



townhall.virginia.gov

Final Regulation Agency Background Document

Agency name	Virginia Department of Health
Virginia Administrative Code (VAC) Chapter citation(s)	12 VAC5-590 <i>et seq.</i>
VAC Chapter title(s)	<i>Waterworks Regulations</i>
Action title	Amend and update the <i>Waterworks Regulations</i>
Date this document prepared	October 9, 2020

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Order 14 (as amended, July 16, 2018), the Regulations for Filing and Publishing Agency Regulations (1VAC7-10), and the *Form and Style Requirements for the Virginia Register of Regulations and Virginia Administrative Code*.

Brief Summary

Provide a brief summary (preferably no more than 2 or 3 paragraphs) of this regulatory change (i.e., new regulation, amendments to an existing regulation, or repeal of an existing regulation). Alert the reader to all substantive matters. If applicable, generally describe the existing regulation.

The *Waterworks 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 planned regulatory action is a comprehensive update of the *Waterworks 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) will be incorporated into Part III, and the appendices will be 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Significant changes include amending out-of-date regulations, incorporating technologies and procedures that have come into use since the last major revision in 1993, and reorganizing sections to make them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, 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 will 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.

Acronyms and Definitions

Define all acronyms used in this form, and any technical terms that are not also defined in the "Definitions" section of the regulation.

"APA" means the Virginia Administrative Process Act, *Code of Virginia* §§ 2.2-4000 through 2.2-4032.
 "ASSE" means the American Society of Sanitary Engineering
 "AWWA" means the American Water Works Association.
 "BAT" means best available technology
 "CCCP" means cross-connection control program,
 "CFR" means the Code of Federal Regulations.
 "DBPPs" means Disinfection Byproduct Precursors
 "DBPs" means Disinfection Byproducts
 "DEQ" means the Virginia Department of Environmental Quality.
 "DPOR" means the Virginia Department of Professional and Occupational Regulation
 "EPA" means the United States Environmental Protection Agency.
 "FOIA" means the Virginia Freedom of Information Act, *Code of Virginia* §§ 2.2-3700 through 2.2-3715.
 "gpm" means gallons per minute.
 "GUDI" means groundwater under the direct influence of surface water.
 "MCL" means maximum contaminant level.
 "MPA" means microscopic particulate analysis.
 "MRDL" means maximum residual disinfectant level
 "NPDWR" means National Primary Drinking Water Regulations, 40 C.F.R. Part 141.
 "NTNC" means nontransient noncommunity waterworks.
 "PMCL" means primary maximum contaminant level.
 "O&M" means operation and maintenance.
 "POE" means point-of-entry.
 "POU" means point-of-use.
 "RIS Style Manual" refers to the Virginia Register of Regulations *Form, Style and Procedure Manual for Publication of Virginia Regulations* (April 2014).
 "RPZ" means reduced pressure zone.
 "RTCR" means the Revised Total Coliform Rule, 40 CFR §§ 141.851 through 141.861 (Subpart Y).
 "SDWA" means Safe Drinking Water Act, codified at 42 USC §§ 300f et seq.
 "SMCL" means secondary maximum contaminant level.
 "TNC" means transient non-community waterworks.
 "USBC" means Uniform Statewide Building Code.
 "USC" means United States Code.
 "VA ABPA" means the Virginia Chapter of the American Backflow Prevention Association.

“VDH” means the Virginia Department of Health.

“VOSH” means the Virginia Occupational Safety and Health Program

“WAC” means waterworks advisory committee. The WAC advises VDH and the Health Commissioner.

Statement of Final Agency Action

Provide a statement of the final action taken by the agency including: 1) the date the action was taken; 2) the name of the agency taking the action; and 3) the title of the regulation.

[PROPOSED: The State Board of Health approved the final amendments to the *Waterworks Regulations*, 12VAC5-590, at its quarterly meeting on December 3, 2020.]

Mandate and Impetus

List all changes to the information reported on the Agency Background Document submitted for the previous stage regarding the mandate for this regulatory change, and any other impetus that specifically prompted its initiation. If there are no changes to previously reported information, include a specific statement to that effect.

The mandate and impetus for the amendments to the *Waterworks Regulations* remains the same as stated in the Agency Background Document submitted for the Proposed Stage. There are no changes to previously reported information.

Legal Basis

Identify (1) the promulgating agency, and (2) the state and/or federal legal authority for the regulatory change, including the most relevant citations to the Code of Virginia and Acts of Assembly chapter number(s), if applicable. Your citation must include a specific provision, if any, authorizing the promulgating agency to regulate this specific subject or program, as well as a reference to the agency’s overall regulatory authority.

§ 32.1-169 of the *Code of Virginia* provides that the State Board of Health (board) shall have general supervision and control over all water supplies and waterworks in the Commonwealth insofar as the bacteriological, chemical, radiological, and physical quality of waters furnished for human consumption may affect the public health and welfare and may require that all water supplies be pure water. In exercising such supervision and control, the board shall recognize the relationship between an owner’s financial, technical, managerial, and operational capabilities and his capacity to comply with state and federal drinking water standards.

§ 32.1-170 of the *Code of Virginia* authorizes the board to promulgate regulations to govern waterworks, water supplies, and pure water to protect the public health and promote the public welfare. These regulations shall include criteria and procedures to accomplish these purposes.

§§ 32.1-167 and 32.1-168 and §§ 32.1-171 through 32.1-176 of the *Code of Virginia* provide additional details regarding the board’s authorities and responsibilities for regulating waterworks in Virginia.

Purpose

Explain the need for the regulatory change, including a description of: (1) the rationale or justification, (2) the specific reasons the regulatory change is essential to protect the health, safety or welfare of citizens, and (3) the goals of the regulatory change and the problems it's intended to solve.

The purpose of this action is to amend the *Waterworks Regulations* to update and clarify the requirements for waterworks to follow in construction, operation, and treating, monitoring, and testing drinking water that are necessary to protect public health and ensure they provide reliable, safe drinking water to Virginians.

The Board of Health promulgated the *Waterworks Regulations* in 1991 and significantly amended them in 1993. Since 1993, sections of the *Waterworks Regulations*, primarily the definitions (12VAC5-590-10) and Part II, have been amended as needed to incorporate federal requirements in the *Safe Drinking Water Act* (42 USC § 300f *et seq.*) and National Primary Drinking Water Regulations (40 CFR Parts 141, 142, and 143). VDH completed the most recent amendment in November 2016 to incorporate the requirements in the Revised Total Coliform Rule (RTCR), 40 CFR §§ 141.851 through 141.861, in the *Waterworks Regulations*. VDH made these amendments through “exempt” regulatory actions that were necessary for the state to retain primary enforcement responsibility for waterworks in Virginia. See § 2.2-4006 A 4 of the *Code of Virginia*. From 1993 to the present, the balance of the *Waterworks Regulations* have remained unchanged.

The VDH Office of Drinking Water, the WAC, and a Regulatory Advisory Panel consisting of waterworks stakeholders, collectively recommend that Parts I and III of the current *Waterworks Regulations* be updated in the areas of waterworks’ permitting, design, and construction, and Part II be amended to clarify operating requirements and improve overall readability. As part of the agency’s effort to clarify and improve the readability of the *Waterworks Regulations*, VDH also addressed consistent use of defined terms and technical terms across the entire document. The current regulatory action follows these recommendations and also incorporates the following: current water treatment technologies; current monitoring and control technologies; changes to water consumption patterns resulting from shifts in consumer use and water-saving plumbing fixtures; changes to source water quality and availability due to increased water demands; and new state laws and regulations governing source water supply planning and withdrawal.

Substance

Briefly identify and explain the new substantive provisions, the substantive changes to existing sections, or both. A more detailed discussion is provided in the “Detail of Changes” section below.

The proposed amendments reorganize the way information is provided; add new sections to expand or clarify existing provisions or incorporate new provisions; delete sections in whole or in part to remove obsolete information and duplication; revise references and/or citations to be current; update references to the commissioner and department to reflect appropriate authority and responsibility for action; and correct sentence structure, grammar, spelling, and typographical errors. VDH reviewed and revised technical terms and word use to improve consistency throughout the *Waterworks Regulations*. No new federal mandates are included. Substantive changes include:

Part I – General Framework for Waterworks Regulations

1. Revise, add, or delete definitions.
2. Add units of measurement.
3. Add new section on the Waterworks Advisory Committee.
4. Add a new section on relationship to the Uniform Statewide Building Code (USBC).
5. Add a new section on administrative proceedings and update enforcement requirements to be more consistent with the APA and Title 32.1 of the *Code of Virginia*.

6. Update, clarify and streamline the permit process, including the requirements for obtaining a construction permit.
7. Add requirements and circumstances for issuance of a temporary operation permit.

Part II - Operation Regulations for Waterworks

8. Move and consolidate all water quality standards, maximum contaminant levels, action levels, treatment techniques, and maximum disinfectant levels and goals to the first section of Part II.
9. Clarify federal sodium monitoring and reporting requirements.
10. Revise and clarify the procedure for determining surface water influence of groundwater sources.
11. Reorganize and move content of five large sections (370, 410, 420, 530, and 545) into several new, smaller sections.
12. Revise and clarify the classification of waterworks, operator requirements, and operator attendance.
13. Add new sections for abandoning and reactivating wells.
14. Move and revise operation report content requirements from Appendix G to section 570.
15. Revise and clarify cross-connection control program requirements.

Part III - Manual of Practice for Waterworks Design

16. Update design water demand and waterworks capacity requirements.
17. Revise and clarify metering, building design, layout, and laboratory design requirements.
18. Revise and clarify new source development requirements for groundwater sources, including springs.
19. Clarify well construction requirements and well classification.
20. Distinguish and clarify construction, testing, and capacity requirements for wells located in designated groundwater management areas (9VAC25-600).
21. Revise and clarify water treatment processes. Add new sections for membrane filtration, bag and cartridge filtration, pre-engineered package treatment units, powdered activated carbon, disinfection processes using chloramines, chlorine dioxide, ultraviolet light, and ozone.
22. Clarify design requirements for pump stations and equipment.
23. Distinguish atmospheric and pressure storage tank design requirements.
24. Reorganize and move content of four sections (870, 880, 1000, and 1080) into new, smaller sections.
25. Update and clarify requirements for fire and yard hydrants.
26. Add new section on water loading stations.

Part IV- Exceptions for Noncommunity Waterworks

27. Move content to applicable sections in Part III and repeal this part.

Appendices

28. Appendix A. [Reserved] - Repeal.
29. Appendix B. Background Used in Developing the Chemical, Physical and Radiological Limits of the Drinking Water Standards - Extract relevant content and move to Part II. Repeal appendix.
30. Appendix C. Field Office Counties and Cities Served - Repeal. Content is available on VDH website.
31. Appendix D. [Reserved] - Repeal.
32. Appendix E. [Reserved] - Repeal.
33. Appendices F. and H. were previously repealed.
34. Appendix G. Monitoring and Reporting - Revise content and move to Part II. Repeal appendix.
35. Appendix I. Suggested Outline of Contents of a Cross Connection Control Program - Revise content and move to Part II. Repeal appendix.
36. Appendices J. and K. were previously repealed.
37. Appendix L. Determination of CT - Extract relevant content and move to Part II. Repeal appendix.
38. Appendix M. Lead and Copper - Repeal.
39. Appendix N. Inorganic Compounds and Organic Chemicals - Add reference in Part III to federal regulations for Best Available Treatment of inorganic and organic compounds. Repeal appendix.
40. Appendix O. Regulated Contaminants for Consumer Confidence Reports and Public Notification - Extract relevant content and move to Part II. Repeal appendix.
41. Appendix P. Best Available Technologies for Radionuclides - Add reference in Part III to federal regulations for Best Available Treatment of radionuclides. Repeal appendix.

Issues

Identify the issues associated with the regulatory change, including: 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions; 2) the primary advantages and disadvantages to the agency or the Commonwealth; and 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, include a specific statement to that effect.

The majority of the proposed changes to the *Waterworks Regulations* update and clarify existing requirements. In many cases, the changes reflect current requirements, practices and technologies for treatment, monitoring, and reporting; changes that waterworks have already implemented, but, because it has been over 25 years since the last significant revision, have not been incorporated in the *Waterworks Regulations*. VDH worked with stakeholder groups to make changes that are both protective of public health and reflect best practices for the regulated community. However, there are several specific areas, described below, upon which the stakeholders, VDH, and the citizens of the Commonwealth may not be in complete agreement. They include cross-connection control, source water capacity evaluation, operator classification, point-of-use devices, reduced monitoring for bacteriological contaminants at certain TNCs, the addition of fluoride to drinking water to reduce dental caries, and requirements for hydrants (fire hydrants and yard hydrants) that waterworks install after the effective date of the amendments.

VDH requires community waterworks to take measures to reduce the possibility of cross-connections and to prevent backflow, both of which can lead to contamination of drinking water. A number of waterworks owners requested changes to the *Waterworks Regulations* that reflect their current practices to track and monitor cross-connection and backflow prevention devices, educate consumers, and prevent conditions that result in greater risk of contamination. The changes reflect the input from stakeholders and have the advantage of being based largely on their input. While they address as many stakeholders' concerns as possible, they do not, and cannot, take into account all their varying positions on cross-connection requirements. VDH believes the changes provide more clarity about requirements for cross-connection control programs, they distinguish between a waterworks' responsibility under the *Waterworks Regulations* and a building owner or consumer's responsibility under the USBC, they provide a great deal of flexibility for waterworks to meet program requirements, and they are no less protective of public health than the current practices and requirements. While individual waterworks may have issues with the changes, VDH does not believe there are any disadvantages to the changes.

The determination of waterworks' source water capacity and how much can be withdrawn is a concern to stakeholders. Waterworks with wells located in a Virginia Groundwater Management Area may be subject to regulation by DEQ (based on the quantity of water that is withdrawn), and may be required to obtain a Groundwater Withdrawal Permit before construction. Waterworks with surface water sources may also be subject to regulation by DEQ, depending on the amount the waterworks withdraws and when the withdrawal commenced. Section 830 (12VC5-590-830) does not reflect VDH practices for evaluating a permit application that involves a surface water withdrawal. However, efforts to reach a consensus among stakeholders about how to revise this section were unsuccessful. Consequently, VDH did not amend Section 830 in this regulatory action. VDH will continue to work with stakeholders outside of this regulatory action to reach consensus on this topic.

The operator classification and minimum attendance requirements may be an issue for a small subset of waterworks, particularly those with the Class 4, 5 and 6 designations, which are differentiated by the type of treatment provided and by the population served. This change establishes regulatory requirements that VDH has been implementing by policy. Placing the operator classification and attendance requirements in the *Waterworks Regulations* will give the regulated community a sense of security that the requirements will not be subject to change without going through the rulemaking process. The advantage to the regulatory change is that waterworks will be required to have properly trained and licensed operators, and

the operators will have standards for training. For waterworks owners, the disadvantage will be the cost to train operators and, in some areas, the difficulty of finding sufficient trained, licensed operators. For the agency and the Commonwealth, having qualified operators in responsible charge of waterworks is critical to ensuring waterworks can consistently and reliably provide drinking water that meets regulatory standards and is protective of public health.

VDH will allow point-of-use (POU) or point-of-entry (POE) devices for long-term compliance with PMCLs; except that POU devices are still prohibited for achieving compliance with microbial contaminant treatment technique requirements. This action will provide waterworks additional flexibility, allowing owners and operators the option to employ POU and POE treatment to meet PMCLs.

VDH incorporated the Revised Total Coliform Rule (a federal mandate) into the *Waterworks Regulations* in 2016. At the time, VDH did not include the option in the rule to reduce the monitoring frequency for bacteriological contaminants at certain TNCs from quarterly to annual. To reduce (potentially) the burden of collecting and submitting quarterly bacteriological samples at qualified well-operated TNCs, VDH will add this option to the *Waterworks Regulations*. EPA Region 3 determined that the changes to the *Waterworks Regulations* that are related to reduced monitoring at TNCs are no less stringent than, and do not differ materially from, the federal rule. For VDH, the change requires the agency to increase its site visit frequency at those TNCs that qualify for reduced monitoring from every three years to every year. However, VDH believes the change will be a benefit for the TNCs that qualify because it will reduce their monitoring costs.

Although the benefits of adding fluoride to drinking water, which does not contain naturally occurring fluoride, to prevent tooth decay and reduce dental caries are widely accepted in the United States, some individuals and groups strongly oppose the practice. VDH is changing the *Waterworks Regulations* to clearly state that the Board of Health recommends that all community waterworks maintain an optimal level of fluoride in drinking water and to require notice to the commissioner and consumers before the waterworks makes any operational changes which either initiate or permanently stop programs to provide community water fluoridation. The main advantage of the changes is that they align the recommended level of fluoridation with the U.S. Department of Health and Human Resources' guidelines and they ensure VDH and the public are notified about proposed changes in fluoridation before they take effect. Groups that oppose fluoridation may be resistant to any statement in the *Waterworks Regulations* that the practice is effective or recommended. VDH sees advantages to receiving notice about proposed changes in fluoridation programs and allowing the recommended level, currently 0.7 parts per million, to be established by the U.S. Department of Health and Human Resources.

VDH is providing new requirements, applicable to new installations, for the location, construction standards, and installation of dry-barrel fire hydrants and yard hydrants, discussed here collectively as hydrants. Drain ports in dry-barrel hydrants open after use to allow water to drain from the hydrant to keep it from freezing in the barrel during cold weather. However, drain ports can also allow water from the subsurface to flow into the base of the hydrant and, possibly, into water lines if the drain port is submerged and the water line experiences low or zero pressure. The new requirements call for locating hydrants in areas that are not subject to high groundwater, flooding, surface water ponding, and contaminant or pollutant spills. When this is not practical, the hydrant should either be drained to daylight with screening on the end of the pipe or have the drain port plugged. If fire hydrant drains are plugged and not dewatered after use, utility and fire department representatives are concerned about hydrants freezing and being blocked with ice during cold weather. As a result, they oppose plugging weep holes. Although the amendments do not require waterworks to plug drain ports on dry-barrel fire hydrants, they do clarify that hydrants installed after the effective date of the regulations will comply with industry standards, and drain to the ground surface or a dry well, if the drain port is not plugged. VDH believes this revision provides flexibility for firefighters and waterworks owners while being protective of drinking water quality.

Requirements More Restrictive than Federal

List all changes to the information reported on the Agency Background Document submitted for the previous stage regarding any requirement of the regulatory change which is more restrictive than applicable federal requirements. If there are no changes to previously reported information, include a specific statement to that effect.

The explanation of requirements in the amendments to the *Waterworks Regulations* that are more restrictive than applicable federal requirements remains the same as stated in the Agency Background Document submitted for the Proposed Stage. There are no changes to previously reported information.

Agencies, Localities, and Other Entities Particularly Affected

List all changes to the information reported on the Agency Background Document submitted for the previous stage regarding any other state agencies, localities, or other entities that are particularly affected by the regulatory change. If there are no changes to previously reported information, include a specific statement to that effect.

The explanation of other state agencies, localities, or other entities that are particularly affected by the regulatory change remains the same as stated in the Agency Background Document submitted for the Proposed Stage. There are no changes to previously reported information.

Public Comment

Summarize all comments received during the public comment period following the publication of the previous stage, and provide the agency response. Include all comments submitted: including those received on Town Hall, in a public hearing, or submitted directly to the agency. If no comment was received, enter a specific statement to that effect.

Comments VDH received during the 60-day public comment period are included in the table below. They are listed in the order received on the Town Hall website. VDH received two comments directly; they follow those from Town Hall. VDH received the last comment during a public hearing the agency conducted on January 7, 2020 in Richmond, Virginia. Where a commenter addresses more than one section or subsection of the proposed amendments, VDH separated the comments and put them in section/subsection order.

The majority of the comments focused on two areas, cross-connection control and hydrants.

1. Cross-connection control

Comment Summary: VDH received numerous comments with recommendations to revise the requirements for the cross-connection control program. These comments included:

- Public education is not a substitute for testing.
- Clarify that annual testing is required.
- Clarify inventory and recordkeeping requirements.
- Clarify examples of high and low hazards
- Clarify relationship between the owner, the CCCP, the USBC, and the code official.

- Clarify certain facilities where containment protection is required.
- Add requirements to meet standards established by the University of Southern California’s Foundation for Cross Connection Control and Hydraulic Research.
- Address devices suitable for continuous pressure applications.
- Add, correct or clarify certain definitions.

Response: VDH modified definitions in 12VAC5-590-10 and 12VAC5-590-580 through 12VAC5-590-630 to address these comments. Additional details can be found in the following table. Where more than one person submitted the same or a substantially similar comment, the agency response may refer to a previous commenter, identified by an abbreviation under the commenter’s name.

2. Hydrants

Comment Summary: VDH received numerous comments and recommendations to revise the requirements for the design standards for hydrants. These comments included:

- Concerns about a requirement to plug dry-barrel fire hydrant drains.
- Concern about requirement to plug drains in existing fire hydrants.
- Allowing flushing hydrants on waterlines less than 6 inches in diameter.

Response: VDH modified 12VAC5-590-1170 to address these comments. Additional details can be found in the following table. Where more than one person submitted the same or a substantially similar comment, the agency response may refer to a previous commenter, identified by an abbreviation under the commenter’s name.

Commenter	Comment	Agency response
Scott Sande, Plumbing Contractor (SS-1)	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> 12VAC5-590-600 D can be misconstrued and could lead to a dangerous situation. This could lead an owner to implement a program in which backflow prevention assemblies are not required to be tested annually. All backflow prevention assemblies need to be tested annually! These devices are required to be installed in systems meeting the criteria, so why would it not need to be tested if it is installed? If a device is required, it's required for a reason, and therefore, should be tested to ensure it's working to prevent "the reason".</p> <p>Evidence has shown these devices fail periodically. A failed device can fail to prevent the cross connection of hazardous conditions into the water system.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630. Modifications to 12VAC5-590-600 provide clearer distinctions of the roles/responsibilities between the USBC and the waterworks owner, beyond consumer self-assessments, and to accommodate and clarify the use of an optional public education program for consumer self-awareness.</p> <p>The amendments and subsequent modifications do not compromise annual testing. They require a waterworks CCCP to include procedures for completing and monitoring operational tests on testable assemblies, methods, and devices to provide containment and they have inventory and recordkeeping requirements. The modifications eliminate the option to substitute public education for annual operation tests, but allow consumer education to prompt self-assessments, increase awareness, and inform consumers about hazards of backflow. The owner may determine whether or not to maintain an inventory and/or records for single-family residences.</p> <p>These modifications provide regulatory flexibility and protect public health. In addition, VDH made modifications to sections 12VAC5-590-610 on containment and 12VAC5-590-630 on assemblies, devices, and methods to provide additional clarity to the CCCP regulatory requirements.</p>
Scott Sande (SS-2)	<p><u>12VAC5-590-600 D</u> The use of the term "high hazards" in 12VAC5-590-600 D is ambiguous. The table referenced can be interpreted many</p>	<p>VDH revised 12VAC-590-600 D (now -600 E) to remove the term "high hazards." To improve clarity and understanding, Table 630.1 lists more examples of</p>

	<p>different ways. Since the types of hazards are not specifically listed in the table, an owner could interpret a specific hazard to be "low", simply to avoid implementing a proper program with record keeping of annual testing of devices. The "public education program" could be used as a loophole for owners who may not have a proper program in place or choose not to implement one.</p>	<p>conditions that are high and low hazards such as lawn irrigation systems and fire sprinkler systems with chemical additives or antifreeze (high hazard) and coffee machines, non-carbonated beverage dispensers, and residential fire sprinkler systems constructed of materials designed for potable water flow (low hazard). Subsection 12VAC-590-630 B 3 requires owners and users to use the USBC and the manufacturer's specifications to determine the appropriateness of the backflow prevention assembly or backflow prevention device application for containment.</p>
<p>Scott Sande (SS-3)</p>	<p><u>12VAC5-590-600 D</u> As someone in the industry for over 20 years, I have never seen a public education program. Should such a program be implemented, even in its most effective method, it should be apparent to any objective party that "consumer self-assessments" is an unrealistic ask. If we were to rely on consumers to "do the right thing" then why would any of these regulations even exist? It needs to be up to the owner, not the consumer, to ensure the owner's system and the public's safety is protected from hazards.</p>	<p>Noted. The modifications eliminate the option to substitute public education for annual operation tests, but allow consumer education to prompt self-assessments, increase awareness, and inform consumers about hazards of backflow. The optional public education program can supplement a waterworks' CCCP, but does not modify the customer's responsibilities to comply with the USBC, including situations where they modify plumbing systems and/or install and test assemblies and devices. The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of its CCCP.</p>
<p>Scott Sande</p>	<p><u>12VAC5-590-600 D</u> I don't understand the statement, "For all other residential consumers, the department may approve a public education program provided by the owner as part of the CCCP." It references consumers where there is no known or suspected high hazard. This would imply that "all other residential consumers" means those where there are known or suspected high hazard present. Does this mean the department will approve the public education program, in lieu of, annual testing records and a proper CCCP even for consumers with high hazards!? I may be reading it incorrectly, but it's ambiguous at best. In summary, please consider eliminating or rewording 12VAC5-590-600 D</p>	<p>Noted. VDH modified 12VAC5-590-600 D (now -600 E), removing the referenced statement.</p>
<p>Wade Gerze, American Backflow Prevention Association Member</p>	<p><u>12VAC5-590-600 D</u> 12VAC5-590-600 D has potential to create additional hazards by allowing for interpretation as to who has a complex plumbing system, and who knows (or doesn't) about "known or suspected" high hazards. It's understandable that Backflow Prevention Assemblies (BPA) annual testing can be viewed as frustrating or inconvenient, much similar to the Virginia registered automobile safety inspection program, in which both programs require that equipment shall be verified in good mechanical working condition, annually. The only way to verify that a BPA is operating as designed is to perform an annual test. Through my experience in the industry, education will not take the place of insuring a BPA functions correctly, or</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630. See responses to SS-1 through SS-3 above and HC-1 below.</p>

	<p>identify where a BPA should be installed. Please consider the proposed regulation to provide concise direction and hazard identification through table 630.1, while requiring annual inspection/test of a BPA.</p>	
<p>Hanover County Department of Public Utilities - Steven Herzog, Director (HC-1)</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> Hanover County is concerned that that the proposed regulations require that all waterworks track annual testing for backflow devices for residential irrigation systems unless ODW approves a public education program. We estimate that Hanover would need to add 2-3 employees to move from our current public education program to a tracking program as proposed. We don't believe this is the best use of limited resources with the many challenges that we face. We recommend that waterworks have the option to choose whether to track the annual testing of backflow devices for residential customers or utilize a public education system at their discretion rather than the ODW discretion. We suggest that section 12VAC5-590-600 D. be changed to read:</p> <p>D. Instead of annual operational tests (12VAC5-590-600 C) and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), the owner has the option to provide a public education program to residential consumers. The owner may also provide a public education program, instead of annual operational tests and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), to commercial consumers whose premise plumbing is not complex and where there are no known or suspected high hazards as identified in Table 630.1.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630. With respect to 12VAC5-590-600 H, VDH modified the subsection to allow the owner to determine whether or not to maintain an inventory and records for single-family residences subject to 12VAC5-590-610 C 5 (where there are fire protection systems, lawn sprinkler systems, or irrigation systems).</p> <p>The public education program, now in 12VAC5-590-600 E, is optional and does not replace or modify the consumer's responsibilities to comply with the USBC, including testing of reduced pressure zone backflow prevention assemblies (RPZ assemblies), double check detector backflow assemblies, and pressure vacuum breaker assemblies after initial installation, immediately after repairs or relocation, or annually thereafter.</p> <p>The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of its CCCP.</p>
<p>Hanover County Department of Public Utilities (HC-2)</p>	<p><u>12VAC5-590-1170 Hydrants</u> Hanover County is concerned that the proposed changes will lead to fire hydrant drains being plugged regularly. The plugging of fire hydrant drains will lead to operational issues for the utility as hydrants will have to be regularly pumped to avoid freezing and posing extreme danger to the community and fire fighters when hydrants are found frozen much more when they are used for firefighting activities. Weep holes are an engineered solution to prevent the potential for hydrants to freeze and minimize the risk of backflow. Once that engineered solution is bypassed, the likelihood for problems increases dramatically. The risk of contamination through a hydrant drain to the water system does not out way the risk of a hydrant freezing and not being functional when needed to serve its primary purpose.</p>	<p>VDH appreciates this and other comments about the requirements for hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. The requirements for hydrants are in Part III of the Regulations and are applicable to waterworks construction, not existing facilities. As such, the Regulations do not require waterworks to plug weep holes in existing hydrants. For hydrants that a waterworks installs as part of a construction project, VDH modified 12VAC5-590-1170 to include the commenter's recommendations and explicitly provide options for waterworks when they install dry-barrel fire hydrants – they should be located in areas not subject to high groundwater, flooding, surface water ponding and contaminant or pollution spills. When this is not practical, owners may plug weep holes or pipe the drain port to daylight. All dry-barrel hydrants will need to comply with the industry standard (AWWA C502-18), to include drain ports that are physically isolated from the drinking water system by the hydrant stem valve. In addition, hydrants shall be drained to the ground surface or a dry well provided exclusively for this purpose.</p>

	<p>Hanover County recommends that 12VAC5-590-1170 be changed to read: A. Where hydrant drains are not plugged, they shall be drained to the ground surface or to subsurface stone filled wells or other engineered solutions provided exclusively for this purpose. B. Hydrant drains shall not be connected to sanitary sewers or storm drains. C. Fire hydrants shall be connected only to water mains adequately designed for fire flows in accordance with the requirements of 12VAC5-590-1120 B.</p>	
<p>Ben Jones, Operations Manager, Dinwiddie County Water Authority</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> Water system utility owners and operators can do everything right, proper and compliant for 364 days a year, but they will only be remembered for the one day when everything goes terribly wrong. It is a cross that we in the water industry will always bear. When it comes to Backflow prevention, our regulations must remain strong. We cannot sit back and allow high hazards to be interpreted by just anyone. Consumer self-assessments will not be enough to protect our water supply. Backflow devices need to be installed correctly and to the specific hazard they are preventing. All Backflow devices must be tested annually and by a certified tester to prevent creating additional hazards. Let's make a difference by protecting our drinking water, thank you.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630. See responses to SS-1 through SS-3 above.</p> <p>12VAC5-590-630 D requires persons testing and repairing backflow prevention assemblies and devices to be certified starting January 1, 2023.</p>
<p>Christopher Mayhew, Backflow Services, Inc., CCC Program Manager</p>	<p><u>12VAC5-590-580 A</u> Does striking the approval requirements for permitting mean that the CCCP will no longer have to be approved by the department (VDH) and if approval is needed what would the process be?</p>	<p>12VAC5-590-580 A states that every waterworks owner must establish and enforce a CCCP and submit the cross-connection control plan to VDH for review and approval. The review and approval process is described in VDH policy documents available on Town Hall.</p>
<p>Christopher Mayhew</p>	<p><u>12VAC5-590-600 D</u> This paragraph should be withdrawn from the proposed regulatory change. Replacing minimum testing requirements with educational programs is irresponsible at best. Although a public education program should be integral part of any CCCP it does nothing to ensure that all of the mechanical devices that are put in place to protect the safe drinking water from backflow are performing as designed. Backflow preventers have a specific purpose from protecting low to high hazards as well as protecting from backsiphonage and/or backpressure. Testing by a certified technician with an approved and certified test kit is the only way to determine if a backflow prevention assembly is working properly and this must be done after installation, after repairs or maintenance or at a minimum annually. These standards are repeated throughout the industry by the manufacturers, industry associations and labs. (USC, ASSE, etc.) The requirement for testing must not be reduce in any way and in most cases needs reinforcing through tighter legislation and more aggressive enforcement.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

