COMMONWEALTH of VIRGINIA
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November 19, 2021

Ms. Karen Crumlish, Chief
Drinking Water Section (3WD21)
Water Protection Division
USEPA Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

Dear Ms. Crumlish:

Please find a copy of the Commonwealth of Virginia's Capacity Development Implementation Annual Report for 2021, attached to this correspondence. The report covers the period October 1, 2020 through September 30, 2021 and has been prepared pursuant to § 1420(a) of the 1996 Amendments to the Safe Drinking Water Act (SDWA) and the United States Environmental Protection Agency instructions.

The Virginia Department of Health - Office of Drinking Water (ODW) practices described in this report continue to promote public health protection for Virginians. Through the Training, Capacity Development, and Outreach Division, ODW enhances the technical, managerial, and financial capabilities of Virginia's public waterworks. ODW efforts continue to develop sustainable waterworks and support the mission of safe drinking water for all Virginians.

If you have any questions regarding this report or the Division of Training, Capacity Development, and Outreach, please contact me at (804) 477-5171 or by email barry.matthews@vdh.virginia.gov.

Sincerely,

Barry E. Matthews

Barry E. Matthews, CPG
Training, Capacity Development and Outreach Manager

Enclosure

Commonwealth of Virginia
Capacity Development Implementation Annual Report

October 1, 2020 through September 30, 2021

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment
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Office of Drinking Water
Safe Drinking Water for a Healthy Virginia

COMMONWEALTH OF VIRGINIA

Ralph Northam, Governor

VIRGINIA DEPARTMENT OF HEALTH

M. Norman Oliver, MD, MA
State Health Commissioner

OFFICE OF DRINKING WATER

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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 2021, from October 1, 2020 through September 30, 2021. This program is based on and is compliant with Virginia's Capacity Development Strategy. The United States Environmental Protection Agency (EPA) approved Virginia's Strategy on May 29, 2014. Virginia has submitted a revised Capacity Development Strategy to EPA. 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. The Virginia Department of Health (VDH) submitted the final revision to EPA for review and approval.

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.

Significant changes include amending out-of-date regulations, incorporating technologies and procedures that have come into use since the last major revision in 1993, and reorganizing sections to make them easier to understand and follow. The updates to Part I include deleting some of the definitions, revising the existing definitions, and adding some new ones. Other changes to Part I address permit requirements, the Waterworks Advisory Committee (WAC), business plans, variances, exemptions, and other administrative details. Significant updates to Part II involve reorganizing much of the content into smaller sections to improve clarity and readability, but do not change the requirements in the Regulations that are necessary for the state to retain primary enforcement responsibility for waterworks in Virginia. Other changes to Part II address sodium monitoring, cross-connection control, operator requirements, evaluation for groundwater under the direct influence of surface water (GUDI), and requirements for waterworks to provide notification to the Commissioner and consumers if they make changes to start or stop fluoridation programs. The changes to Part II also include adding the option to reduce the monitoring

frequency for bacteriological contaminants at qualified, well-operated transient noncommunity waterworks. Updates to Part III address new technology and current industry standards for waterworks design, including automated control systems and alternate power requirements, hydrants, and reorganizing existing content into smaller sections to improve clarity and readability.

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, 2018, through September 30, 2021. 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, 2018, through September 30, 2021, ODW identified 37 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 (27%) of them incurred violations. This represents a decrease of one waterworks (down from 11, or approximately 28%) compared to the three-year period ending in fiscal year 2020. There was a small decrease in the number of new systems, down from 40 new systems to 37. Of the eight systems that were either new or reactivated in the October 1, 2020, to September 30, 2021, time-period, none had 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.

EPA designed the Enforcement Targeting Tool (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 is weighted.

According to EPA's Office of Enforcement and Compliance Assurance's July 2021 Enforcement Targeting Tool (ETT), 18 waterworks were identified as a "priority system." All of the 18 waterworks were issued a formal enforcement action or have returned to compliance. None of these priority systems are "New" systems.

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

[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*.

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 2.9 on page 16 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 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 needed 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 last year's 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 1,080 community, 506 NTNC, and 1,203 TNC waterworks during the reporting period. These systems collectively serve approximately 7.6 million consumers--about 89% of the total population of Virginia (8.5 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.

Staff conduct special site visits to evaluate waterworks new construction, investigate consumer complaints, provide guidance to waterworks required to conduct Level 1 RTCR assessments, conduct Level 2 RTCR Assessments, and respond to specific requests for assistance. 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 1,296 routine sanitary surveys, provided guidance to waterworks in completing 131 Level 1 RTCR Assessments, conducted 42 Level 2 RTCR Assessments, and performed 41 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 17,423 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.

2.5 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 2,123 as of September 2021. In June 2020, there were 2,201 licensed operators, reflecting a decrease of 78 operators. Staff attributes this decrease to an aging workforce and operators retiring. To help increase the number of licensed operators, VDH-ODW is continuing to offer low cost education solutions, which are now more important than ever. 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 June 2021.

2.6 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. Course attendees gave favorable feedback for these interactive webinars. ODW moved two of its most popular in-person management classes, "*Management, Methods, and Money: Understanding Concepts in Capacity Development"* and *"Establishing a Successful and Sustainable Waterworks"* to an online platform in 2021. ODW plans a return to in-person instruction, while also continuing to provide remote learning opportunities.

Water Operators Short School: Virginia Tech offered synchronous and asynchronous online classes this year in response to the pandemic. ODW actively participates in the Short School by volunteering as course instructors at this weeklong course held annually since the 1940s. Historically, there have been three levels to the course: introductory, intermediate, and advanced. Each level provides approximately 15 classes 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 2-13, 2021; 86 people attended.

Table 1: Broadcast Classes offered by ODW and Virginia Tech

Program Date	Program Name	Participants
11/18/2020	Virtual VDH CPE Broadcast Series Nov: Harmful Algal Blooms: A Threat to the Waters of the World	145
2/8/2021 - 2/10/2021	Virtual Basic Groundwater Course for Small Systems	35
2/17/2021	Feb Virtual Water Quality Broadcast: Applied Chemistry	56
2/22/2021 - 2/26/2021	Water Operations Math – Virtual	36
3/17/2021	March Virtual Water Quality Broadcast: Sample Collection, Analysis & Interpretation	147
4/14/2021	April Virtual Water Quality Broadcast: Communication, Leadership, Ethics, & Teamwork	186
4/26/2021	Water Treatment Process at Full-Scale Water Plants	32

Table 1: Continued		
Program Date	**Program Name**	**Participants**
5/12/2021	May Virtual Water Quality Broadcast: Meters, Metering Systems, & Accuracy	142
5/24/2021 - 6/04/2021	Operation and Maintenance of Distribution Systems	31
6/1/2021 - 6/3/2021	Groundwater Math for Small Systems	21
6/16/2021	June Virtual Water Quality Broadcast: Harmful Algal Blooms	141
6/21/2021 - 6/25/2021	Applied Math and Basic Science	20
7/14/2021	July Virtual Water Quality Broadcast: Asset Management, Budgeting, Rate Structure	145
7/20/2021- 7/30/2021	Management, Methods, and Money: Understanding Concepts in Capacity Development	6
8/2/2021- 8/13/2021	Water Operator's Short School	86
8/31/2021- 9/9/2021	Establishing a Successful and Sustainable Waterworks	14
9/22/2021	September Virtual Water Quality Broadcast: Disinfection Practices	178
9/27/2021 - 10/01/2021	Operation and Maintenance of Distribution Systems	7
10/13/2021	October Virtual Water Quality Broadcast: Coagulation, Flocculation and Residuals	149

2.7 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 216 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).

2.8 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) and the Southeast Rural Community Assistance Project (SERCAP) have both received grant funds for leak detection equipment. They provide the services through ODW referral and direct contact from waterworks. VRWA reported delivery of 749.75 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
64.25	Appalachia, Town of	4	Jonesville, Town of
34.25	Big Stone Gap, Town of	5.75	Luray, Town of
45.75	Bluefield, Town of	47.25	Middleburg, Town of
5.25	Boydton, Town of	8.5	Montvale Water
16.5	Buena Vista, City of	7.5	Nickelsville, Town of
3.5	Caroline County	10.5	Onancock, Town of
12.25	Cedar Bluff, Town of	54.75	Pembroke, Town of
21.25	Coeburn, Town of	91.75	Pennington Gap, Town of
3	Craigsville	21	Prince George County Industrial Park
11.25	Culpeper Co. Environmental Services	6	Prince George County Public Schools
7.75	Drakes Branch, Town of	35.75	Pulaski County PSA
21.75	Dublin, Town of	6	Ridge Utilities
125.75	Dungannon, Town of	3	Rural Retreat, Town of
1	Edinburg, Town of	4	Rye Valley Water Authority
8.5	Exmore, Town of	32	Tauxemont Community Association
19	Fries, Town of	1.5	Thomas Bridge Water Corp.
1	Hillsville, Town of	8.5	Troutdale, Town of

2.9 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 this tool in cases where a waterworks has not returned to compliance in a timely fashion following issuance of notice and/or a warning letter. As required by Virginia's 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 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 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 waterworks to submit a WBOP as a budgeting tool. ODW may provide the waterworks with rate-setting assistance to address the underlying lack of financial capacity.

Performance: During the reporting period, ODW issued 1,288 NOAVs and 91 warning letters. The Health Commissioner issued three special orders and 14 consent orders. Six waterworks satisfied the requirements in their consent orders: Town of Hillsboro (6107200), Dickenson County Regional- DCPSA (1051721), Quantico Marine Base Mainside (6153675), Ramsey Mobile Home Park (1063154), Trattoria Villagio (6059023), and Al Madina School of Richmond (4041025). One waterworks', Springfield Downs (3093647), special order was terminated after permanently closing in November 2020.

