintenance broke the waterline. Both waterworks provided excellent communication with the impacted customers and with ODW. Water service was restored and ODW lifted the BWA.

ODW field staff assisted the Town of South Hill with issuance of a Precautionary Boil Water Advisory (BWA) and corrective actions related to a waterline break caused by a truck hitting a fire hydrant. The break resulted in 165 residential connections and 450 people to be without water for a few hours. As a precaution, the Town issued a BWA by radio, web sites, social media, and door to door notification in order to inform residents of the BWA. The town was able to isolate the line break and make repairs within a few hours. Pressure was restored and sampling for bacteriological quality was completed Thursday and Friday August 4 and 5, 2022. Final sample results came back on Saturday August 6th showing that the water was safe to drink. The BWA was lifted on the same day.

ODW Field Staff provided technical assistance to the Bedford Regional Water Authority (BRWA) during the BRWA Turkey Mountain Plant shutdown. The plant was temporarily shut down for the month of April 2022 due to maintenance activities associated with replacing filter control valves at the plant. Staff worked with the BRWA through start up procedures in returning to service. In addition. BRWA is finalizing improvements to a critical booster pumping station, which will have the capacity to route water from any of their three pressure zones to any of the three current pressure zones. This project will increase reliability in the system.

Late on January 31, 2022, ODW staff learned that the Azzie Manor Home for Adults (Dinwiddie County) lost water service on the evening of January 28, because the raw water line from the well to the treatment plant blew out. The well continued to run, with the result that about two feet of water collected in the treatment plant room and other parts of the bottom floor of the building. The owner contacted their plumber and the designated operator, who responded quickly but were unable to make immediate repairs. They eventually managed to get the well turned off, and then got the flooded rooms dewatered and made the treatment plant room safe for entry, repaired a number of pipe leaks, replaced the cartridge filter ahead of the treatment plant, and restored the system to operation. Water service was restored about noon on January 31. They worked with ODW to issue a Boil Water Advisory (BWA) until the system could be sampled and cleared. The facility used bottled water for cooking, drinking, and brushing of teeth, and system water for handwashing and toilet flushing. They took required samples and then ODW lifted the BWA, providing recommendations to reduce the potential for future ruptures of the raw water line.

Situation-Specific Technical Assistance
Staff responded to a failed well at a rural High School. The existing well at King and Queen Central High School, located in King and Queen County, failed. ODW Staff prioritized a site visit to assist with locating a location for a replacement well. Due to limited space and existing

structures, identifying an acceptable well site location was difficult. However, staff worked with the waterworks to find a location that provided adequate protection, minimized distance to existing waterworks infrastructure, and was accessible for well drilling equipment. This reduced the amount of impact to the water system's ability to provide water.

The Chemetrics Waterworks in Fauquier County learned during routine Volatile Organic Compound analysis that toluene was detected in their water. ODW staff discovered that the waterworks had recently replaced their well pump. From experience, Staff knew that often the electrical cable for submersible pumps is attached to the drop pipe using vinyl electrical tape. The adhesive in these types of tapes frequently contains VOCs, including toluene. They requested a confirmation sample. A confirmation sample collected shortly thereafter and was non-detect for toluene, leading Staff to conclude that the residual adhesive material was no longer releasing detectable toluene into the water.

Field Staff provided technical assistance to the Washington County Service Authority during their development and implementation of a preventative maintenance (PM) program at their Membrane Filtration Plant. Staff confirmed during a Technical Assistance site visit that the PM program includes assessment of components in the membrane units including actuated and manual valves, membrane modules, pressure sensors and chemical feed systems. The WCSA reports that the PM program is identifying leaking valves and seals before a failure occurs, thus improving the average Log Reduction Value (LRV) resulting from Direct Integrity Testing.

New Owner / New Operator One-on-One Training

Fauquier County Water and Sanitation Authority (FCWSA) operates sixteen separate community groundwater systems ranging in size from 5,000 GPD to close to 1 MGD; treatment includes disinfection, corrosion control, and radionuclide and arsenic removal. An unexpected staffing change at FCWSA placed the system's lead operator in the position of Acting Water Systems Supervisor with little notice. Field Staff met with the new Supervisor to conduct a comprehensive training in the processes related to submitting Monthly Operations Reports, managing sampling schedules, and monitoring all systems for operational compliance. This Staff member is a licensed waterworks operator and was able to provide the kind of help that the Supervisor needed to get up to speed quickly. Staff followed up with the new FCWSA Supervisor on a weekly basis to support him and his staff regarding regulatory and technical issues.

Bull Run Park in Fairfax County is comprised of six TNC groundwater waterworks serving from a few dozen to 3,000+ consumers. They contacted ODW for assistance during a significant staffing transition. Feld Staff met with the park's managers and superintendent of grounds on site; the group visited each system to identify and confirm the suitability of all sampling locations, and Staff provided instruction on best practices for sample collection. This Staff member is a licensed waterworks operator and had the real-world experience needed to answer the waterworks' questions. The group discussed monitoring and reporting requirements, routine maintenance and recommendations from previous inspections, and protocols for seasonal components of some of the systems.

Appendix F

ODW Technical Assistance by Field Staff

Revised Total Coliform Rule Technical Assistance

The Grafton School in Clarke County is a community waterworks that serves a residential substance abuse and mental health treatment facility for children and adolescents. During a routine sanitary survey, ODW Staff found significant problems: one of the wells and a bladder tank were both inoperable, and the equipment and monitoring processes for bacteriological treatment did not verify consistent 4-log virus inactivation as required. Staff discussed his findings with the waterworks to identify and prioritize repairs and changes to procedures. On a subsequent visit, Staff found that the waterworks had made the suggested repairs and had improved oversight of waterworks monitoring and operations to ensure accountability and accuracy in the data being collected and reported.

Wilderness Camping Resorts in Spotsylvania County received ongoing technical assistance from ODW Field Staff following multiple coliform positive samples. Staff conducted a Level 2 Assessment and determined that damage to a hydropneumatic tank, as well as operational problems with a pump's variable frequency drive, had led to extreme fluctuations in system pressure that caused or exacerbated a leak and subsequent persistent contamination. Staff recommended the waterworks install hypochlorination disinfection for at least one entry point and develop improved SOPs for disinfection following main breaks. Challenges remain for this system, which has undergone piecemeal expansion for 50+ years. There are multiple sources, tanks, and pump stations, and staff is continuing to work with the waterworks to ensure an adequate residual in the whole system.

ODW Staff made technical assistance visits to two waterworks in Augusta County to assist with and train staff on sampling techniques. The Shenandoah Acres waterworks had a routine positive total coliform sample. Staff instructed on proper bacteriological sampling techniques and chlorine residual testing. The Grey Pine Lodge (former Colony House Motel) is under new ownership. Staff instructed on nitrate/nitrite and bacteriological sample collection.