<p>Christopher Mayhew</p>	<p><u>12VAC5-590-610 Containment of backflow</u> This section can only work if the "Owner" and USBC officials come together in a common effort to enforce backflow prevention. This is an ongoing effort with some jurisdictions having a good working relationship with code officials and having a common interest in protecting the drinking water but in a lot of cases this does not happen and I see nothing here that will change that. Perhaps language that would promote the code officials communication with the owner and the owner taking responsibility for enforcement and record keeping.</p> <p>One point of interest to add would be for the jurisdictions to not apply devices on connections with simple plumbing and that meet USBC. This is a wasteful practice and gives the jurisdiction a false sense of security and can in some cases create a hardship on the resident. (Hot water heater T&P valves)</p>	<p>Noted. VDH believes sufficient authority exists in the Regulations to ensure waterworks owners enforce backflow prevention requirements and maintain proper records. 12VAC5-590-55 states that the USBC governs the construction of buildings and structures, including plumbing systems and backflow prevention and governs the water service piping from the service connection to a building or structure; however, the <i>Waterworks Regulations</i> extend to the backflow prevention assemblies or elimination methods, or both, installed for containment and located downstream from the service connection, including where located in a building or structure. 12VAC5-590-630 B states that backflow prevention assemblies, backflow elimination methods, and backflow prevention devices must be of the approved type and comply with the USBC. 12VAC5-590-600 B requires that the CCCP shall not be in conflict with the USBC. Together, these requirements, are a performance standard for the waterworks, in effect requiring the waterworks owner to understand and implement the cross connection requirements of the USBC, in concert with the local USBC officials. A waterworks owner has overarching responsibilities under in 12VAC5-590-360, and authority to discontinue or refuse water service under 12VAC5-590-600 F.</p>
<p>Christopher Mayhew</p>	<p><u>12VAC5-590-610 E</u> Why are we removing "Lawn Sprinkler systems"? Wording can get lost in a paragraph but on a list it is easier to locate. Removing or striking from the regulation can lead people to think that it is no longer necessary. Lawn sprinkler systems are high hazards even without chemical additives and again as mentioned earlier their numbers are insurmountable.</p>	<p>Noted. Lawn sprinkler and irrigation systems are listed in 12VAC5-590-610 C and require a backflow prevention assembly or backflow prevention device. They are subject to annual testing, repairs, maintenance, and recordkeeping requirements.</p>
<p>Christopher Mayhew</p>	<p><u>12VAC5-590-630 A</u> The USBC should not have authority over containment assemblies. That authority should be with the waterworks owner.</p>	<p>Noted. The USBC establishes standards for containment assemblies, methods, devices and their installation. The waterworks has its own authority under 12VAC5-590-360 and 12VAC5-590-600 D. The authority is appropriately divided between building officials and waterworks owners. No further changes are necessary.</p>
<p>Christopher Mayhew</p>	<p>In my years of working throughout the Commonwealth I have had many conversations with CCC Managers that desired more guidance from state in order for them to better organize and enforce their programs and perhaps standardize the CCCP in Virginia. What I have read and understand with regard to the proposed changes that there are some good and some not so good changes. I would respectfully request that the WAC add Cross Connection Professionals to the board and that the state appoint a Cross Connection Director Office dealing specifically with backflow prevention.</p>	<p>Noted. The revisions to 12VAC5-590-45 give the commissioner greater flexibility with respect to membership on the Waterworks Advisory Committee and may include representation by cross connection professionals. Further, VDH believes that with the amendments to the <i>Waterworks Regulations</i> that are related to the cross connection profession/industry, DPOR certification/testing requirements, the USBC, and waterworks oversight of the CCCP, there is no compelling need for a "Cross Connection Director Office".</p>
<p>Chesterfield County Utilities Department - Mike Nannery, Assistant Director</p>	<p><u>12VAC5-590-1170 Hydrants</u> The Chesterfield County Utilities Department is concerned that the proposed additional language will require fire hydrant drains, aka weep holes, to be plugged unnecessarily due to high groundwater and surface flooding and ponding. These are frequently seasonal conditions or happen periodically when there are periods of heavy precipitation. These conditions do not present a hazard of contaminating the fire</p>	<p>VDH appreciates this and other comments about the requirements for hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. The requirements for hydrants are in Part III of the Regulations and are applicable to waterworks construction, not existing facilities. As such, the Regulations do not require waterworks to plug weep holes in existing hydrants. See response HC-2 above.</p>

	<p>hydrant barrel. If the groundwater were to become contaminated, once the fire hydrant is utilized, the pressurized water system would quickly force the water from the barrel. If the hydrant drains are plugged and water remains in the hydrant, it would be susceptible to a complete blockage by ice during periods of below freezing temperatures. Relying on manual removal of the water from the hydrant is not a practical solution. The weep holes are an engineered solution to automatically remove water from the fire hydrant barrel to prevent freezing. Frozen hydrants are believed to be a higher risk to public safety. The plugging of fire hydrants drains also may cause the fire hydrant to become pressurized if the hydrant foot valve were to have a leak. This puts utility workers and fire fighters at risk if they remove the hydrant cap and are not aware the hydrant was pressurized. In conclusion, the risk of contamination through a fire hydrant drain to the water system does not out way the risk of a fire hydrant freezing and not being functional when needed to serve its primary purpose of protecting life and property from damage by fire.</p> <p>The Chesterfield County Utilities Department recommends that 12VAC5-590-1170 be changed to read: A. Where hydrant drains are not plugged, they shall be drained to the ground surface or to dry wells provided exclusively for this purpose. (Leave language as-is; no change recommended) B. Hydrant drains shall not be connected to sanitary sewers or storm drains. C. Fire hydrants shall be connected only to water mains adequately designed for fire flows in accordance with the requirements of 12VAC5-590-1120 B. (Agree with proposed language change)</p>	
<p>Chesterfield County Utilities Department</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> The Chesterfield County Utilities Department requests that the proposed regulations provide the owner an educational program option to satisfy requirements for residential customers of their Cross-Connection Control Program. This program is reviewed periodically by the Virginia Department of Health’s Office of Drinking Water. Residential customers are generally required to adhere to the cross-connection control program due to their landscape and lawn irrigation systems. We believe that the best use of our resources should be dedicated to protecting the utility system from the commercial/non-residential users with complex plumbing systems or are suspected to be high hazards. An educational program should be allowed for residential customers at the owner’s discretion rather than at the Office of Drinking Water’s discretion.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The public education program is optional, but does not replace or modify the customer’s responsibilities to comply with the USBC, including but not limited to, modifying plumbing systems, installing and testing assemblies and devices. The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of its CCCP. Also, see the response to HC-1 above.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>The Chesterfield Utilities Department suggests that section 12VAC5-590-600 D. be changed to read: D. Instead of annual operational tests (12VAC5-590-600 C) and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), the owner has the option to provide a public education program to residential consumers. The owner may also provide a public education program, instead of annual operational tests and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), to commercial consumers whose premise plumbing is not complex and where there are no known or suspected high hazards as identified in Table 630.1.</p>	
<p>Chesterfield County Utilities Department</p>	<p>12VAC5-590-600 G The Chesterfield County Utilities Department suggests that section 12VAC5-590-600 G. be changed to read: G. Except for options allowed in 12VAC5-590-600.D., the owner shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12VAC5-590-610.</p>	<p>The recordkeeping requirements are now in 12VAC5-590-600 H. In the case of single-family residences subject to 12VAC5-590-610 C 5, the owner may determine whether or not to maintain an inventory and/or records. VDH recommends the owner follow best practices identified in the AWWA Manual of Water Supply Practices M14 and the EPA Cross-Connection Control Manual.</p>
<p>Hanover County Department of Fire & EMS</p>	<p>12VAC5-590-1170 Hydrants Hanover County Fire-EMS supports initiatives aimed to increase the safety of the community to include safeguards from water contamination. Consumers yield to the Utility and the regulatory authority to establish comprehensive laws that do not increase known risks. Although 15 VAC5-59-1170 – Hydrants is intended to increase safety, the proposed language change decreases safety by increasing system failure. Not to mention, a decrease in reliability and in overall increase in maintenance.</p> <p>The proposed language requires the Utility to either remove, relocate, or prevent contaminants from entering the water system by plugging the hydrants' drain valve. In many cases, removal or relocation is not an option as it may affect system maintenance or even service demand by emergency responders. Moreover, plugging of drain valve has an increased risk to the system. Drain valve are engineered on dry barrel hydrants to protect the system and improve reliability during freezing conditions by allowing the hydrant drain. Thus, returning the hydrant to its native "dry" barrel. If the drain valve is plugged, water will remain in the barrel which will create an environment to freeze during winter months.</p> <p>Another consequence to plugging the drain valve is the increase maintenance demand. The maintenance demand will increase as</p>	<p>VDH appreciates this and other comments about the requirements for hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.</p>

	<p>plugged hydrants will need to be pumped out after each use to prevent freezing. Currently, the drain valve is engineered as a self-maintaining feature that allows for automatic water drainage. Inevitably, the increased maintenance cost will be passed to the consumer. Furthermore, drain holes are designed to be located on the dry side of the main valve. Therefore, decreasing the risk of contaminants entering the water system.</p> <p>In conclusion, Hanover County Fire-EMS does not support the proposed language change to 15 VAC5-59-1170 – Hydrants. The proposed language change creates an unsafe environment by circumventing an engineered feature designed to maintain reliability in all environments. Thus, decreasing the reliability and unnecessarily increasing the risk to the community. Hanover County Fire-EMS echo's the recommended language to read: "Where hydrant drains are not plugged, they shall be drained to the ground surface or to subsurface stone filled wells or other engineered solutions provided for this purpose".</p>	
<p>Keith Chambers, Chesterfield Fire and EMS</p>	<p><u>12VAC5-590-1170 Hydrants</u> Chesterfield Fire and EMS is concerned that language changes within 12VAC-590-1170 may lead to engineered weep holes being plugged and subsequently having fire hydrants highly susceptible to freezing during cold weather. We recommend that no language be added that would imply or indicate that weep holes should be plugged.</p> <p>Weep holes are an engineered solution to prevent water accumulation within fire hydrants so they would not be susceptible to freezing, removing this engineered design would require that water removal be a manual process. Relying on a manual process over an engineered solution is not the most effective means to drain hydrants. We believe the probability and risk of having a frozen hydrant far outweighs the risk of contamination through a weep holes.</p>	<p>VDH appreciates this and other comments about the requirements for hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.</p>
<p>Doug Powell, General Manager, James City Service Authority</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> The James City Service Authority is concerned about [12VAC5-590-600 D]. Irrigation systems are high hazards – period. They are exposed to everything in or on the ground to include insects, animal feces, animal urine, and other chemical and biological contaminants. They also may be subject to various onsite conditions such as additional water supplies, booster pumps, and elevation changes. In addition, many are used to feed highly toxic fertilizers, herbicides, and pesticides. In most instances, without the consent or knowledge of the water system owner. These systems are required to have a backflow prevention assembly (BPA) for a reason - because they are a high hazard. They have been</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. Lawn irrigation systems are listed as "high hazard" in modified table 630.1. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>identified as such by the Virginia Department of Health (VDH) for nearly 40 years. The hazard an irrigation system presents to the waterworks doesn't change based on whether it is zoned commercial or residential. Given the fact that they are clearly identified as a high hazard, this section, or any other section in these regulations should not be allowed to substitute a public education system for the required testing of irrigation system BPA's. The safety of the consumer should be paramount, regardless of staffing requirements. How much will it cost if one or more of these chemicals are back-flowed into one of our distribution systems? If, for the sake of argument, cost is a consideration for some municipalities, then we would point out the many companies that offer programs that can manage and track their cross connection control program with little, or even no cost for the municipality.</p> <p>To conclude, it's an unfortunate fact that water distribution systems experience breaks on a somewhat frequent basis. When these breaks occur, it is a fair assumption that in many of these cases water is being back-siphoned back into our distribution systems. It is an undeniable fact. These breaks do not only occur on water lines serving commercial properties. Do we want to hope that the irrigation systems hazards noted above are being controlled because we sent the irrigation system owner an educational letter, or know we are protected because we ensured they were tested each year? Educational programs are a great way to enlighten consumers about the potential hazards associated with cross connections for properties that are without any known high hazards. An irrigation system simply does not fall into that category. The original regulations required that they be tested and tracked annually. There was a Working Memo (WM801) developed by the VDH that required that they be tested and tracked annually. If we want to keep our distribution systems safe, we should ensure that they continue to be tested and tracked at least annually. We suggest it be changed to read:</p> <p>D. Instead of annual operational tests (12VAC5-590-600 C) and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), the owner may provide a public education program to residential and commercial consumers whose premise plumbing is not complex and where there are no known or suspected high hazards as identified in 12VAC5-590-610 C. through 12VAC5-590-610 E. or Table 630.1.</p>	
--	---	--

<p>James City Service Authority</p>	<p><u>12VAC5-590-610 Containment of backflow</u> The James City Service Authority is concerned about [12VAC5-590-610 E]. Item 11 as written can leave potential hazardous situations as not requiring adequate protection. We suggest it be changed to state: Item 11. Buildings with commercial, mixed use, industrial, or institutional occupants served through a master meter.</p>	<p>Noted. VDH believes “commercial, industrial, or other institutional occupants” in item 11 and “multiuse commercial, office or warehouse facilities” in item 22 that a mixed-use facility falls within the categories listed.</p>
<p>James City Service Authority</p>	<p><u>12VAC5-590-610 E</u> The proposed wording at item 21 is not as concise as it was under the original regulation. The pressure created through elevation does not change for buildings above 3 stories based on the classification of use. The concerning backpressure that can be created is the same no matter what type of building it is. The proposed wording can create future loopholes in the requirement. We suggest to leave it as it is currently written in the existing cross connection regulations: Item 21. Highrise buildings (four or more stories).</p>	<p>Agreed. VDH modified 12VAC5-590-610 E 21 to remove the proposed language and restore “Highrise buildings (four or more stories)”</p>
<p>James City Service Authority (JCSA-4)</p>	<p><u>12VAC5-590-630 B 3 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u> The James City Service Authority is concerned about this paragraph. The protection of our water distribution systems should be of the highest priority. As such, we should want to ensure that the assemblies we utilize meet the highest quality approval standards. No other approval listing meets the standards as set forth by the University of Southern California’s Foundation for Cross Connection Control and Hydraulic Research (USC CCC&FHR). Their rigorous testing program emphasizes what is the most important aspect of the BPA’s we select to protect our water systems – does it actually work as it is designed under all possibilities of conditions and usage. AT the USC CCC&FHR the various sized BPA’s are tested at various temperatures, pressures, and orientations. Most importantly they are field tested for one year so that we can be assured that it will continue to function properly over an extended time frame, and under the harsh field conditions that they are subject to be exposed to. It is under this final stage of field testing that upwards of thirty percent of the submitted BPA’s fail to meet the standards. Since after the initial installation, or after repairs or relocation, we only require our BPA’s be tested annually, shouldn’t we want to have a containment BPA that has met this criteria? The VDH developed a Working Memo (WM801) that required this designation for our containment assembly. It stated:</p>	<p>Noted. 12VAC5-590-630 B 3 clarifies the role of the USBC regarding approval of assemblies, methods, and devices. 12VAC5-590-600 requires annual testing, inventory and recordkeeping.</p> <p>The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of a CCCP, so there are not any compromises to public health protection.</p> <p>In revising the cross connection control requirements, VDH harmonized the Regulations with the requirements in the USBC. As part of this effort, the team elected not to reference the standards published by the University of Southern California’s Foundation for Cross Connection Control and Hydraulic Research (USC CCC & FHR). The <i>Waterworks Regulations</i> establish the minimum requirements for cross connection control, and do not prohibit waterworks owners from requiring customers to meet standards published by USC CCC & FHR, to the extent they are not in conflict with the USBC.</p>

	<p>Approved Containment Devices. Containment devices under the jurisdiction of the Waterworks Regulations (12 VAC 5-590-620) are those which meet AWWA standards, hold ASSE approval, and have an approval from the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC). USC Foundation members are kept up to date on approvals. Otherwise, the supplier or manufacturer can supply approval documentation. NOTE: USC device approval is specific to orientation, horizontal or vertical, device model number and size. Approvals are continuously verified and can be rescinded.</p> <p>The USC CCC&FHR no longer requires membership to access their approved listings, and it is a valuable tool that is available for all to utilize. We suggest the standard that was set by the VDH in its WM801 be similarly transferred to replace the current wording:</p> <p>12VAC5-590-630 B. 3. Containment devices under the jurisdiction of the Waterworks Regulations are those which meet AWWA standards, hold ASSE approval, and have an approval from the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC). NOTE: USC device approval is specific to orientation, horizontal and vertical, device model, number and size. Approvals are continuously verified and can be rescinded.</p>	
<p>Henrico County Department of Public Utilities – Ralph Claytor, Design Division</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u></p> <p>The Henrico County Utilities Department requests that the proposed regulations be clarified regarding the owner’s provision of an educational program option to satisfy requirements for residential customers of their Cross- Connection Control Program. This program is reviewed periodically by the Virginia Department of Health’s Office of Drinking Water. Residential customers are generally required to adhere to the cross-connection control program due to their landscape and lawn irrigation systems. We believe that the best use of our resources should be dedicated to protecting the utility system from the commercial/non- residential users with complex plumbing systems and/or with suspected high hazards. The following modifications to the proposed regulation clarify the intent that an educational program be allowed for residential customers at the owner’s discretion rather than at the Office of Drinking Water’s discretion.</p> <p>The Henrico County Utilities Department suggests that section 12VAC5-590-600 D. be changed to read:</p> <p>D. Instead of annual operational tests (12VAC5-590-600 C) and the related</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The public education program, now in 12VAC5-590-600 E, is optional and does not replace or modify the consumer’s responsibilities to comply with the USBC, including testing of reduced pressure zone backflow prevention assemblies (RPZ assemblies), double check detector backflow assemblies, and pressure vacuum breaker assemblies after initial installation, immediately after repairs or relocation, or annually thereafter. The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of its CCCP.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), the owner has the option to provide a public education program to residential consumers. The owner may also provide a public education program, instead of annual operational tests and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (12VAC5-590-600 G), to commercial consumers whose premise plumbing is not complex and where there are no known or suspected high hazards as identified in Table 630.1.</p>	
<p>Henrico County Department of Public Utilities</p>	<p><u>12VAC5-590-600 G</u> The Henrico County Utilities Department suggests that section 12VAC5-590-600 G. be changed to read: G. Except for options allowed in 12VAC5-590-600.D., the owner shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12VAC5-590-610.</p>	<p>The recordkeeping requirements are now in 12VAC5-590-600 H. In the case of single-family residences subject to 12VAC5-590-610 C 5, the owner may determine whether or not to maintain an inventory and/or records. VDH recommends the owner follow best practices identified in the AWWA Manual of Water Supply Practices M14 and the EPA Cross-Connection Control Manual. See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>Henrico County Department of Public Utilities</p>	<p><u>12VAC5-590-1170 Hydrants</u> Henrico County Utilities Department is concerned that the proposed changes will lead to fire hydrant drains being plugged regularly. The plugging of fire hydrants drains will lead to maintenance and operational issues for the utility as hydrants will have to be regularly pumped to avoid freezing and posing extreme danger to the community and fire fighters when hydrants are used for firefighting activities and are found to be frozen more often. Weep holes are an engineered solution to prevent the potential for hydrants to freeze and minimize the risk of backflow. Once that engineered solution is bypassed, the likelihood for problems increases dramatically. The risk of contamination through a hydrant drain to the water system does not outweigh the risk of a hydrant freezing and not being functional when needed to serve its primary purpose.</p> <p>Henrico County Utilities Department recommends that 12VAC5-590-1170 be changed to read:</p> <ul style="list-style-type: none"> A. Where hydrant drains are not plugged, they shall be drained to the ground surface or to subsurface stone filled wells or other engineered solutions provided exclusively for this purpose. B. Hydrant drains shall not be connected to sanitary sewers or storm drains. C. Fire hydrants shall be connected only to water mains adequately designed for fire flows in accordance with the requirements of 12VAC5-590-1120 B. 	<p>VDH modified 12VAC5-590-1170. See response HC-2 above.</p>

<p>Andrea Wortzel, Mission H2O</p>	<p>Mission H2O appreciates the opportunity to comment on the proposed revisions to the Virginia Department of Health (“VDH”) Waterworks Regulation. Mission H2O is an informal stakeholder group focused on the management of Virginia’s water resources and, in particular, developments affecting water supply and water availability. Mission H2O has a broad membership that ranges from municipal water providers and water supply professionals to manufacturers and agricultural operations. Many of our members operate in accordance with waterworks operating permits issued by VDH, and Mission H2O is an active participant with the VDH-commissioned Waterworks Advisory Committee.</p> <p>The Waterworks Regulations serve as an important component of assuring that citizens can obtain safe drinking water. These regulations have not been comprehensively updated since 1993. The changes that VDH is proposing are necessary and Mission H2O supports the proposed revisions. The changes have been reviewed and considered by numerous stakeholders since the time the amendment process was initiated in 2014. Mission H2O members have been active participants throughout this process, and appreciated the opportunity to work with VDH staff on the proposed revisions.</p>	<p>VDH appreciates Mission H2O’s comments about and support for the proposed amendments to the <i>Waterworks Regulations</i>. VDH also appreciates Mission H2O’s participation in the rulemaking process.</p>
<p>Mission H2O</p>	<p><u>12VAC5-590-10 Definitions and units of measure</u> The definition of “source water” found at 12 VAC 5-590-10 appears to reference only surface water sources. The definition should be revised to make clear that source water can be either surface water or groundwater.</p>	<p>Noted. The definition includes water that “is pumped or otherwise withdrawn from a well [or] spring” – both groundwater sources. VDH believes the definition includes both surface and groundwater sources and does not require modification.</p>
<p>Mission H2O</p>	<p><u>12VAC5-590-45 Waterworks Advisory Committee</u> Mission H2O supports the inclusion of provisions regarding the Waterworks Advisory Committee (“WAC”) (12VAC5-590-45). The WAC has been an important opportunity for stakeholder involvement in issues affecting drinking water providers. Having industry experts with extensive experience provide input to VDH related processes assists VDH staff in identifying gaps in statutes, policies and regulations and making improvements to the waterworks program. Mission H2O would welcome the opportunity to have a representative serve on the WAC.</p>	<p>Noted. VDH appreciates Mission H2O’s recognition of the importance of the WAC. The revisions to 12VAC5-590-45 give the commissioner greater flexibility with respect to membership on the Waterworks Advisory Committee and may include representation groups such as Mission H2O.</p>
<p>Mission H2O</p>	<p><u>12VAC5-590-830 Surface Water Sources</u> During the regulatory development process, there was much discussion about the safe yield of surface water sources (12 VAC 5-590-830.A.2). At the heart of the discussion was the question of the respective roles and responsibilities of VDH and the Virginia Department of Environmental Quality (“DEQ”) in determining source water availability and the authorized volume of withdrawal. Mission H2O supports VDH’s</p>	<p>Noted. VDH is not modifying or changing 12VAC5-590-830 in this regulatory action. VDH expects to involve Mission H2O and other stakeholders in any efforts to amend this section in the future.</p>

	<p>decision to retain this provision as currently drafted. Entities subject to the waterworks regulation have the experience and expertise to develop the safe yield assessment required by the regulations and satisfy this requirement.</p> <p>The purpose of the Waterworks Regulation is to ensure that the citizens of Virginia have safe, reliable drinking water. The regulation as drafted requires entities subject to the regulation to make a demonstration that their facility is able to safely and reliably provide drinking water. Broader questions regarding water rights, water withdrawal permitting and water allocation should be addressed outside the waterworks regulation. Mission H2O has suggested that a broader stakeholder group be convened to address these issues, and remains willing to participate in such a meeting with VDH and DEQ.</p>	
Mission H2O	<p><u>12VAC5-590-1170 Hydrants</u> Several Mission H2O members are concerned about the proposed amendment to 12 VAC 5-590-1170.A addressing fire hydrants. Many fire hydrants include weep holes or drain holes, designed to provide an outlet for any residual water, preventing harm to the hydrant should it freeze. Thus, plugging these holes creates a public health risk. Mission H2O requests that the existing language in 1170.A remain unchanged.</p>	Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.
Mission H2O	<p>Practical Implementation As noted above, Mission H2O supports the updates to the Waterworks Regulation, and agrees that they are needed for consistency with federal requirements and to more accurately reflect actual practice. Nonetheless, the changes that are proposed are significant. Mission H2O urges VDH to take a practical approach to the implementation of these regulations. Waterworks have enjoyed a collaborative working relationship with VDH, focused on the shared goal of ensuring Virginia's citizens have safe and reliable drinking water. Maintaining that focus as these regulations are implemented will be of critical importance.</p>	VDH will work to implement the amendments and enforce the <i>Waterworks Regulations</i> in a manner that is protective of public health and in compliance with state and federal requirements. VDH is also maintaining its commitment to primacy, the EPA, and the development of the "non-primacy" Part III of the regulations regarding waterworks design and manual of practice. ODW recognizes industry standards in this process. It has always been VDH's goal to include and encourage various stakeholder input to engender objectivity and transparency in the regulatory process.
City of Richmond Department of Public Utilities, Rosemary Green, Deputy Department Director, Sr	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> <u>12VAC5-590-1170 Hydrants</u> The City of Richmond Department of Public Utilities (Richmond DPU) fully endorses the comments submitted on December 17, 2019 by Steve Herzog, Hanover County Department of Public Utilities Director, and recommends the same revisions to 12VAC5-590-600 D and 12VAC5-590-1170.</p>	VDH appreciates this and other comments about the cross-connection control program requirements and hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630 and 12VAC5-590-1170. See responses to SS-1 through SS-3, HC-1, and HC-2 above.
David Taylor, Dave's Testing	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> How serious is the state in protecting our drinking water? What is the cost of even one contamination? Residential lawn irrigation is not only a high hazard (pesticides, herbicides, fungicides,</p>	VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.

	<p>animal feces, mold, and other soil contaminates), but conditions change constantly. Backflow devices not only fail to operate over time, but any change to an existing irrigation system can result in a backflow device falling out of compliance. An annual visit by a state-certified backflow tester is needed not only to test the device, but make sure the device is in compliance with current regulations. Basically, every homeowner with a lawn irrigation system, would not only need to be able to pass the state certification exam (administered to backflow prevention specialists), but also have a working knowledge of lawn irrigation. A "public education program", as the sole source of backflow prevention, would be inadequate and potentially dangerous.</p> <p>If there are concerns about the cost and implementation of this cross-connection and backflow prevention program, all you need to do is study the success of the program at James City County. Since 2008, residential lawn irrigation systems have been tested and cataloged with minimal cost to the homeowners and run by a very lean and efficient team of two. I can't see how a well-run "public education program" would cost any less than a well-run cross-connection department. And here I ask the question again, "What would be the cost of even one incident of contamination?"</p>	<p>The comment refers to 12VAC5-590-600 D, which has become -600 E. Lawn irrigation systems are listed as "high hazard" in modified table 630.1. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>12VAC5-590-630 D requires persons testing and repairing backflow prevention assemblies and devices to be certified starting January 1, 2023.</p> <p>See responses to SS-1 through SS-3, and HC-1 above.</p>
<p>Mark Titcomb, Newport News Waterworks (NN-1)</p>	<p><u>12VAC5-590-874 Gravity filtration, Subsection H 2 b</u> I'm assuming that operational backwash strategies and physical positioning of backwash troughs are adequate methods for avoiding media loss through backwash. I think it would be useful to clarify that methods can include operational strategies, filter design, or equipment installed on the troughs if the intent is to allow any of these as acceptable methods to prevent media loss</p>	<p>Noted. VDH intentionally made the requirements in 12VAC5-590-584 H 2 b general in nature to allow flexibility to the filter designer. As written, this allows for operational strategies, design features, or trough elements. This is consistent with the Ten States Standards.</p>
<p>Newport News Waterworks (NN-2)</p>	<p><u>12VAC5-590-874 Gravity filtration, Subsection K 1</u> Minimum 50% media expansion is very high and above typical AWWA recommendations of 20-30% and there is not necessarily significantly improved media scouring at higher expansions. Surface water plants would also find it difficult if not impossible to reach 50% expansion in summer months due to water temperature.</p>	<p>Noted. The 50% media expansion is a design criteria, rather than an operational standard or goal, and is consistent with the Ten States Standards.</p>
<p>Belinda Wilson PE, Licensed Civil Engineer & Resident</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> Please do not leave the safety of drinking water to public education programs. There are too many people who don't even what backflow protection is and to leave this extremely important, life threatening matter to informational packets, mailed letters that will never be read and websites that people won't check is irresponsible. There are many severe and even deadly health threats that can come from unprotected residential irrigation systems. These systems must have backflow protection</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p>

	<p>device tests that are tracked by municipalities and must be stated in the regulations as high hazards because they absolutely are high hazard. Please revise the amendments to ensure that the residential irrigation systems must be protected and the testing of the devices must be tracked.</p>	<p>12VAC5-590-600 E reiterates the requirement in the USBC for annual testing of backflow prevention assemblies and requires the CCCP to establish procedures for completing and monitoring operational tests.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>Belinda Wilson, City of Virginia Beach Public Utilities, Cross Connection Control Program Manager</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> The City of Virginia Beach Public Utilities Department considers residential irrigation systems to be high hazards that need to be regulated in order to protect the drinking water system. These systems which likely aren't complex can have severe and even deadly contaminants enter the water system (i.e. animal urine and feces, pesticides and other chemicals). These systems must have backflow prevention devices that are tested annually and are tracked through the municipality. In a city with over 450,000 people, a public outreach program will be extremely difficult and costly but more importantly it will not be sufficient enough to protect the drinking water system. The regulations need to state that residential irrigation systems are high hazards that need to have their backflow devices tested annually and submitted to the municipality for tracking. It is all of our responsibility to protect the drinking water system which includes protection from all irrigation systems.</p>	<p>The comment refers to 12VAC5-590-600 D, which has become -600 E. Lawn irrigation systems are listed as "high hazard" in modified table 630.1. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>Tim Brown, Albemarle County Service Authority</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> There are two separate, but related, issues associated with [12VAC5-590-600 D] of the proposed regulations.</p> <p>At the very least, and by far of most importance, is the recommendation that the last sentence of the paragraph be removed entirely. Leaving the sentence in place and unchanged is extremely ambiguous, and is likely to be interpreted that an educational program may be used in lieu of testing a residential backflow assembly that protects a potentially high-hazard situation. The first sentence of the Section focuses on situations where the "... premise plumbing is not complex and where there are no known or suspected high hazards...". The opening phrase of sentence #2 "... for all other residential consumers..." clearly implies the reverse of sentence #1; i.e., instances of complex premise plumbing and/or potential high hazards. Even the most robust educational program can never serve to replace the need for regular testing of a backflow assembly, particularly in a high-hazard situation.</p> <p>Elimination of the last sentence of this Section will be a significant improvement. However, there is still concern with sentence #1 as a stand-alone sentence.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630. See responses to SS-1 through SS-3 and HC-1 above.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E. VDH's revisions to 12VAC5-590-600 remove the sentences the commenter is referring to in the proposed amendments.</p>

	<p>While an educational effort will always be beneficial, if a backflow assembly has been installed, regardless of the level of potential hazard, the assembly needs to be tested on an annual basis. If the assembly is not to be tested, it needs to be removed.</p>	
Albemarle County Service Authority	<p>12VAC5-590-610 A It is recommended that the word "located" be removed as unnecessary.</p>	<p>Agree. VDH deleted the word "located" in 12VAC5-590-610 A.</p>
Albemarle County Service Authority	<p>12VAC5-590-610 E 21 I feel the language of this Section pertaining to the mandatory installation of a backflow prevention assembly, or backflow elimination method, in instances of building height of at least four (4) stories, needs to be simplified. A slight modification of the current verbiage of 610.E.20 would not only be adequate, but less complicated and thus less confusing.</p> <p>A structure of four (4) or more stories above grade, whether multi-story office or other commercial buildings, or whether adjoining townhomes, duplexes or free-standing residences, all present the same issue and potential hazard to the municipal water supply. The hydraulics of downward force generated by water at this height does not distinguish between whether this water is contained within a commercial or residential building. It is unimportant whether the lowest level is an above-ground garage or the first floor of the residence or commercial building, and it is equally unimportant whether the 4th level is referred to as a "habitable space" less than 750 square feet if this space is plumbed to serve a bathroom and/or a wet bar.</p> <p>My recommended wording for this Section is as follows: "Buildings, whether commercial or residential, and whether adjoined or free-standing, that are four (4) or more stories above the water meter serving the building".</p>	<p>Agree. VDH will use the existing language in former 12VAC5-590-610 E 20, now E 21, "Highrise buildings (four or more stories);" because it is broader and less complicated.</p>
Albemarle County Service Authority	<p>12VAC5-590-630 A The approval of backflow prevention assemblies should include not only compliance with the Uniform Statewide Building Code, but also acceptance by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC-FCCCHR). USC is the only organization that tests backflow assemblies under both laboratory and field conditions before granting their approval. Approval is based upon several criteria in addition to performance, including size, configuration, and flow orientation.</p> <p>My recommended wording for this Section would be as follows: "Any backflow prevention assembly or device or backflow elimination method shall be in compliance with the USBC, and be approved by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research".</p>	<p>Noted. 12VAC5-590-630 B 3 clarifies the role of the USBC regarding approval of assemblies, methods, and devices. 12VAC5-590-600 requires annual testing, inventory and recordkeeping.</p> <p>The waterworks owner under 12VAC5-590-360 has full responsibility of the waterworks and the implementation of a CCCP, so there are not any compromises to public health protection.</p> <p>In revising the cross connection control requirements, VDH harmonized the Regulations with the requirements in the USBC. As part of this effort, the team elected not to reference the standards published by the University of Southern California's Foundation for Cross Connection Control and Hydraulic Research (USC CCC & FHR). The <i>Waterworks Regulations</i> establish the minimum requirements for cross connection control, and do not prohibit waterworks owners from requiring customers to meet standards published by USC CCC & FHR, to the extent they are not in conflict with the USBC.</p>