2.10 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* 12VAC5-590-40 5 provides requirements related to the WAC.

Performance: The WAC and ODW staff met five times during the reporting period: December 16, 2020, February 17, 2021, April 21, 2021, July 21, 2021, and September 22, 2021. The meeting minutes are available on the Virginia Town Hall website.

2.11 Drinking Water State Revolving Fund – Construction Funding

Relationship to Technical, Managerial, and Financial Capacity: ODW 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. ODW can use financial assistance to resolve health-related issues, for infrastructure improvement, and to refinance debt. ODW 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. ODW can then notify these waterworks by letter of the DWSRF opportunities available through the year, rather than a couple months before the application deadline. ODW continues to solicit eligible applicants for each DWSRF Construction funding cycle.

A sustainability category is included in the DWSRF priority system process. The purpose of this category is to promote sustainable programs, such as asset management, for DWSRF applicants. Applicants able to provide documentation of such programs and activities receive additional priority system points. Additionally, ODW has begun requiring 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, the highest scoring DWSRF construction application receiving a funding offer was the Pulaski County Public Service Authority, with 10 chronic points and 42 points over all. The proposed project will benefit 118 residential connections and the total

project cost is $2,897,000. The Virginia DWSRF made offers totaling $46,770,671 of low-interest/principal forgiveness loans to 19 systems. All waterworks that received an offer had TMF assessments completed prior to the offer of funding. ODW staff identified issues regarding low TMF capacity and recommended corrective actions in the funding offers.

2.12 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, the DWSRF construction program 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 1 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 applications totaling $205,000 to the Planning and Design Fund during calendar year 2021. ODW received six applications for the Planning and Design Fund solicitation issued in January 2021. ODW receives applications on a rolling basis during the year. To date, ODW has made an offer to two waterworks totaling $65,000, three were ineligible, and staff is evaluating one application at the time of this report. ODW continues to reimburse projects cost for offers from previous years with approximately $58,654.25 expended on prior year projects. Seven projects from prior years remain active with two from 2019 and five from 2020. Staff continue to follow-up on these projects to ensure timely completion.

2.13 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 participated in four exercises to test emergency response capabilities: the Potomac Spill Functional Exercise simulating a spill on the Potomac River, the Virginia Operational Exercise simulating a nuclear incident, the Virginia Emergency Support Team Exercise simulating a cyberattack affecting the power grid, and the Occoquan Reservoir Spill Functional Exercise simulating a spill into the Occoquan Reservoir. ODW also presented at five training webinars, discussing topics such as safety, continuity of operations, and emergency response planning. ODW helped EPA's Water Security Division prepare to host emergency response plan exercises with Virginia waterworks, and did the research and preparation necessary to incorporate cybersecurity into sanitary surveys.

ODW staff virtually staffed the Emergency Support Function – 3 Public Works and Engineering (ESF-3) desk in the Virginia Emergency Operations Center during the COVID-19 pandemic, statewide first amendment activities, an ice storm, and other severe weather incidents. Response activities for COVID-19 included ensuring waterworks had staffing contingency plans in place, securing personal protective equipment, and communicating the status of waterworks to state partners. Staff continues to monitor the effects of COVID-19 on waterworks, which has been minimal at this time.

ODW staff assisted three waterworks with a Harmful Algal Bloom (HAB) event on the North Fork of the Shenandoah River. ODW provided technical assistance to help the waterworks optimize their treatment protocols, prepared press releases for public information, funded water quality testing for cyanotoxins, and connected the potentially affected waterworks with emergency management partners.

2.14 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 459 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.

2.15 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 2021 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). This effort exceeded the goal set in FY2020 and maintained in FY2021 to increase the metrics 1% from the FY2019 goal. Some waterworks began purchasing water from systems who are already implementing protection plans. Other waterworks regained SI status this year due to plan updates and implementation efforts by our contractors. As a result, some waterworks lost SI status due to a lack of action in the past 3 years. This resulted in a drop in the SP4a metric. Details of the SWPPs that VRWA assisted are included 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).

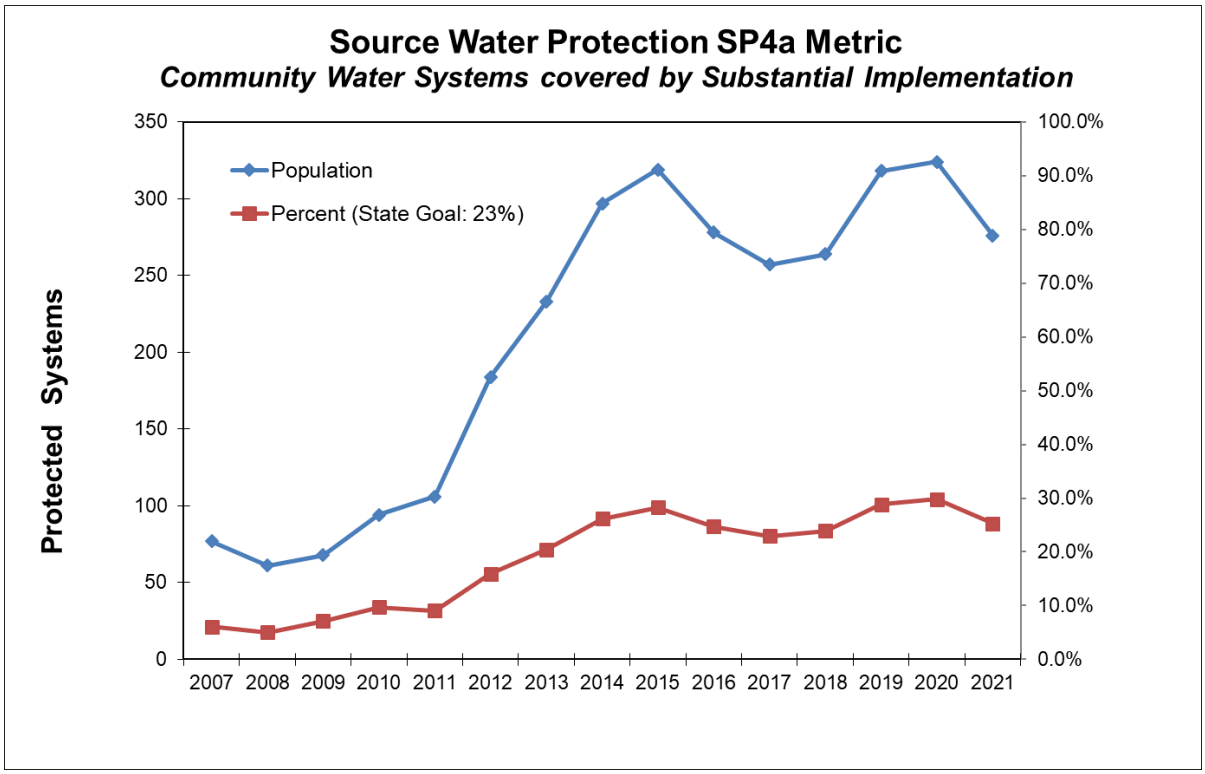

Figure 1: Source Water Protection SP4a Metric: CWSs covered by substantial implementation

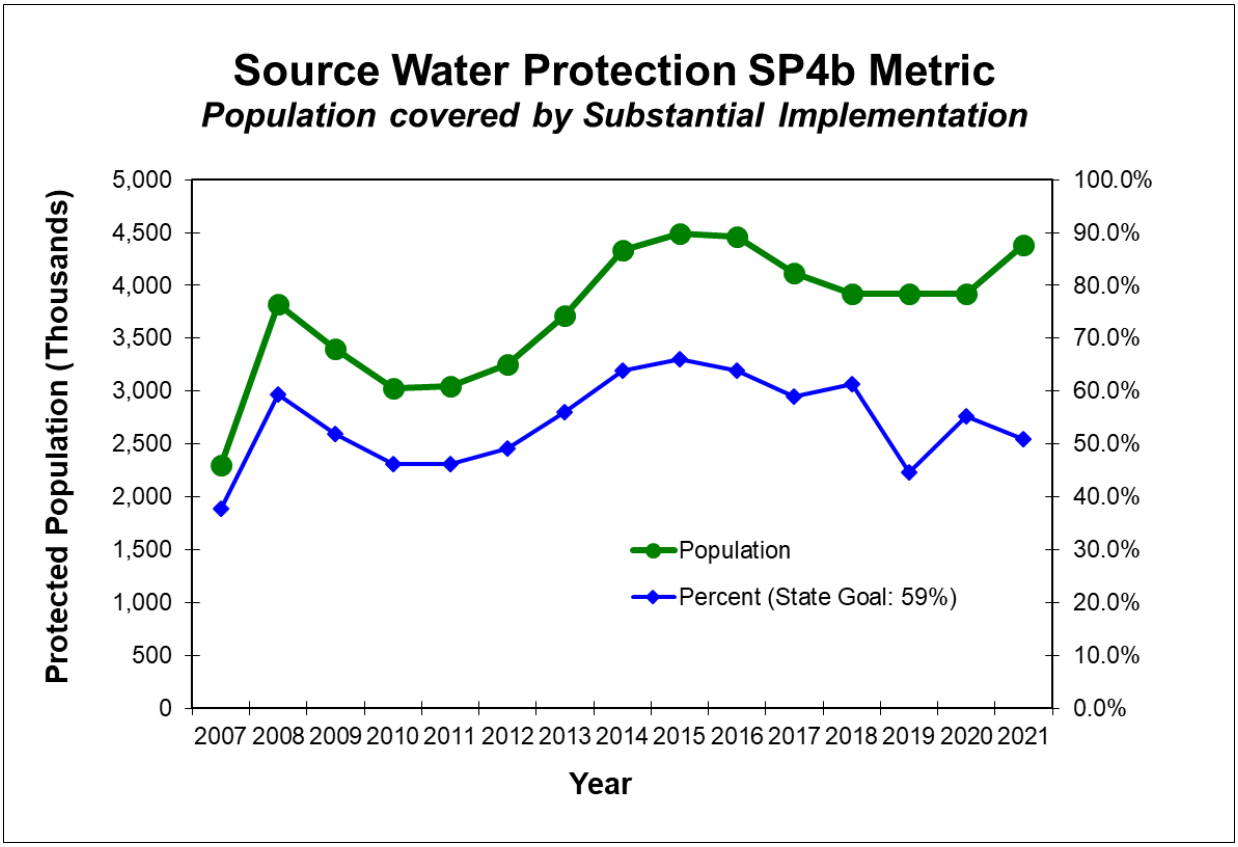

Figure 2: Source Water Protection SP4b Metric: Population covered by Substantial Implementation

The VDH issued the 2021 Wellhead Protection Implementation Projects Request for Applications on January 8, 2021. Staff distributed a total of $72, 942 between 2 awardees. The performance cycle for these awards ends on June 15, 2022. The projects funded include:

- **The Town of Middleburg**: The scope of the project includes analyzing well level data, pumping output data, topography, stream drainage elevations, and hydrogeological studies from inside and outside the Town to determine various capture zones and impacts on the Town's source water. In addition, the project will identify potential threats to the source water quantity and quality. This information will guide the Wellhead Protection Advisory Committee in making recommendations to the Town Council for protecting and enhancing the Town's water supply.

- **The Town of Purcellville**: The scope of the project includes fencing four wells.

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/

2.16 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 seventh year. During this reporting period, no new projects were initiated and two projects were completed, one of which involved plans and specifications for corrosion control and disinfection, and the other for plans and specifications for disinfection only. A third project providing an Asset Management Plan, remains open and is nearing completion. 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.

2.17 Staffing

Capacity Development staff are part of the Training, Capacity Development, and Outreach (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 and a staff training position (currently vacant and possibly will not be filled). 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.

2.18 Financial Capacity Building

The Virginia Resources Authority (VRA) provides direct technical assistance to waterworks on financial capacity on behalf of ODW. VRA charges the ODW Capacity Development Program for time spent to provide direct technical assistance for financial development to the waterworks.

2.19 Receivership Program

Section 32.1-174.3 of the *Code of Virginia* authorizes the State Health Commissioner to petition the circuit court for 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 2014 revision of the EPA approved Capacity Development Strategy and the most recent revision.

2.20 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 redevelopment 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.

2.21 Update on Waterworks with an ETT ≥ 11

The July 2021 ETT report is included in Appendix C. There are 15 community, two transient noncommunity, and one NTNC waterworks with a score of 11 or higher. These scores reflect a 20% increase from the July 2020 ETT report. On the July 2020 ETT, nine community and one NTNC waterworks had a score of 11 or higher. The use of the EPA's ETT will continue to serve as a tool to measure the improvement in waterworks' TMF capacity. As shown in Figure 3, below, the number of waterworks with ETT scores greater than 10 has dramatically decreased since 2011. During 2011, 72 waterworks had an ETT score greater than 10; this number dropped to 40 waterworks in 2012. ODW added Compliance Specialists to each of the regional field offices about two years ago. Having staff dedicated to this effort is improving consistency across the state and is likely resulting in the increased number of reported violations, and thus waterworks on the ETT. Capacity Development staff work closely with the waterworks, field office staff, compliance specialists, and enforcement staff to look for areas to reduce waterworks noncompliance.

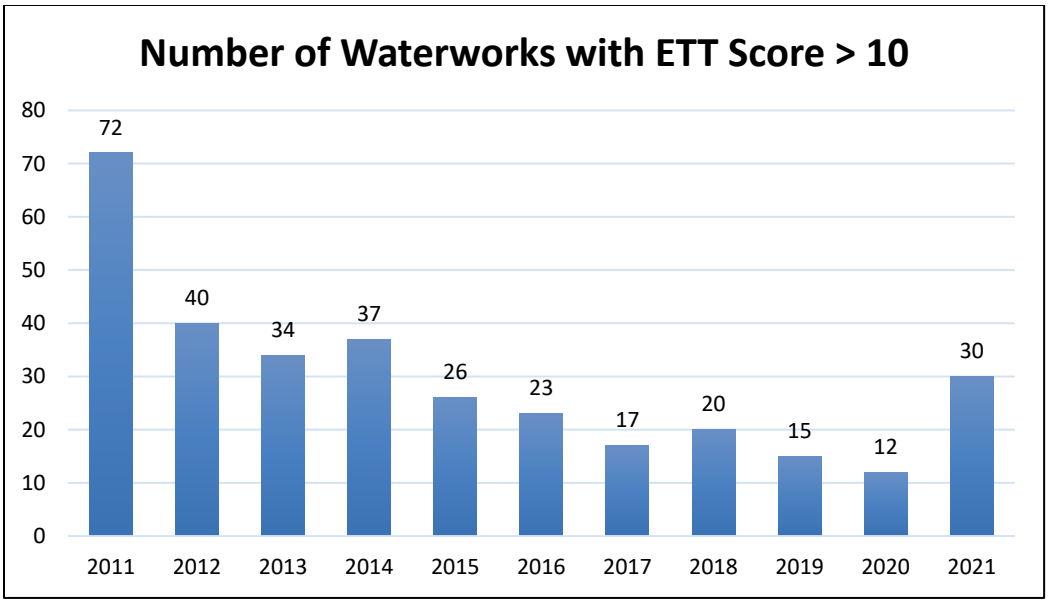

Figure 3: Number of Community and Nontransient Noncommunity Systems with ETT Score >10

2.22 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 30, 2021, 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 30, 2020

Percent of Waterworks with Licensed Designated Operators As of September 30, 2021			
System Type	**# of Systems**	**# of Systems with Active Designated Operator**	**% of Systems with Active Designated Operator**
C	1079	1074	99.54%
NTNC	499	496	99.40%
Total	1578	1570	99.49%

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, 2020 to September 30, 2021. 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 2,123 as of September 30, 2021. This reporting period revealed a loss of 78 operators in total. Staff attributes this decrease to an aging workforce and operators retiring. To help increase the number of licensed operators, VDH-ODW will continue offering low cost education solutions, which are now more important than ever. Data obtained from DPOR on Oct 15, 2021.

Table 4: Number of Operators by Class as of September 30, 2021

Number of Operators by Class as of September 30, 2021			
Class License	Number of 2020 Licensees	Number of 2021 Licensees	Net Gain (Loss)
6	239	214	-25
5	235	225	-10
4	336	320	-16
3	378	301	-77
2	316	366	50
1	697	697	0
Total	***2201***	***2123***	***-78***

2.23 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. In 2021, the American Rescue Plan Act (ARPA) became law and Virginia was awarded funding for water infrastructure. ODW staff evaluated infrastructure needs amongst the regulated community. Staff is in the process of facilitating the award of ARPA funds to waterworks for eligible projects.

2.24 Modifications to Strategy

Virginia has submitted a 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. Stakeholders in Virginia reviewed the revised strategy and ODW staff revised the Strategy based on feedback received from EPA. EPA Region 3 is currently reviewing the final version. This reporting period, as indicated in other sections, has seen the deployment and implementation of most of the initiatives contained within the existing Strategy. The only exception is that ODW has not initiated a receivership case to date.

ODW began to formalize a process to use AMPs in Virginia prior to the enactment of AWIA. ODW and participating organizations trained technical service providers' 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 2021, from October 1, 2020 through September 30, 2021. 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 follows:

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 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 is listed in 12VAC5-590-200 C of the *Waterworks Regulations*. A PER must include all viable alternatives; 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 submitted to EPA on September 30, 2021, contained two highlighted projects.

3.6 Capacity Development Success Stories

Division of 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 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
- developed a "Welcome Packet" for new waterworks that includes sampling and permitting requirements. The packet is primarily targeted at TNCs but the information is being used with community and NTNC waterworks as well.
- made marketing efforts to increase the number of waterworks personnel attending training events
- collaborated with United States Department of Agriculture-Rural Development (USDA-RD) and planning district commissions on a funding workshop for water and wastewater utilities
- worked with utility boards and staff to provide regulatory insight, discuss technical issues, and offer suggestions for funding options
- reviewed 21 DWSRF Construction Applications for TMF capacity and made recommendations for improvements to be attached to the funding offers.

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:

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 is under a Consent Order to correct problems at the systems. The issues largely revolved around failure to complete compliance sampling. One of the provisions of the Consent Order required the owner to complete a comprehensive Waterworks Business Operations Plan (WBOP). The WBOP would facilitate development of strategies to improve technical, financial, and managerial capacity

at each waterworks. All parties agreed that this would be a large undertaking. Capacity Development discussed with the owner the amount of work involved in completing the WBOP. When the owner expressed interest in divesting herself of the systems, Capacity Development staff reached out, with the owner's permission, to the regional water authority to get the parties connected. Over the past year, many of the sampling issues have been resolved, the consolidation is in the final stages of discovery and due diligence, and the owner is prepared to hire a licensed operator if the sale falls through. More importantly, she is in regular communication with staff and is able to address issues as they come up. Regular communication between all parties involved has been central to the success of this effort. We expect resolution in the next couple of months.