<p>Albemarle County Service Authority</p>	<p><u>12VAC5-590-630 B 2 Table 630.1</u> The examples of water usage included under "High Hazard" fail to mention one of the most significant and most common potential high hazard situations, that being "irrigation and lawn sprinkler systems". This pertains to both commercial and residential water usage, and with most municipal water systems, represents by far the greatest hazard among residential water customers.</p> <p>My recommendation would be to include "irrigation and lawn sprinkler systems" right after "sewage" in the list.</p>	<p>Agreed. VDH revised Table 630.1 and listed "lawn irrigation systems, fire sprinkler systems with chemical additives or antifreeze, sewage, [etc.]" as examples of high hazards. See response to SS-2 above.</p>
<p>Timothy Mitchell, City of Lynchburg</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> In the interest of public safety we oppose the changes to 12VAC5-590-600.D. Specifically we oppose allowing the substitution of education programs for the annual testing and record keeping requirement. The determination of whether the premise plumbing is not complex is subjective and allowing options opens water utilities further scrutiny and conflict over our CCCP. A review of a high hazard from Table 630.1, reinforces the need for annual operational tests, and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices.</p> <p>As a result of irrigation, irrigation-related, and fire sprinkler systems being added more frequently by residential consumers, as well as frequent changes to commercial consumer sites, etc., and restrictions on the owner with regard to determining if premise plumbing is or is not complex, we propose that 12VAC5-590-[600] D be eliminated.</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>VA Chapter of the American Backflow Prevention Association</p>	<p>The majority of the Proposed Regulations are a welcome update. As backflow professionals from across the industry, the VA ABPA appreciates the Department for clarifying and aligning these regulations with the USBC, in cooperation with the DHCD. Waterworks owners & building officials share the responsibility of enforcing cross-connection control, while consumers and other stakeholders must install, maintain & test backflow preventers. Eliminating redundancy & improving efficiency are important goals, but the Department must not lose sight of the ultimate goal: to ensure that waterworks furnish potable water to consumers, which requires protecting it from backflow & contamination. Waterworks and government agencies across the country are being scrutinized and legally challenged on the failure to protect this vital resource. The Department should not lower the standards of protection, especially for high hazard cross-connections of any kind. If waterworks are too complex or lack personnel or funding to implement an effective CCCP, the Department and each waterworks should develop ways to ensure regulatory compliance, rather than lowering</p>	<p>VDH appreciates the VA Chapter of the American Backflow Prevention Association's (VA ABPA) detailed analysis of the proposed amendments to the <i>Waterworks Regulations</i> and comments on the cross-connection control requirements. Based on the comments from VA ABPA and other members of the public, VDH worked with the Waterworks Advisory Committee and other stakeholders to modify 12VAC5-590-580 through 12VAC5-590-630.</p>

	<p>the standards of protection. To do otherwise risks the safety of potable water and the public health, and could irreparably breach the public's trust. A mistrustful public could resort to installing auxiliary systems and create cross-connections with these systems, and negatively impact the public health. In the spirit of cooperation, and to ensure that potable water remains potable, we submit the following general and technical concerns that should be addressed and resolved before legislation:</p>	
<p>VA Chapter of the American Backflow Prevention Association</p>	<p>12VAC5-590-10 Definitions</p> <ul style="list-style-type: none"> - Add "ASSE" means American Society of Sanitary Engineering. - Recommendation to rephrase: "Backflow prevention assembly" means a mechanical unit designed to control various cross-connections and stop the reversal of flow, that includes an inlet and outlet shutoff valve and test cocks to facilitate testing of the assembly. Backflow prevention assemblies include the reduced pressure principle or reduced pressure zone (or RPZ) assembly, the double check valve (or DCVA) assembly, and the pressure vacuum breaker (or PVB) assembly. - Recommendation to rephrase: "Backflow prevention device" means a mechanical unit designed to control cross-connections and stop the reversal of flow, that is not testable because it does not have inlet and outlet shutoff valves or test cocks. A backflow prevention device is not generally designed or constructed to withstand backpressure, or continuous pressure over 12 hours, or to control high hazards. A backflow prevention device generally includes atmospheric type vacuum breakers and the dual check valve type devices. - Add "CCCP" means Cross-Connection Control Program. -Recommendation to rephrase: "Cross-connection" - After "contamination" add "or pollution" for consistency. - Recommendation to rephrase: "Double check valve assembly" (or DCVA) means an assembly composed of two single independently acting check valves including tightly closing shutoff valves located at each end of the assembly and test cocks to facilitate testing of the assembly. - Recommendation to edit: "Pressure Vacuum Breaker Assembly" – add "(or PVB)" and the phrase "to facilitate testing of the assembly." - Recommendation to edit: "Reduced pressure principle backflow prevention assembly" - after "principle" add the phrase "or reduced pressure zone" and add "(or RPZ)"; and add "to facilitate testing of the assembly" at the end of the definition. - Recommendation to rephrase: "Service connection" means the point of delivery of finished water from a waterworks to a consumer's water system, fire protection system, or irrigation system and to all other points where finished water is delivered 	<p>VDH added definitions for:</p> <ul style="list-style-type: none"> - ASSE, and - Service line. <p>VDH revised the definitions of:</p> <ul style="list-style-type: none"> - Backflow prevention assembly, - Backflow prevention device, - Cross-connection, - Double check valve assembly, - Pressure vacuum breaker assembly, - Reduced pressure principle backflow prevention assembly, and - Service connection. <p>CCCP was a new definition in the proposed amendments and will be in the final amendments.</p> <p>VDH is not citing University of Southern California requirements or standards in the final amendments, therefore did not add a definition for USC.</p> <p>The definition of "Waterworks" is established in state law, <i>Code of Virginia</i> § 32.1-167 and based on the definition of "public water supply" in the Safe Drinking Water Act. Because Virginia's drinking water program is has to comply with federal requirements for primacy, VDH did not change the definition in the final amendments to the <i>Waterworks Regulations</i>.</p>

	<p>through the distribution system to a consumer. Service connections may be permanent, temporary, or emergency.</p> <ul style="list-style-type: none"> - Add a definition: "Service Line" means the pipeline or service pipe between the service connection and the building connection. - Add a definition: "USC" means the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research. - Revisit definition of "Waterworks": As noted in "service connection" above, the phrasing "except inside the building where such water is delivered" extends the waterworks up to the building in all cases, rather than as an exception, conflicting with 12VAC5-590-55-B, the USBC, and the Memorandum of Agreement of 2013 between VDH & DHCD. The waterworks should be clearly defined as stopping at the service connection. Recommendation: rephrase by ending the definition with: "...and distribution of potable water up to the service connection. 	
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-55 Relationship of this chapter to the USBC</u> "Backflow prevention method" is a defined term, meaning a physical separation or air gap. However, the USBC governs backflow generally and specifically, and is not limited to backflow methods, devices and assemblies. Recommendation: Remove "method" to rephrase as "backflow prevention" in general. Alternatively, rephrase to include "backflow prevention methods, backflow prevention assemblies, and backflow prevention devices."</p>	<p>Agreed. VDH revised 12VAC5-590-55 B by removing the word "method" as suggested by the commenter.</p>
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> In -600 B, "consumer water system" should be plural, i.e. "systems." In -600 B and C, Consumer water systems are subject to change after assessment. Assessments should be performed annually or at some minimum specified interval. Recommendation: add the word "annually" or a minimum interval to -600 B; or add the word "assessments" to the required testing and evaluations required in -600 C.</p>	<p>Noted. VDH revised 12VAC5-590-600. Subsection C says, "... every consumer's water system ..." and establishes that the waterworks' CCCP "shall ensure complete assessments of every consumer's water system..."</p>
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-600 D</u> "premise" should be plural, i.e. "premises."</p>	<p>Noted. Revisions to 12VAC5-590-600 do not use the word "premise" in the same context as -600 D in the proposed amendments (premise plumbing). This comment not relevant to the revisions because the text is deleted.</p>
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-600 D</u> A public education program is a welcome improvement, to give owners a flexible option for low risk consumer systems. But any exemption increases the risk of contamination. However, 600 D is ambiguously worded, is dangerously lacking in detail and minimum standards, and includes unnecessary loopholes. Misinterpretation and/or misapplication could result in unintended consequences</p>	<p>12VAC5-590-600 D has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>and contamination of water distribution systems across the State. It is arguable that such an exemption should be allowed by the Department of Health, since 12VAC5-590-450 & 12VAC5-590-461 requires competent and adequate staff to operate and maintain a waterworks (including the CCCP). Substantial modification is recommended to address the following concerns:</p> <p>1. As subsection 600 D is an exemption, the catch-all phrase “related records and inventory” implies that the owner does not need to perform, or retain records of, assessments, evaluations or inventories, to in fact prove that a consumer’s system is not complex and has no known or suspected high hazards. Without assessment, high hazards cannot be “known or suspected,” and without records, how can the owner comply with the department when records for exempt consumer systems are reviewed? Recommendation: Reiterate that assessment is required to qualify for the public education exemption, and stipulate that all assessment and evaluation records shall be retained.</p> <p>2. Once a consumer’s system is exempted, there is no requirement to re-assess it, and no guarantee that all high hazards were discovered. High hazards may exist, or could be installed later without the owner’s knowledge; low hazard assemblies and devices could fail or be removed, and may not be repaired or replaced unless required by the owner; and other risks may also apply. Since the primary intent of 600 D appears to be to reduce the burden on CCCPs for low-risk consumer systems, the following recommendation is made, and is dependent on all other ambiguities and conflicts of 600 D being resolved: Require re-assessment by the owner at a reduced but specified minimum interval, and only apply the exemption to consumer systems which are determined to be a low risk as specified by the recommended revisions.</p> <p>3. As written, this exemption specifically limits the assessment of high hazards to “Table 630.1.” This is inadvisable because Table 630.1 provides insufficient guidance for a CCCP without substantial additions to the Table’s examples, and the entire Chapter provides the necessary guidance that should be used. Recommendation: replace the phrase “Table 630.1” with “this Chapter” to ensure all requirements for containment are considered.</p> <p>4. A public education program does not appear mandatory, but is only required for owners opting to exempt low-risk consumers from the requirements. Recommendation: consider mandating a public education program as part of the CCCP.</p> <p>5. The phrase “all other residential consumers” contradicts the previous provision that allows only systems of low</p>	
--	--	--

	<p>complexity with no known or suspected high hazards to be exempt from testing, record-keeping and inventory. As written, it allows high-hazard residential systems to forego these requirements in lieu of a public education program. Public education is needed but cannot prevent backflow like a tested, functional backflow prevention assembly. WARNING: Exempting residential systems from annual testing violates and contradicts the USBC, and conflicts with numerous authorities who uphold annual or periodic testing of all backflow prevention assemblies, including AWWA, ASSE, EPA, UFL-TREEO, USC-FCCCHR, etc. In the event of litigation, an owner's claim of "due diligence" based on 600 D could be refuted by plaintiffs citing the USBC and the aforementioned agencies' standards. The department could become party to litigation for not requiring waterworks to ensure adequate protection due to reduced minimum standards that contradict established laws and precedents. Simply put, a high hazard cross-connection remains a high hazard, regardless of it being located on a residential system, and all backflow prevention assemblies should require testing annually. Recommendation: Remove the last sentence of subsection 600 D.</p> <p>6. Based on the above concerns, subsection 600 D should be rephrased to remove all ambiguity, and incorporate the recommended modifications. Recommendation: Rephrase: "A public education program is required for the CCCP. Where the owner's assessment determines that a commercial or residential consumer's premises plumbing is not complex, and there are no known or suspected high hazards as identified in this Chapter, the owner may provide a public education program instead of annual operational tests (12VAC5-590-600 C) and the related records and inventory of backflow prevention assemblies, devices or methods (12VAC5-590-600 G). Exempted consumer systems must be assessed by the owner every [specify minimum] years to ensure they qualify for exemption under this section. The owner shall retain records of all assessments (12VAC5-590-550)."</p> <p>7. In 600 D 2, the phrase "or reduce" is insufficient & improper. See comments under section 12VAC5-590-610 for an explanation. Recommendation: Replace the word "reduce" with "control".</p>	
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-600 E</u> Isolation by devices is allowed instead of containment (12VAC5-590-610 B) and referenced by (12VAC5-590-600 B, C & D) but devices could also be removed, faulty or bypassed. Recommendation: Add the phrase "backflow prevention device" after "backflow prevention assembly" in E1 and E2.</p>	<p>Noted. The requirements in 12VAC5-590-600 E 1 and E 2 have been moved to 12VAC5-590-600 F 1 and F 2. VDH revised 12VAC5-590-610 B and C to make the suggested revision unnecessary.</p>

<p>VA Chapter of the American Backflow Prevention Association</p> <p>(VA ABPA-8)</p>	<p>12VAC5-590-610 Containment of Backflow</p> <p>1. The word “reduce” is highly subjective, unreliable and insufficient for protection of the potable water. “Reduction” is an inferior level of protection, both physically and legally, versus “controlling” a cross-connection with an assembly, device or method that is approved by the USBC and recognized approval agencies. Recommendation: Replace “reduced” with “controlled” in keeping with the stated purpose of the cross-connection Control program.</p> <p>2. In subsection E, containment is limited to specific facility types, while the original phrasing included “a consumer’s water system serving the following types of facilities.” This is an important distinction, since a low-hazard facility can install high-hazard cross-connections noted in this section, which does not change the facility type per se. For example, a low-hazard commercial or residential system can have high hazards, such as a swimming pool, spa, pier, brewery equipment (beverage processing), printing equipment, pesticide equipment, etc. The facility does not become a “health club,” “waterfront facility,” “beverage processing plant,” “exterminating company,” etc. and provides a loophole, since the verbiage specifies “facility type.” Recommendation: Rephrase 610 E: “A backflow prevention assembly or backflow elimination method shall be installed at consumer water systems serving the following types of facilities, including:”</p> <p>3. Also in subsection 610 E, multi-use commercial, office and warehouse facilities have been rephrased and re-assigned on the containment facilities list, but some have been removed, likely unintentionally. For example, these facilities are not always served by a master meter (item 11) and frequently do not exceed three stories in height (item 21). But these facility types have always required containment because of the likelihood of high hazard cross-connections being created by owners and tenants, without the waterworks’ knowledge or control once a service connection is established. In addition, not all residential buildings classified as commercial by the USBC are over 3 stories tall, but may also be served by a master meter. Often these facilities have high hazards requiring containment, but the CCCP may not have local authority or resources to properly assess them for these. Recommendations: Restore “Multi-use commercial, office or warehouse facilities” to the required containment list. The proposed items 11 and 21 should also remain on the list. Also, add verbiage to proposed item 11 from proposed item 21 “including residential buildings classified by the USBC as commercial.”</p>	<p>Agreed. VDH revised 12VAC5-590-610 B by replacing “reduced” with “controlled” and 12VAC5-590-610 E by adding “consumer water systems serving” and, in items E 1 through 23, restoring “Highrise buildings (four or more stories)” and “Multiuse commercial, office or warehouse facilities.”</p>
--	---	---

<p>VA Chapter of the American Backflow Prevention Association</p> <p>(VA ABPA-9)</p>	<p><u>12VAC5-590-630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u></p> <p>1. The approved type” does not say who is doing the approving. The word “approved” has been omitted from much of the regulations, greatly limiting the context of its use. The regulations should specify that all assemblies & devices must be approved by the waterworks owner as an appropriate safeguard. Recommendation: Rephrase 630 A, for example: “Any backflow prevention assembly or device or backflow elimination method shall be approved by the owner [as an appropriate safeguard,] and comply with the USBC.”</p> <p>2. “The approved type” is also implies that backflow preventers may be approved by any agency. For example, the Canadian Standards Association (CSA) is an approval agency, but is not in this country. Subsection 630 B 3 requires owners to consult the USBC and manufacturer specifications, but devices and assemblies must still hold recognized agency approvals. While the USBC recognizes ASSE standards for backflow prevention assemblies and devices used for isolation, assemblies used for containment have required approval from the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (or USC), as noted in Working Memo 801 (WTR-801) subsection III-F “Approved Containment Devices.” While WTR-801 is not part of the regulations, it provides invaluable guidance from VDH for CCCPs, and uses the phrase “shall.” Furthermore, USC approval is important for several reasons and should be included in these regulations, for example: USC approval is performance-based and includes exhaustive laboratory and field testing in real-world conditions; USC approval is only given for the specific device model type, size and valve tested; USC approval is rescinded for field modifications or improper installation; USC approval is specific to the direction of flow that is evaluated, whether horizontal, vertical, or some combination; and USC approval is continuously verified and can be revoked when an assembly proves to be defective. USC publishes this information, but CCCPs may not know to consult USC or verify USC approval for assemblies without guidance. Because assemblies are used for high hazards, contamination can result if they are not thoroughly evaluated or are installed with unapproved valves, unapproved field modifications, or in unapproved flow orientations, but these problems are commonly found in the field. For example, assemblies installed on vertical fire risers may meet ASSE design standards, but are not approved for vertical flow by USC (or ASSE). These problems could be dramatically reduced and eventually eliminated by requiring USC approval. Recommendation: The</p>	<p>Noted. The waterworks, which establishes the CCCP, would be responsible for approving backflow prevention assemblies, backflow elimination methods, or backflow prevention devices that are consistent with the program requirements. This provides flexibility for waterworks to develop their CCCP and for consumers to comply with the USBC.</p> <p>In revising the cross connection control requirements, VDH harmonized the Regulations with the requirements in the USBC. As part of this effort, the team elected not to reference the standards published by the University of Southern California’s Foundation for Cross Connection Control and Hydraulic Research (USC CCC & FHR). The <i>Waterworks Regulations</i> establish the minimum requirements for cross connection control, and do not prohibit waterworks owners from requiring customers to meet standards published by USC CCC & FHR, to the extent they are not in conflict with the USBC.</p> <p>12VAC5-590-630 B 3 specifies the USBC and the manufacturer’s specifications shall be used to determine the appropriateness of the backflow prevention assembly or backflow prevention device application for containment. The manufacture’s specifications address whether specific devices are suitable for continuous pressure applications. The USBC addresses device selection, including whether testable devices are adequate for the application.</p>
--	--	---

	<p>regulations should specify ASSE and USC approval for assemblies and devices used for containment, by adding verbiage to 630 A or 630 B 3 (or by creating item 630 B 4), for example: "Backflow prevention assemblies shall meet ASSE standards and hold USC approval, and shall be installed in the approved flow orientation. Backflow prevention devices shall meet ASSE standards."</p> <p>3. The USBC does not identify devices that are unfit for continuous pressure over 12 hours, which may render them useless. Manufacturer specifications generally disclose this information, but devices are often installed without regard pressure conditions, on both low and high hazards. Valves downstream of a backflow prevention device are a common source of continuous pressure. If non-testable devices are acceptable for isolation instead of containment, the regulations should clarify this issue and provide guidance. Recommendation: Clarify continuous and non-continuous pressure conditions to ensure owners require the appropriate safeguards. Rephrase 630 B 3, for example: "The USBC and the manufacturer specifications shall be used to determine the appropriateness of the backflow prevention assembly or device application for containment. Only backflow prevention devices approved for continuous pressure shall be used for continuous pressure conditions. Valves downstream of a backflow prevention device are sources of continuous pressure."</p>	
<p>VA Chapter of the American Backflow Prevention Association (VA ABPA-10)</p>	<p>12VAC5-590-630 Table 630.1</p> <p>1. High hazard examples are vague and may not prompt thorough evaluation, particularly if Table 630.1 is used solely for assessing commercial & residential consumers for exemption under 12VAC5-590-600 D. Fire sprinklers in general should be identified as potential high hazards, since most use nonpotable plumbing, where contaminants leach into stagnant water. These should not be considered a low hazard, as previously documented (see article "Wet-Pipe Fire Sprinklers and Water Quality" by Duranceau, Pool & Foster in AWWA Journal Vol. 91 Issue 7). Also, historic and recent case studies abound where e. coli outbreaks originated from residential and commercial irrigation systems. While Table 630.1 is not designed to be exhaustive, it should include examples of high hazard systems that are often overlooked, or considered to be "medium" hazards. Recommendation: Table 630.1 should include fire sprinklers*, lawn irrigation systems, and any other high hazards, including those previously considered to be medium hazards, that are common to commercial & residential systems. (* Fire sprinkler systems installed "as a portion of the building's water distribution</p>	<p>To improve clarity and understanding, VDH revised Table 630.1 so that it lists more examples of conditions that are high and low hazards such as lawn irrigation systems and fire sprinkler systems with chemical additives or antifreeze (high hazard) and coffee machines, non-carbonated beverage dispensers, and residential fire sprinkler systems constructed of materials designed for potable water flow (low hazard). VDH also removed "nontoxic chemicals, and nonhazardous chemicals" as recommended by VA ABPA.</p>

	<p>system in accordance with” do not require isolation according to the USBC (2015 Va. Plumbing Code Sec. 608.16.4, Exception 1), but should be evaluated during hazard assessment. NOTE: while 2015 VPC Section 608.16.4 “Exception 2” does not require isolation, it conflicts with waterworks regulations because deluge, pre-action or dry pipe systems may contain stagnant water and/or contaminants from nonpotable pipes, and may be modified into different types of sprinkler systems without notice to the waterworks owner, thus posing a potential high hazard.</p> <p>2. Low Hazard examples should not include “nontoxic” or “nonhazardous” chemicals. Chemicals are rightly prohibited from entering a potable supply by the USBC, and should be prohibited by these regulations. Waterworks owners & CCCPs should not be determining which chemicals are non-toxic or non-hazardous; chemical types can be changed by the consumer at any time, for any reason, without notice to the waterworks owner; low hazard devices and assemblies may not be approved for chemical use; there is no way to know how much chemical will enter a system or pass through an unapproved low-hazard device or assembly under backflow conditions; and “the dose makes the poison,” where ingestion of high enough doses can result in injury or death, depending on the age and health status of the actual consumer. For example, Nitrogen is harmless at low levels and is present in food, but is found in fertilizer (from irrigation) and can be toxic at higher levels; and nontoxic chemicals such as propylene glycol or glycerin are often used in food processing equipment and fire sprinkler systems. In contrast, the USBC requires isolation from chemical contamination or pollution by installing high hazard assemblies or devices for these and other chemicals (2015 VPC Sec. 608.5, 608.16.2, 608.16.4.1, 608.16.7). Recommendation: Remove “non-toxic chemicals” and “nonhazardous chemicals” from the “Examples of Low Hazards”, and use appropriate examples.</p>	
<p>VA Chapter of the American Backflow Prevention Association</p>	<p><u>12VAC5-590-1170 Hydrants</u> Like backflow preventers, fire hydrants are a critical piece of health and life safety equipment. But the implied requirement that hydrants must be plugged if they do not comply with these regulations could result in freezing, inoperability, or other unintended consequences too numerous to discuss (and is better left to organizations that specialize in this equipment). That said, backflow prevention is critical to public health, but subsection 1170 A lacks examples of methods for owners to achieve the prescribed results, and should be included as subsections or as an appendix. Recommendation: the subsection should be revised to include clear examples, or an appendix should be added, for new and</p>	<p>Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.</p>

	<p>retrofitted hydrants, since modification of existing waterworks falls under Part III (12VAC5-590-50 B & C) and retrofits require specific guidance, and must comply with numerous other regulations.</p>	
<p>VA Chapter of the American Backflow Prevention Association</p>	<p>REFERENCE MATERIALS: While training and experience for CCCP personnel is a needed addition to the regulations, the department should direct owners to authoritative resources, to aid in development and implementation of the CCCP. We recommend incorporating VDH documents by way of reference, and including the others recommended below on a "Suggested Reference Materials" list as an Appendix:</p> <ol style="list-style-type: none"> 1. VDH - Working Memo 801 (WTR-801) – This document contains invaluable commentary and experience in backflow prevention and issues that impact CCCPs. Some information is outdated due to regulatory and USBC changes, however most of its content remains applicable and valid. WTR-801 and any future revisions should be incorporated by way of reference, and included in any suggested reference materials list. 2. VDH – Effective Cross Connection Control Programs (current and future revisions). This "Hip Pocket Tool for Operators" also contains valuable information and experience concerning backflow prevention. Like WTR-801, it contains some outdated information, but much of it is practical and useful for CCCPs. It and any future revisions should be incorporated by way of reference, and included in any suggested reference material list. 3. M-14 Backflow Prevention and Cross-Connection Control: Recommended Practices (4th and subsequent editions) by the American Water Works Association (AWWA). These regulations incorporate many AWWA standards, and including Manual 14 is appropriate, as it provides practical general and technical guidance for CCCPs. 4. Backflow Prevention Theory and Practice (3rd and subsequent editions) by the University of Florida TREEO Center (UF-TREEO). Like AWWA M-14, UF-TREEO provides practical general and technical guidance for CCCPs. 5. Manual of Cross -Connection Control (10th and subsequent editions) by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC). Like AWWA M-14, USC provides practical general and technical guidance for CCCPs. 	<p>Noted. VDH will continue to provide guidance as needed to supplement the cross-connection control program requirements in the <i>Waterworks Regulations</i>. As VDH revises and issues new guidance documents, they will be published on the Town Hall website for a 30-day public comment period before they become effective. VDH added a reference to the AWWA Manual of Water Supply Practices M14 in 12VAC5-590-600 H and included it in the Documents Incorporated by Reference. VDH will consider including other reference materials in its policy documents.</p>
<p>James M. Cherry Virginia Beach DPU Operations Administrator</p>	<p>12VAC5-590-600 D VBDPU opposes the changes to allow the substitution of education programs in lieu of annual testing and record keeping. The determination of whether the premise plumbing is or is not complex is subjective,</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p>

	<p>subject to change, brings scrutiny on the safety of the public water system and conflicts with current CCCP in Virginia Beach. Ponding water in lawns is not potable water and this water can cover sprinkler heads. A review of a high hazard from Table 630.1, reinforces the need for annual operational tests, and the related records and inventory of backflow prevention assemblies, backflow elimination methods, and backflow prevention devices. Educational outreach has limited success and are not equivalent of the prevention provided by an annually tested device. VBDPU has encounter numerous homeowners who are not aware of our public water supply, its connection to their premise plumbing which they own should maintain.</p> <p>VBDPU proposes that 12VAC5-590-[600] D be eliminated.</p>	<p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>Donald N. Jennings, PE, Isle of Wight County Director of Utility Services</p>	<p><u>12VAC5-590-10 Definitions</u> “Consumer” and “Human Consumption” are narrowly defined, and do not include the numerous uses of water or methods of consumption which actually exist by consumers of a waterworks. For example, hemodialysis and other medical procedures require potable water, but these are not considered methods of “human consumption,” and a person using water for this purpose is not considered a “consumer” by such a strict definition. Numerous other examples could be made where potable water is used for residential, commercial and institutional uses which are outside these narrow definitions. The definitions should be modified and broadened to fit existing and anticipated conditions and consumers, to include general usage of potable water, and any method of consumption.</p>	<p>Noted. The definition of “human consumption” is based on the definition in the Public Water Supplies Law, <i>Code of Virginia</i> § 32.1-167</p>
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-10 Definitions</u> “Service Connection”, “Service Line” and “Waterworks” should include verbiage and/or examples of where the service connection and waterworks generally end, and the consumer system begins. If possible, these should align with the USBC as this is a stated goal and intention of VDH and DHCD. The phrasing should retain the proposed flexibility to address containment of backflow downstream of the service connection.</p>	<p>VDH revised the definition of “service connection” to be more specific about where it occurs. VDH added a definition for “service line.” The definition of “waterworks” is established in the <i>Code of Virginia</i> at § 32.1-167.</p>
<p>Isle of Wight County Utility Services</p>	<p><u>CROSS CONNECTION CONTROL AND BACKFLOW PREVENTION</u> (12VAC5-590-580 through 12VAC5-590-630)</p> <p>When contamination of a waterworks occurs, the public outcry is typically “Who’s job was it to protect the water and the citizens?” and “Why wasn’t anything done to protect us better?” and “There ought to be more laws to protect us!” Illness and death can result, lawsuits ensue, and only then do</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>waterworks realize the true cost and high responsibility of providing potable water. The cost to make water safe, and keep it safe, simply pales in comparison to plaintiff's awards, penalties, and fines. But laws do not protect people: public servants and professionals tasked with implementing the laws do. As waterworks, we must uphold the laws and regulations we're given, and depend on public and private sectors to do their part to ensure compliance. But laws require revision from time to time, and should always improve; they should never reduce the protections afforded to the public.</p> <p>The proposed regulations include many improvements, but fall short in some areas concerning Cross-Connection Control. By reducing redundancy and making efficiencies, the Department has created loopholes and ambiguities that must be addressed prior to legislation. The Department should ensure its regulations do not conflict, violate or supersede other laws which play a role in backflow protection, such as the USBC. Otherwise, consumers may not have equal protection afforded by waterworks across the state, as intended by public health regulations in general. Regulations, after all, are minimum standards, leaving little room for error. Lack of enforcement and noncompliance both pose great risks to the public health, particularly when it comes to backflow prevention, as case histories and recent events irrefutably prove. American consumers have generally assumed that tap water is safe and potable. But due to recent contamination events across the country, whether from source water contamination to backflow events, the fact that water is safe cannot and should not be assumed. Making and keeping water safe is a constant task that requires diligence, and cannot rely on assumptions.</p> <p>Backflow prevention is assumed to be adequate when a building is built or modified, but this is not always the case, and modifications are often made without permits or inspections. Cross-connections are often made by unqualified or unlicensed individuals out of ignorance of established codes, or for convenience. High hazard connections can just as easily be made that put the consumer and the waterworks at risk. For these reasons and more, the Department requires a CCCP, and to be effective, it must be competently staffed by an adequate number of personnel. Without the minimum prescribed protection required by implementation of the regulations, waterworks can be contaminated, resulting in numerous unintended consequences, and consumer confidence can fail. Again, the cost and ramifications of remedying a contamination event dwarfs the costs of a properly staffed and trained CCCP, to</p>	
--	--	--

	<p>protect the waterworks from contamination in the first place.</p> <p>As a utility, we wholeheartedly support and echo the recommendations offered by the VA ABPA and of those waterworks who seek to improve the regulations while keeping and improving the level of protection provided to the consumer.</p>	
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-55 Relationship of this chapter to the USBC and 12VC5-590-630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u></p> <p>Sections 12VAC5-590-55 and 12VAC5-590-630 should be carefully reviewed and rephrased to ensure optimal coordination with the USBC, and to ensure that owners and CCCPs are guided by the Department regarding the limitations of backflow devices, assemblies, methods, and the hydraulic or other conditions which render them ineffective, whether or not they are mentioned in the USBC or the manufacturer's specifications.</p>	<p>VDH reviewed and revised 12VAC5-590-55 and 12VAC5-590-630 to ensure the relationship between the USBC and <i>Waterworks Regulations</i> is clear.</p>
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u></p> <p>Section 12VAC5-590-600 in its entirety should be carefully reviewed and reworded to remove all ambiguity, loopholes and gray areas. It should only allow public education to be used in place of CCCP required assessments and recordkeeping for consumers with very low risk systems. Because conditions can change over time, it should include a re-assessment clause, to ensure periodic assessment, rather than assuming nothing has changed.</p>	<p>Noted. VDH revised 12VAC5-590-600. See responses to SS-1 through SS-3 and HC-1 above.</p>
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-610 Containment of backflow</u></p> <p>12VAC5-590-610 should be carefully reviewed; words like "reduced" should be replaced by "controlled" to remove ambiguity, since reduction is not the same as control or elimination of hazards. Subsection E, should be carefully reviewed and rephrased to restore or include unintentional deletions or reclassified facilities, such as "consumer systems" serving the listed facilities; multi-use commercial, office and warehouse facilities that are less than four stories tall and are not served by a master meter; and residential buildings classified by the USBC as commercial that are not four stories tall but are served by a master meter.</p>	<p>Noted. VDH revised 12VAC5-590-610 to replace "reduced" with "controlled" and update Subsection E. See response to VA ABPA-8 above.</p>
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u></p> <p>12VAC5-590-630 The word "approved" is conspicuously lacking for some reason throughout the proposed regulations. Approval is quantifiable and not subjective, and must be an integral part of any standard or regulation. Approval agencies</p>	<p>Noted. See response to VA ABPA-9 above.</p>