The Four Winds Campground (6033249), located in Caroline County, is required to complete a WBOP in order to satisfy a Special Order. VDH previously regulated this waterworks as a TNC and now has determined Four Winds to be a Community waterworks. The waterworks serves approximately 1,000 connections with only 50 year-round residents. It has lacked strong leadership in the past that allowed problems to go unchecked. With new Board members, Four Winds now has the right people in place to make progress on addressing the Special Order. Their reclassification has brought additional regulatory requirements. Bringing them into compliance with the more stringent community waterworks requirements is taking considerable time and effort. Capacity Development staff is in regular communication with ODW Richmond Field Office. Together they have secured an offer of assistance from the Community Engineering Corps (CEC) for engineering field assistance. The waterworks also applied for and received Planning and Design Funds to pay for a Preliminary Engineering Report (PER). The PER will incorporate data from the CEC volunteers into an evaluation of the entire waterworks. It will identify and prioritize the most essential projects so that the waterworks will be able to comply with the Virginia Waterworks Regulations. In addition to addressing regulatory issues, Capacity Development staff worked with their Maintenance Supervisor to help him learn how to use a brand new computer, purchased by the Board for completing the WBOP, and provided a crash course on using Gmail and Google Calendar. While this is atypical of the type of training and education we provide when working with a system on their WBOP, it remains part of the services we are able to provide.

The Division of Training, Capacity Development, and Outreach (TCDO) has provided regular assistance to the Town of Tangier (3001833) in Accomack County. The Town is on Tangier Island, in the middle of the Chesapeake Bay. This causes site-specific problems related to their geography and access, complicating the inspection, assistance, and construction processes. TCDO has provided resources for training management and operators in the form of scheduled seminars and direct assistance. The Town was required to complete a WBOP as a condition of previous construction funding and TCDO has been trying to help them with it. Progress on this has been spotty. The Town has not completed necessary audits and communication issues have impeded progress on the WBOP. Although Tangier faces many challenges, TCDO remains committed to assisting them through this process toward becoming a well-managed waterworks.

The Danville Field Office, TCDO staff, and EPA contractors identified several small localities in Charlotte County that appear well positioned for possible regionalization. The communities are of equivalent size, have similar resources and several are served by the same contract operator. TCDO has been interested in fostering these relationships since 2010. We have recently begun working with PG Environmental, a firm contracted to the EPA, to begin working with the Towns of Drakes Branch, Keysville, Phenix, and Charlotte Courthouse to move toward this goal. The first steps include developing a shared assent inventory between the Towns and then moving on to

drafting Memorandums of Understanding for mutual aid between the individual waterworks. Regionalization will take time, though these initial steps will facilitate increased cooperation in the short term and lay the foundation for the next part of the process.

The Town of Chatham (5143114) in Pittsylvania County has been experiencing numerous leaks in their water system over the past few years, a few of which have required complete system shut downs to repair. Training, Capacity Development, and Outreach (TCDO) personnel assisted the Town with an application for a Planning and Design Grant to develop a Preliminary Engineering Report assessing the distribution system. This will allow the Town to determine logical steps in upgrading and repairing the system in a phased approach. TCDO is encouraging the Town to develop an Asset Management Plan during the construction phase of the project and to consider a rate study to move the Town toward solid sustainability. The application is in review at the time of this report.

The Light Academy (2065195) is a non-profit school with an approximate combined population of 65 students and staff located in Fluvanna County. It had an existing corrosion control system that was no longer functioning as designed, resulting in exceedance of the Copper Action Level during two 6-month periods in 2019, and contributing to bacteriological issues. The Lexington Field Office referred this system to the ODW Small Project Engineering Program for engineering assistance to evaluate the existing components, identifying changes, and recommend treatment modifications. Once the engineering was complete, the waterworks proceeded with construction. On March 30, 2021, Field Office staff completed the final construction inspection of the corrosion control and disinfection treatment for waterworks. The final design included two calcite contactors, sodium hypochlorite feed, and sufficient contact time to achieve 4-log virus inactivation. The waterworks is now meeting bacteriological as well as lead and copper requirements

The Town of Iron Gate (2005480) in Alleghany County contacted ODW for assistance reviewing funding options for the installation of new water meters. Many of the currently installed meters are out of service or well beyond their useful life. Staff met with the Town, discussed funding, and provided a review of the draft Asset Management Plan (AMP) funded through ODW's Small Project Engineering program. During the meeting, staff learned that the Town was struggling with significant water loss. Staff also identified a neighborhood that was an unregulated consecutive connection on the Town waterworks. The owner of the consecutive system was not repairing leaks in his system and was not communicating with the Town. Staff contacted the VRWA for leak detection assistance. The effort substantially reduced the water loss and the Town is progressing with their AMP.

Gigi's Pizza (4075368) is a transient noncommunity (TNC) waterworks in Goochland County, Virginia. Gigi's is a pizzeria and Italian restaurant. Gigi's has been a regulated waterworks for nearly a decade; however, it has new tenants who are unfamiliar with the Regulations and the SDWA. In their first few months of operation, they triggered a Level 1 RTCR Assessment due to multiple positive bacteriological samples. Capacity Development staff set up a meeting with the owner of the restaurant and provided technical assistance on operating a regulated waterworks. Staff provided specific instructions on sample technique and assisted in the completion of the Level 1 Assessment. During the training and discussion, it became clear that the positive bacteriological samples were due to improper sampling technique. Assisting the owner with the assessment allowed them to become familiar with their waterworks, learn how to properly collect

samples, and learn how to identify problems at the waterworks. Staff provided a copy of the "TNC Welcome Guide and Waterworks File" with the new owner. The guide is an A-Z index of running a sustainable TNC water system. It has an annotated appendix designed to organize and optimize all waterworks related business information. The owners have since maintained compliance with the Drinking Water Regulations and routinely return favorable sample results.

Brother's Italian Restaurant (4127400) is a TNC waterworks in New Kent County. Brother's is an Italian Restaurant and Pizzeria. Over the past several years, the waterworks has amassed numerous violations for failure to collect routine bacteriological and nitrate samples. ODW's Division of Compliance and Enforcement drafted a Consent Order to bring the restaurant back into compliance with the Regulations and levy a civil penalty for chronic noncompliance. The owner needed to post and certify public notice for nearly a dozen violations, complete a level 1 total coliform assessment, take a triggered source water sample, and take a combined nitrate-nitrite sample to return to compliance. Capacity Development Staff began working with the owner to address the items in the Consent Order. They scheduled a meeting with the owner where they went over the Consent Order, completed the Level 1 Assessment, provided assistance with posting public notice, and shared a copy of the "TNC Welcome Guide and Waterworks File." During the meeting, the owner also expressed interest in hiring an operator to handle waterworks related business. Staff shared operator information with the owner and the restaurant has since contracted a licensed waterworks professional. Since that meeting, the owner has satisfied all outstanding requirements to return to compliance. ODW staff is finalizing the civil penalty for the consent order, and is considering the good faith effort by the owner.

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.

APPENDIX A
New Community and NTNC Waterworks
October 1, 2018 – September 30, 2021

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
HALIFAX	VA5083270	SOUTHSTONE BEHAVIORAL HEALTH	NTNC	3/28/2018
RUSSELL	VA1167814	THOMPSON CREEK RCPSA	C	4/1/2018
FLUVANNA	VA2065195	THE LIGHT ACADEMY	NTNC	5/30/2018
CAROLINE	VA6033515	PEUMANSEND CREEK REGIONAL JAIL	NTNC	7/9/2018
POWHATAN	VA4145625	MOSLOW WOOD PRODUCTS	NTNC	8/24/2018
RUSSELL	VA1167155	THREE CREEK APPAREL	NTNC	9/19/2018
MECKLENBURG	VA5117360	GRANITE HALL SHORES	C	10/8/2018
MECKLENBURG	VA5117660	PEETE RIVER FARM	C	10/8/2018
ROCKINGHAM	VA2165122	SHENANDOAH VALLEY CHRISTIAN SCHOOL	NTNC	12/5/2018
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

Appendix B

List of New Water Systems Violations

As of the July 2021 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
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
VA2065195	THE LIGHT ACADEMY	2808807	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	11/24/2020	10/1/2020
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
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

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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
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
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

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List of New Water Systems Violations

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
VA4145625	MOSLOW WOOD PRODUCTS	24	3A	MONITORING, ROUTINE, MAJOR (RTCR)	E. COLI	8/30/2021	7/1/2021
VA5049110	ENVIGO - CUMBERLAND	27	01	MCL, SINGLE SAMPLE	NITRATE + NITRITE	6/3/2021	4/1/2021

Appendix C

Enforcement Targeting Tool – July 2021

All ETT scores at or above 11 are highlighted in yellow ***July 2021 SDWIS/FED Freeze*** *(For most states, this includes data up to 3/31/2021)*

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
VA3093850	WILLING WORKERS CLUB	87	Y	CWS	31	12/31/2009	83	Not on Path	N
VA1121150	DRY VALLEY SUBDIVISION	32	Y	CWS	48	9/30/2020	30	Not on Path	N
VA1121048	BETHEL WOODS SUBDIVISION	28	Y	CWS	126	3/31/2021	27	Not on Path	N
VA1155050	BELLAVISTA ESTATES	23	Y	CWS	45	3/31/2021	21	Not on Path	N
VA1121842	WALTON FARMS SUBDIVISION	21	Y	CWS	135	3/31/2021	20	Not on Path	N
VA3595250	EMPORIA, CITY OF	21	Y	CWS	5,600	3/31/2021	20	Not on Path	N
VA4115400	CHESAPEAKE SHORES	21	Y	CWS	56	6/30/2021	20	New	N
VA5029291	KYANITE MINE-EAST RIDGE	21	Y	NTNCWS	40	3/31/2021	20	Not on Path	N
VA5031050	ALTAVISTA, TOWN OF	21	Y	CWS	3,850	6/30/2021	20	New	N
VA1121755	TWIN BOULDERS SUBDIVISION	20	Y	CWS	90	3/31/2021	19	Not on Path	N
VA1155700	RIVERBEND SUBDIVISION	20	Y	CWS	72	3/31/2021	19	Not on Path	N
VA5143940	WOODROAM SUBDIVISION	17	Y	CWS	80	3/31/2021	17	Not on Path	N
VA1121825	VIEWLAND SUBDIVISION	16	Y	CWS	230	3/31/2021	15	Not on Path	N
VA1077135	CREEPER TRAIL CAMPGROUND	14	N	TNCWS	25	6/30/2021	10	New	N
VA1063152	DADDY RABBITS CAMPGROUND	12	Y	TNCWS	30	3/31/2021	12	Not on Path	N
VA3053210	AZZIE MANOR HFA	11	Y	CWS	39	6/30/2021	11	New	N
VA5025150	BRUNSWICK IDA - NORTH	11	Y	CWS	1,035	6/30/2021	11	New	N
VA5025450	LAWRENCEVILLE, TOWN OF	11	Y	CWS	4,806	6/30/2021	11	New	N

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Project	County	Project Summary	Population
Brown's Mobile Home Village 2020 CCR	Franklin	At the request of the Office of Drinking Water, completed Consumer Confidence Report	75
Hardy Road Trailer Park 2020 CCR	Bedford	At the request of the Office of Drinking Water, completed Consumer Confidence Report	200
Hardy Road Trailer Park Compliance	Bedford	Providing Technical Assistance to address multiple uncorrected Significant Deficiencies; assist in the use of WIIN Grant Funding for Construction	200
Lee County PSA – Big Hill 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	188
Lee County PSA – Blackwater 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	240
Lee County PSA – Blue Springs 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	2,873
Lee County PSA – Eastern Lee 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	1,297
Lee County PSA – Ely & Puckett Creek 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	155
Lee County PSA – Fleenortown 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	160
Lee County PSA – Jasper 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	622
Lee County PSA – Keokee 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	445
Lee County PSA – KVS 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	5,003
Lee County PSA – Miller Chapel 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	662
Lee County PSA – Robbins Chapel 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	475
Lee County PSA – St. Charles 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	1,959
Lee County PSA – Stickleyville 2020 CCR	Lee	At the request of the Office of Drinking Water, completed Consumer Confidence Report	457
Richmond Cold Storage Groundwater Withdrawal Permit Renewal Application	Isle of Wight	Provide Continuing Administrative Support for Application Review Process	60
Russell County PSA - Belfast 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	1600

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Russell County PSA - Hansonville 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	928
Russell County PSA - New Garden/Finney 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	375
Russell County PSA - Swords Creek 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	3233
Tazewell County PSA – Baptist Valley 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	3,857
Tazewell County PSA – Barkay Estates 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	85
Tazewell County PSA – Big Creek 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	300
Tazewell County PSA – Claypool Hill 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	4,897
Tazewell County PSA – Daw Road 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	43
Tazewell County PSA – Eastern Tazewell 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	3,097
Tazewell County PSA – Falls Mills 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	870
Tazewell County PSA – Fort Witten 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	173
Tazewell County PSA – Gratton 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	707
Tazewell County PSA – Jewell Ridge 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	605
Tazewell County PSA – Middle Creek 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	50
Tazewell County PSA – Raven Doran 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	5,800
Additional Projects Aligning with CAP DEV Mission but Funded Through Other Grant Programs			
Appalachian Detention Center 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	140
Big Stone Gap 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	9,372
Bold Camp 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	943

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Brown Grove Environmental Justice*	Hanover	Sampling of private wells owned by minority residents living near commercial/industrial sites	175
Buchanan County PSA - Grassy Creek 2020 CCR	Buchanan	At the request of the Office of Drinking Water, completed Consumer Confidence Report	440
Buchanan County PSA – Kennel Gap/Main 2020 CCR	Buchanan	At the request of the Office of Drinking Water, completed Consumer Confidence Report	25,196
Buchanan County PSA – Osborne Mtn 2020 CCR	Buchanan	At the request of the Office of Drinking Water, completed Consumer Confidence Report	70
Buchanan County PSA - Page 2020 CCR	Buchanan	At the request of the Office of Drinking Water, completed Consumer Confidence Report	50
Buchanan County PSA – Shortt Gap 2020 CCR	Buchanan	At the request of the Office of Drinking Water, completed Consumer Confidence Report	64
Castlewood 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	5,565
Cedar Bluff 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	1,400
Cleveland 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	340
Clintwood 2020 CCR	Dickenson	At the request of the Office of Drinking Water, completed Consumer Confidence Report	7,721
Coeburn 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	4,630
Dickensonville Rest Home 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	46
Dungannon 2020 CCR	Scott	At the request of the Office of Drinking Water, completed Consumer Confidence Report	410
Eastern Shore Environmental Justice	Accomack	Sampling of 60 Private Wells for Contamination from Failed Septic Systems and to Document the Need for Public Water	140
Gate City 2020 CCR	Scott	At the request of the Office of Drinking Water, completed Consumer Confidence Report	3,130
Highland County Regional Water System*	Highland	Exploring the feasibility creating a Regional Water Authority in Highland County	650
Honaker 2020 CCR	Russell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	1,449
Montvale Water 2020 CCR	Bedford	At the request of the Office of Drinking Water, completed Consumer Confidence Report	698
Montvale Water Compliance Sampling	Bedford	Provided short-term compliance sampling assistance while operator was incapacitated	698

Appendix D

EPA Grant Projects
Southeast Rural Community Assistance Project (SERCAP)

Buffalo Creek Estates	Mecklenburg	Procure Funding to Address Compliance Issues for 90 unit MHP	150
Norton 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	3,958
Pamplin City GIS Mapping	Appomattox	Mapping of Water and Wastewater Utility Assets	79
Port Royal GIS Mapping*	Caroline	Mapping of Water Utility Assets and Infrastructure	379
Pound 2020 CCR	Wise	At the request of the Office of Drinking Water, completed Consumer Confidence Report	2,195
Tangier Well Vault Rehabilitation	Accomack	Procure funding to carry our critical rehabilitation of water supply well vaults.	524
Tazewell County PSA – Greater Tazwell 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	12,575
Tazewell, Town of 2020 CCR	Tazewell	At the request of the Office of Drinking Water, completed Consumer Confidence Report	11,604
Virgilina Water System Upgrades	Halifax	Assisted the Town locate funding to provide critical well and well control system upgrades	104
Willing Workers Club Water System*	Isle of Wight	Procured funding and contractor to address significant deficiencies and dissolve community water system	31
Winsdor 2020 CCR	Isle of Wight	At the request of the Office of Drinking Water, completed Consumer Confidence Report	2,626

* See additional information, below

Brown Grove Environmental Justice - In late December of 2020, SERCAP was contacted by the Brown Grove Preservation Group near Ashland, Virginia. The Brown Grove community was founded by former slaves and is still home to some of the families related to the founders. Including a total of 100 homes located on both sides of Exit 89 of I-95 (though the majority are on the east side of the highway), the area's proximity to Richmond and the major highway has made it an attractive site for commercial and industrial ventures – often over the objections of Brown Grove's minority residents. Currently there is a truck stop, a concrete plant, an industrial waste treatment facility, a county/municipal airport and an active landfill all located within the traditional boundaries of Brown Grove.

A major grocery store chain distribution center (including a fuel depot for the chain's fleet) had received preliminary approval to be sited within the community, creating additional concerns about impacts to the environment (a significant portion of the nearby wetlands would have to be eliminated if the project was ultimately greenlighted) and the community's groundwater. Approximately 75 of the 100 homes within the community get their drinking water from shallow, bored wells and many of the residents are concerned that the cumulative effect of these industrial

uses was potentially impacting the quality of their ground water. The Preservation Group was seeking an advocate to sample and analyze at least some of the area wells, the results of which they would bring before the state's Water Control Board at its FEB 26 hearing to consider the distribution center's approval.

SERCAP mobilized to collect nearly 70 different types of water samples from eight strategically selected wells and had them analyzed at a Richmond-area environmental lab in time to provide results to the group before the meeting. Though the State Water Control Board voted 4-3 in favor of allowing the project to proceed, the board did *suggest* that the grocery store chain find a way to work with residents of the community to potentially get them connected to public water – a process SERCAP hopes to facilitate. Fortunately, all of the sample results were well within state and federal drinking water regulatory compliance limits and was determined to be safe for consumption.

Port Royal GIS Mapping - In October of 2020, SERCAP began a GIS (Geographical Information System) project for the Town, collecting GPS (Global Positioning System) data to map the Town's water system assets. This included reaching out to the Town's consulting/design engineer to acquire engineering data in CAD (Computer Aided Design) format and importing that data into the mapping software. Work on site began in November and consisted of using a GPS receiver to verify (and frequently correct the positioning of) assets such as water meters and distribution system valves on the map. The GPS map and asset data within the GIS will allow the Town to more efficiently operate their system and lay the groundwork for the development of an Asset Management Plan (AMP). The AMP will allow the Town to more fully understand the long-term financial needs for the water system and aid the Town with its future financial and managerial decision-making.