	<p>recognized by industry standards and current regulations including the USBC and VDH regulations and memoranda should be included as approved agencies, including ASSE and USC-FCCCHR, as these agencies set standards and approve backflow preventers using different criteria, all of which is required to provide the best protection for the potable water, the public health and the waterworks.</p>	
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-630 Table 630.1</u> 12VAC5-590-630 Table 630.1 should be reviewed and further updated to reflect that anything not considered a low hazard is by default considered a high hazard or potential high hazard, and the appropriate backflow protection according to the regulations and the USBC. Table 630.1 should include additional examples of recognized high hazards which have previously been considered medium hazards, such as fire sprinkler systems, and include high hazard systems that are typical to residential and commercial consumers, such as lawn irrigation, swimming pools, and other high hazards. Low hazard examples should not include chemicals of any kind.</p>	<p>Noted. See response to VA ABPA-10 above.</p>
<p>Isle of Wight County Utility Services</p>	<p><u>12VAC5-590-750 Shop space and storage</u> 12VAC5-590-750 was repealed, but as worded appeared to provide a stronger reference to require a water purveyor to provide an adequate shop facility. The revised shop related references appear to be associated with the design of new building or the expansion of an existing building only if a locality is contemplating such construction activities. The new references do not appear to require construction of an adequate shop facility should one not already exist. Although the construction of an adequate shop seems basic enough to be inherently understood as necessary, a more direct reference (or allowing the previous reference to remain) would help smaller localities justify the establishment of an adequate shop facility.</p>	<p>Noted. The requirements in 12VAC5-590-750 have been moved to 12VAC5-590-720 E so that all building design and construction criteria are in one section. With respect to shop space, that is not a critical component of a waterworks' objective of producing drinking water that meets water quality standards, and what is meant by "adequate facilities" for shop space is subjective and difficult to enforce; therefore VDH is providing flexibility to the regulated community to design and construct needed shop facilities.</p>
<p>Dan Maloy, Backflow Partners, Inc.</p>	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> I support public education programs as a vital component of a successful CCCP; however, it is a complement to annual inspections to confirm the operation of the backflow assemblies (12VAC5-590-600 C). - When you eliminate the requirement for annual inspection of backflow assemblies, even for a limited subsegment of consumers, you increase the risk to the owner and ultimately the consumers. - When you eliminate the requirement for annual inspection of backflow assemblies, even for a limited subsegment of consumers, you immediately diminish the importance of the CCCP. - Consider this analogy - with all the education provided, we have learned the</p>	<p>VDH appreciates this and other comments about the cross-connection control program requirements. Based on the comments and stakeholder input, VDH modified 12VAC5-590-580 through 12VAC5-590-630.</p> <p>The comment refers to 12VAC5-590-600 D, which has become -600 E. A public education program is allowed in 12VAC5-590-600 E to promote consumer self-awareness, but does not forego annual testing, repairs, and maintenance, which is covered in 12VAC5-590-600 D and 12VAC5-590-600 E.</p> <p>See responses to SS-1 through SS-3 and HC-1 above.</p>

	<p>dangers of speeding. Everyone chooses to obey or not obey the posted speed limits. Some choose to obey because of the education, and some obey because there is someone monitoring compliance. Regardless of the reason, we are all safer because of their compliance.</p>	
<p>Dan Maloy, Backflow Partners, Inc.</p>	<p><u>12VAC5-590- 630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u> I agree with the numerous posts advocating for the classification of lawn irrigation systems as “High Hazard” in table 630.1. To classify as “Low Hazard” would be a dangerous reversal.</p>	<p>Noted. See response to VA ABPA-10 above.</p>
<p>Ben Shoemaker, Fauquier County Water and Sanitation Authority</p>	<p><u>12VAC5-590-1170 Hydrants</u> Fauquier County Water and Sanitation Authority strongly opposes language requiring fire hydrant weep holes to be plugged, and concurs with comments entered by other waterworks owners and public safety organizations. Specifically, the public safety risk posed by a frozen hydrant will always outweigh any theoretical public health risk from an “unplugged” weep hole. Consequently, we object to the inclusion of any language regarding fire hydrant weep holes and/or draining hydrants, and request removal of 12VAC5-590-1170 A entirely.</p>	<p>VDH appreciates this and other comments about the requirements for hydrants. Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.</p>
<p>Jessica Edwards-Brandt, Director, Water Operations, Loudoun Water</p>	<p>Loudoun Water appreciates the time and efforts of the Virginia Department of Health (VDH) in updating the proposed Waterworks Regulation. Loudoun Water provides drinking water to over 80,000 households in Loudoun County. Our drinking water comes from the Potomac River and is treated by Loudoun Water at our Trap Rock Water Treatment Facility, and by our wholesaler, Fairfax Water. Loudoun Water also owns and operates several small groundwater community water systems located in Loudoun County. Loudoun Water supports the update of the Waterworks Regulation (Regulation). The proposed Regulations include substantial breadth of topics that impact both large and small community systems and non-transient community systems and may impose a financial burden if not reasonably implemented. Loudoun Water has reviewed the proposed Regulation within the 60-day comment period and offers the following comments and recommendations related to 12VAC5-590 Parts I, II and III.</p>	<p>VDH appreciates Loudoun Water’s comments about and support for the proposed amendments to the <i>Waterworks Regulations</i>. VDH also appreciates Loudoun Water’s participation in the rulemaking process.</p>
<p>Loudoun Water</p>	<p><u>12VAC5-590-45 Waterworks Advisory Committee</u> Loudoun Water fully supports the formation of the Waterworks Advisory Committee (WAC) and feels the cross section of industry related professionals will only improve the dialogue around regulation, policy, and legislation.</p>	<p>VDH appreciates the support for the Waterworks Advisory Committee and the important function it serves.</p>

Loudoun Water	<p><u>12VAC5-590-340 Compliance Standards</u> The AWWA references within Part II are year specific and some listed are not the current versions. For example, 12VAC5-590-1140.D references AWWA Standards C600-10, C604-11, however the most current AWWA standards for those sections are C600-17 and C604-17. It is recommended the proposed language be updated to include current AWWA Standards.</p>	<p>Agreed. VDH has updated the Documents Incorporated by Reference to include current versions of standards from AWWA and other organizations.</p>
Loudoun Water	<p><u>12VAC5-590-480 Operational control testing and monitoring</u> The propose[d] language states “The owner of a waterworks employing ozone for inactivation credit shall perform calibration checks on continuous, online ozone residual monitors at least weekly, during peak hourly flow”. How will VDH evaluate “peak hourly flow” related to calibration checks on continuous, online ozone residual monitors? Requiring a peak hourly flow calibration does not seem reasonable. It is recommended that “peak hourly flow” be deleted.</p>	<p>Noted. VDH revised 12VAC5-590-480 E 2 to remove “during peak hourly flow.”</p>
Loudoun Water	<p><u>12VAC5-590-570 Operational reporting requirements</u> The proposed language provides several tables identifying reporting requirements. Table 570.13 is designated for UV disinfection, but a table for ozone disinfection is not proposed. It is recommended that a similar ozone table be included.</p>	<p>Agreed. VDH has added Table 570.14, Ozone Disinfection, which contains reporting requirements for waterworks using ozone disinfection.</p>
Loudoun Water	<p><u>12VAC5-590-580 General requirements for cross-connection control and backflow prevention</u> The proposed language repeals Appendix I. Suggested Outline of Contents of Cross Connection Control Program. It is recommended additional guidance be provided to address administration and enforcement of ordinance from repealed Appendix I.</p>	<p>Noted. VDH reviews its guidance documents on a routine basis and will assess the need to update, supplement, or issue guidance to address administration and enforcement of cross-connection control program requirements.</p>
Loudoun Water	<p><u>12VAC5-590-600 C</u> The proposed language states “The owner shall establish procedures for completing operational tests or other evaluation procedures as appropriate at least annually and after installation, relocation, or repairs for testable backflow prevention assemblies, devices, and methods that provide containment”. It is recommended that other evaluation procedures be described to include cross-connection inspection and/or survey or others.</p>	<p>Noted. VDH revised 12VAC5-590-600 to address CCCP requirements, annual testing, repairs, and maintenance.</p>
Loudoun Water	<p><u>12VAC5-590- 630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u> There should be clarification of the various organizations and criteria. When the Regulations refer to the Uniform Statewide Building Code (USBC), is it the same as the</p>	<p>12VAC5-590-55 establishes the relationship between the <i>Waterworks Regulations</i> and the USBC, which is incorporated into state regulations through Title 13,</p>

	<p>Virginia Plumbing Code listed in the International Code Council?</p> <p>If the owner conducts inspection on commercial customers and does not test or repair backflow prevention assemblies or devices, is the Waterworks trained individual required to be certified by DPOR? It is recommended that additional language be provided to include an apprentice under the designated individual's DPOR Backflow certification is allowable until requirements have been met to test for the DPOR certification.</p>	<p>Agency 5, Chapter 63 of the Virginia Administrative Code.</p> <p>12VAC5-590-630 D calls for persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers). Person who conduct inspections of customer's plumbing systems for cross connections but do not test or repair backflow prevention assemblies or devices will not be required by the <i>Waterworks Regulations</i> to hold a DPOR backflow prevention device worker certification. 12VAC5-590-630 D gives until January 1, 2023 for persons testing and repairing backflow prevention assemblies and backflow prevention devices to obtain the DPOR backflow prevention device worker certification.</p>
Loudoun Water	<p><u>12VAC5-590-690 Capacity of waterworks</u> 12 VAC5-590-690 has been repealed. Will additional guidance be provided as a Working Memo or other?</p>	<p>VDH revised and relocated parts of 12VAC5-590-690 to other sections (12VAC5-590-640 B, -840 R and S) with related requirements. The tabulated water consumption rates are outdated and produce inaccurate estimates of water demands and design basis. VDH provides additional guidance on waterworks design in its Permit Manual.</p>
Loudoun Water	<p><u>12VAC5-590-930 Fluoridation</u> Loudoun Water urges VDH to exercise reasonable implementation of this recommendation (903 B) as design, implementation and operation of this addition could impose a financial burden on water systems.</p>	<p>Noted. VDH will exercise reasonable implementation of the requirement that waterworks that add fluoride compounds to adjust the fluoride ion level to optimal levels.</p>
Loudoun Water	<p><u>12VC5-590-1120 Minimum pipe size</u> The proposed regulation (1120 A and B) states "Fire hydrants shall not be connected to water mains that are not designed to carry fire flows. Connection of a fire hydrant to a pipe of less than six inches in diameter is prohibited."</p> <p>Loudoun Water agrees that fire hydrants shall not be connected to water mains that are not designed to carry fire flow or smaller than 6-inches. The proposed Regulation includes the term "fire hydrant", "hydrant", and "flushing device" somewhat interchangeably. Depending on the interpretation, the language could cause significant misunderstanding of the regulatory intent. Additional language should be added that acknowledges hydrants not used for fire flow be allowed on water mains smaller than 6-inches, if used for flushing or related purpose. Definitions for fire hydrant, hydrants and flushing devices should be added.</p>	<p>Noted. VDH revised 12VAC5-590-1170 by adding subsection C, which states that "Hydrants and flushing devices not designed for fire protection may be connected to pipe of less than 6 inches in diameter, consistent with 12VAC5-5909-1120 A."</p>
Loudoun Water	<p><u>12VC5-590-1160 Valve, air relief, meter, and blowoff chambers</u> The proposed language in 1160 E 2 c states "The installation and testing specifications shall require field verification by the owner's engineer of the groundwater elevation and surface water drainage prior to placement of the pit or chamber". The language indicates</p>	<p>Noted. VDH revised 12VAC5-590-1160 to provide more flexibility to waterworks, requiring field verification "as needed in circumstances or situations where there is potential concern, before placement of the pit or chamber."</p>

	<p>the intent is to protect Waterworks from groundwater intrusion at air relief valves.</p> <p>It is recommended that the proposed language be modified to include field verification by the owner's engineer of the groundwater elevation and surface water drainage in circumstances or situations where this is of potential concern and not for all installations.</p>	
Loudoun Water	<p><u>12VAC5-590-1170 Hydrants</u> The proposed language states "Where hydrant drains are not plugged, they shall be drained to the ground surface or to dry wells provided exclusively for this purpose in a manner that will avoid contamination of the hydrant or water main from high groundwater, surface flooding and ponding, and contaminant or pollutant spills." The public safety risks associated with freezing hydrants outweigh the benefit of plugging hydrant drain holes. The proposed language would impose a heavy financial burden to waterworks owners. It is recommended that the proposed language be deleted.</p>	<p>Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.</p>
Steve T. Edgemon, General Manager, Fairfax Water	<p>The Regulations have largely remained unchanged since amendments in 1993 and their original promulgation in 1991. Overall, Fairfax Water has participated in the amendment process since the establishment of the regulatory Advisory Panel in 2014 and supports the proposed amendments to the regulations. More recently, Fairfax Water appreciates the efforts of the Waterworks Advisory Committee to review and discuss substantive changes to the regulation. Fairfax Water strongly urges the Virginia Department of Health (VDH) to emphasize practical implementation of these Regulations so that VDH Central and Field Offices focus their resources on meaningful public health protection. Specific sections with additional comments are noted as follows.</p>	<p>VDH appreciates Fairfax Water's comments about and support for the proposed amendments to the <i>Waterworks Regulations</i>. VDH also appreciates Fairfax Water's active participation in the rulemaking process over since the establishment of the Regulatory Advisory Panel in 2014.</p>
Fairfax Water	<p><u>12VAC5-590-10 Definitions</u> The definitions for PMCL and SMCL should be provided after each versus referencing back to MCL for their definitions. As written, PMCL and SMCL is being defined to mean the same as MCL.</p>	<p>VDH revised the definitions of MCL, PMCL, and SMCL to improve clarity and distinguish each term.</p>
Fairfax Water	<p><u>12VAC5-590-376 Surface water and GUDI sources treatment monitoring</u> The use of continuous monitors for compliance reporting may be less accurate than grab samples accomplished on more routinely calibrated lab equipment and may not meet EPA guidance. While continuous monitoring may be useful as an indicator of treatment processing, grab samples may be better for compliance sampling.</p>	<p>Noted. EPA has approved VDH's regulations under the surface water treatment rule and, to ensure they remain consistent with the NPDWR (40 CFR § 141.74), VDH is not changing any requirements based on federal regulations in this regulatory action, except reduced monitoring in 12VAC5-590-370.</p>

Fairfax Water	<p><u>12 VACS-590-395 Surface water and GUDI sources, polymers, and recycle treatment techniques</u> We were generally confused by the organization and interdependency with subsequent sections. To avoid an attempt to clarify the language at this late date, can VDH simply verify that; If a facility remains in Bin 1, that no additional treatment is required by this new/revised language?</p>	<p>Section 12 VACS-590-395 sets the minimum requirements for treatment of surface and GUDI sources. The additional cryptosporidium log removal requirements established by the LT2 Rule, including bin requirements are in 12VAC5-590-401. ODW is not changing these federal requirements and if a facility remains in Bin 1, no additional treatment is required by the proposed amendments.</p>
Fairfax Water	<p><u>12VAC5-590-480 Operational control testing and monitoring</u> This section may include carryover wording from other sections, in regard to the use of the term "peak hourly flows". Specifying these calibration tests being performed during peak hourly flows is not practical.</p>	<p>Noted. VDH revised 12VAC5-590-480 E 2 to remove "during peak hourly flow."</p>
Fairfax Water	<p><u>12VAC5-590-545 Consumer confidence reports</u> 12VAC5-590-545 E 2 and 3, 3rd sentence should be changed back to read "In addition, we were required to take (insert the number of corrective actions) corrective actions and we completed (insert the number of corrective actions) of these actions." The proposed change, to remove the underlined word "take" and replace it with "collect" makes no sense in the context of the sentence.</p>	<p>Agreed. VDH replaced "take" with "correct" in 12VAC5-590-545 E 3 and E 3.</p>
Fairfax Water	<p><u>12VAC5-590-546 Regulated contaminants for the consumer confidence reports and public notice</u> In Table 546.1, item (3) E. coli, we suggest adding a clarification to explain that the "TT" for this E. coli violation applies to a failure to perform Level 2 assessments or corrective actions.</p>	<p>Noted. The information about the violation definition is in 12VA5-590-392F and is not necessary in Table 546.1.</p>
Fairfax Water	<p><u>12 VAC5-590-550 Recordkeeping</u> It seems unwarranted to keep disinfection profile and benchmarking results indefinitely. It is suggested that a 12-year period to match the maximum period for other record retention would seem sufficient.</p>	<p>The disinfection profile must be kept indefinitely per 40 CFR § 141.172 (b) (6).</p>
Fairfax Water	<p><u>12VAC5-590-570 Operational reporting requirements</u> An Ozone Table should be included in this Section.</p>	<p>Agreed. VDH has added Table 570.14, Ozone Disinfection, which contains reporting requirements for waterworks using ozone disinfection.</p>
Fairfax Water	<p><u>12VAC5-590-600 Cross-connection control program responsibilities</u> The last sentence in item D of the Section is unnecessary and could be misinterpreted. This sentence should be stricken.</p>	<p>VDH revised 12VAC5-590-600 and removed the sentence related to approving a public education program. The public education program is now optional, but may not be used in lieu of testing. See responses to SS-1 through SS-3 and HC-1 above.</p>
Fairfax Water	<p><u>12VAC5-590- 630 Backflow prevention assemblies, devices, and backflow elimination methods for containment</u> This Section needs to clarify the approving organization (ASSE, USC-FCCCHR) and criteria. These more precise references had previously been provided in a working memo.</p>	<p>Noted. 12VAC5-590-55 establishes the relationship between the <i>Waterworks Regulations</i> and the USBC, which is incorporated into state regulations through Title 13, Agency 5, Chapter 63 of the Virginia Administrative Code. Additional references may be included in future guidance.</p> <p>In revising the cross connection control requirements, VDH harmonized the Regulations with the requirements</p>

		in the USBC. As part of this effort, the team elected not to reference the standards published by the University of Southern California's Foundation for Cross Connection Control and Hydraulic Research (USC CCC&FHR). The <i>Waterworks Regulations</i> establish the minimum requirements for cross connection control, and do not prohibit waterworks owners from requiring customers to meet standards published by (USC CCC&FHR), to the extent they are not in conflict with the USBC.
Fairfax Water	<p><u>12VAC5-590-1170 Hydrants</u></p> <p>It is essential that VDH recognize that a frozen hydrant presents a greater public safety and health risk than any benefit that could be derived from plugging the hydrant weep holes. Practical implementation would recognize a Waterworks to be in full compliance with the Regulations if the fire hydrants on their approved products list all contain weep holes above the final seat (main valve) of the hydrant. This design allows the barrel to drain without the potential negative impacts of backsiphonage.</p>	Based on the comments and stakeholder input, VDH modified 12VAC5-590-1170. See response HC-2 above.
Fairfax Water	<p><u>12VAC5-590-1180 Surface water crossings</u></p> <p>Item (C) (2) in 12 VAC5-590-1180 (Surface water crossings) should be enhanced to include the use of hydrants as "easily accessible" locations to perform testing rather than just specifying taps.</p>	Noted. The <i>Waterworks Regulations</i> establish minimum design standards and do not preclude installation of hydrants at easily accessible locations.
Dan Malloy, Backflow Partners, Inc.	"It appears as though we're going backwards relative to water irrigation and some other identification of high hazard, low hazard, that type of thing."	VDH revised 12VAC5-590-630 Table 630.1 and included lawn irrigation systems as "high hazard."

Detail of Changes Made Since the Previous Stage

List all changes made to the text since the previous stage was published in the Virginia Register of Regulations and the rationale for the changes. For example, describe the intent of the language and the expected impact. Describe the difference between existing requirement(s) and/or agency practice(s) and what is being proposed in this regulatory change. Explain the new requirements and what they mean rather than merely quoting the text of the regulation. * Put an asterisk next to any substantive changes.

Current chapter-section number	New chapter-section number, if applicable	New requirement from previous stage	Updated new requirement since previous stage	Change, intent, rationale, and likely impact of updated requirements
12VAC5-590-10	N/A	VDH amended defined terms in this section to reflect current use of the terms and changes in technology, correct typographical errors, ensure consistent use of defined terms throughout the chapter, and/or use terms that are easier to understand.	<u>Revised definitions:</u> Backflow prevention device, Best available technology, Cross-connection, Double check valve assembly, Initial compliance period, Maximum contaminant level goal or MCLG, Reduced pressure principle backflow prevention assembly or reduced pressure zone backflow prevention assembly or RPZ assembly, Service connection, SUVA, Total organic carbon	Revisions to defined terms provide more clarity and understanding for the regulated community Intent: Update and clarify requirements. Rationale: Need to have unambiguous meanings of the terminology used in the regulations. Impact: Provide an improved understanding, clarity, and application of the regulations
12VAC5-590-10	N/A	VDH added defined terms in this section to enhance understanding and provide consistency throughout the chapter.	<u>Revised definitions:</u> Backflow prevention assembly, Comprehensive business plan, Containment, Membrane technology, NSF, PMCL, Pressure vacuum breaker assembly, Site visit, SMCL <u>New definitions:</u> ASSE, Regulations, Service Line	Revisions to defined terms provide more clarity and understanding for the regulated community The deleted definitions are used only once in the regulations and therefore are not necessary as separate defined terms. "EDR" is explained in the definition of "membrane technology," and "Nondetected or ND" is explained in the text of section 545 A 3.

			<p><u>Deleted definitions that had been added in the previous stage:</u> EDR, Nondetected or ND</p>	<p>Intent: Update and clarify requirements.</p> <p>Rationale: Need to have unambiguous meanings of the terminology used in the regulations.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations</p>
None	12VAC5-590-45	Create new section titled "Waterworks Advisory Committee" to provide clarification about committee membership, meetings, and term of membership.	Minor editorial changes to improve clarity; made meeting notice requirements consistent with the FOIA.	<p>Revise text to provide less ambiguity and more clarity.</p> <p>Intent: Provide clarification about committee purpose, membership, meetings, and term of membership.</p> <p>Rationale: Changes reflect current and future purpose of the committee.</p> <p>Impact: None, this is not a new requirement (moved from 12VAC5-590-40 (5).</p>
None	12VAC5-590-55	Create new section titled "Relationship of this chapter to the USBC." This new section clarifies and codifies the scope of the <i>Waterworks Regulations</i> and where the USBC governs in building plumbing systems.	By deleting the word "methods," the revised requirement now addresses "backflow prevention" more generally rather than the specificity of "backflow prevention methods."	<p>Revise text to provide less ambiguity and more clarity.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Provide a more generalized interpretation of the requirement.</p> <p>Impact: Provide improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-150	N/A	A minor editorial change that provides for the consistent use of terminology in sections 140 and 150.	This revision ensures that the phrase "an alternative water supply" is used consistently in both sections 140 and 150.	<p>Revise text to provide consistency in terminology.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: No change.</p> <p>Impact: Provide an improved understanding,</p>

				clarity, and application of the regulations.
12VAC5-590-330	N/A	Add criteria for requiring water treatment process monitoring equipment. Update references to commissioner and department. Organize this section with new subsections. Minor word changes.	A minor editorial change that clarifies that the department may specify the method for reporting test results.	Revise text to provide clarification. Intent: Update and clarify requirements. Rationale: No change. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-340	N/A	Move and consolidate all water quality standards, Maximum Contaminant Levels, Action Levels, Treatment Techniques, and Maximum Disinfectant Levels and Goals to one section at the beginning of Part II, Operation Regulations for Waterworks. Clarify laboratory certification requirements.	(i) Restore information from Section 440, Table 2.2 in the current chapter and *add language regarding the special monitoring requirements for sodium. (ii) Specify that all drinking water analyses are performed by laboratories that have received certification by the EPA or DCLS as specified in 12VAC5-590-440.	*Revise text to provide clarity on sodium monitoring, a federal requirement under the NPDWR, and added information on laboratory certification. Intent: Update and clarify requirements. Rationale: Clarify the context of these requirements. Impact: Provide improved understanding, clarity, and application of the regulations.
12VAC5-590-350	N/A	Clarify that ODW conducts sanitary surveys and has a right of entry with the owners' consent.	Minor revision to make right of entry consistent with <i>Code of Virginia</i> § 32.1-25.	Revise to clarify authority, purpose, and requirements for sanitary surveys. Intent: Update and clarify requirements. Rationale: Existing regulations suggest that sanitary surveys by the department are optional. Content is based on NPDWR 40 CFR 141.401, with no substantial changes. Impact: Provide improved understanding and

				application of the regulations.
12VAC5-590-370	N/A	Retain existing federal requirements for monitoring, but break a large section into smaller ones, organized by water quality characteristic.	Minor editorial changes to consolidate routine bacteriological monitoring (370 A 14) and reporting (370 A 15) violation situations and the associated public notification requirements; and clarify compliance with the sampling schedules. Clarify failure to collect confirmation samples is a violation (370 B 4). All requirements are consistent with federal requirements under the NPDWR.	<p>Revise text to consolidate information on the monitoring and reporting violations and clarification on the chemical reporting schedules.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Keep all related information on the violations in one place.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-370 B 1	12VAC5-590-372	Moved 12VAC5-590-370 B 1, inorganic chemicals monitoring, to new section 372. The monitoring requirements have not changed and remain consistent with the NPDWR.	*Added D 6 to include the special monitoring requirements for sodium referenced in 12VAC5-590-340, Table 340.1 "Inorganic chemicals."	<p>*Add clarifying information on sodium monitoring requirements.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Incorporate the federal requirement for sodium. Existing section 370 is too large to navigate easily.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-370 B 2	12VAC5-590-373	Moved 12VAC5-590-370 B 2, organic chemicals monitoring, to new section 373. The monitoring requirements have not changed from 370 B 2 and remain consistent with the NPDWR.	No new requirements. Reorganized this section, changing subsection C through E to subsection C through F, and revised the following: (i) Restored previously used preferred terminology in the current regulations; (ii) Clarified source water protection	<p>Correct inconsistencies and internal errors associated with moving requirements from 12VAC5-590-370 B 2 to new section 373.</p> <p>Intent: Clarify monitoring requirements while maintaining consistency with NPDWR.</p> <p>Rationale: Ensure properly presented information on the regulatory requirements. The monitoring</p>

			<p>measure between surface water and groundwater systems; (iii) Re-numbered and re-labeled subdivisions as needed; (iv) Clarified monitoring frequencies and returning to compliance; (v) Corrected internal cross references as needed; and (vi) Revised to enhanced readability, including correction of typos.</p>	<p>requirements have not changed and remain consistent with the federal requirements.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
<p>12VAC5-590-370 B 3</p>	<p>12VAC5-590-374</p>	<p>Moved 12VAC5-590-370 B 3, residual disinfectant, DBPs, and DBPPs monitoring, to new section 374. The monitoring requirements have not changed from 370 B 3 and remain consistent with the NPDWR.</p>	<p>No new requirements. Revisions: (i) clarify that all analyses for regulated contaminants have to be performed by laboratories that have received certification by the EPA or DCLS, as specified in 12VAC5-590-440, for compliance purposes; (ii) Include bromide in the list of processing parameters (VDH inadvertently omitted it in the previous stage); (iii) Specify that all new waterworks shall comply with the monitoring location requirements of 40 CFR 141 Subpart U, in the development of the waterworks monitoring plan. (iv) Clarify that waterworks with annual or less frequent monitoring</p>	<p>Updated text for laboratory certification requirements, restored bromide in the list of analytes, clarified monitoring location requirements are consistent with NPDWR, and clarified criteria for remaining on reduced monitoring for waterworks on annual or less monitoring.</p> <p>Intent: Update and clarify requirements to make consistent with EPA requirements.</p> <p>Rationale: These revisions include the EPA laboratory certification.</p> <p>Impact: Provide improved understanding, clarity, and application of the regulations.</p>

			may remain on reduced monitoring if DBPs are below specified levels.	
12VAC5-590-380	N/A	Consolidate bacteriological monitoring compliance requirements for groundwater monitoring in one section.	Revised to stipulate that all samples be analyzed by laboratories that have received certification by the EPA or DCLS as specified in 12VAC5-590-440 for drinking water analyses.	<p>Updated text for laboratory certification requirements to include the EPA.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: These revisions include the EPA laboratory certification.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-410	12VAC5-590-382 A 2 b	Moved 12VAC5-590-410 B to new section 382, "inorganic chemicals compliance." The methods to determine compliance have not changed and are consistent with the NPDWR.	Corrected the meaning of the compliance requirement by the inclusion of the word "not" as follows: "...waterworks is not out of compliance ... collected".	<p>Revise text to include the missing word "not" inadvertently excluded in the proposed previous stage.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Updated text is needed for compliance determination.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
None	12VAC5-590-401	Moved 12VAC5-590-420 B 3 a to new section 401 "Enhanced filtration and disinfection for Cryptosporidium treatment" techniques and reorganized content.	Added meaning of term "grandparented data" to subsection B 13 to improve clarity.	<p>Revise text to explain a term used only in this section.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Group treatment technique sections together. Existing section (420) is too large to navigate and understand easily.</p> <p>Impact: Improved understanding and</p>

				application of the regulations.
12VAC5-590-420	12VAC5-590-411 A	Moved 12VAC5-590-420 H, I and J to new section 411 "DBPPs, DBPs, and MRDL treatment techniques" to group related treatment techniques together in one section.	Corrected internal cross reference and replaced the reference to EPA's "Enhanced Coagulation and Enhanced Precipitative Softening Guidance Manual," May 1999, EPA Office of Water" with a reference to existing Table 411.1, Required Percentage Removals of TOC.	<p>Correct typo on an internal reference citation, and delete reference and reorganize text for better clarity for the user.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Correct typo. Replace reference to an EPA guidance document to existing text in the Regulations.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-430	N/A	Clarify requirements for determination of surface water influence on groundwater sources, including revisions to stepwise procedure to evaluate sources.	Revised to clarify that all bacteriological analysis shall be performed by laboratories that have received certification by the EPA or DCLS as specified in 12VAC5-590-440 for drinking water samples.	<p>Revise text to clarify laboratory certification requirements.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Revisions provide for better clarity on the laboratory requirements to the user.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-440	N/A	Confine subject matter to analytical methods; relocate other relevant content to more appropriate sections; clarify laboratory certification requirements by DCLS and refer to 1VAC30-41.	These revisions clarify that all drinking water analyses for compliance purposes be performed by analytical methods that are consistent with current EPA regulations. Editorial change to (i) clarify that all drinking water analyses for	<p>Editorial changes, reorganized text, added information and regulatory references, deleted 40 CFR Part 136, and included "bromide" which was inadvertently excluded in the previous stage. Requirements are consistent with the NPDWR.</p> <p>Intent: Update and clarify requirements.</p>

			<p>compliance purposes shall be performed by analytical methods that are consistent with current EPA regulations and those promulgated by DCLS. EPA regulations found at 40 CFR Part 141 and 40 CFR Part 143. Standards for laboratories seeking certification and Regulations for the Accreditation for Commercial Laboratories (1VAC30-46) are promulgated DCLS. (ii) add “bromide” to the list of testing parameters as required by the NPDWR</p>	<p>Rationale: Revisions provide for better clarity to the laboratory requirements.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-480	N/A	<p>Consolidate requirements for operational control testing and monitoring in one section, correct analytical method references, and require proper calibration and maintenance.</p>	<p>Revisions deleted the requirement to calibrate “during peak hourly flow” which was inadvertently included in the proposed stage regulations.</p>	<p>Delete reference to calibration during “peak hourly flow” which is no longer required.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Revisions provide for better understanding on ozone operations.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
None	12VAC5-590-515	<p>Created a new section 515 “Use of chemicals” to include clarification of their selection in accordance with industry standard NSF/ANSI Standard 60-2017.</p>	<p>Update to the new revised industry standard NSF/ANSI/CAN Standard 60-2020</p>	<p>Revise text to provide updated information.</p> <p>Intent: Update and clarify latest requirements.</p> <p>Rationale: No change.</p> <p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>

12VAC5-590-530	12VAC5-590-531	Break up large section into smaller, individual, subject specific sections. 12VAC5-590-531 has reporting requirements for filtration treatment and disinfection treatment.	Revisions included editorial changes to remove the duplicative text referencing the reporting “within 10 days after the end of each monitoring period in which samples were collected” which is already stated in section 530, and multiple change to correct internal cross references.	Delete extra text inconsistent with 12VAC5-590-530, and correct multiple citations of internal references. Intent: Update and clarify requirements. Rationale: Revisions provide for better clarity and consistency. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-545	N/A	Update consumer confidence report requirements.	Minor editorial change to correct improper word choice to avoid ambiguity. Inserted the meaning of “non-detect,” “not detect,” and “ND” as used in this section. Also, restored the word “take” instead of “collected”.	Clarified meaning of text after deletion of a definition, and correct word choices. Intent: Update and clarify requirements. Rationale: Revisions provide for better clarity and context. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-570	N/A	Move and update monthly operation report requirements from Appendix G to section 12VAC5-590-570 and tables 570.1 through 570.13. Specify situations in which reporting within 24 is required.	Inserted Table 570.14 for the reporting on ozone operations (missing from previous stage) and updated all internal cross references to this table. Reporting requirements for ozone disinfection are currently established by policy so this is not a procedural change for waterworks.	Insert missing Table 570.14 and correct all internal cross references in text. Intent: Update and clarify requirements. Rationale: Standardize monthly operation report content to achieve consistency in reporting among waterworks with similar treatment facilities. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-580	N/A	Change title to “general requirements for cross-connection control and backflow	(j) *Added language to this section: “The owner shall document the CCCP activities in a cross-	*Revise text with added language to improve clarity of the cross-connection program requirements and owner responsibilities.