Willing Workers Club Water System - The Willing Workers Club Water System is a small, privately owned water system begun in the mid 1990's by the residents to serve the small minority community in which they live. Located in Carrollton in Isle of Wight County, the well system provides water to 18 homes. Due to the small number of residents on the system relative to the cost to operate it and remain in compliance with state and federal drinking water regulations, the system has been unable to maintain compliance and SERCAP is providing funding to help resolve the situation.

Alternatives for achieving regulatory compliance were considered, including the installation of a treatment system and a potential connection of the community to the Isle of Wight County Public Utilities. The cost of each of these options was prohibitive and well beyond the means of the small community. After these possibilities were considered and rejected, an additional option presented itself: split the single water system into two smaller ones.

By drilling an additional well, separating a number of homes from the existing well and connecting them to the new well, each smaller system would fall below the 15 connection/25 people CWS threshold and no longer be required to comply with the waterworks regulations. Though not ideal, this solution will both save the community the significant costs of regular sampling and monitoring

and also remove them from the state and federal lists of Significantly Non-Compliant Water Systems. SERCAP has awarded a grant in the amount of $32,000.00 to the community in order to have the new well drilled and the necessary distribution system changes accomplished. The work is expected to be completed in the fall of 2021.

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

Training provided through "EPA Training & Technical Assistance for Small Public Water Systems"

Virginia Rural Water Association Training

October 1, 2020, through September 30, 2021

Date	Course Name	Location	Attendees
8/24/2021	A Cost Recovery Program for PFAS	Webinar	21
10/8/2020	Aging Water and WW Infrastructure - Replace or Repair	Webinar-virtual	15
1/12/2021	AWIA Software Training	Webinar	2
9/8/2021	Basic Pump Class	Buena Vista	6
12/1/2020	Cybersecurity and AWIA Made Easy	Webinar-virtual	14
1/28/2021	Encapsulation Leak Repair	Webinar	5
10/21/2020	How to Conduct and Certify Your Risk and Resilience Assessment	Webinar-virtual	22
11/19/2020		Webinar-virtual	16
12/16/2020		Webinar-virtual	16
8/31/2021	Management in the Real World	Wise	15
12/17/2020	Managing High Solids in Aerobic and Anoxic Environments	Webinar-virtual	9
10/15/2020	Modeling for Success - Taking Lagoon Process Design to the Next Level	Webinar-virtual	4
9/29/2021	Operational & Safety Aspects: W/WW Chlorination	Wise	11
10/27/2020	Operator Math	Keysville	6
11/17/2020		Bath Co.	10
6/22/2021	PFAS - What you need to know	Webinar	86
8/24/2021	Preparation and Submission of Your ERP	Webinar	15
9/21/2021		Webinar	7
1/14/2021	R&R and CIP - It's Not That Hard	Webinar	16
10/22/2020	Remote Pressure and Temp Monitoring of Distribution System through Fire Hydrants	Webinar-virtual	6
1/19/2021	Safe, Simple, Economical Flow & Level Solutions for W/WW Applications	Webinar	6
12/15/2020	Science of Mixing and Improving Water Quality in Water Storage Tanks	Webinar-virtual	8
3/18/2021	SEMS Software Training	Webinar	5
8/18/2021	Sustainable Management of Rural and Small Systems Workshop	Louisa	7
8/26/2021	Tank Care	Rocky Mount	19
11/5/2020	The Phenomena of Surge in Pipelines and the Need for Surge Protection	Webinar-virtual	9
10/27or 28/2020	Tubing Options	Keysville	10
11/17/2020		Bath Co.	10

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

10/13/2020	Understand Proper PVC Pipe DR, Pipe Stiffness Needs, and Internal Joint Restraints	Webinar-virtual	20
10/28/2020	Utility Workshop in a Box	Keysville	8
1/7/2021	Water Loss Reduction through Pressure Management	Webinar	6
10/29/2020	Water Storage & Distribution System Maintenance	Palmyra	17
11/18/2020	Wireless Technology for W & WW Industry Applications	Webinar-virtual	5
12/9/2020		Webinar-virtual	6
5/11-12/2021	WW Certification	Webinar	12
5/19-20/2021		Webinar	2
6/15-16/2021		Webinar	11
6/23-24/2021		Webinar	7
2/10-11/2021 (am)		Webinar	14
2/10-11/2021 (pm)		Webinar	2
	October Recorded Webinars Ordered	Webinar-virtual	12
	November Recorded Webinars Ordered	Webinar-virtual	25
	December 2020 Recorded Webinars Ordered	Webinar-virtual	27

VRWA Leak Detection

The Town of Coeburn in Wise County (1195170) requested assistance from Virginia Rural Water Association (VRWA) to detect leaks in the town's water distribution system. The town's staff has been looking for water leaks and needed assistance verifying and pinpointing the possible leak locations. The town's water loss amounted to about 60 percent of the water being treated at the water treatment plant. The VRWA Circuit Rider arrived on-site on May 18th and followed the town's staff to the areas of concern. He began surveying the first area using sensitive listening equipment to detect water leak sounds on valves, hydrants, and an exposed water line. The Circuit Rider located a water leak on a one-inch galvanized service line. The Circuit Rider assisted staff with testing PVC water lines by isolating small sections at a time. These water lines held tight, and no water leaks were detected. The Circuit Rider returned on May 19th to continue surveying for other possible water leaks on a three-quarter-inch service line and a one-inch service line in a creek. The Circuit Rider helped staff locate the water line in the creek. The following day, the Circuit Rider returned and assisted staff in locating a main water line valve, and additional line locations for the water line in the creek. The Town of Coeburn incurred no charges for the services of the VRWA Circuit Rider. Private contractors typically charge a minimum of $125 to $150 per hour for water leak detection services with a minimum of four hours. The Town of Coeburn saved over $2,250 in water leak detection costs. Additional savings will also be realized in the more efficient operation of the water treatment plant with reduced hours of operation, chemical treatment savings, and electrical expenses.

Appendix D

EPA Grant Projects
Virginia Rural Water Association (VRWA)

The Town of Bluefield in Tazewell County (1185061) requested assistance with leak detection in their water distribution system due to water loss of over 50 percent and paying extra for staffing their water plant additional hours due to the water loss. The Circuit Rider arrived on-site March 8th and discussed with staff the leak detection plan for the next several days. He returned on March 9th to begin surveying areas of concern for possible water leaks with town staff. A water leak was heard on the first water main valve they listened to and the water leak was located on a bank above a creek. This water leak was repaired later that evening. The system's water loss has been reduced by approximately 180,000 gallons per day. The Circuit Rider continued surveying with sensitive listening devices over the next two days for possible water leaks. Several smaller water leaks were located in water meter boxes and a water leak on a water main. The Circuit Rider was also able to locate another larger water leak on a water main up next to Dudley Primary School. This water leak has not been excavated at this time by staff.

On September 23, 2021, Prince George County Utilities contacted VRWA for assistance with a major water leak at the county's industrial park. Several attempts to locate the leak by county personnel was unsuccessful and the county had to initiate a Boil Water Notice because of low water pressure issues caused by the leak. Several businesses and schools were forced to close. VRWA Circuit Riders responded on the afternoon of the 23rd to assess the situation and met with the waterworks. After isolation and valving off along with taking pressure readings on various fire hydrants the Circuit Riders determined the probable cause of the leak was on a mile stretch of main in the industrial park. Darkness and labor issues precluded any more searches for the day. The Circuit Riders were notified the next morning that a 12-inch valve had been inserted to better isolate the problem area. Circuit Riders resumed leak detection efforts on the morning of the 24th of September using the Seba MKT Hydrolux Acoustic leak detection equipment. After energizing the problem section and using a systematic approach, using the acoustic equipment and monitoring the gages installed on various fire hydrants the Circuit Riders were able to determine that a faulty fire protection system located at one of the facilities in the industrial park was the culprit. After shutting the valve going to the fire protection vault, all pressures returned to normal in the rest of the system. Apparently, over pressurization due to a new piece of equipment being installed in the protection system had ruptured a ten-foot section of pipe, which in turn caused the massive leak in a wooded area behind the facility, resulting in the drop in pressure to the system. County Officials and the Utility Superintendent were extremely appreciative of the efforts and successful locating of the faulty fire protection apparatus and subsequent leak. Total cost savings for the event is still yet to be determined but it was estimated that several thousand gallons of water was saved and the duration of the event was considerably shortened resulting in additional cost savings.

The Water Superintendent for Big Stone Gap in Wise County (1195100) requested assistance with leak detection training for Public Works staff. The Town had leak detection equipment but had not been trained by the equipment vendors. The staff had tried using the equipment but was not sure of what they are hearing and did not feel comfortable using it. The VRWA Water Circuit Rider arrived on February 16, 2021, and reviewed with staff the process for water leak detection, including water leak sounds, and review of their FCS Survey Tool and Sebakmt Hydrolux Ground Mic. The Circuit Rider offered to train that day in two smaller groups of four employees each due to Covid-19 restrictions. The Circuit Rider returned on February 17 to do some field leak detection

in their water distribution system with town staff. They pinpointed a water leak and staff was able to see their equipment used and listen to the water leak sounds. On February 24, 2021, the VRWA Circuit Rider returned for further leak detection training for staff. Prior to the arrival of the Circuit Rider, the Town of Big Stone Gap developed problems with high water loss in the area of East Stone Gap. Town staff had started surveying for water leaks, and had located areas of concern to have the Circuit Rider pinpoint the water leaks. The Circuit Rider pinpointed seven water leaks. On February 25th the Circuit Rider returned to Big Stone Gap. Town staff had repaired a water leak on Locke Street and the Circuit Rider listened to see if everything had quieted down, but another water leak was heard and pinpointed. The VRWA Water Circuit Rider will check back with Mr. Hampton after all leaks are repaired to see if further assistance is needed including further leak detection field training for staff. The VRWA Water Circuit Rider spent a total of 23 hours onsite in leak detection training and water leak detection in their water distribution system. The Town of Big Stone incurred no charges for the services of VRWA. Immediate savings for training and leak detection assistance was $2,450.00, with additional savings after all water leaks are repaired, in reduced cost of water treatment at the plant. These savings would be in the form of reduced electricity, chemical cost savings, and reduced maintenance for water treatment equipment.