		<p>prevention.” Add subsection A – D to consolidate general requirements. Clarify prohibited installations.</p>	<p>connection control plan and submit the written document to the department for review and approval.” (ii) *Clarified that if cross-connections exist, the owner and department must ensure the cross-connections are adequately safeguarded. (iii) Clarified when water from an auxiliary water system may enter a waterworks or consumer water system – the owner and department must approve the method of connection, and use of the system.</p>	<p>Intent: Update and clarify requirements. Rationale: Revisions improve clarity and consistency. Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
<p>12VAC5-590-600</p>	<p>N/A</p>	<p>Consolidate CCCP responsibilities in one section: owner requirements include having a CCCP, establishing procedures, conducting tests, allowing public education program, maintaining records.</p>	<p>Updated section: (i) *Add a requirement for the owner to review the CCCP and written plan at least every five years and update it as necessary. (ii) *Specify that the CCCP shall not be in conflict with the USBC. (iii) Require that the CCCP (instead of the owner) shall ensure complete assessment of every consumer’s water system. (iv) *The CCCP shall ensure testing, maintenance, and repairs of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed.</p>	<p>*Revise and reorganize section to address stakeholder concerns, and improve clarity related to the cross-connection program responsibilities. Intent: Update and clarify requirements, reduce uncertainty about owner responsibilities. Rationale – Establish performance standards for cross-connection control. Clarify relationship with the USBC. Clarify requirements for testing and recordkeeping. Organization of content will improve understanding. Comply with RIS Style Manual. Impact – Increased flexibility for owners to have and implement the CCCP. Improved understanding and application of the regulations.</p>

			<p>(v) *Allow a public education program, but not allow it to substitute for annual operational tests.</p> <p>(vi) *Require the CCCP to provide a method to discontinue or refuse water service in certain circumstances.</p> <p>(vii) *Clarify inventory and recordkeeping requirements.</p>	
12VAC5-590-610	N/A	<p>Update to include overlooked conditions and delete inappropriate ones; consistent with the USBC, allow point-of-use isolation, allow low pressure cutoffs at pumps, and list facilities requiring backflow prevention.</p>	<p>*Updated to clarify the conditions where actual or potential cross-connection hazards can be eliminated or controlled. In addition, instead of containment, the owner may allow consumers to use point-of-use isolation protection by application of appropriate backflow prevention assemblies, backflow prevention devices, or backflow elimination methods complying with the USBC.</p>	<p>General editorial changes to update conditions for the containment of backflow.</p> <p>*Update the listing of specific facilities requiring containment.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Eliminate conflicts between regulations and the USBC.</p> <p>Impact: Consistent standards improve public health protection, and provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-630	N/A	<p>Update requirements so they are consistent with the USBC, describe safeguards and relate to degree of hazard (high or low), and require backflow device testers to have tradesman certification from the Virginia Department of Professional and Occupational Regulation (DPOR).</p>	<p>Revised to:</p> <p>(i) Require that any backflow prevention assembly, or backflow elimination method, or backflow prevention device be of the approved type and comply with USBC.</p> <p>(ii) *Update Table 630.1 consistent with the USBC with additional examples of low- and high-hazard situations.</p> <p>(iii) Adjust deadline for backflow</p>	<p>*Update requirements and Table 630.1 with examples to agree with the USBC.</p> <p>Adjust timeframe for when backflow prevention workers are required so that is more closely correlates with effective date of regulations.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Revisions improve clarity and eliminate conflicts between regulations and USBC.</p>

			prevention device workers to obtain DPOR certification.	Impact: Provide an improved understanding, clarity, and application of the regulations; timelines correspond to expected effective date of regulations.
12VAC5-590-640	N/A	Require sound engineering basis for design. Add subsections A through D to clarify requirements. Subsection D includes reference to industry standard for material in contact with product water (NSF/ANSI Standard 61-2017).	Update subsection D to the new revised industry standard NSF/ANSI/CAN Standard 61-2020.	Revise text to provide updated information. Intent: Update and clarify latest requirements. Rationale: No change. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-810	N/A	Change title of section, delete specific approval requirement, and refer to national standard (NSF/ANSI Standard 61-2017).	Update section to the new revised industry standard NSF/ANSI/CAN Standard 61-2020.	Revise text to provide updated information. Intent: Update and clarify latest requirements. Rationale: No change. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-840	N/A	Update groundwater supply and development requirements. These include changing subsection B to G and updating requirements for well construction materials to meet general industry standards NSF/ANSI and NSF/ANSI Standard 61-2017.	Update subsection G to the new revised general industry standards NSF/ANSI/CAN and NSF/ANSI/CAN Standard 61-2020.	Revise text to provide updated information. Intent: Update and clarify latest requirements. Rationale: No change. Impact: Provide an improved understanding, clarity, and application of the regulations.
12VAC5-590-930	N/A	Update fluoridation requirements, including reference to industry standard (NSF/ANSI Standard 60-2017).	Update subsection B to the new revised industry standard NSF/ANSI/CAN Standard 60-2020.	Revise text to provide updated information. Intent: Update and clarify latest requirements. Rationale: No change.

				<p>Impact: Provide an improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-1000	N/A	Reorganize section and add requirements for disinfection of pipes, tanks, and equipment prior to placing in service with reference to AWWA standards. Other updates.	Correct publication year, AWWA C652-11 to AWWA C652-19.	<p>Update regulations to reflect most recent standards.</p> <p>Intent: Identify the standard accurately.</p> <p>Rationale: Reference the most recent AWWA standard.</p> <p>Impact: Provide accurate information in the application of the regulations.</p>
12VAC5-590-1080	N/A	Reorganize relevant content and reference AWWA standards. Move some content to new sections, based on subject matter, to improve clarity and understanding.	Correct publication years, AWWA D103-09 to AWWA D103-19, AWWA D108-10 to AWWA D108-19, AWWA D115-06 to AWWA D115-17, AWWA D120-09 to AWWA D120-19, and C652-11 to AWWA C652-19, ANSI/NSF 61-2016 to ANSI/NSF 61-2017, AWWA D102-14 to D102-17, and D104-11 to D104-17.	<p>Update regulations to reflect most recent standards.</p> <p>Intent: Identify the standards accurately.</p> <p>Rationale: Reference the most recent AWWA standards.</p> <p>Impact: Provide accurate information in the application of the regulations.</p>
None	12VAC5-590-1081	Create new section, titled “Atmospheric tank storage” relocating relevant text from 12VAC5-590-1080 B through N.	Correct publication years for reference standards: NSF/ANSI Standard 61-2016 to NSF/ANSI/CAN Standard 61-2020, AWWA D102-14 to D102-17 and D104-11 to D104-17, C652-11 to C652-19.	<p>Update regulations to reflect most recent standards.</p> <p>Intent: Identify the standards accurately.</p> <p>Rationale: Reference the most recent NSF/ANSI/CAN and AWWA standards.</p> <p>Impact: Provide accurate information in the application of the regulations.</p>
12VAC5-590-1140	N/A	Incorporate industry standards for testing and allowable leakage of water mains; update to include applicable AWWA standards.	Correct publication years, AWWA C600-10 to AWWA C600-17 and AWWA C604-11 to AWWA C604-17.	<p>Update regulations to reflect most recent standards.</p> <p>Intent: Identify the standards accurately.</p> <p>Rationale: Reference the most recent AWWA standards.</p>

				<p>Impact: Provide accurate information in the application of the regulations.</p>
12VAC5-590-1160	N/A	Editorial changes to clarify means of removing sediments and air; require accessibility of valves and discharge piping from air relief and blow-off valves.	Revised to provide flexibility on installation and testing of the appurtenances where field verification of groundwater elevation and surface water drainage is of potential concern, before placement of the pit or chamber.	<p>Clarify situations when field verification is necessary.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Not all installations require field verification by the engineer.</p> <p>Impact: Avoids cost of a field visit by an engineer when not necessary.</p>
12VAC5-590-1170	N/A	Update and clarify acceptable hydrant design and installation requirements for waterworks construction.	Expanded this section to clarify the design requirements for: (i) *fire hydrants and the AWWA Standard C502-18 (ii) *yard hydrants, and (iii) *other hydrant and flushing devices, to avoid cross-connection and contamination.	<p>*Update and clarify hydrant design and installation design criteria. Added sections addressing fire hydrants, yard hydrants and other hydrants and flushing devices to address stakeholder comments.</p> <p>Intent: Update and clarify requirements. Codify requirements implemented by policy</p> <p>Rationale: Hydrant drains must be properly constructed to prevent contamination; fire hydrants are for firefighting and pipe flushing, not domestic use.</p> <p>Impact: Reduced risk of contamination of drinking water. Improved understanding, clarity, and application of the regulations.</p>

Detail of All Changes Proposed in this Regulatory Action

*List all changes proposed in this action and the rationale for the changes. For example, describe the intent of the language and the expected impact. Describe the difference between existing requirement(s) and/or agency practice(s) and what is being proposed in this regulatory change. Explain the new requirements and what they mean rather than merely quoting the text of the regulation. * Put an asterisk next to any substantive changes.*

The sections listed below replace “commissioner,” “district engineer,” “field office,” “ODW,” and “division” with “department” to ensure terminology and responsibilities are consistent with the Public Water Supplies Law, *Code of Virginia* §§ 32.1-167 through 32.1-176, i.e., the “department” will be responsible for carrying actions unless the law specifically provides that the “commissioner” should act. An example is in *Code of Virginia* § 32.1-172, which states that “No owner shall establish, construct or operate any waterworks ... without a written permit from the commissioner...” Affected sections include: 10, 40, 110, 140, 200, 210, 220, 240, 250, 270, 290, 300, 330, 350, 370, 375, 379, 380, 385, 392, 405, 421, 430, 440, 490, 520, 530, 540, 545, 550, 610, 640, 680, 820, 840, 860, 910, 920, 930, 990, 1000, 1020, 1150, and 1180.

The following sections include amendments to replace “division” and/or “department” with “commissioner” to ensure the appropriate level of authority and because the “division” no longer exists within the Department of Health: 210 and 220.

The following sections include amendments to replace “disinfectant residual” with “residual disinfectant” to ensure consistency in terminology: 10, 374, 376, 380, 395, 411, 440, 500, 550, and 1000.

The following sections include amendments to replace “in lieu” with “instead” to represent a more common meaning and be consistent with the RIS Style Manual: 290, 300, 374, 375, 376, 378, 405, 411, 500, 531, 545, and 680.

The following sections include amendments to replace “in order to” with “to” since the words “in order” are insignificant and do not affect the meaning of the sentence: 375, 392, 405, 540, 545, 570, 830, and 880.

The following sections include amendments to replace “owners” with “owner” because the singular term is more appropriate to the context of the regulations: 350, 370, 372, 373, 374, 375, 376, 378, 379, 380, 392, 401, 405, 421, 500, 530, 531, 540, 545, and 550.

The following sections include amendments to replace “prior to” with “before” to represent a more common meaning and to be consistent with the RIS Style Manual: 10, 40, 50, 210, 370, 375, 379, 395, 401, 405, 530, 540, 610, 840, 860, 940, and 1210.

The following sections include amendments to replace “water purveyor” or “purveyor” with “waterworks owner” or “owner” because the term “water purveyor” is being deleted from the definitions: 10, 600, and 610.

The following sections include amendments to replace “residual chlorine” with “chlorine residual” to ensure consistency in terminology: 10, 900, 960, and 1001.

The following sections include amendments to replace “surface water” with “surface water source” to differentiate between reference to the “source” versus the “type” and to ensure uniformity in terminology: 374, 376, 380, 401, 411, 531, 830, 883, and 1001.

The following sections include amendments to replace “taken” with “collected” to more appropriately represent the act of “sample collection” rather than “sample taken:” 370, 375, 379, 380, 405, and 550.

The following sections include amendments to replace “water supply” with “source water” to differentiate among other usage of the term and to clarify its proper context: 140, 150, 220, 360, 375, 405, 830, 840, and 860.

Current Chapter-section number	New Chapter-section number, if applicable	Current requirements in VAC	Change, intent, rationale, and likely impact of updated requirements
Article 1		Article 1 title is "Definitions"	Eliminate article number and title for simplicity.
12VAC5-590-10	N/A	Section title is "Definitions"	<p>Change section title to “Definitions and units of measurement.” *VDH is revising the following definitions:</p> <ul style="list-style-type: none"> Action level, Air gap separation, Auxiliary water system, Backflow, Backflow prevention device, Bag filters, Bank filtration, Best available technology, Cartridge filters, Commissioner, Compliance cycle, Compliance period, Consecutive waterworks, Consumer, Cross-connection, Disinfectant, Disinfection, Disinfection profile, Distribution main, Double check valve assembly, Dual sample set, Entry point, Exemption, Filter profile, Finished water, Free available chlorine, Groundwater, Groundwater system, Groundwater under the direct influence of surface water, GUDI Haloacetic acids (five), HAA5 Hypochlorite, Initial compliance period, Karst geology, Lake or reservoir, Lead free, Lead service line, Legionella Log inactivation,

			<p>Maximum contaminant level, MCL, Maximum contaminant level goal, MCLG, Maximum residual disinfectant level, MRDL Maximum total trihalomethane potential, MTP, Membrane filtration, Method detection limit, Most probable number, MPN, Nontransient noncommunity waterworks, NTNC, One hundred year flood elevation, 100-year flood elevation, Operator, Optimal corrosion control treatment, Owner, Point of disinfectant application, Point-of-entry device, POE device, Point-of-use device, POU device, Pollution, Potable water, Practical quantitation level, PQL, Prechlorination, Presedimentation, Process fluids, Pure water, Reduced pressure principle backflow prevention assembly, reduced pressure zone backflow prevention assembly, RPZ assembly, REM, Residual disinfectant concentration, Sanitary survey, Service connection, Sewer, Significant deficiency, Slow sand filtration, SUVA, Synthetic organic chemical, SOC, Too numerous to count, TNTC, Total organic carbon, TOC Total trihalomethanes, TTHM, Transient noncommunity waterworks, TNC, Treatment technique, TT, Used water, Variance, Virus, Volatile organic chemical, Water supply, Waterworks, and Wholesale waterworks.</p>
--	--	--	--

			<p>Intent: Update and clarify requirements.</p> <p>Rationale: The changes reflect current use of the terms, changes in technology, corrections of typographical errors, changes to ensure consistent use of terms throughout the regulations, changes in terminology, and/or using easier to understand definitions.</p> <p>Impact: the regulations and the use of the terms throughout the regulations will be more straightforward and easier to understand.</p>
12VAC5-590-10	N/A		<p>*The definitions for the following terms will be deleted:</p> <p>Annual daily water demand, Approved, Breakpoint chlorination, Chlorine, Chlorine gas, Chlorine solution (chlorine water), Chronically noncompliant waterworks, CNC, Coliform bacteria group, Comprehensive performance evaluation, CPE, CT, CT_{calc}, Daily fluid intake, Dechlorination, Degree of hazard, Disinfectant contact time, District engineer, Domestic or other nondistribution system plumbing problem, Effective corrosion inhibitor residual, Equivalent residential connection, Exception First draw sample, GAC10, GAC20, Governmental entity, Health regulations, Interchangeable connection, Large waterworks, Liquid chlorine, Manmade beta particle and photon emitters,</p>

			<p>Maximum daily water demand, Medium waterworks, Office, ODW, Plant intake, Pollution hazard, Postchlorination, Raw water main, Responsible charge, Sanitary facilities, Secondary water source, Service line sample, Small waterworks, Standard sample, Terminal reservoir, Total effective storage volume, Transmission main, Two-stage lime softening, Water purveyor, Water supply main, Water well completion report, and Waterworks with a single service connection.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Many of the terms are no longer used in the regulations and are not needed for historical purposes (e.g., “health regulations”). Other terms are used in only one section and are defined in that section. An example is “first draw sample” which is only used in 12VAC5-590-375 and is defined in subsection B 2 b, Sample collection methods.</p> <p>Impact: Improved understanding and application of the regulations by removing unnecessary content.</p>
12VAC5-590-10	N/A	None	<p>*Add new definitions: Administrative Process Act, APA ANSI, ASME, ASSE, ASTM, AWWA, Backflow elimination method, Backflow prevention assembly, Backpressure backflow, Backsiphonage, Boil water advisory, boil water notice, BSSP, CAP, Case decision, CCCP, CCR, CDC, CFE, CFR, Clean compliance history,</p>

		<p>Comprehensive business plan, Confirmation sample, Consolidated, Containment, DBPPs, DBPs, DCLS, Department, DEQ, Distribution system, DOC, DPOR, Drawdown, EPA, GAC, GWMA, HPC, Isolation, Leakage, Log removal, Membrane module, Membrane technology, Membrane unit, Microfiltration, MPA, Nanofiltration, NSF, Operating staff, Optimum fluoride ion concentration, PAC, PCBs, PER, Permit, Permitted capacity, Person, pH, Physical disconnection, PMCL, Pressure vacuum breaker assembly, Primary disinfection, Process water, Project documents, QCRV, RAA, Regulations, Reverse osmosis, SDWA, Secondary disinfection, Service line, Site visit, SMCL, SOP, Source water, Supervisory control and data acquisition, SCADA, TDS, TMF, Treatment, Ultrafiltration, Unconsolidated, USBC, UV, VOSH Waiver, Water treatment plant, and Waterworks business operation plan.</p>
--	--	---

			<p>Intent: Update and clarify requirements.</p> <p>Rationale: Definitions for terms, acronyms, and units of measure will enhance reader understanding and provide consistency throughout the regulations.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-10	N/A	None	<p>*Add new subsection B, "Units of measurement".</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Definitions for terms, acronyms, and units of measure will enhance reader understanding and provide consistency throughout the regulations.</p> <p>Impact: Improved understanding and application of the regulations.</p>
Article 2		Article title is "General Information"	Eliminate article number and title for simplicity.
12VAC5-590-20	N/A	Section title is "Authority for regulations."	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Section is unnecessary.</p> <p>Impact: None.</p>
12VAC5-590-30	N/A	Section title is "Purpose of the regulations."	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Section is unnecessary.</p> <p>Impact: None.</p>
None	12VAC5-590-35	None	<p>Add new section with title "Delegation of authority."</p> <p>Intent: Establish delegation of authority</p> <p>Rationale - Commissioner or designee can act on behalf of the Board of Health, with limitation.</p> <p>Impact: none.</p>

12VAC5-590-40	N/A	<p>Section title is "Administration of regulations."</p> <ol style="list-style-type: none"> 1. Board of Health is responsible for promulgating, amending, and repealing regulations. 2. Commissioner is the executive officer of the Board of Health. 3. Division of Water Supply Engineering is designated the primary reviewing agent for administrating this chapter. 4. Central and field offices locations, 5. Waterworks Advisory Committee membership and role is defined. 	<p>Change section title to "Administration of this chapter." Remove description of the field offices. Update name of the department. Move description of the Waterworks Advisory Committee to a new section 45.</p> <p>Intent: Clarify and update to reflect organization changes.</p> <p>Rationale: Office of Drinking Water name and organization has changed and may change in future.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-45	None	<p>*Create new section 45 titled "Waterworks Advisory Committee (WAC).</p> <p>Intent: Provide clarification about committee membership, meetings, and the term of membership.</p> <p>Rationale: Changes reflect current and future purpose of the WAC.</p> <p>Impact: None, this is not a new requirement.</p>
12VAC5-590-50	N/A	<p>Section title is "Application of regulations to waterworks and water supplies in operation or planned prior to the effective date of the regulations."</p> <ol style="list-style-type: none"> A. Waterworks must comply with Part II of this chapter. B. Compliance with Part III and IV is required for waterworks modification and construction. C. Compliance with Part III and IV is necessary for all repair to pipes, tanks, pumps and appurtenances part of a waterworks. D. VOC and unregulated contaminants regulations in accordance with times schedule presented. E. Lead and Copper regulations in accordance with time schedule presented. 	<p>Change section title to "Application of regulations to waterworks in operation or planned before the effective date of the regulations." Remove "water supplies" from title. Water supplies may be misinterpreted.</p> <p>Update this section to reflect deletion of Part IV and delete subsections D and E. Remove outdated regulations and timetables. Clarify that existing facilities are not required to upgrade to current design requirements unless modifications are proposed.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: New design standards cannot be imposed on existing facilities without excessive cost;</p>

			and is not the intent of the regulations. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-55	None	*Create new section titled "Relationship of this chapter to the USBC." This new section clarifies and codifies the relationship between of the <i>Waterworks Regulations</i> and the USBC, which governs building plumbing systems. Intent: Clarify responsibilities of waterworks owners and building officials with respect to cross-connection control. Rationale: Clearer regulations are preferable to the current interagency agreement between VDH and the Department of Housing and Community Development. This change will eliminate the need for the interagency agreement. Impact: Provide improved understanding, clarity, and application of the regulations.
Article 3		Article title is "Procedures"	Eliminate article number and title for simplicity.
12VAC5-590-60	N/A	Section title is "Compliance with the Administrative Process Act (APA)." "All procedures outlined below..."	Repeal section. Intent: Simplify and streamline. Rationale: Section is unnecessary. Impact: None.
12VAC5-590-70	N/A	Section title is "Powers and procedures". The Board of Health reserves the right to authorize any procedure ... that is consistent with the provisions set forth herein and the ... Title 32.1 of the <i>Code of Virginia</i> .	Delete qualifying phrase "that is consistent with..." Intent: Simplify and streamline. Clarify regulation and remove unnecessary text. Rationale: Simple language conveys meaning directly. Impact: Improved understanding and application of the regulations.
12VAC5-590-80	N/A	Section title is "Procedure." Regulations are established in accordance with the Administrative Process Act	Repeal section. Intent: Simplify and streamline. Rationale: Section is unnecessary

			<p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-100	N/A	<p>Section title is "Exception; emergency regulations." The Board of Health may promulgate regulations by complying with procedures in §32.1-13 of the <i>Code of Virginia</i>.</p>	<p>Add reference to APA procedures set forth in § 2.2-4011 of the <i>Code of Virginia</i> and clarify authority of the commissioner to act when the Board of Health is not in session.</p> <p>Intent: Update language and provide specific references to the <i>Code of Virginia</i>.</p> <p>Rationale: APA procedures must be followed. Clarifies the commissioner's authority to act in an emergency situation.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-110	N/A	<p>Section title is "Enforcement." 1. Notifying the alleged violator. 2. Orders requiring owner to comply. 3. Enforcement of orders. 4. Voluntary compliance. 5. Hearing as a matter of right.</p>	<p>*Add references to §§ 32.1-174 and 32.1-27 of the <i>Code of Virginia</i>, where appropriate. Update references to board, department, and commissioner. Also, clarify regulation and remove unnecessary text and cross references.</p> <p>Intent: Update language and references to the <i>Code of Virginia</i>.</p> <p>Rationale: Consistency needed with enforcement terminology and practices found in §§ 32.1-26, 32.1-27, and 32.1-174 of the <i>Code of Virginia</i>.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-115	None	<p>*Create a new section titled "Administrative proceedings". Incorporate information from sections 160, 170, and 180 into this new section.</p> <p>Intent: Consolidate information in one section.</p> <p>Rationale: Related information presented together improves understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>

<p>12VAC5-590-120</p>	<p>N/A</p>	<p>Section title is "Emergency orders." Commissioner may issue emergency orders in case where there is imminent danger to public health from a waterworks. Emergency order may be communicated by the best practical notice and is effective immediately upon receipt. Violation of an Emergency Order. Emergency orders shall be effective for a period determined by the commissioner. Emergency orders may be appealed in accordance with the provisions of the APA.</p>	<p>Update language and organize text into subsections.</p> <p>Intent: Improved organization, clarify language.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
<p>12VAC5-590-125</p>	<p>N/A</p>	<p>Section title is "Chronically noncompliant waterworks." A. Identification of chronically noncompliant waterworks (CNC). B. Bringing a CNC into compliance. C. Owner shall provide commissioner a copy of notice sent to each consumer within 5 calendar days of receiving the order. D. The commissioner shall send copy of order to chief administrative officer of the locality. E. Civil penalties statues.</p>	<p>Reference definition of chronically noncompliant contained in §32.1-167 of the <i>Code of Virginia</i>. Eliminate list of reasons for determination of chronically noncompliant, and refer to Code definition instead.</p> <p>Intent: Simplify and streamline. Harmonize with the <i>Code of Virginia</i>.</p> <p>Rationale: The Code language is more comprehensive than the existing regulations.</p> <p>Impact: Improved understanding and application of the regulations.</p>
<p>12VAC5-590-130</p>	<p>N/A</p>	<p>Section title is "Suspension." In case of disaster, the commissioner may suspend the application of the chapter until the disaster is abated.</p>	<p>Change section title to "Suspension of this chapter." Change "localities" to "waterworks" and clarify that enforcement may be suspended. Clarify that the commissioner may suspend enforcement of the regulations in the event of a man-made or natural disaster.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: The existing phrase "application of the chapter" is unclear.</p> <p>Impact: Improved understanding and application of the regulations.</p>

12VAC5-590-140	N/A	Section title is "Variances." Content is based on National Primary Drinking Water Regulations, 40 CFR 141.4, and section 1415 of the SDWA with no substantial changes.	<p>Minor word and format changes. Change "application" to "request," "raw water" to "source water." Correct reference citations.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-150	N/A	Section title is "Exemptions." Content is based on National Primary Drinking Water Regulations, 40 CFR 141.4 and section 1416 of the SDWA with no substantial changes.	<p>Minor word and format changes, including change "application" to "request". Correct reference citations. Provide consistency in terminology.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-160	N/A	Section title is "Type of hearings." 1. Informal hearing 2. Adjudicatory hearing 3. Regulatory hearing	<p>Repeal section. Move and consolidate information to new section 115.</p> <p>Intent: Consolidate information on topic.</p> <p>Rationale: Related information presented together improves understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-170	N/A	Section title is "Request for hearing."	<p>Repeal section. Move and consolidate information to new section 115.</p> <p>Intent: Consolidate information on topic.</p> <p>Rationale: Related information presented together improves understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-180	N/A	Section title is "Hearing as a matter of right."	<p>Repeal section. Move and consolidate information to new section 115.</p>

			<p>Intent: Consolidate information on topic.</p> <p>Rationale: Related information presented together improves understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-190	N/A	<p>Section title is "Permits." Written construction permit required from commissioner. Written operation permit required from commissioner. Conditions may be imposed on issuance of any permit.</p>	<p>*Harmonize requirements with the <i>Code of Virginia</i> requirements and clarify when a written operation permit and a written construction permit is required.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Clarify requirement for a permit and the types of permits. General permits are described later in the regulations (section 300) and need to be included here also.</p> <p>Impact: Potential increase in general permits issued to waterworks instead of requiring standard construction permits, thereby reducing effort and costs to utilities and state government.</p>
12VAC5-590-200	None	<p>Section title is "Procedure for obtaining a construction permit." The Commissioner issues Construction permits. The section outlines the requirements for a construction permit: A. Submit an application to establish, construct, expand, modify and/or operate a waterworks; B. Participate in a preliminary engineering conference; C. Submit plan data and applicable information that may include: the engineer's report and preliminary plans with general information, extent of waterworks system, alternative plans, soil, groundwater conditions, and foundation problems, water consumption, fire flow requirements, sewerage system available, source of water supply,</p>	<p>*Revise, update, and reorganize permit procedures. *Add requirements for business plans and Uniform Water Well Completion Report GW-2. Update requirements for well lot dedication documents.</p> <p>Intent: Consolidate and update procedures and submittal requirements in one location of the regulations. Refer to new standard well completion form.</p> <p>Rationale: Business plan requirements added to state law since last revision to this section. Conference and report requirements listed are outdated and may inhibit communication. Use of one universal well completion form for both State agencies (VDH and DEQ) needed to obtain complete and accurate well construction data.</p>