VRWA Source Water Protection 2021 - 2022

The Rye Valley Water Authority (Congressional District 9) system operates 5 wellheads and serves a population of around 758 customers. VRWA provided the Authority with educational materials to be distributed to customers regarding smart septic and smart wellhead practices. All of these practices are meant to prevent residential pollution of groundwater. The system may also explore working with the Evergreen Soil and Water Conservation District to improve regional agricultural practices. Agriculture can harm groundwater quality and improving grazing and production methods can help prevent groundwater contamination.

The Town of Stony Creek waterworks, part of the Sussex County Service Authority (Congressional District 4) operates 4 wellheads and serves a population of around 180 customers. Currently, Source Water Protection implementation includes educational materials for customers living in the protection zones on smart septic practices and other information meant to prevent the pollution of groundwater. The town will also explore the possibility of cost share measures for septic pump outs.

The Northeast Regional Water System, part of the Sussex County Service Authority (Congressional District 4) operates two wellheads and serves a population of around 2,300 people. Their Source Water Protection Plan was submitted with educational materials on source water protection measures that may be put in action by customers existing within the protection zone. Future implementation measures can include increasing shrub and native grass cover in the Zone 1 protection zone to prevent runoff and pooling water around the wellheads.
The Virginia Rural Water Association is working with the Town of Big Stone Gap and the Thomas Bridge Water Corporation on Source Water Protection Plans. VRWA expects these to be

completed later in 2021. They are also working with the Town of Dungannan on a Plan to be completed in 2022.

Appendix D

EPA Grant Projects
Environmental Finance Center Network (EFCN)

For the period of October 1, 2020 through September 30, 2021, the Environmental Finance Center Network provided the following services to small systems in Virginia:

- 5 national webinars on water system finance and management topics
- A variety of blog posts on financial and managerial topics, which can be accessed at: https://efcnetwork.org/small_systems_blog/

The 2019 Water and Wastewater Rates Dashboard was deployed on February 28, 2020 and can be accessed here:
https://efc.sog.unc.edu/resource/virginia-water-and-wastewater-rates-dashboard/

Appendix D

EPA Grant Projects
Virginia Section American Waterworks Association (VAAWWA)

The Virginia Section of the American Water Works Association has conducted training throughout Virginia this year (see table below) between October 1, 2020 to September 30, 2021. Due to the COVID pandemic, many of our annual events were not able to be held or were converted to a virtual option.

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Event: Webinar: Water Outreach Response to COVID-19	**Event**: Cybersecurity and Accessing Funding to Improve Small Systems (USDA Grant)
Date: November 19, 2020 **Location**: Webinar **Registered Attendees**: 56	**Date**: April 15 and 16, 2021 **Location**: Webinar **Registered Attendees**: 13
Event: Webinar: Addressing Aging Infrastructure Challenges for Water/Wastewater Utilities	**Event**: 2021 Spring Distribution Seminar
Date: December 3, 2020 **Location**: Webinar **Registered Attendees**: 58, including 6 groups	**Date**: April 21 and 28, 2021 **Location**: Webinar **Registered Attendees**: 45
Event: Leadership Academy – Crucial Conversations (Book Discussion)	**Event**: 2021 Plant Operations Conference
Date: January 27, 2021 **Location:** Virtual **Registered Attendees:** 30	**Date**: May 6 and 7, 20212 **Location**: Webinar/Online **Registered Attendees**: 35
Event: Funding Opportunities for Small Water Systems Workshop (Partnership with VDH)	**Event**: Drinking Water Quality and Research Seminar Series
Date: February 16, 2021 **Location**: Webinar/Online **Registered Attendees**: 125	**Date**: May 13, 20, and 27, 2021 **Location**: Webinar **Registered Attendees**: 72
Event: Leadership Academy – Water Industry Issues	**Event**: Leadership Academy – Moral and Ethical Leadership
Date: February 17, 2021 **Location:** Virtual **Registered Attendees:** 30	**Date:** May 19, 2021 **Location:** Virtual **Registered Attendees:** 28
Event: Webinar: Removing Manganese	**Event**: Cross Connection Devices: Inspection, Maintenance, and Testing – 16 Hour Course
Date: March 9, 2021 **Location**: Webinar **Registered Attendees**: 51, including 3 groups	**Date**: June 23 – 25, 2021 **Location**: Virginia Beach, VA **Registered Attendees**: 14 registrants
Event: Webinar: VOSH COVID-19 Permanent Standard Made Simple	**Event**: Setting Effective Rates and Accessing Funding to Improve Small Systems (USDA Grant)
Date: March 16, 2021 **Location**: Webinar **Registered Attendees**: 190	**Date**: July 13 and 14, 2021 **Location**: Webinar **Registered Attendees**: 7 registrants

Appendix D

EPA Grant Projects

Virginia Section American Waterworks Association (VAAWWA)

Event: Webinar: Strengthening Customer Relationships Through Social Media **Date**: March 17, 2021 **Location**: Webinar **Registered Attendees**: 92	**Event**: Leadership Academy – People Styles and Motivation **Date:** July 15, 2021 **Location:** Virtual **Registered Attendees:** 28
Event: Water Loss Control and Accessing Funding to Improve Small Systems (USDA Grant) **Date**: March 23 and 24, 2021 **Location**: Webinar **Registered Attendees**: 24	**Event**: Cross Connection Devices: Inspection, Maintenance, and Testing – 16 Hour Course **Date**: August 11 - 13, 2021 **Location**: Virginia Beach, VA **Registered Attendees**: 11 registrants
Event2021 Achieve and Maintain Compliance with the Safe Drinking Water Act (EPA Grant) **Date**: March 29 and 30, 2021 **Location**: Webinar **Registered Attendees**: 42	**Event**: Leadership Academy – Goal Setting **Date:** August 18, 2021 **Location:** Virtual **Registered Attendees:** 28
Event: Leadership Academy – Crucial Conversations (Book discussion) **Date:** April 20, 2021 **Location:** Virtual **Registered Attendees:** 30	**Event**: Utility Management Workshop Series **Date**: April 28, 2021 – Keys to a Successful Asset Management Program May 12, 2021 – Controversial Statements: How Will Our Utility Managers Respond? May 26, 2021 – What Will Your Future Look Like? How to Ensure a Successful Workforce for Tomorrow **Location**: Webinar **Registered Attendees**: approx. 60
Event: WaterJAM 2021 **Date:** September 13 – 16, 2021 **Location:** Virginia Beach, VA **Registered Attendees:** 1575 **Sessions:** 180+ **Workshops:** 2	American Water Works Association VirginiaSection

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

New River Water Company owned a number of small waterworks across the western portion of the state. Over time, the owner was not providing adequate oversight of the systems and had effectively abandoned them. This resulted in multiple Notices of Apparent Violation (NOAV). Through coordination with the ODW Compliance and Enforcement Division, the State Health Commissioner issued a Consent Order against the company. During this time, field office staff provided additional technical assistance to ensure that the drinking water at those systems was meeting SDWA standards. Staff conducted special site visits to collect bacteriological samples, hand deliver Boil Water Advisories, and to address customer complaints. The affected waterworks included Bethel Woods Subdivision (1121048), Dry Valley Subdivision (1121150), Twin Boulders Subdivision (1121755), Viewland Subdivision (1121825), Walton Farms Subdivision (1121842) and Castle Craig Subdivision (5031225). The same owner was operating an unpermitted consecutive waterworks off the Town of Iron Gate (2005480). The residents of that waterworks are in discussions with a local utility to take over ownership and operations.

Elevated Copper at a School

The Northside Middle School (2161588) collected lead and copper samples. The results indicated that copper was above the action level. Field staff assisted the waterworks operator with completing a new Lead and Copper Materials Survey, collecting Water Quality Parameter samples, collecting confirmation samples, and flushing protocols. The second set of samples continued to show elevated copper. Staff worked with the School to identify options including installation of treatment or connecting to an adjacent regulated water system that is feeding corrosion inhibitor. The Roanoke County School Board has approved connecting the school to the Western Virginia Water Authority. This project is set to take place December 2021.

Nitrate/Nitrite Removal Treatment Optimization

The Ballyhack Golf Course (2161028) has elevated nitrate and nitrites and has treatment to remove these contaminants. Quarterly nitrate/nitrite sample results were elevated, indicating the treatment system was not functioning as designed. Field staff met on-site with the operator and a representative from the company that designed the treatment. During the troubleshooting, field staff was able to identify the cause of the problem. The operator was mixing the post-treatment soda ash with raw water; this inadvertently added nitrates/nitrites back into the process stream. The operator is now using the finished water tap for make-up water for the soda ash. The quarterly nitrate/nitrate results have returned to an acceptable range.