		<p>proposed treatment processes, waste disposal, automatic equipment, project sites, financing, future extensions.</p> <p>D. Plans for waterworks improvements shall provide the following: a general layout and detailed plans.</p> <p>E. Submit complete, detailed, technical specifications for the proposed project.</p> <p>F. Submit a summary of complete design criteria.</p>	<p>Impact: Potential reduction of time and expense to waterworks owners and VDH for small waterworks design and construction projects. Short-term increase in time spent by water well systems providers to transition to new form and provide business plan. This should be offset by owner’s assessment of and planning for the technical, managerial, and financial requirements to operate a waterworks successfully.</p>
12VAC5-590-210	N/A	<p>Section title is “Formal requirements for the submission of engineering data.”</p> <p>All drawings, specifications, and engineer’s reports submitted for approval shall be prepared by or under the supervision of a licensed professional engineer qualified to practice in Virginia. The front cover of each report shall bear the signed imprint of the seal of the licensed professional engineer and signed with original signature. If plans and specifications are found to be incomplete or inadequate, they will be returned to the submitting party with a letter outlining the necessary revisions.</p>	<p>Change section title to “Requirements for the submission of engineering data.” Revise, update, and reorganize requirements. Remove outdated submission requirements and replace with a reference to the <i>Code of Virginia</i> to allow submission of electronic documents. Include professional engineer exemption as allowed by Code.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Allow more efficient submission and management of documents.</p> <p>Impact: Negligible, as changes have already been implemented by policy and cost savings to owners, consultants, and state agency have been realized.</p>
12VAC5-590-220	N/A	<p>Section title is "Compliance with Manual of Practice."</p> <p>A. Design guidelines are provided in the Manual of Practice but the commissioner may impose more stringent standards or requirements when required to meet critical areas, special conditions, special standards, or federal mandates.</p> <p>B. Designs must demonstrate that a system will adequately safeguard public health.</p> <p>C. Plans and specifications will be reviewed by the division.</p> <p>One set of approved plans and</p>	<p>Change section title to “Compliance with the Manual of Practice.”</p> <p>General revisions and updates to wording. Remove requirement for VDH to stamp and return one set of approved plans and specification to owner. Allow for exceptions granted by DPOR for transient noncommunity waterworks meeting specific conditions.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Design flexibility and innovation are acceptable when conditions warrant. More efficient</p>

		specifications will be stamped by the division and returned to the owner.	<p>submission and management of documents will result.</p> <p>Impact: Negligible, as changes have already been implemented and cost savings to owners, consultants, and state government have been realized.</p>
12VAC5-590-230	N/A	<p>Section title is "Issuance of the construction permit."</p> <p>Upon approval of the plans and specifications, the commissioner will issue a construction permit.</p>	<p>Specify the duration of a construction permit and allow VDH to add conditions under certain circumstances to a construction permit. Organize the section with new subsections.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Construction must be started in order to provide reasonable assurance that design conditions have not changed. Documentation may be required for installed equipment to meet the performance or certification requirements of the design.</p> <p>Impact: Reduces the potential for constructing waterworks incorrectly, thereby saving the owner's time and cost.</p>
12VAC5-590-240	N/A	<p>Section title is "Revisions of approved plans."</p> <p>Any deviations from approved plans and specifications must be approved. Revised plans and specifications shall be submitted in time to permit the review and approval before construction work is begun.</p>	<p>Minor word changes to improve grammar and understanding. Organize section with new subsections.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Comply with RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-250	N/A	<p>Section title is "Statement required upon completion of construction."</p> <p>Upon completion of the construction or modification of the waterworks, the owner shall submit a statement signed by a licensed professional engineer stating that the construction work was completed in</p>	<p>Clarify "statement of completion of construction". Add that project documents may require a performance verification report and operator training. Organize section with new subsections.</p> <p>Intent: Update and clarify requirements.</p>

		accordance with the approved plans and specifications.	<p>Rationale: Improve receipt of deliverables from contractor after construction is completed. Contract documents may specify verification of performance and operator training for proprietary equipment in order to assure acceptable operation.</p> <p>Impact: Operation and performance of new process equipment may be improved.</p>
12VAC5-590-260	N/A	<p>Section title is "Issuance of the operation permit." Upon receipt of the 12VAC5-590-250 statement, the commissioner will issue an operating permit.</p>	<p>Clarify procedures, requirements for an operation permit, and the content of the operation permit. Organize section into new subsections.</p> <p>Rationale: Update to reflect current procedures.</p> <p>Impact: Waterworks will be permitted and operated by properly qualified operators.</p>
12VAC5-590-270	N/A	<p>Section title is "Inspection and correction." A. Within 30 days after placing a new or modified waterworks into operation, the owner shall test the water. B. The commissioner has a right to inspect any waterworks and be present for any testing.</p>	<p>Change title to "Startup testing and inspections." Clarify owner's responsibilities to notify VDH and test prior to operating new facilities. Clarify the commissioner and department have a right to inspect any waterworks.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Existing language is unclear.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-280	N/A	<p>Section title is "Procedure for obtaining a construction permit for well sources." The following procedures for well sources shall be used: 1. Submit Application. 2. Preliminary engineering conference. 3. VDH issues tentative well lot approval letter. 4. Submit engineer's report and preliminary plans. 5. Submit plans and specifications as per Section</p>	<p>Repeal section and move relevant content to subsections 200 B, C, and D. Combine well development procedures with permit procedures.</p> <p>Intent: Reorganize, simplify and streamline.</p> <p>Rationale: Combining this section in with related requirements to improve understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>

		<p>200 D, E, and F, Section 210, and Section 840. 6. Compliance with Sections 220 through 270 required.</p>	
<p>12VAC5-590-290</p>	<p>N/A</p>	<p>Section title is "Procedure for issuance of special permits for new or nonconventional methods, processes, and equipment." A. Water treatment methods, processes or equipment which are not covered by the design criteria of Part III or IV, and which in principle or application are new or nonconventional, are subject to special permit application procedure in lieu of that set forth in Section 200. B. New or nonconventional developments shall have been thoroughly tested in a full-scale or representative pilot-plant installation before approval of a plant utilizing this process and equipment can be employed. Testing guidelines are provided. C. Detailed plans shall be submitted showing how, in case of disapproval, the plant or unit will be converted to, or replaced with, a proven process. Financial assurance is required. D. Commissioner will issue a construction permit if he is satisfied that the method, process, or equipment will efficiently produce water that will meet the operation standards of Part II, and that the method, process, or equipment may be converted to a conventional technique, if necessary. E. VDH will issue a provisional permit for a limited duration for the operation of the new or nonconventional methods, processes, and equipment. Not more than one provisional permit will be granted during the evaluation period. Provisional permits requirements are listed.</p>	<p>Change title to "Issuance of a temporary operation permit." *Replace "Special" and "Provisional" permits with "Temporary" permits and clarify requirements. Remove equipment requirements for surface water treatment. Update "commissioner" to "department" in certain cases.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: <i>Code of Virginia</i> § 32.1-172 E provides for issuance of a temporary permit. Design requirements for treatment are in Part III of the Regulations.</p> <p>Impact: Improved understanding and application of the regulations.</p>

		F. The commissioner will issue an operation permit upon lapse of the provisional permit if he finds that the waterworks meets the operation standards of Part II. If standards are not met, an order will be issued to require standards to be met.	
12VAC5-590-300	N/A	Section title is "Procedure for obtaining a general permit for distribution mains." Instead of obtaining a permit for each distribution main project, an owner may elect to obtain a general permit for distribution mains. 1. The owner shall develop, adopt, and have division approval of general specifications and plan details covering water main design and construction. 2. The owner shall enter into a memorandum of understanding with the division. System-specific requirements are listed.	Change title to "Issuance of a general permit for construction of distribution mains." Clarify meaning of a general permit, and the requirements and procedures for its issuance. Establish the duration of the general permit at five years. Organize the section with new subsections. Minor word changes. Intent: Update and clarify requirements. Rationale: Clear requirements and procedures are needed to ensure that the owner is qualified to assume the responsibilities for design and construction of water distribution mains. Impact: Improved understanding and application of the regulations.
12VAC5-590-310	N/A	Section title is "Amendment or reissuance of permits." The commissioner may amend or reissue a permit.	Change title to "Amendment or reissuance of operation permits." Minor word changes to be consistent with § 32.1-173 of the <i>Code of Virginia</i> . Add new subsection B allowing the commissioner to require submission of a business operation plan as a condition to amend or reissue an operation permit. Intent: Update and clarify requirements. Rationale: Harmonize with the <i>Code of Virginia</i> . Impact: Improved understanding and application of the regulations.
12VAC5-590-320	N/A	Section title is "Revocation or suspension of a permit." A. The commissioner may suspend or revoke a permit for listed reasons.	Change title to "Revocation of an operation permit." Update the procedure for revoking an operation permit. Include reasons when the commissioner may revoke an operation permit. Remove

		<p>B. When revoking or suspending permits, the commissioner shall send a written notice of intent to the owner stating the reasons for the proposed suspension or revocation and provide at least 30 days advance notice of the hearing.</p> <p>C. The owner has the right to a hearing.</p>	<p>“suspension” of an operation permit.</p> <p>Intent: Clarify and update requirements. Harmonize with the <i>Code of Virginia</i>.</p> <p>Rationale: Operation permits are not suspended, but may be revoked for specific reasons listed in § 32.1-174 of the <i>Code of Virginia</i>, following procedures consistent with the APA.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-330	N/A	<p>Section title is "Monitoring, records, and reporting." The commissioner may require the owner to install, use, and maintain equipment for the control and testing of water flowing through the plant. Sampling and testing shall be by methods approved by the division. Test results shall be recorded, compiled, and reported to the field office in a format approved by the division.</p>	<p>Add criteria for requiring water treatment process monitoring equipment. Update references to commissioner and department. Organize this section with new subsections. Minor word changes.</p> <p>A minor editorial change that clarifies that the department may specify the method for reporting test results.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: The imposition of monitoring requirements by the state must be justified by explaining the basis for them, with the overall goal of protecting public health.</p> <p>Impact: Improved understanding and application of the regulations.</p>
Article 1		Article 1 title is “General.”	Eliminate article number and title for simplicity.
12VAC5-590-340	N/A	<p>Section title is “General.” All physical, chemical, bacteriological or radiological tests to determine compliance must be performed by DCLS or labs certified by DCLS.</p>	<p>Change title to “Compliance standards.” *Move and consolidate all water quality standards, Maximum Contaminant Levels, Action Levels, Treatment Techniques, and Maximum Disinfectant Levels and Goals from section 440 to this section. Clarify laboratory certification requirements.</p> <p>*Add sodium to Table 340.1.</p>

			<p>Intent: Group drinking water standards and limits together. Update and clarify requirements.</p> <p>Rationale: The drinking water standards need to be easily identified and located by the reader.</p> <p>Impact: Improved understanding, clarity, and application of the regulations.</p>
12VAC5-590-350	N/A	<p>Section title is "Sanitary surveys." A. Frequent assessments shall be made by owners. B. Commissioner may perform sanitary surveys. C. Eight components of the sanitary survey D. Significant deficiencies - notification and correction procedures.</p>	<p>Change title to "Assessments and sanitary surveys." Clarify the purpose of sanitary surveys. Clarify that sanitary surveys are conducted by the department, who has right of entry with owners consent. Update word choices.</p> <p>Intent: Clarify and update requirements. Comply with RIS Style Manual.</p> <p>Rationale: Existing Regulations appear to suggest that sanitary surveys by the commissioner are optional. VDH based the updated content on National Primary Drinking Water Regulations 40 CFR 141.401, with no substantial changes.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-360	N/A	<p>Section title is "Responsibility; owner." A. General description of waterworks owner responsibilities. B. Delineates extent of waterworks to the customer's service connection.</p>	<p>Change title to "Responsibilities of the owners." Identify the responsibility of the waterworks owner and the property owner (consumer) with respect to service lines and service connections. Update word choices.</p> <p>Intent: Clarify and update requirements.</p> <p>Rationale: The service connection may not always be located at the customer's property line; in some locations, the waterworks may agree to maintain the water service pipe from the water distribution main.</p> <p>Impact: Improved understanding and application of the regulations.</p>

Article 2		Article 2 title is "General Information."	Eliminate article number and title for simplicity.
12VAC5-590-370	Break section 370 into 7 smaller sections: 12VAC5-590-370 12VAC5-590-372 12VAC5-590-373 12VAC5-590-374 12VAC5-590-376 12VAC5-590-377 12VAC5-590-378	Section title is "Sampling frequency." Content includes detailed monitoring requirements (sampling and testing) for bacteriological, chemical, physical and radiological parameters. Content is based on National Primary Drinking Water Regulations 40 CFR 141.21, 141.23, 143.4, 141.24, 141.132, 141.621, 141.623, 141.625, 141.72, 141.73, 141.74, 141.173, 141.174, 141.550 - 141.564, 141.26, and 141.851 - 141.858, with no substantial changes.	Rename section 370 "Monitoring requirements". Move the opening section paragraph to new subsection C to describe limits for consecutive waterworks monitoring. *Add provisions in subsection A to allow qualified, well-operated TNCs to reduce the bacteriological monitoring frequency from quarterly to annually and provide requirements for reduced monitoring, increased monitoring, and returning to annual monitoring for these TNCs. Retain subsection B (1 st paragraph) and rename as, "Chemical monitoring". Move subdivision B 1 to a new section 372, "Inorganic chemicals monitoring." Move subdivision B 2 to new section 373, "Organic chemicals monitoring." Move subdivision B 3 to new section 374, "Residual disinfectant, DBPs, and DBPPs monitoring." Delete subdivision B 4, Unregulated contaminants, and associated Table 2.6. Contaminants listed are now regulated disinfection byproducts and are addressed elsewhere in the regulations. Move subdivision B 7 to new section 376, "Surface water or GUDI sources treatment monitoring" and renumber Table 2.5 to Table 376.1 "Grab Sample Monitoring Frequency". Move subsection C to new section 377, "Physical constituent monitoring." Move subsection D to new section 378, "Radiological monitoring." Add new subsection D to refer to other sections where new source monitoring requirements are given.

			<p>Update descriptions of monitoring and reporting violations. Provide clarification on the chemical sampling schedules, including confirmation samples.</p> <p>Intent: Retain federal requirements unchanged, but break one large section into smaller ones, organized by water quality characteristic.</p> <p>Rationale: Existing section is too large to navigate easily. "Sampling" is not accurate description of content. Allowing reduced monitoring at qualified, well-operated TNCs will lower the regulatory burden on these waterworks.</p> <p>Impact: Improved understanding and application of the regulations. Less regulatory burden on certain TNCs.</p>
None	12VAC5-590-372	See 12VAC5-590-370 B 1	<p>Moved 12VAC5-590-370 B 1 to new section 372, "Inorganic chemicals monitoring." Minor revisions to update language from section 370, i.e., change "commissioner" to "department," "owners" to "the owner" and use defined acronyms.</p> <p>*Add sodium monitoring requirements.</p> <p>Intent: Clarify existing requirements and incorporate EPA requirements for sodium per 40 CFR §141.41.</p> <p>Rationale: Incorporate the federal requirement for sodium. Existing section 370 is too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-373	See 12VAC5-590-370 B 2	<p>Moved 12VAC5-590-370 B 2 to new section 373 "Organic chemicals monitoring." Minor revisions to update language from section 370, i.e., change "commissioner" to "department,"</p>

			<p>“owners” to “the owner” and use defined acronyms.</p> <p>VDH updated this section to make the requirements consistent with EPA requirements and to improve organization.</p> <p>Intent: Clarify existing requirements while maintaining consistency with NPDWR.</p> <p>Rationale: Existing section 370 is too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-374	See 12VAC5-590-370 B 3	<p>Moved 12VAC5-590-370 B 3 to new section 374 “Residual disinfectant, DBPs, and DBPPs monitoring.” Minor revisions to update language from section 370, i.e., change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms.</p> <p>VDH updated this section to make the requirements consistent with EPA requirements, including laboratory certification, “bromide” in the list of analytes, reduced monitoring, and new waterworks monitoring plan requirements.</p> <p>Intent: Clarify existing requirements while maintaining consistency with NPDWR.</p> <p>Rationale: Existing section 370 is too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-375	N/A	<p>Section title is "Lead and copper monitoring." Lead monitoring waiver - materials criteria: requires owner to demonstrate that all distribution system, service lines and service plumbing shall meet lead-free materials criteria pursuant to 42 USC § 300g-6(e). Base content on National Primary Drinking Water</p>	<p>Correct references within section. Update lead content criteria to reflect Public Law 111-380, Reduction of Lead in Drinking Water Act. Added requirement that first-draw samples shall be collected without flushing the tap. Minor revisions to update language from section 370, i.e., change “commissioner” to “department,” “owners” to “the owner” and use defined acronyms.</p>

		Regulations 40 CFR 141.86, with no substantial changes.	<p>Intent: Clarify existing requirements, update to make consistent with EPA requirements.</p> <p>Rationale: Existing citation is no longer applicable. Need to update to current requirements.</p> <p>Impact: None. Public Law 111-380, Reduction of Lead in Drinking Water Act went into effect on Jan 4, 2014.</p>
None	12VAC5-590-376	See 12VAC5-590-370 B 7	<p>Moved 12VAC5-590-370 B 7 to new section 376 "Surface water or GUDI sources treatment monitoring" and renumbered Table 2.5 to Table 376.1 "Grab Sample Monitoring Frequency." Minor revisions to update language from section 370, i.e., change "commissioner" to "department," "owners" to "the owner" and use defined acronyms.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Existing section 370 is too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-377	See 12VAC5-590-370 C	<p>Moved 12VAC5-590-370 C to new section 377 "Physical constituent monitoring."</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Existing section 370 is too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-378	See 12VAC5-590-370 D	<p>Moved 12VAC5-590-370 D to new section 378 "Radiological monitoring." Minor revisions to update language from section 370, i.e., change "commissioner" to "department," "owners" to "the owner" and use defined acronyms.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Existing section 370 is too large to navigate easily.</p>

			<p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-379	N/A	<p>Section title is "Groundwater waterworks monitoring." Base content on National Primary Drinking Water Regulations 40 CFR 141.402, with no substantial changes.</p>	<p>Change section title to "Groundwater system monitoring." Consolidate all groundwater monitoring requirements into one section. Update word choices and correct references. Move content of 12VAC5-590-425 A - D into a new subsection 379 C.</p> <p>Intent: Clarify and consolidate requirements in one section.</p> <p>Rationale: Specific requirements in subsection 425 may be overlooked as presently organized.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-380	N/A	<p>Section title is "Bacteriological quality." Content includes determination of compliance with the PMCL and treatment technique requirements for microbial contaminants. Base content on National Primary Drinking Water Regulations 40 CFR 141.63, 141.21, and 141.402, with no substantial changes.</p>	<p>Rename section 380 "Bacteriological compliance." Consolidate all bacteriological compliance requirements for groundwater monitoring into one section. Eliminate items covered by other regulations and standards. Describe follow-up requirements for groundwater source monitoring specified in sections 379, 430, and 840.</p> <p>Update laboratory certification requirements to make consistent with EPA requirements.</p> <p>Intent: Clarify and consolidate requirements, eliminate items covered by other regulations or standards. Update to make consistent with EPA requirements.</p> <p>Rationale: Specific requirements in sections 379, 425, and 840 may be overlooked as presently organized.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-382	See 12VAC5-590-410 B	<p>Moved 12VAC5-590-410 B to new section 382 "Inorganic chemicals compliance." VDH updated to correct a typographical error.</p> <p>Intent: Clarify requirements.</p>

			<p>Rationale: Group compliance determination sections together. Existing sections are too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-383	See 12VAC5-590-410 C 1	<p>Moved 12VAC5-590-410 C 1 to new section 383 "Organic chemicals compliance."</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Group compliance determination sections together. Existing sections are too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-384	See 12VAC5-590-410 C 2	<p>Moved 12VAC5-590-410 C 2 to new section 384 "Residual disinfectant, DBPs, and DBPPs compliance."</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Group compliance determination sections together. Existing sections are too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-385	N/A	Section title is "Lead and copper action level compliance." Base content on National Primary Drinking Water Regulations 40 CFR 141.80.	<p>Change section title to "Lead and copper AL compliance" Substitute defined acronym (AL) for "action level," change "commissioner" to "department" and make minor wording changes to improve clarity.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Comply with RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-388	See 12VAC5-590-400 and 12VAC5-590-410 D	<p>Create new section 388 "Radiological compliance" (see below from 12VAC5-590-400). Move text from section 400 and subdivision 410 D.</p>

			<p>Intent: Clarify requirements.</p> <p>Rationale: Group compliance determination sections together. Existing sections are too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-390	N/A	<p>Section title is "Chemical and physical quality." A 1 through A 3. Action required for noncompliance with chemicals and turbidity. A 4. Action required for exceeding SMCL. B. General statement concerning contaminants and specific limits.</p>	<p>Rename section 390, "Physical constituent compliance." Identify specific physical constituents, number of samples required, and how compliance with SMCLs is determined. Identify confirmation sample and compliance determination requirements. Move subsection B to subdivision 340 B. Describe turbidity standards for groundwater sources that are not required to filter.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Necessary, specific information is missing from the existing regulations.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-391	<p>See 12VAC5-590-420, first paragraph.</p>	<p>New section 391, "Treatment technique requirements," with an expand explanation moved from 12VAC5-590-420.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Group treatment technique sections together. Existing section (420) is too large to navigate and understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-392	N/A	<p>Section title is "Coliform treatment technique triggers and assessment requirements." A. Treatment technique triggers and assessments. B. Completing Level 1 and Level 2 assessments. C. Requirement for corrective actions. D. Consultation between owner and department.</p>	<p>Minor wording changes: Replace references to "a review" with "an evaluation", and references to ODW or ODW field staff with "department".</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Improved understanding of the regulations.</p>

		E. Determining violations. Base content on National Primary Drinking Water Regulations 40 CFR 141.859.	Impact: Increased public health protection.
None	12VAC5-590-395	See 12VAC5-590-420	<p>New section 395 "Surface water and GUDI sources, polymer, and recycle treatment techniques" groups treatment technique requirements together from section 420. Update interim requirements for GUDI sources until installation of filtration treatment.</p> <p>Intent: Clarify and reorganize requirements. Update interim requirements.</p> <p>Rationale: Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-400	12VAC5-590-388	Section title is "Radiological quality." Base content on National Primary Drinking Water Regulations 40 CFR 141.66, with no substantial changes.	<p>Repeal section 400. Move selected sections to a new section 388, "Radiological compliance".</p> <p>Intent: Clarify and organize requirements.</p> <p>Rationale: Specific requirements may be overlooked as presently written.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-401	See 12VAC5-590-420 B 3 a	<p>New section 401, "Enhanced filtration and disinfection for Cryptosporidium treatment techniques" with requirements moved from 12VAC5-590-420 B 3 a and reorganized.</p> <p>Intent: Clarify and reorganize requirements.</p> <p>Rationale: Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>

12VAC5-590-405		Section title is "Lead and copper treatment techniques." Base content on National Primary Drinking Water Regulations 40 CFR 141.81 - 141.85, with no substantial changes.	<p>Minor technical corrections and wording changes.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Comply with RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-410	Break section 410 into four smaller sections: 12VAC5-590-382 12VAC5-590-383 12VAC5-590-384 12VAC5-590-388	Section title is "Determination of compliance." Content includes compliance determination details for chemical and radiological parameters, turbidity, and disinfectant residuals, disinfection byproducts, and disinfection byproduct precursors. Base content on National Primary Drinking Water Regulations 40 CFR 141.23, 141.11, 141.24, and 141.133, with no substantial changes.	<p>Repeal section 410. Move text from section 410 into separate, smaller sections, organized by water quality characteristic.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Existing sections too large to navigate easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-411	See 12VAC5-590-420, subdivisions H, I, and J	<p>New section 411 "DBPPs, DBPs, and MRDLs treatment techniques" consisting of requirements moved from 12VAC5-590-420 H, I, and J.</p> <p>VDH made technical corrections and deleted an external reference.</p> <p>Intent: Clarify requirements and correct errors.</p> <p>Rationale: Group treatment technique sections together. Existing section (420) is too large to navigate, understand easily.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-415	See 12VAC5-590-420, subdivision L	<p>New section 415, "Uncovered finished water storage," consisting of requirements moved from 12VAC5-590-420 L.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Existing section (420) is too large to navigate, understand easily.</p>

			<p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-420	Break section 420 into five smaller sections: 12VAC5-590-391 12VAC5-590-395 12VAC5-590-401 12VAC5-590-411 12VAC5-590-415	<p>Section title is "Treatment technique requirement." Content includes treatment techniques for surface water or groundwater source under the direct influence of surface water. Requirements are described for disinfection, filtration, and enhanced filtration. Content is based on National Primary Drinking Water Regulations 40 CFR 141.71, 141.70 -141.73, 141.111, 141.76, 141.700- 141.703, 141.707, 141.708, 141.710, 141.711, 141.713, 141.715 - 141.720, 141.130, 141.135, 141.64, 141.65, 141.510, and 141.511, with no substantial changes.</p>	<p>Repeal section 420. Move content from section 420 into smaller sections, organized by water quality characteristics.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Existing sections are too large to navigate easily. Public health protection will be ensured when GUDI sources must remain in service prior to filter installation</p> <p>Impact: Increased public health protection.</p>
12VAC5-590-421	N/A	<p>Section title is "Groundwater system treatment techniques." A. Sources that have confirmed E. coli contamination or a significant deficiency must take specific actions. B. Existing and new sources providing 4-log virus treatment of viruses must monitor. C. Monitoring requirements to demonstrate treatment effectiveness. D. Discontinuing compliance monitoring or treatment. Base content on National Primary Drinking Water Regulations 40 CFR 141.403, with no substantial changes.</p>	<p>Clearly distinguish treatment technique requirements for groundwater sources that have confirmed E. coli contamination. Delete the categories "existing" and "new".</p> <p>Intent: Clarify and update requirements.</p> <p>Rationale: If a groundwater source is in operation, it is "existing"; the language is confusing.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-425	N/A	<p>Section title is "Raw water monitoring requirements for groundwater sources." Base content on National Primary Drinking Water Regulations 40 CFR 141.402, with no substantial changes.</p>	<p>Repeal section 425. Consolidate requirements into 12VAC5-590-379 and 380.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Specific requirements may be overlooked as presently organized.</p> <p>Impact: Improved understanding and application of the regulations.</p>

<p>12VAC5-590-430</p>	<p>N/A</p>	<p>Section title is "Determination of surface water influence of groundwater sources." All groundwater sources utilized by waterworks such as wells, springs, and infiltration galleries, shall be evaluated by the division to determine surface water influence. The source shall be evaluated in stepwise fashion. Step 1 source history. Step 2 source physiology and geology. Step 3 water quality.</p>	<p>*Describe and update the procedure for evaluating surface water influence of groundwater sources, to include microscopic particulate analysis (MPA) testing. Codify interim requirements during Step 3 additional water quality monitoring and until the owner provides disinfection treatment to provide 4-log inactivation treatment. Organize the section with new subsections.</p> <p>Clarify laboratory certification requirements.</p> <p>Intent: Clarify and update requirements.</p> <p>Rationale: In 1992, EPA issued the Consensus Method (EPA 910-9-92-029, Oct. 1992) which relies on MPA testing as one level of evidence when surface water is influencing groundwater. Interim measures for potential GUDI wells are critical to protect public health because it can take several months to install treatment.</p> <p>Impact: The current procedure for evaluating if a groundwater well is a GUDI source stops at Step 2. By adding an additional step, the owner will incur additional cost from the Step 3 testing but will acquire increased certainty that the well is a GUDI source. The owner can always stop at Step 2 and forego Step 3 testing if it is clear that the water source is a GUDI source. Groundwater sources determined to be GUDI require significantly more treatment, monitoring, and reporting.</p>
<p>12VAC5-590-440</p>	<p>N/A</p>	<p>Section title is "Analytical methods." Analytical methods shall comply with National Primary Drinking Water Regulations 40 CFR Parts 141 and 143. Labs shall comply with DCLS regulations for certification of drinking water analyses.</p>	<p>Limit subject matter to analytical methods; relocate other relevant content or delete irrelevant text. Organize the section with new subsections.</p> <p>VDH updated this section to comply with EPA requirements for laboratory certification, sampling,</p>

		Tests for alkalinity, calcium, conductivity, disinfectant residual, orthophosphate, pH, silica, temperature and turbidity may be performed by any person acceptable to the commissioner.	and testing. Added bromide to the list of parameters. Intent: Clarify and update requirements. Rationale: Current drinking water quality standards in tables should be located in separate section. Impact: Improved understanding and application of the regulations.
Article 3		Article 3 title is "Operation of Waterworks."	Eliminate article number and title for simplicity.
12VAC5-590-450	N/A	Section title is "General." Waterworks operation comprises the constant operation and management of facilities and personnel.	Change title to "Facility and personnel management." Minor word changes with clarification to include drinking water standards. Improve grammar. Intent: Clarify requirements. Rationale: Existing text is awkward. Impact: Improved understanding and application of the regulations.
12VAC5-590-460	12VAC5-590-461	Section title is "Personnel." A. Waterworks operators in responsible charge must possess a valid waterworks operator license issued by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage Professionals, Department of Professional and Occupational Regulations in accordance with 18VAC160-20-10 <i>et seq.</i> and Chapters 1, 2, 3 and 23 of Title 54.1 of the <i>Code of Virginia</i> . B. The number and class of operators in attendance are specified and personnel must conform with Table 2.9 - Minimum classification for waterworks operations additional operating personnel.	Repeal section 460. Create new section 461 titled "Classification of waterworks, operator requirements, and operator attendance." *Describe waterworks classification requirements. *Update operator requirements consistent with DPOR's regulations, and clarify minimum operator attendance based on waterworks classification. Intent: Update and clarify requirements. Rationale: Existing operator classification regulations are outdated. Currently operator attendance is inconsistent throughout the state; minimum attendance requirements are needed to assure proper performance of all waterworks. Impact: Waterworks with membrane filtration will have increased operator requirements. For other waterworks, negligible, as

			changes have already been implemented and costs to owners, have already been realized.
12VAC5-590-470	N/A	Section title is "Waterworks appearance." The general appearance and state of cleanliness of a waterworks can greatly influence the attitude of the public toward a utility and can actually promote public health. A community without confidence in its public water supply may resort to the use of water from questionable or polluted sources; therefore, the waterworks must be maintained in a clean and orderly condition to achieve this goal.	Change title to "Waterworks condition". Update to remove text on influence of public opinion and confidence. Intent: Clarify requirements. Rationale: Existing language is subjective and unenforceable. Impact: None.
None	12VAC5-590-475	See 12VAC5-590-840 B 14	Create new section 475 titled "Removal of wells from service." *Clarify requirements for temporary inactivation and permanent abandonment of wells. Relocate requirements from 12VAC5-590-840 B 14 and update content. Intent: Clarify and update requirements. Rationale: Maintenance of inactive wells is necessary to assure acceptable performance when it is returned to service. Properly abandoning a well protects the groundwater resource. Impact: Some waterworks may incur increased operating cost for quarterly inspection and documentation of wells that are temporarily inactivated.
None	12VAC5-590-476	None	Create new section 476 titled "Reactivation of wells." Establish minimum requirements for reactivating an inactive well. Intent: Codify requirements implemented by policy. Rationale: Water quality of an unused well may deteriorate over time; therefore, specific mitigation procedures are needed.

			<p>Impact: Some waterworks may incur a one-time cost for pumping and testing of inactivated wells prior to bringing them back in service.</p>
12VAC5-590-480	N/A	<p>Section title is "Analytical laboratory control." A. Operational testing is required to present evidence that water has been properly prepared for each major key step in the treatment process, each key process is effective, and the finished product is clean, free from taste and odor, free from undesirable chemical characteristics, and is safe for human consumption. B. Laboratory analyses shall conform to the most current edition available of Standard Methods for the Examination of Water and Wastewater or analytical methods approved by the division. Ample laboratory space shall be provided for chemical and bacteriological testing.</p>	<p>Change title to "Operational control testing and monitoring." Consolidate requirements into one section, correct analytical method references, update minimum tests required for key treatment processes, and require proper calibration and maintenance. Add requirements for UV and ozone treatment.</p> <p>VDH corrected a typographical error related to the ozone residual calibration checks.</p> <p>Intent: Clarify and update requirements.</p> <p>Rationale: Existing information is outdated. Specify minimum process control requirements for UV and ozone treatment.</p> <p>Impact: Acceptable treatment operation will be assured by accurate and reliable test results and controls.</p>
12VAC5-590-490	N/A	<p>Section title is "Adequate treatment." A. Adequate treatment is any one or any combination of the controlled processes of coagulation, sedimentation, absorption, filtration, disinfection, or other processes that produce water consistently meeting the requirements of the chapter. B. All waterworks shall provide adequate treatment and pure water.</p>	<p>Minor changes of word selection to use the correct terms where applicable and appropriate.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Use consistent terms and references throughout the Regulations.</p> <p>Impact: None.</p>
12VAC5-590-500 & Appendix L	N/A	<p>Section 500 title is "Disinfection by chlorination." Content includes A. Chlorine residual shall be maintained. B. Surface water plants must prechlorinate. C. GUDI sources shall be disinfected.</p>	<p>Change section title to "Disinfection criteria, determination of CT, disinfection profiles, and disinfection benchmarks for Giardia and virus inactivation." Eliminate requirement to chlorinate surface water prior to filtration. Consolidate microbial inactivation and disinfection profile requirements into one section. Move content to</p>

		<p>D. Groundwater systems shall meet CT requirements for virus inactivation. E. Disinfection profile and benchmark requirements. Base content on National Primary Drinking Water Regulations 40 CFR 141.72, with no substantial changes.</p> <p>Appendix L is entitled "Determination of CT." It includes:</p> <ul style="list-style-type: none"> A. Disinfection criteria B. Determination of compliance with Inactivation C. Determination of Disinfection Contact Time D. Disinfection Profile and Benchmark E. CT values (Tables) for inactivation of Giardia and Virus for disinfectants. <p>Base content on National Primary Drinking Water Regulations 40 CFR 141.74 and 141.709, with no substantial changes.</p>	<p>appropriate sections and update references.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Pre-chlorination may cause disinfection byproducts and is no longer recommended. Disinfection profiles are developed using the microbial inactivation tables, so the information is best presented together. Comply with RIS Style Manual.</p> <p>Impact: Improved water quality provided to consumers. Improved understanding and application of the regulations.</p>
<p>12VAC5-590-505</p>	<p>N/A</p>	<p>Section title is "Emergency management plan for extended power outages." A. Each community waterworks shall develop and maintain an emergency management plan for extended power outage. B. Each plan shall be kept current and readily accessible. C. Each community waterworks shall certify in writing that the plan is completed. D. List of items to include in the plan.</p>	<p>Minor updates and changes to word selection.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Improve clarity of text.</p> <p>Impact: Improved readiness of waterworks towards continuous operation.</p>
<p>12VAC5-590-510</p>	<p>N/A</p>	<p>Section title is "Acceptable operating practices." A. This section is not intended to be all inclusive. B. Waterworks designed for bacteria and turbidity removal shall not be operated without adequate chemical coagulation. C. Waterworks utilizing filtration in the treatment process shall not vary the rate of filtration</p>	<p>Clarify gravity flow filtration operation requirements and add membrane filtration integrity test requirements. Update requirements for gravity filter, microfiltration and ultrafiltration. Add new requirements for fluoridation practices.</p> <p>Intent: Clarify and update requirements.</p>

		<p>through any single unit above its design capacity.</p> <p>D. Filtering units equipped with rewash facilities shall not be returned to service after backwashing until being thoroughly rewash.</p> <p>E. All waterworks shall provide a minimum working pressure of 20 psi at all service connections.</p>	<p>Rationale: Requirements for pathogen removal credits for membranes must be consistent with federal Enhanced Surface Water Treatment Rules. *The Board of Health recognizes the public health benefit of community water fluoridation and recommends that community water systems provide the optimum fluoride ion concentration in the water they provide to their consumers.</p> <p>Impact: owners that add fluoride to drinking water are required to provide notice to the commissioner and consumer if they intend to permanently stop the fluoridation program. They are also required to provide notice if they intend to start a fluoridation program. The notice requirements mean owners cannot make a change during the 90-day notice period. Other changes are negligible because; requirements have already been implemented.</p>
None	12VAC5-590-515	None	<p>Create a new section 515 titled, "Use of chemicals." Adopt current industry standards for chemicals used in water treatment.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: ANSI/NSF Standard 60 is currently cited in Part III, section 860 and needs to move to Part II.</p> <p>Impact: Negligible; requirements have already been implemented.</p>
12VAC5-590-520	N/A	<p>Section title is "Waterworks expansion."</p> <p>A. At such time as the water production of a community waterworks reaches 80% of the rated capacity of the waterworks for any consecutive three-month period, the owner shall cause plans and specifications to be developed for expansion of the waterworks to include a schedule for construction; however, if it can be shown by the owner that</p>	<p>Change title to "Waterworks capacity." Modify to require the owner to submit a plan when certain capacity criteria are met. Add that the commissioner may require the owner to reevaluate a well source capacity when the well has demonstrated declining yield.</p> <p>Intent: Update requirements.</p> <p>Rationale: Not all waterworks that reach 80% of rated capacity need to design for expansion. Other</p>

		<p>growth within the service area is limited and will not exceed the rated capacity of the waterworks or if unusual transient conditions caused production to reach the 80% level, preparation of plans and specifications for expansion will no longer be required.</p>	<p>measures may be appropriate, such as reducing potable water demand through reduction of leakage or reclamation/reuse of water for nonpotable needs. Provide authority to require an owner to reevaluate a well yield when it has demonstrated declining yield.</p> <p>Impact: Reduced demand on natural water supplies and potential capital, operation and maintenance cost savings to waterworks and their customers.</p>
12VAC5-590-530	<p>Break section 530 into three smaller sections: 12VAC5-590-530 12VAC5-590-531 12VAC5-590-532</p>	<p>Section title is "Reporting." A. The results of required monitoring shall be reported by the owner (or authorized agent) to ODW by dates specified in this subsection. B. Report to the ODW. C. Reporting for Coliform TT violations. D. Seasonal waterworks start-up certification. E. Reporting for filtration and disinfection treatment. F. Reporting for lead and copper. G. Reporting for disinfection byproducts. H. Reporting for disinfectants. I. Reporting for disinfection byproduct precursors and enhanced coagulation or enhanced softening. J. Reporting of results to the district engineer. K. Recycle flow reporting requirements. L. Reporting for enhanced treatment for cryptosporidium. M. Reporting for groundwater waterworks. Content is based on National Primary Drinking Water Regulations 40 CFR 141.31, 141.21, 141.75, 141.175, 141.706, 141.721, 141.629, 141.134, 141.861, and 141.90, with no substantial changes.</p>	<p>Reorganize reporting requirements in this section, moving selected portions to section 531 and 532.</p> <p>VDH corrected citations and deleted duplicate text.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Too much information is provided in one section, which is too large and complex to navigate easily and comprehend requirements.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-531	<p>See 12VAC5-590-530 B.9 and 12VAC5-590-530 E, G, H, I, & L</p>	<p>Create a new section 531, titled "Reporting requirements for filtration treatment and disinfection</p>

			<p>treatment." Move content from 12VAC5-590-530 B.9 and E, G, H, I, and L</p> <p>VDH made technical corrections to match EPA requirements and correct references.</p> <p>Intent: Clarify and correct requirements.</p> <p>Rationale: Keep the relevancy of the information in one section, more easily to navigate and comprehend requirements.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-532	See 12VAC5-590-530 F "Reporting requirements for lead and copper."	<p>Create a new section 532, titled "Reporting requirements for lead and copper." Move content from 530 subsection F.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Keep relevant information in one section, to make it easier to navigate and to comprehend the requirements.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-540	N/A	Section title is "Public notices." Base content on National Primary Drinking Water Regulations 40 CFR 141.201-141.211, Part 141 Appendix A to Subpart Q, 141.403, 141.31, 141.33, with no substantial changes.	<p>Minor updates and changes to word selection. *Add requirement for public notice before initiating or discontinuing a program to provide the optimum fluoride ion concentration. Clarified that the department may require public notice for violations or other situations.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Many waterworks purchase finished water and are required to notify customers under specific circumstances. Text must conform with the RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-545	N/A	Section title is "Consumer confidence reports."	<p>Minor updates to word selection and correct references. Update</p>

		Base content on National Primary Drinking Water Regulations 40 CFR 141.151 - 141.155, Part 141 Appendix A to Subpart O, Part 141 Appendix B to Subpart Q, and 141.52, with no substantial changes.	<p>report content requirements in this section and eliminate Appendix O, placing it in new section 12VAC5-590-546.</p> <p>VDH provided a definition of “non-detect”, “not detected” and “ND” within this section. VDH also corrected some typographical errors.</p> <p>Intent: Clarify requirements.</p> <p>Rationale: Group related sections together for easier navigation. Eliminate appendices in accordance with the RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-546	See Appendix O, “Regulated Contaminants for Consumer Confidence Reports and Public Notification”.	<p>Move content from Appendix O into new section 546 titled, “Regulated contaminants for the consumer confidence reports and public notification”. Add information to indicate use of mandatory language for public notification and consumer confidence reports.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Improve accessibility of information. Comply with the RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-550	N/A	Section title is “Recordkeeping.” Content is based on National Primary Drinking Water Regulations 40 CFR 141.33, 141.75, 141.91, 141.134, 141.155, 141.175, 141.405, 141.571, 141.629, 141.722, and 141.861 with no substantial changes.	<p>Insert new requirement for owners to maintain waterworks records in accordance with Library of Virginia requirements. Add specific retention requirements for specific documents. Consolidate list of recordkeeping requirements in one location.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Reduce possibility of owner/operator overlooking or misplacing documents that</p>

			<p>demonstrate compliance with the regulations.</p> <p>Impact: Improved documentation and compliance with operational regulations.</p>
12VAC5-590-560	N/A	<p>Section title is "Safety." The waterworks' most important asset is a trained workforce. The protection of personnel through an active safety program is important. It is strongly recommended that every waterworks institute a safety program.</p>	<p>Revise to require a safety program for the operation of the waterworks in accordance with VOSH requirements.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Worker safety is necessary to assure reliable production of drinking water.</p> <p>Impact: Waterworks will incur cost to develop and implement safety program, however, this should be offset by savings in employee absences, workmen's compensation, claims, etc.</p>
None	12VAC5-590-565	None	<p>Create new section 565 titled, "Source water protection." This section encourages owners to prevent source water quality deterioration by taking action to protect their water sources.</p> <p>Intent: Update and clarify requirements and identify action that could be taken by owners.</p> <p>Rationale: A proactive approach to protecting source water quality will reduce incidents that could have a harmful impact on drinking water quality.</p> <p>Impact: ODW provides technical and financial assistance to waterworks to assess and protect their sources; the potential cost to treat polluted source water may be reduced or eliminated.</p>
12VAC5-590-570	N/A	<p>Section title is "Operational report forms." All waterworks required to report information to the department shall use approved forms.</p>	<p>Rename section "Operational reporting requirements". Move and update Monthly Operation Report requirements from Appendix G to Tables 570.1 through 570.14.</p>

			<p>*Insert Table 570.14, Ozone Disinfection and correct related internal cross references, codifying reporting that waterworks had previously done by policy.</p> <p>Identify incidents that owners must report to the department within 24 hours.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Reporting consistency among waterworks with similar treatment facilities will be achieved with standardized content. Replace and delete appendices in accordance with RIS Style Manual.</p> <p>Impact: Consistent monitoring and reporting of waterworks operations, leading to improved enforcement of the regulations and water quality provided to consumers.</p>
Article 4		Article 4 title is “Cross Connection Control and Backflow Prevention in Waterworks.”	Eliminate article number and title for simplicity.
12VAC5-590-580	N/A	Section title is “General” Each owner is required to establish and enforce a program of cross-connection control and backflow prevention for each waterworks. The program shall be approved by the division prior to issuance of the operation permit (See Appendix I).	<p>Change title to “General requirements for cross-connection control and backflow prevention.” Organize into subsections. Consolidate general requirements and clarify that owners shall not allow a service connection where cross-connections exist unless the owner ensures the cross-connections are adequately safeguarded.</p> <p>VDH clarified the requirement for a written plan, owner responsibilities, and made general editorial changes.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Improve clarity and consistency. Comply with the RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>

<p>12VAC5-590-590</p>	<p>N/A</p>	<p>Section title is "Cross connections." A. The purveyor shall not install, maintain, or allow to be installed a water service connection to any premise where cross-connections may exist unless it is abated or controlled. B. The purveyor shall not install, maintain, or allow to be installed any connection whereby water from an auxiliary water system may enter a waterworks unless the auxiliary water system is approved by purveyor and the division.</p>	<p>Repeal section. Move content to section 580 B and summarize as noted above.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Organization of content will improve understanding.</p> <p>Impact: Improved understanding and application of the regulations.</p>
<p>12VAC5-590-600</p>	<p>N/A</p>	<p>Section title is "Responsibilities." A. General information B. Water Purveyor is required to establish and operate a cross-connection control program. Suggested elements are listed in Appendix I.</p>	<p>Change title to "CCCP Responsibilities." Delete reference to Appendix I (to be repealed). Consolidate specific requirements in one section.</p> <p>*Establishes and updates specific requirements for the CCCP.</p> <p>Adds a requirement for the owner to review the CCCP and written plan at least every five years and update it as necessary. Requires that the CCCP shall not be in conflict with the USBC. Requires that the CCCP shall ensure complete assessment of every consumer's water system. The CCCP shall ensure testing, maintenance, and repairs of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed. Establishes minimum requirements for an optional public education program. Requires the CCCP to provide a method to discontinue or refuse water service in certain circumstances. Establishes inventory and recordkeeping requirements.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Establish performance standards for cross-connection</p>

			<p>control. Clarify relationship with the USBC. Clarify requirements for testing and recordkeeping. Organization of content will improve understanding. Comply with RIS Style Manual.</p> <p>Impact: Increased flexibility for owners to have and implement the CCCP. Improved understanding and application of the regulations.</p>
12VAC5-590-610	N/A	<p>Section title is "Containment policy." A. Backflow prevention required at the service connection. B. If necessary, backflow prevention may be installed downstream of the service connection. C. Conditions requiring backflow prevention. D. Premises with booster pumps. E. List of facilities requiring backflow prevention.</p>	<p>Change title to "Containment of backflow." General editorial changes to word selection and use of active voice. *Update to include overlooked conditions and delete inappropriate ones; make consistent with USBC. Allows point-of-use isolation instead of containment under certain circumstances. Clarify specific conditions where backflow prevention is required. Update requirement for low pressure cutoffs on customer's pumps. Update the list of specific facilities that must have containment.</p> <p>Editorial updates to word choices.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Eliminate conflicts between regulations and plumbing code.</p> <p>Impact: Consistent standards improve public health protection.</p>
12VAC5-590-620	N/A	<p>Section title is "Type of protection required."</p>	<p>Repeal section.</p> <p>Intent: Update and clarify requirements. Refer to USBC on protection requirements.</p> <p>Rationale: Relevant content is contained in sections 610 and 630 and USBC.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-630	N/A	<p>Section title is "Backflow prevention devices." A. Devices shall comply with USBC.</p>	<p>Change title to "Backflow prevention assemblies, devices, and backflow elimination methods for containment." General editorial</p>

		<p>B. Installation shall comply with USBC. Table 2.10 "Determination of degree of Hazard": High, Moderate and Low Hazard. C. Existing backflow prevention assemblies may be excluded.</p>	<p>changes to word selection, acronyms, and use of active voice.</p> <p>Update requirements and Table 630.1 to agree with USBC.</p> <p>*Establish a requirement for persons testing and repairing backflow prevention assemblies and devices to be certified.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Eliminate conflicts between regulations and USBC.</p> <p>Impact: Consistent standards improve public health protection, and improved understanding and application of the regulations.</p>
Article 1		Article title is "General"	Eliminate article number and title for simplicity.
12VAC5-590-640	N/A	<p>Section title is "General." The engineer shall confer with the division before proceeding with the detailed designs. The engineering report and preliminary plan shall include plant site selection. Operation and maintenance manuals are required for treatment facilities and pumping facilities.</p>	<p>Change title to "General design considerations." Add new subsections A-D. Eliminate redundant language. Require sound engineering basis for design. *Clarify that community waterworks shall be designed for future water demand. *Clarify design basis, including maximum daily and peak hour water demands, effective storage requirements for community and noncommunity waterworks. Establish minimum residual pressure requirements for water demands including fire protection. Reference NSF/ANSI Standard 61 for materials in contact with product water.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Delete requirement for engineer conference, engineering report, and preliminary plan. Clarify and update the required hydraulic design basis. Delete requirement for operation and maintenance manuals. Ensure consistency with industry best practices.</p>

			<p>Impact: Administrative cost savings for the waterworks owner and others by providing improved information exchange. Assure reliability and performance of waterworks to produce safe drinking water.</p>
12VAC5-590-650	N/A	<p>Section title is “Objectives of a waterworks.”</p> <p>A. Objectives listed are the production of pure water; and the production of water appealing to the consumer.</p> <p>B. To reach the objectives of a waterworks, finished water quality shall conform to Part II of this chapter.</p>	<p>Repeal section.</p> <p>Intent: Update and clarify requirements. Delete unnecessary requirements.</p> <p>Rationale: Terms “Pure” and “appealing” do not assist in applying design requirements that follow.</p> <p>Impact: None.</p>
12VAC5-590-660	N/A	<p>Section title is “Site location.”</p> <p>A. Location of wells and treatment plants above the 100-year flood elevation, or lower elevations considered if flood protection is shown.</p> <p>B. Waterworks shall be readily accessible in all seasons.</p> <p>C. Consideration should be given to transportation and electrical service.</p>	<p>Insure adequate protection from flooding and surface runoff. Clarify access requirements. Clarify that access roads shall be provided for water treatment and pumping facilities. Clarify that electric power from more than one source should be considered. Add requirement to grade site for adequate drainage.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Water pumping and treatment facilities need to be accessible at all times to insure reliable and safe water service. Reliable electrical service is needed at pump stations and treatment facilities.</p> <p>Impact: Improve reliability of waterworks.</p>
12VAC5-590-670	N/A	<p>Section title is “Site size.”</p> <p>A. Refers to other sections for reserve area required around well and spring sites.</p> <p>B. Plant site shall be adequate for expansion and disposal of plant wastes.</p> <p>C. Refers to VA Code for disposal of treatment plant wastes.</p>	<p>Minor editorial changes to word selection and citations.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Residuals are not always waste products that must be disposed of; beneficial uses exist.</p> <p>Impact: None.</p>

<p>12VAC5-590-680</p>	<p>N/A</p>	<p>Section title is "Treatment process selection." Considerations are listed: A. Source water quality and quantity. B. Source water quality changes. C. Water quality goals and public desire for better water. D. Removal of contaminants using BAT. E. Established treatment techniques must be used for PMCLs. F. POE or POU devices cannot be used for long-term compliance with PMCLs; only short-term, interim use as a condition of a variance or exemption issued by the commissioner.</p>	<p>Change title to "Treatment process selection and BAT." Repeal Appendix N and Appendix P. Replace these requirements by incorporating by reference the Best Available Treatment Technologies listed in the federal regulations in section 680.</p> <p>Clarify and consolidate content. Delete general language. Add the option of employing alternative treatment technology. Clarify that designs must use processes specified under treatment technique requirements. Prohibit the use of POU devices for treating microbiological contaminants. Limit POE or POU for short-term interim uses. *Add new subsection allowing the use of reverse osmosis and nanofiltration technology.</p> <p>Rationale: Consolidation of text improves message. POU & POE devices have proven effective for short-term compliance with water quality standards, which is the objective.</p> <p>Impact: Potential reduction is in capital and operation costs for use of POU and POE devices in place of centralized treatment; and allowing the use of membrane technology for certain treatment applications.</p>
<p>12VAC5-590-690</p>	<p>N/A</p>	<p>Section title is "Capacity of waterworks." Design capacity of a waterworks shall exceed the maximum daily water demand of the system; design on the basis of water consumption provided in table (subsection A). A. Annual daily water consumption rates (annual daily water demand): table. B. Minimum water storage of 200 gallons per equivalent residential connection at minimum pressure required. C. Minimum working pressure described; selection of fire flow described; formula</p>	<p>Repeal section. Revise and relocate corrected content as follows: Eliminate outdated design values. Eliminate maximum hour flow design formula, and the existing storage requirement. Revise storage requirement in new subsection 640 B 3. Move minimum working pressure requirement and fire flow selection to new subsection 640 C. Revise the capacity of the second well from 20% to 30% of water demand, for systems with only two wells in new subsection 840 R . Move requirement for waterworks with less than 50 residential connections to new subsection 840 S, and clarify</p>

		<p>provided for estimating maximum hour domestic flow.</p> <p>D. Well source capacity of 0.5 gpm/equivalent residential connection required.</p> <p>E. Waterworks using only groundwater sources with 50 or more residential connections are required to have at least two wells; the second well capacity must be at least 20% of waterworks capacity.</p> <p>F. Waterworks using only groundwater sources with fewer than 50 residential connections must have an auxiliary well pump or 48 hours of effective storage.</p>	<p>requirement for access to a replacement pump and related equipment.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Tabulated water consumption rates are outdated, and produce inaccurate estimates of water demands and design basis. The formula for estimating maximum hour domestic demand flow is outdated and produces inaccurate results. Existing language is unclear whether to design for the maximum daily water demand or for the annual daily water demand. Minimum acceptable storage and well capacity refer to concept of “equivalent residential connections” (ERC), which ignores effects of non-residential water demands and results in excess storage requirements for large waterworks. Failure of the primary well will require the 2nd well to supply all water needs, so increased the required capacity of 2nd well. Insure that the replacement well pump will be available and able to be put into operation when needed.</p> <p>Impact: Improve design and reliability of waterworks.</p>
<p>12VAC5-590-700</p>	<p>N/A</p>	<p>Section title is “Metering total water production.”</p> <p>Waterworks that chlorinate and remove iron or manganese shall meter the water prior to treatment. Waterworks that soften by ion exchange shall meter water treated and delivered. Waterworks that remove turbidity shall meter prior and subsequent to treatment.</p>	<p>*Require the design for all community waterworks to provide meter total water produced, instead of based on specific treatment facilities. Provide clarification on metering for noncommunity waterworks. Recommend the provision of metering of total water production.</p> <p>*Expand metering requirements for all waterworks that provide treatment that result in a waste flow.</p> <p>Intent: Update and clarify requirements.</p>

			<p>Rationale: Existing regulation excludes several treatment processes that use water, and makes no provision for new technologies in future. Metering total water production prepares waterworks to meet DEQ requirements.</p> <p>Impact: Metering will improve accountability of water use and will likely improve waterworks efficiency and reduce waste.</p>
12VAC5-590-710	N/A	Section title is "Site layout." Requires site grading, adequate drainage, walks, access roads, and driveways. Requires consideration of function.	<p>Repeal section. Requirements moved to section 660.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: No need for a separate section.</p> <p>Impact: None.</p>
12VAC5-590-720	N/A	Section title is "Building layout." Provide adequate lighting, ventilation, heat, drainage, dehumidification, and equipment accessibility. Consider operator safety, convenience, and separate rooms for storing chemicals. Provide sanitary facilities at all waterworks.	<p>Change title to "Building design and construction." Include reference to the USBC for building design and layout for purposes listed. *Delete sections A-L, and add new sections A-F. Delete requirement for sanitary facilities. Provide relevant references.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: General building design and construction requirements are in the USBC, and to avoid conflicts, should not be included in this regulation.</p> <p>Impact: Waterworks design will be more consistent in compliance with applicable building codes and potential conflicts eliminated.</p>
None	12VAC5-590-725	None	<p>*Add new section 725 titled "Automated monitoring and control systems." Specify design requirements for data security, equipment protection, data displaying and recording, and manual operation and backup controls. Add requirement for automated monitors and controls.</p>

			<p>Intent: Update and clarify requirements.</p> <p>Rationale: Technology is widely used and continues to evolve; minimum requirements must be established to assure compliance with water quality standards, data quality and reporting.</p> <p>Impact: Improved reliability of waterworks operation.</p>
12VAC5-590-730	N/A	<p>Section title is “Standby power capability.”</p> <p>Standby power may be required for treatment or pumping in order to maintain a minimum level of service during an emergency.</p>	<p>Change title to “Alternate power sources.” Add reference to emergency management plan for extended power outages (section 505). Add requirement to consider alternative power sources for each community waterworks to maintain a minimum level of service during an electrical power outage.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Allows more options to be considered for providing power during outages.</p> <p>Impact: Potential reduction in capital costs and improved waterworks reliability.</p>
12VAC5-590-740	N/A	<p>Section title is “Maintenance and servicing of equipment.”</p> <p>Provide adequate facilities for servicing & maintaining automatic equipment.</p>	<p>Repeal section and move content to section 720 A.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Design features should be addressed in one section to improve accessibility of content.</p> <p>Impact: Improved facility design and operation.</p>
12VAC5-590-750	N/A	<p>Section title is “Shop space and storage.”</p> <p>Include adequate facilities for shop space & storage.</p>	<p>Repeal section and move content to section 720 E.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Design features should be addressed in one section to improve accessibility of content.</p>

			<p>Impact: Improved facility design and operation.</p>
12VAC5-590-760	N/A	<p>Section title is "Laboratory." A. Testing equipment must be adequate for purpose intended and recognized procedures shall be used. B. Lab floor and bench space is specified for plants treating for iron removal, manganese removal, softening by ion exchange, turbidity removal or softening by precipitation. C. Bacteriological testing must be in a separate lab room.</p>	<p>Change title to "Laboratory facilities." *Delete minimum floor and bench space requirements for treatment processes specified. Refer to DCLS regulations. Provide general design requirements only.</p> <p>Intent: Update and clarify requirements, remove potential conflicts.</p> <p>Rationale: Remove antiquated requirements specifying specific space requirements. DCLS regulates analytical and specific requirements should not be included in this regulation.</p> <p>Impact: Lab designs will comply with applicable DCLS certification requirements. Eliminates potential conflicts.</p>
12VAC5-590-770	N/A	<p>Section title is "Sample taps." Water sample taps from each water source are required. Sample taps running to a lab sink are required for each unit treatment process. Taps shall be consistent with sampling needs. Petcock type taps are prohibited.</p>	<p>Change title to "Sampling and monitoring equipment." Clarify sampling locations required for all types of waterworks. Add a subsection describing continuous monitoring equipment requirements.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Need to address monitoring equipment for waterworks other than those using conventional treatment. Need to address continuous monitoring equipment in the Regulations.</p> <p>Impact: Improved facility design and operation.</p>
12VAC5-590-780	N/A	<p>Section title is "Wall castings." Consider providing extra wall castings in concrete for piping required if facility is expanded.</p>	<p>Repeal section and move content to subsection 720 F.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Address design features in one section to improve accessibility of content.</p> <p>Impact: Improved facility design.</p>

12VAC5-590-790	N/A	Section title is "Water supply service." Water used for treatment facilities shall be taken from a point after thorough chemical mixing.	<p>Change title to "Process water." Clarify that water used in treatment processes or equipment must be taken from the finished water, and that an approved backflow prevention assembly or device shall be installed.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Address the potential for contaminated or partially treated water that could be introduced into the treatment process, compromising the water quality produced.</p> <p>Impact: Improved water quality provided to consumers.</p>
12VAC5-590-800	N/A	Section title is "Disinfection." Pipes, tanks, and equipment conveying or storing potable water must be disinfected prior to placing in service. Plans & specifications shall outline disinfection procedures. Forms of chlorine are described. Disinfection methods other than chlorination will be considered. Required testing following disinfection and acceptance criteria is described.	<p>Repeal section and move a portion of the text to subsection 1000 C. Eliminate descriptions of forms of chlorine and instead refer to AWWA standards.</p> <p>Rationale: Address disinfection in one section to improve accessibility of content. Chemical solution details are in AWWA standards.</p> <p>Impact: Improved water quality provided to consumers.</p>
12VAC5-590-810	N/A	Section title is "Paintings, coatings, sealers, or liners." Paints, coatings, sealers, and liners in contact with raw, partially treated or potable water shall be approved prior to use.	<p>Change title to "Components, materials, and products." Delete specific VDH approval requirement and replace with compliance with NSF/ANSI/CAN Standard 61-2020.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: VDH does not approve specific materials used in water treatment; adherence to appropriate standards is required.</p> <p>Impact: Improved understanding and application of the regulations.</p>
Article 2		Article title is "Source Development"	Eliminate article number and title for simplicity.
12VAC5-590-820	N/A	Section title is "General." Source preference shall be given to water with minimal risk	Change title to "New water source selection and sampling." Update to consider contamination from "point

		<p>of contamination from wastewater. Engineer must prove that the proposed water source will comply with PMCLs for bacteriological, chemical, physical, and radiological qualities.</p>	<p>and nonpoint pollution sources”. Refer to the water quality standards listed in section 340. Update requirements for laboratory certification and analytical methods.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Update title to convey subject matter; make references accurate and complete.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-830	N/A	<p>Section title is “Surface water sources; quantity; quality; development structures.”</p> <p>A. General description of quantity requirements, including reasonable surplus and compensation for losses; definition of safe yield for simple and complex intakes, refer to assistance from SWCB.</p> <p>B. Owner required to conduct a sanitary survey of watershed.</p> <p>C. Intake structure design features listed.</p> <p>D. Detention reservoir defined as pretreatment structures. Development restrictions & construction requirements listed.</p> <p>E. Terminal reservoirs prohibited from body contact recreation or boats powered by gasoline.</p>	<p>Intent: No changes to this section in this regulatory action.</p> <p>Rationale: Stakeholders could not agree on revisions to subsection A related to determining safe yield, the capacity of surface water sources, or appropriate roles and authority of the executive branch agencies with responsibility for oversight of natural resources in Virginia.</p> <p>Impact: VDH will continue to works with stakeholders outside this regulatory action to reach a consensus on this topic.</p>
12VAC5-590-840	N/A	<p>Section title is “Groundwater sources.”</p> <p>A. Requirements for water quality testing, well lot, well location, class I and II construction</p> <p>B. General well development requirements, including water used, steel and plastic casing, packers, screens, pumping test, chemical conditioning, grouting, plumbness and alignment, temporary capping, bacteriological</p>	<p>*Update groundwater supply development requirements. Minor editorial changes and updates to references. Organize into subsections per the RIS Style Manual. Replace “public water supply wells” to “wells intended to serve a waterworks”. Change “registered contractor” to “certified water well system provider” to be consistent with DPOR classifications.</p> <p>*Add new subsection B describing well construction requirements for</p>

		<p>quality, water quality sampling, observation wells, well abandonment.</p> <p>C. Gravel packing, radial collectors, flowing artesian wells, springs.</p>	<p>wells in the Eastern Virginia or Eastern Shore Groundwater Management Areas.</p> <p>Eliminate the description of bacteriological tests in subsection C and refer to subsection K for water quality testing.</p> <p>Revise the minimum well lot requirements in subsection D. Delete descriptions of plat plan and dedication document and refer to section 200.</p> <p>Update minimum well location requirements in subsection E.</p> <p>*Update description of construction requirements for Class I and II wells in subsection F and establish requirement for completion of GW-2 form. Eliminate Class IIA and IIB well classifications. Update requirements for plastic well casing and delete maximum allowable depths table for PVC well casing. Delete water well completion report description.</p> <p>*Update well casing materials requirements in subsection G. Delete requirements for chemical conditioning specifications. Update grouting requirements. Delete plumbness and alignment testing.</p> <p>*Add a new description of well yield and drawdown tests in subsection H. Add alternative test methods considerations, coordination with DEQ aquifer tests in groundwater management areas (GWMAs).</p> <p>Describe the requirements for well appurtenances including sanitary seal, vent, and pitless well units in subsection I.</p> <p>Describe the disinfection requirement after placement of well pump.</p> <p>Establish requirements for water quality sampling and analysis,</p>
--	--	--	--

		<p>including bacteriological, chemical, physical, and radiological tests in subsection K.</p> <p>In subsection L, update requirements for observation wells and reword existing text to refer to DEQ construction requirements if located in a GWMA; otherwise construct observation wells in accordance with 12VAC5-630 (Private Well Regulations).</p> <p>Describe requirements for sealing excluded zones in subsection M.</p> <p>Move permanent well abandonment subsection to new section 475, Removal of wells from service and section 476-Reactivation of wells.</p> <p>Describe requirements for gravel packed wells in subsection N. Add reference to construction requirements in subsection B for wells located in GWMA's.</p> <p>Describe radial collector systems in subsection O. Delete text on multiple aquifer wells.</p> <p>Describe new design requirements for flowing artesian wells in subsection P.</p> <p>Describe well capacity requirements of community waterworks in subsection Q. Define sustainable yield for wells in consolidated rock formations and unconsolidated formations.</p> <p>*Revise requirement for waterworks serving 50 or more residential connections in subsection R. Require at least two wells; if only two wells are provided then the 2nd well must be rated for at least 30% of total design capacity.</p> <p>Describe requirement for waterworks serving fewer than 50 residential connections in subsection S. Require ready access to a replacement pump and other</p>
--	--	---

			<p>equipment or 48 hours of finished water storage.</p> <p>Update the design requirements for springs in subsection T.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Update requirements to harmonize with DEQ's regulations for Water Supply Planning, and Groundwater Management Areas. Update to harmonize with the Private Well Regulations.</p> <p>Impact: Eliminate potential regulatory and jurisdictional conflicts when developing a groundwater source.</p>
Article 3		Article title is "Processes and Devices"	Eliminate article number and title for simplicity.
12VAC5-590-850	N/A	<p>Section title is "General." Design shall depend on source water quality and potable water standards. All surface waters shall be treated by conventional filtration and disinfection unless otherwise approved. Pre-sedimentation may be required. Operation and maintenance manuals are required.</p>	<p>Change title to "Appropriate treatment". Add reference to Section 680 for treatment process selection and delete other regulation references. Delete required surface water treatment processes. Delete pre-sedimentation possibility. Refer to safety considerations in section 560. Delete requirement for O&M manuals. Delete requirement for conventional treatment of all surface water and refer to appropriate sections for treatment process selection.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Alternatives to conventional treatment are available. O&M Manual requirements also deleted from section 640.</p> <p>Impact: Potential reduction in capital and operation costs to waterworks if alternative treatments are used.</p>
12VAC5-590-860	N/A	<p>Section title is "Chemical application." A. Plans and specification requirements listed.</p>	Clarify chemical feed design requirements and delete operation requirements.