Appendix F

ODW Technical Assistance by Field Staff

New Owner / New Operator One-on-One Training

The Chief Water Operator at the City of Covington (2580100) left to take a new job at another waterworks. When he left, a lot of hands-on knowledge left with him. ODW staff made multiple site visits to the water plant and sat with the operators to figure out how to find necessary information for the Monthly Operations Report (MOR). After multiple correspondence with the former Chief Operator, they were able to figure out how to upload the data. ODW staff then worked with the operators to develop Standard Operating Procedures for generating the MORs. Because of the one-on-one time between the operators and field staff, the waterworks has been completing the required reports without assistance for several months.

Crestview Trailer Court (5143150) came under new ownership. The new owner did not know the requirements for the Consumer Confidence Report (CCR) nor how to produce it. Field Staff worked directly with the owner to explain the federal and state requirements and assisted the owner with creating one. Through this work, ODW built trust with the owner and helped ensure proper messaging of water quality information to the customers.

The building located at 803 S. Church Street (3093030) in rural Isle of Wight County was converted to house the "Red Point Taphouse." With this change in use, the facility came under the SDWA as a TNC waterworks. The owner was unfamiliar with the requirements of owning and operating a regulated waterworks. With extra on-site time, ODW field staff helped the owner understand the requirements and complete the necessary paperwork. An Operation Permit is in process.

Frequently, the first time ODW staff meets a potential new waterworks it is in the context of a well site inspection for a proposed facility. During one such meeting, ODW field staff met with the owner for the well site inspection and discovered that the owner had not fully thought through all of the implications (VDH Regulations, Local Ordinances, Local Health requirements). Two Authorized Onsite Soil Evaluators (AOSE) were also present at the meeting to consult on the sewage system. Field staff led a discussion amongst all parties to cover the state and federal requirements for a regulated drinking water system. All left with a better understanding of the interconnectedness of the regulatory bodies and processes.

ODW staff frequently finds that missed samples, errors in reporting, and missing SDWA plans are the result of a change in owner or operator. This is most common with TNC waterworks. In response to this need, Capacity Development staff developed a "Welcome Packet for TNCs" to both provide information to the owners and serve as a vehicle to facilitate discussion between ODW staff and the waterworks. Field staff used the Welcome Packet when they met with the new owner and operator of Revolution Sportplex (6107085). Staff observed that the Welcome Packet shortened the time required to bring the new owner up to speed and gave the operator confidence to complete the required tasks.

ODW field staff makes a concerted effort to provide one-on-one training in the field with the waterworks individual, typically in the context of a sanitary survey. One example is Tuggle's Gap Roadside Inn (1063742). The Inn had a new owner that had never owned a waterworks. Following a routine inspection in which the inspector provided additional training, the owner planned to make

necessary repairs to the well casing and was prepared to operate in compliance with the Regulations. At the Elkhorn Lake Campground (5143176, 5143178, and 5143179) the new manager was having difficulty keeping track of regulatory requirements for the three systems. ODW field staff spent extra time going through all of the sampling requirements with the new manager, ensuring he understood how each system worked. Following this meeting, the waterworks has completed all compliance sampling properly and on time.

Staff regularly encounters waterworks staff at small waterworks that do not understand the principles of cross connection control. Staff provided one-on-one instruction for the Town of Hurt (5143246) and the Town of Pamplin City (5011400). In both cases, the waterworks had new personnel that needed basic training on the requirements of an active cross connection control program. This protects public health and builds the confidence of the new personnel.

Revised Total Coliform Rule Technical Assistance

One of the most common violations that ODW issues is for either failure to monitor for bacteriological contaminants, or for violating provisions of the Revised Total Coliform Rule. Technical assistance that staff provides ranges from helping the owners understand benefits of proper sample taps to good sampling techniques to proper disinfection following modifications to premise plumbing. ODW staff also helps owners understand the pros and cons of hiring a licensed operator (when not required at TNCs) versus collecting the samples themselves. A few examples follow.

The Montgomery County Game and Fish Club (1155500) had two Most Probable Number (MPN) samples in excess of 100 MPN in April 2021. Because of these samples, the Club was required to increase sampling from quarterly to monthly. Field staff visited the waterworks, explained the new requirements, and talked with the owner about the increased costs. While the owner elected to continue to use the private lab they had been using, the owner had a better understanding of the reasons for bacteriological sampling, the potential impacts on the business, and what was needed to remain in compliance with the SDWA.

The Holly Grove Marina (5117382) had received multiple Failure to Monitor for Bacteriological Contaminants. During a site visit, field staff provided one-on-one training to the owner on the importance of collecting the samples and proper technique. This training has resulted in the owner beginning to collect valid samples on time for compliance.

During the fall and spring, Oak Grove Baptist Church (4193702) operates a school. During May of 2021, a routine bacteriological sample tested positive for total coliform. Field staff performed follow-up on the result and learned that contractors were doing phased improvements to the recreational building at the school that likely contributed to the bacteriological problem. In consultation with ODW, the school decided to shut down the facility and the waterworks during the summer so construction could be completed. Prior to putting the system back in service, the well and distribution system were shock chlorinated, flushed, and samples were collected to ensure the water was free of bacteria. The water system was reactivated and the school resumed monitoring.

The Naylors Beach Campground (4159610) received a total coliform positive result in August 2021. Repeat and raw water samples collected also tested positive. Staff scheduled a routine inspection and during that site visit, the owner said that there had been no water line breaks or any work done on the tank or well. Staff observed that the hydro-pneumatic tank was waterlogged and the sight glass was valved off to prevent leakage. It had recently been very hot and only a limited amount of water was being used, possibly leading to insufficient tank turnover. Staff directed the owner to remount the site glass and maintain a 50/50 ratio of air to water. This would cause less on/off cycling of the well pump, ensure good turnover in the tank, and prevent water stagnation. The next routine sample result is pending.

Situation-Specific Technical Assistance

Leakage: The Town of Iron Gate (2005480) was having leakage issues that were showing up in their Monthly Operation Reports. Field and Capacity Development staff went out to the town and discussed approaches to leak detection, the benefit of Asset Management, and a neighborhood that the Town supplied water to, but for which the owner was non-responsive. Following the visit and subsequent discussions with the Town, the Town found a major leak in the neighborhood and some other smaller leaks in their system. After those repairs, the leakage issue was mostly resolved. Capacity Development staff will continue to work with the waterworks to address financial and managerial issues identified.

Monthly Report Data Incorrect: During a regular review of Monthly Operation Reports for Loudoun Water, Field Office staff noticed that the reported production for some of Loudoun Water's newer systems appeared incorrect. Staff reached out to the Utility Manager and learned that production was being tracked using a MS Excel spreadsheet. Utility staff had been entering meter readings, but had not realized that embedded formulas were incorrect. Once ODW staff alerted them of this, they corrected the problem.

Source Water Protection Advanced: While performing a Level 2 Assessment in Loudoun County, Field Staff observed five new wells on property adjacent to the waterworks. The wells did not appear to be connected to homes or other infrastructure and were not capped. Staff contacted the Town of Hamilton Planning and Zoning Department and the Loudoun County Health Department to get more information. Staff learned that the wells had been drilled to serve five new homes, but the projects had stalled. Staff emphasized the importance of protecting the groundwater supply and observed that the five wells could easily be vandalized. After further discussion, staff was able to gain the cooperation of Local Health to get a contractor weld steel caps on the wells. This simple fix protected local groundwater supplies.

Disinfection and sampling following maintenance and repairs: The City of Salem (2775300) had two separate issues that ODW staff helped address. The first one involved routine tank maintenance. Utility staff was unclear of the procedures for bringing the tanks safely back online following maintenance. Field staff pulled the Regulations and relevant AWWA standards, finding the proper protocols for disinfection and follow-up sampling. The tanks were properly disinfected and bacteriological sampling was negative before the tanks were placed back in service. The second issue involved a water main break adjacent to the local High School. The High School had to close for the day because of the water main break. As with the first issue, ODW staff pulled the

necessary resources and found protocols for line disinfection following repair. The line was replaced and after proper disinfection and bacteriological testing, the line was returned to service. The school was closed for only a day and a half.

Well Failure, assistance during transition: The well at the Bradley Mart (4097210) failed and there was no water for the convenience store. The owner installed a line from an adjacent residential well to temporarily supply water to the system. Field Office staff worked closely with the owner to ensure that the water from the temporary well met bacteriological and nitrate/nitrite requirements, ensuring that chlorination was continued. Staff approved the new well site. The new well will be connected after engineered plans and specifications are approved to ensure they meet Regulations design standards.

Consumer Confidence Report Assistance with Calculations: The lab manager for the City of Chesapeake, Western Branch, and Northwest River systems (3550050 and 3550051**)** was unclear how to calculate the Locational Running Annual Averages (LRAAs) for disinfection byproducts for the two waterworks. Additionally, some of the monitoring locations had changed during the year. They needed to include this information in the Annual Consumer Confidence Report (CCR). They reached out to regional field staff who provided guidance on how to calculate the LRAAs properly and how to report the results in the CCRs. With this bit of assistance, the waterworks completed and distributed the CCRs on time, with all the result correctly reported.

Delay in Shipment of sample kits: The Town of Tangier (3001833) deals with many logistical challenges since it is an island in the Chesapeake Bay and has had recent staff turnover. One issue that they have struggled with has been sample collection. They have received many failures to monitor violations. The source of this issue seems to have been that they have not paid for their sample kits in sufficient time for the lab to get the kits to them for the required monitoring period. Staff has been more proactive in discussing monitoring requirements, timing, and need for communication with the State Lab with the Town. The Town Manager is now paying for samples consistently, following up with the Lab to ensure the kits are delivered on time, and ensuring that the samples are collected and submitted for analysis as required.