		<p>B. Chemical shall be applied to maximize efficiency, consumer protection, operator safety, operation flexibility, prevent backflow, and provide for pH adjustment to the raw water.</p> <p>C. Feed equipment requirements listed, including: quantity, design, capacity, location, controls, solution tank features, material of construction, weighing scales, feed lines, and service water supply for dissolving chemicals.</p> <p>D. Chemicals.</p> <p>E. Housing.</p> <p>F. Operator safety.</p>	<p>Minor wording changes to ensure consistent use of terms. Update references. Update feeder capacity requirements. Clarify control features. Prohibit burial of chemical storage tanks. Clarify chemical storage requirements based on dose. Include storage requirements for activated carbon. Include reference to VOSH requirements. Add references to disinfection and chlorination sections. Clarify operator protective equipment.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Chemical storage is based on average consumption to arrive at a reasonable supply onsite. Activated carbon is combustible and special safety precautions are required. Operation requirements are covered in Part II of the regulations.</p> <p>Impact: Excess chemical storage and consequent deterioration of chemical quality is reduced. Operator safety will be improved. Potential undetected leaks of buried chemicals will be avoided.</p>
None	12VAC5-590-865	See 12VAC5-590-870 A and B	<p>Create new section 865 titled “Conventional filtration treatment.” Content is moved from 870 A and 870 B. Describe conventional filtration treatment. Add a new presedimentation subsection.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Improve organization and accessibility of information</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-870	Break section 870 into three smaller sections: 12VAC5-590-871	<p>Section title is “Mixing and sedimentation.”</p> <p>A. Surface water treatment process configuration</p> <p>B. Pretreatment for high turbidity or high coliform</p>	<p>Move content of existing subsections A – F to new sections noted and repeal section 870. Break large sections into smaller ones, organized by unit process. Content is essentially unchanged. Move content from 870 A and 870</p>

	12VAC5-590-872 12VAC5-590-873	C. Flash (rapid) mixing design D. Flocculation mixing design E. Sedimentation design F. Combined softening - clarification units	B and consolidate to new section 865. Intent: Reorganize, update and clarify requirements. Rationale: Reorganize large body of information on distinct process design so it is more easily located with separate sections and titles. Combined softening-clarification units are not used in Virginia. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-871	See 12VAC5-590-870 C and D	Create new section 871 titled "Coagulation and flocculation." Add in-line static mixers. Move content from subsection 870 C and 870 D and summarize requirements for rapid mixing and flocculation. Intent: Reorganize, update and clarify requirements. Rationale: Improve accessibility of information. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-872	See 12VAC5-590-870 E	Create new section 872 titled, "Sedimentation," and move content from subsection 870 E and summarize requirements for sedimentation. Allow consideration of sedimentation loading rates exceeding 0.5 gpm/ft ² and reduced settling times. Intent: Reorganize, update and clarify requirements. Rationale: Improve accessibility of information. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-873	See 12VAC5-590-870 F	Create new section 873 titled "Solids contact treatment units," and move content from 870 F and summarize requirements. Eliminate references to softening. Intent: Reorganize, update and clarify requirements.

			<p>Rationale: Improve accessibility of information.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-874	See 12VAC5-590-880 A	<p>Create new section 874 titled "Gravity filtration," and move content from 880 A, and summarize requirements. Allow consideration of filter loading rates exceeding 4.0 gpm/ft². Add design criteria for air scour.</p> <p>Update references and word choices.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of information.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-875	See 12VAC5-590-880 E	<p>Create new section 875 titled "Direct filtration," and move content from 880 E and summarize requirements.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of information.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-880	Break section 880 into four smaller sections: 12VAC5-590-880 12VAC5-590-874 12VAC5-590-875 12VAC5-590-881	Section title is "Filtration." A. Rapid rate gravity filters B. High rate gravity filters C. Slow sand gravity filters D. Diatomaceous filters E. Direct filtration F. Rapid rate pressure filters	<p>Change section 880 title to "Diatomaceous earth filtration" and retain content from subsection D only. Eliminate source restrictions for avoiding pretreatment. Retain pilot plant study but delete specific requirements. Break large sections into smaller ones, organized by water quality characteristic. Content is essentially unchanged.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Existing sections are too large to navigate easily. "Sampling" is not accurate</p>

			<p>description of content. Site-specific water quality should dictate study parameters.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-881	See 12VAC5-590-880 C	<p>Create new section 881 titled, "Slow sand filtration," and move content from 880 C and summarize requirements.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of information.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-882	None	<p>*Create new section 882, titled "Membrane filtration." Add application of membranes and disinfection removal credits. Refer to section 401 E 6 b. Add membrane design detail requirements, including configuration, materials, instrumentation, alarms, and sampling taps.</p> <p>Intent: Move VDH policy for membranes into the regulations.</p> <p>Rationale: Membranes may be successfully applied in water treatment. This treatment technology was not included in Part III of the regulations.</p> <p>Impact: Potential reduction in capital and operation costs to waterworks if membrane treatment is used instead of conventional filtration.</p>
None	12VAC5-590-883	None	<p>*Create new section 883, titled "Bag and cartridge filtration". Require pilot study. Describe disinfection removal credits. Refer to section 401 E 6 a. Describe filter design detail requirements, including instrumentation and alarms. Require operation and maintenance documents and operator training.</p>

			<p>Intent: Establish design requirements for bag and cartridge filtration.</p> <p>Rationale: Bag and cartridge filters may be successfully applied in water treatment.</p> <p>Impact: Potential reduction in capital and operation costs to waterworks if bag and cartridge filtration is used instead of conventional filtration.</p>
12VAC5-590-890	N/A	<p>Section title is “High rate treatment processes.”</p> <p>A. General characteristics</p> <p>B. Instrumentation required</p> <p>C. Unit treatment process design requirements</p>	<p>Repeal section and move applicable text to sections 874, “Gravity filtration” and 872, “Sedimentation”.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Information is more easily located with a separate section and title.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-895	None	<p>*Create new section 895 titled “Pre-engineered package treatment units.” Describe requirements for pre-designed & factory-built treatment equipment in the regulations.</p> <p>Intent: Establish design requirements for pre-engineered package treatment units.</p> <p>Rationale: This equipment may be successfully applied in water treatment.</p> <p>Impact: Potential reduction in capital and operation costs to waterworks if packaged treatment is used instead of conventional filtration.</p>
12VAC5-590-900	N/A	<p>Section title is “Softening.”</p> <p>A. Lime, excess lime, excess lime soda process requirements.</p> <p>B. Cation exchange process.</p>	<p>Change title to “Cation exchange softening.” Delete subsection A. Reorganize text into new subsections with minor revisions to word choices and acronyms. Limit content to ion exchange softening process.</p>

			<p>Intent: Update and clarify requirements.</p> <p>Rationale: Removed lime softening since it is not used in Virginia because the process is costly to operate and maintain, and is unlikely to be employed in future. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
12VAC5-590-910	N/A	<p>Section title is "Aeration."</p> <p>A. Natural draft aeration.</p> <p>B. Forced or induced draft aeration.</p> <p>C. Pressure aeration.</p> <p>D. Other methods of aeration.</p> <p>E. Aerators that discharge through the atmosphere.</p> <p>F. Aerators used for oxidation or removal of dissolved gases.</p> <p>G. Ventilation in buildings.</p> <p>H. Bypass.</p>	<p>Consolidate related text and clarify requirements. Expand and update this section. Delete subsections A through H, update and reorganize content into new subsections A through E.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Terminology needs to be simplified and conform to current usage.</p> <p>Impact: Improved understanding and application of the regulations, and attainment of water quality standards.</p>
12VAC-590-920	N/A	<p>Section title is "Iron and manganese control."</p> <p>A. Removal by oxidation, detention and filtration.</p> <p>B. Removal by lime soda process.</p> <p>C. Removal by continuous potassium permanganate regeneration.</p> <p>D. Removal by ion exchange.</p> <p>E. Sequestering.</p> <p>F. Sampling taps.</p> <p>G. Testing equipment.</p>	<p>Consolidate related text into new sections and clarify requirements. Consolidate and update subsections A, C, and D into one new subsection A. Eliminate subsection B on the lime soda process design. Update design requirements into new subsections B through G.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Lime softening is not used in Virginia. Process is costly to operate and maintain, and is unlikely to be employed in future.</p> <p>Impact: None.</p>
12VAC5-590-930	N/A	<p>Section title is "Fluoridation."</p> <p>A. Plans, specifications. Operation and supervision required.</p> <p>B. Fluoride compounds.</p> <p>C. Fluoride compound storage.</p> <p>D. Chemical feed installations.</p>	<p>Update fluoridation requirements. *Add the board recommends optimal fluoridation level per US Dept. of Health and Human Services guidelines. Revise fluoride chemical names and include reference to NSF/ANSI/CAN</p>

		<p>E. Protective equipment. F. Dust control equipment. G. Measuring equipment.</p>	<p>standard 60-2020. Add isolation of fluoride chemicals. Clarify chemical metering pump requirements, saturators. Delete requirement for fluoride application to raw water.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Update to current federal recommendations, industry nomenclature, and best practices.</p> <p>Impact: None - the reduced dose and changes to point of application have already been implemented by most waterworks that fluoridate.</p>
12VAC5-590-940	N/A	<p>Section title is "Fluoride removal."</p>	<p>Clarify required design criteria and treatment processes. Reorganize subsections A and B into new subsections A through C. Minor wording changes, changes to acronyms.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Rewording facilitates understanding. Conform to the RIS Style Manual.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-950	N/A	<p>Section title is "Stabilization." A. Carbon dioxide addition. B. Sulfuric acid. C. Removal of free CO₂. D. Deposition of calcium carbonate film. E. Polyphosphates. F. Split treatment. G. Residual chlorine may be used to prevent corrosion. H. Cathodic protection. I. Laboratory equipment.</p>	<p>Change title to "Corrosion control or stabilization" to improve accuracy and accessibility of content. Delete subsections A through C and E through G. Reorganize content into new subsections A through E. Remove irrelevant text. Excess lime softening, split treatment, and chlorine residual are not satisfactory corrosion control methods in Virginia and are not used.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Title needs to convey subject matter. Update to match current industry standards and practice.</p>

			<p>Impact: Improved water quality provided to consumers.</p>
12VAC5-590-960	N/A	<p>Section title is "Taste and odor control."</p> <p>A. Source treatment - T&O causes, copper sulfate addition to reservoirs, other chemicals</p> <p>B. Treatment methods - addition of chlorine, chlorine dioxide, potassium permanganate, aeration, powdered activated carbon.</p>	<p>Update and clarify acceptable methods for controlling typical taste and odors. Revise source treatment in new subsection A and delete subsection B. Create new subsection B for aeration, C for chemical oxidation, and D for *powdered activated carbon; E for GAC; move and update text. Delete text no longer relevant. *Add subsection F for ozonation. Replace "raw water" with "source water."</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Update to match current industry standards and practice. Ozone is effective in controlling taste and odors. Effective chemical dosages are Provides more options and flexibility for waterworks.</p> <p>Impact: Improved effectiveness in treating taste and odor-causing compounds.</p>
12VAC5-590-970	N/A	<p>Section title is "Removal of volatile synthetic organic chemicals (VOCs)."</p> <p>Refers to Appendix N for Best Available Technology; perform pilot studies unless 2 studies or prototype plants demonstrate feasibility.</p> <p>A. GAC.</p> <p>B. Packed tower aeration.</p>	<p>Repeal section. Move text related to GAC to new section 985. Move text related to aeration to section 910.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: GAC is addressed in new section 985. Packed tower aeration is addressed in section 910.</p> <p>Impact: Improved understanding and application of the regulations.</p>
None	12VAC5-590-975	None	<p>Create new section 975 titled "Removal of radionuclides."</p> <p>Establish acceptable design requirements for removal of radionuclides.</p> <p>Intent: Establish design requirements for removal of radionuclides.</p>

			<p>Rationale: Design requirements for radionuclides are missing from the regulations.</p> <p>Impact: Improved safety and effectiveness of treatment technology.</p>
12VAC5-590-980	N/A	Section title is "Microscreening."	<p>Repeal section.</p> <p>Intent: Remove material no longer relevant.</p> <p>Rationale: Technology is not appropriate and is not used in potable water treatment in Virginia.</p> <p>Impact: Improved water quality provided to consumers.</p>
None	12VAC5-590-985	See 12VAC5-590-970	<p>Create new section titled "GAC contactors." Incorporate applicable content from existing section 970. Clarify and update GAC treatment process design requirements.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Information is more easily located in a separate section.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-990	N/A	Section title is "Waterworks waste."	<p>General update of words, nomenclature and agency names. Substitute "residuals" and "settled solids" for "sludges."</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Eliminate potential association with sewage or sanitary waste.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-1000	Break section 1000 into two sections: 12VAC5-590-1000 12VAC5-590-1001	Section title is "Disinfection." A. Objective. B. Methods. C. Equipment. D. Engineering design. E. Respiratory protection. F. Application of chlorine. G. Evaluation of effectiveness.	<p>Reorganize by moving and updating requirements for methods, equipment, engineering design, and safety to Section 1001. Add new description of primary disinfection. Move and update text from section 800 for disinfection of pipes, tanks and equipment prior to placing in service, and refer to current AWWA</p>

			<p>Standards. Distinguish objectives of primary disinfection and expand treatment options. Separate chlorination as one process type.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Chlorine is no longer the sole disinfectant used; other chemicals and processes are available.</p> <p>Impact: Improved water quality provided to consumers.</p>
None	12VAC5-590-1001	See 12VAC5-590-1000 C through G	<p>Create new section 1001 titled "Chlorination," with text relocated and updated from section 1000. Include details on the chlorine treatment as a separate process.</p> <p>Intent: Reorganize, update and clarify to match current industry standards and practice.</p> <p>Rationale: May be successfully applied in potable water treatment.</p> <p>Impact: Improved understanding and application of the regulations, with improved water quality provided to consumers.</p>
None	12VAC5-590-1002	None	<p>*Create new section 1002 titled "Chloramination," to establish requirements for chloramination treatment. Topics include acceptability of chloramines, controlling the process, pH adjustment, lead leaching considerations, and public notification requirements.</p> <p>Intent: Establish design requirements for chloramination treatment.</p> <p>Rationale: May be successfully applied in potable water treatment.</p> <p>Impact: Improved understanding and application of the regulations, with improved water quality provided to consumers.</p>
None	12VAC5-590-1003	None	<p>*Create new section 1003 titled "Chlorine dioxide addition," to</p>

			<p>establish requirements for chlorine dioxide treatment. Topics include acceptability of chlorine dioxide, onsite generation, and public notification requirements.</p> <p>Rationale: May be successfully applied in potable water treatment.</p> <p>Impact: Improved understanding and application of the regulations, with improved water quality provided to consumers.</p>
None	12VAC5-590-1004	None	<p>*Create new section 1004 titled "Ozonation." Establish requirements for ozone treatment. Topics include uses for ozone, ozone system components, PER requirements, treatability study requirements, disinfection credit, and requirements for alarms and automatic shutdown.</p> <p>Intent: Establish design requirements for ozone treatment.</p> <p>Rationale: May be successfully applied in potable water treatment.</p> <p>Impact: Improved water quality provided to consumers.</p>
None	12VAC5-590-1005	None	<p>*Create new section 1005, titled "Ultraviolet light (UV) disinfection." Establish requirements for UV disinfection, including UV reactor design requirements.</p> <p>Intent: Establish design requirements for UV disinfection. Codify VDH policy in the regulations.</p> <p>Rationale: May be successfully applied in potable water treatment.</p> <p>Impact: Improved understanding and application of the regulations, with improved water quality provided to consumers.</p>
Article 4		Article title is "Pumping Facilities"	Eliminate article number and title for simplicity.
12VAC5-590-1010	N/A	Section title is "General." Design facilities to maintain water quality.	Change title to "Basic pumping facility design criteria". Require all pumps to be accessible for servicing and repair. Delete

		Avoid subsurface pits and pump rooms, inaccessible installations.	<p>outdated suggestion to avoid subsurface pits or pump rooms.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Update existing language to ensure that facilities will be designed to allow accessibility for servicing and repair.</p> <p>Impact: Improved operation, maintenance, and service life of pump stations.</p>
12VAC5-590-1020	N/A	Section title is "Location."	<p>Minor rewording of requirements, with changes to word choices. Organize into subsections.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve clarity. Conform to RIS Style Manual.</p> <p>Impact: Improved compliance with the regulations and water quality provided to consumers.</p>
12VAC5-590-1030	N/A	<p>Section title is "Groundwater facilities."</p> <p>A. General well appurtenances.</p> <p>B. Drilled wells with motors mounted on the casing.</p> <p>C. Submersible pumps.</p> <p>D. Discharge piping.</p> <p>E. Well pump house construction.</p>	<p>Intent: Repeal section. Move relevant content to appropriate sections in the regulations: text on well appurtenances to section 840, well pump discharge piping to section 1065, and well enclosures to section 1040, as applicable.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Eliminate redundancy and improve organization of content.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-1040	N/A	<p>Section title is "Pump stations."</p> <p>A. General requirements.</p> <p>B. Suction wells.</p> <p>C. Equipment servicing.</p> <p>D. Stairways and ladders.</p> <p>E. Heating.</p> <p>F. Ventilation.</p> <p>G. Dehumidification.</p> <p>H. Lighting.</p>	<p>Consolidate pump station structure requirements in one section from other sections. Move, reorganize, and consolidate content from subsections A through H into one subsection. Relocate content from subsections I through K to section 1050. Topics include enclosures, suction wells, groundwater well</p>

		<p>I. Pumps. J. Suction lift. K. Priming.</p>	<p>enclosures and aprons, and spring enclosures.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of content.</p> <p>Impact: Improved pump station design, operation and maintenance.</p>
12VAC5-590-1050	N/A	<p>Section title is “Booster pumps.” A. Booster pump requirements B. Inline booster pumps</p>	<p>Change title to “Pumps and controls.” Move content from subsections 1040 I through K. Move content from subsections 1070 E through G. Delete existing subsection B “Inline booster pumps.” Consolidate content on pumps, controls, and power into single section.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of information.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-1060	N/A	<p>Section title is “Automatic and remote controlled stations.” Automatic signaling apparatus shall report to a facility manned 24 hours per day.</p>	<p>Repeal section. This section is not necessary.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Design recommendations do not offer value and requirements are redundant or are dated.</p> <p>Impact: None.</p>
12VAC5-590-1070	12VAC5-590-1065	<p>Section title is “Appurtenances.” A. Valves. B. Piping. C. Gauges and meters. D. Water seals. E. Controls. F. Power. G. Auxiliary power supply.</p>	<p>Repeal section 1070. Create new section 1065 titled “Piping, valves, and meters”. Move content 1070 A through C to section 1065. Move content in 1070 E through G to section 1050. Relocate, reorganize, and consolidate text.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Improve accessibility of information.</p>

			Impact: Improved understanding and application of the regulations.
Article 5		Article title is "Finished Water Storage Structures"	Eliminate article number and title for simplicity.
12VAC5-590-1080	Break section 1080 into 3 sections: 12VAC5-590-1080 12VAC5-590-1081 12VAC5-590-1082	Section title is "General." A. Location of facilities. B. Watertight roofs and covers. C. No drain connection to sewer. D. Overflow pipe. E. Access. F. Vents. G. Penetrations. H. Downspouts. I. Safety. J. Freeze protection. K. Catwalks. L. Surface grading and drainage. M. Cathodic protection and paint. N. Cleaning before disinfection. O. Disinfection & testing.	Change title to "Basic finished water storage design criteria." Reorganize relevant content. Move applicable design criteria to a new section 1081 titled "Atmospheric tank storage". Update to reference current AWWA and NSF standard. Intent: Reorganize, update and clarify requirements. Rationale: Information is more easily located in separate sections. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-1081	See 12VAC5-590-1080 B through N	Create new section 1081 titled "Atmospheric tank storage," relocate and update relevant text from subsections 1080 B through 1080 N. Reference current NSF standards. Intent: Reorganize, update and clarify requirements. Rationale: Information is more easily located in separate sections. Impact: Improved understanding and application of the regulations.
None	12VAC5-590-1082	See 12VAC5-590-1090 E	Create new section 1082 titled "Pressure tank storage", reorganize and update relevant content, and insert content from subsection 1090 E. *Modify to require tanks equal or greater than 120 gal to have access manway and other appurtenances. Intent: Reorganize, update and clarify requirements. Rationale: Information is more easily located in separate sections. Impact: Improved understanding and application of the regulations.

12VAC5-590-1090	N/A	<p>Section title is "Plant storage." A. Washwater tanks. B. Clearwells. C. Finished water. D. Receiving basins 7 pump wet wells. E. Hydropneumatic (pressure) storage tanks</p>	<p>General editorial updates to word selections. Relocate subsection E "Hydropneumatic (pressure) tanks" to new section 1082 "Pressure tank storage."</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Hydropneumatic (pressure) tanks are not often located at surface water treatment plants; they are located at many well sites and sometimes in distribution systems.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-1100	N/A	<p>Section title is "Distribution storage." A. Max variation between high and low level. B. Adequate controls. C. Pressure tanks.</p>	<p>Repeal section. Relocate and consolidate subsections A through C into subsections 1080 D and E.</p> <p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Consolidate related content into section 1080.</p> <p>Impact: Improved understanding and application of the regulations.</p>
Article 6		<p>Article title is "Water Distribution Systems"</p>	<p>Eliminate article number and title for simplicity.</p>
12VAC5-590-1110	N/A	<p>Section title is "Materials."</p>	<p>Change title to "Distribution system materials." Delete obsolete or redundant requirements. Reference AWWA standards.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Keep relevant content in place.</p> <p>Impact: Improved understanding and application of the regulations.</p>
12VAC5-590-1120	N/A	<p>Section title is "Minimum pipe size." A. 4-in. minimum pipe size. B. Pipe size for fire flows. C. The standard grading schedule of the Insurance Services Office and other related organizations shall be followed in other cases.</p>	<p>Minor reorganization, updates to word choices and content. Reorganize content and delete outdated references. Delete reference to "standard grading schedule of the Insurance Services Office and other related organizations."</p>

		<p>D. Justification by hydraulic analysis.</p> <p>E. Adequate flows and pressure.</p>	<p>Intent: Reorganize, update and clarify requirements.</p> <p>Rationale: Minimum pipe size must be clearly defined to ensure adequate flow and pressure.</p> <p>Impact: Improved water distribution to consumers.</p>
12VAC5-590-1130	N/A	<p>Section title is "System design."</p> <p>A. Minimizing dead-ends.</p> <p>B. Where dead-end lines occur, they shall be provided with a fire hydrant, flushing hydrant, or blowoff for flushing purposes.</p> <p>C. No flushing device connected to sewer.</p>	<p>Change title to "Distribution system design". Require a "means of effective flushing" in place of specific "fire hydrant, flushing hydrant, or blowoff..." Prohibit connection of flushing device directly to any sewer.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Provide less prescriptive language, increase flexibility.</p> <p>Impact: Potential cost savings to utilities while maintaining water quality provided to consumers.</p>
12VAC5-590-1140	N/A	<p>Section title is "Installation of water mains."</p> <p>A. Supports and restraints.</p> <p>B. Bedding.</p> <p>C. Trenching.</p> <p>D. The specifications for installation.</p> <p>E. Tracing wire for buried pipe.</p>	<p>Change title to "Installation and testing of water mains." Incorporate industry standards for testing and allowable leakage. Minor wording changes.</p> <p>Update to reference current AWWA standard.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Acceptance criteria are not clearly defined in existing regulations.</p> <p>Impact: Improved construction and reliability of distribution systems.</p>
12VAC5-590-1150	N/A	<p>Section title is "Separation of water mains and sewers."</p> <p>A. Factors to consider.</p> <p>B. Parallel installation.</p> <p>C. Crossing.</p> <p>D. Water pipes shall not pass through or come in contact with any part of a sewer manhole.</p>	<p>Change title to "Separation of water mains and sanitary sewers." Remove requirements for AWWA approved water pipe and no leakage. General updates to word selection and AWWA reference standards. Add new requirement for safe horizontal separation of water mains from other sources of contamination.</p>

			<p>Intent: Update and clarify requirements.</p> <p>Rationale: Existing language is inconsistent with industry standards for water mains.</p> <p>Impact: Improved construction and reliability of distribution systems.</p>
12VAC5-590-1160	N/A	<p>Section title is “Valve, air relief, meter, and blowoff chambers.”</p> <p>A. Air and sediment accumulations may be removed using fire hydrants, compressed air or pumping.</p> <p>B-C. Chambers & drainage.</p> <p>D. Valve inspection & servicing.</p> <p>E. Air relief & blowoff piping.</p>	<p>Clarify means of removing sediments and air; require accessibility of valves and discharge piping from air relief and blow-off valves. Minor editorial changes. Minor wording changes; allow use of water main backfill material as absorption pit. Add requirements for air relief and blowoff piping.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Removal methods are different for sediments (bottom of pipe) and air (top of pipe). Air relief valves require periodic inspection and service. Discharge water from air relief and blowoffs must be diverted away from the chamber to prevent potential submergence, valve malfunction, and contamination of potable water.</p> <p>Impact: Improved design, construction, serviceability, and reliability of distribution systems.</p>
12VAC5-590-1170	N/A	<p>Section title is “Hydrants.”</p> <p>A. Hydrants that are not plugged must be drained to the ground or to dry wells.</p> <p>B. Hydrant drains shall not be connected to sewers.</p> <p>C. Fire hydrants connected to water mains designed for fire flows and domestic flow.</p>	<p>*Update and clarify acceptable hydrant design and installation. Major editorial reorganization of section with additional clarifying details.</p> <p>Update and clarify drain requirements for dry-barrel fire hydrants. Reference ANSI/AWWA C502-18 standard.</p> <p>Establish design standards for yard hydrant installations.</p> <p>Clarify hydrants and flushing devices not design for fire protection may be connected to pipe of less than 6 inches.</p>

			<p>Intent: Update and clarify requirements. Codify requirements implemented by policy.</p> <p>Rationale: Hydrant drains must be properly constructed to prevent contamination; fire hydrants are provided for firefighting and pipe flushing, not domestic use.</p> <p>Impact: Reduced risk of contamination of drinking water. Improved understanding and application of the regulations.</p>
12VAC5-590-1180	N/A	<p>Section title is "Surface water crossings."</p> <p>A. Above water crossings.</p> <p>B. Under water crossings.</p>	<p>Clarify requirements for installation, testing, and repairs. Require valves and taps for underwater crossings using rigid pipe only. Editorial changes to word use. Renumber subsections.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Directional drilling method uses fusion-welded, flexible pipe, having low risk of pipe and joint failures. Conform to RIS Style Manual.</p> <p>Impact: Negligible; changes have already been implemented and cost savings to waterworks have been realized.</p>
12VAC5-590-1190	N/A	<p>Section title is "Water services and plumbing."</p>	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is addressed in preceding sections and by the USBC.</p> <p>Impact: None.</p>
12VAC5-590-1200	N/A	<p>Section title is "Water pressure in systems."</p>	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is addressed in preceding sections and by the USBC.</p> <p>Impact: None.</p>
12VAC5-590-1210	N/A	<p>Section title is "Disinfection of water mains."</p>	<p>Change title to "Disinfection and testing of water mains." Remove outdated disinfection and testing procedures and refer to AWWA</p>

		<p>A. All mains must be disinfected before being put in service.</p> <p>B - E. Detailed procedure for flushing, disinfection methods, and testing of water mains.</p> <p>F. Procedures following repairs shall follow AWWA Standard C601.</p>	<p>standard C-651-14. Clarify required information in project documents.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Replace outdated procedure with current industry standard. AWWA Standard C601 replaced by C651.</p> <p>Impact: None; current AWWA standard procedures are being implemented and accepted.</p>
<p>12VAC5-590-1220</p>	<p>N/A</p>	<p>Section title is "Cover." All pipe shall be covered sufficiently to prevent freezing.</p>	<p>Change title to "Pipe cover." Clarify that all buried pipe shall be covered or encased sufficiently to prevent freezing and protect from damage by external forces. Add option of encasing pipe and include objective of damage protection.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Sufficient earth cover may not be available in all instances; but there may be alternative solutions.</p> <p>Impact: Improved design, construction, and performance of distribution systems.</p>
<p>12VAC5-590-1230</p>	<p>N/A</p>	<p>Section title is "Metering." Each service connection shall be metered.</p>	<p>Change title to "Service connection metering." *Update to require all new service connections in community waterworks shall be metered. Require pipes and appurtenances connecting water mains to service connections to meet all applicable codes.</p> <p>Intent: Update and clarify requirements.</p> <p>Rationale: Service meters are used for water accountability in community waterworks, but generally unnecessary in noncommunity waterworks because most have single service connections. Generally, the USBC applies after the service connection.</p>

			<p>Impact: Potential improvements in water accountability and reductions in water loss for community waterworks.</p>
None	12VAC5-590-1235	None	<p>*Create new section 1235 titled "Water loading stations." Establish design standards for water loading stations for hauling potable water. Topics include requirements to prevent unauthorized use, tampering, and vandalism, backflow prevention, standards for hoses, and protecting hoses from contamination.</p> <p>Intent: Establish new requirements.</p> <p>Rationale: Water hauling is a short-term solution to meet a potable water demand; minimum standards will ensure that water is safe to consume.</p> <p>Impact: Reduced risk of contamination of hauled water.</p>
Part IV		Part title is "Exceptions for Noncommunity Waterworks to Specific Sections of the Manual of Practice (Part III)"	Repeal Part IV content
12VAC5-590-1240	N/A	Section title is "General."	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content moved to preceding sections.</p> <p>Impact: None.</p>
12VAC5-590-1250	N/A	Section title is "Exceptions to Article 1 of Part III"	<p>Repeal section. Move storage requirement to section 640.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content moved to preceding sections.</p> <p>Impact: None.</p>
12VAC5-590-1260	N/A	Section title is "Exceptions to Article 2 of Part III."	<p>Repeal section. Move relevant content to section 840.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content moved to preceding sections.</p> <p>Impact: None.</p>

12VAC5-590-1270	N/A	Section title is "Exceptions to Article 5 of Part III."	<p>Repeal section. Move relevant content to section 1050</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content moved to preceding sections.</p> <p>Impact: None.</p>
12VAC5-590-1280	N/A	Section title is "Exceptions to Article 6 of Part III."	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is in the USBC.</p> <p>Impact: None.</p>
APPENDIX A	N/A	Title is "[RESERVED]"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX B	N/A	Title is "BACKGROUND USED IN DEVELOPING THE CHEMICAL, PHYSICAL AND RADIOLOGICAL LIMITS OF THE DRINKING WATER STANDARDS."	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Eliminate unnecessary text. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX C	N/A	Title is "FIELD OFFICE COUNTIES AND CITIES SERVED"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is available on VDH website. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX D	N/A	Title is "[RESERVED]"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX E	N/A	Title is "[RESERVED]"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p>

			<p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX G	N/A	Title is "MONITORING AND REPORTING."	<p>Repeal section. Update content and move to section 570.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX I	N/A	Title is "SUGGESTED OUTLINE OF CONTENTS OF A CROSS CONNECTION CONTROL PROGRAM"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Eliminate unnecessary content. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX L	N/A	Title is "DETERMINATION OF CT"	<p>Repeal section. Update and move applicable content to section 500.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX M	N/A	Title is "LEAD AND COPPER"	<p>Repeal section.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Eliminate unnecessary content. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX N	N/A	Title is "INORGANIC COMPOUNDS AND ORGANIC CHEMICALS"	<p>Repeal section. Replace BAT information with reference to the federal regulations in section 680.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is available in the federal regulations. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX O	N/A	Title is "REGULATED CONTAMINANTS FOR CONSUMER CONFIDENCE"	<p>Repeal section. Update and move applicable content to section 546.</p> <p>Intent: Simplify and streamline.</p>

		REPORTS AND PUBLIC NOTIFICATION.”	<p>Rationale: Conform to RIS Style Manual.</p> <p>Impact: None.</p>
APPENDIX P	N/A	Title is blank	<p>Repeal section. Replace BAT information with reference to the federal regulations in section 680.</p> <p>Intent: Simplify and streamline.</p> <p>Rationale: Content is available in the federal regulations. Conform to RIS Style Manual.</p> <p>Impact: None.</p>
FORMS	N/A		