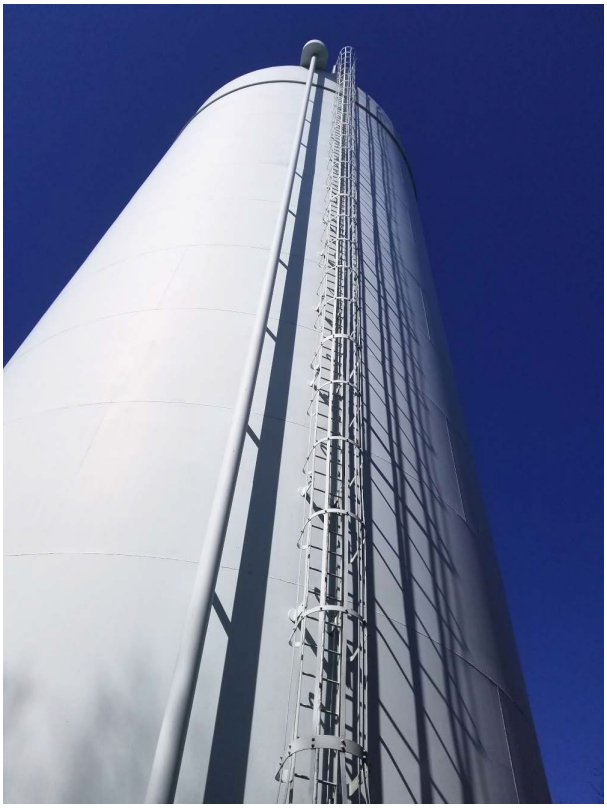
Center for Drinking Water Quality
2021 Annual Report



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Message from the Chief of Drinking Water Quality

I am pleased to present the 2021 Annual Report of the Center for Drinking Water Quality on behalf of the Rhode Island Department of Health. I wish to acknowledge the contributions of our many partners who share our mission to safeguard drinking water in Rhode Island.

In 2021 the drinking water industry in Rhode Island continued to experience the effects of the coronavirus disease 2019 (COVID-19) pandemic with supply chain delays, virtual meetings, worker shortages, and so much more. During this time, threats to public water systems and increased vulnerabilities from remote processes emphasized the importance of cybersecurity. In response, we expanded our Sanitary Surveys to include questions about cybersecurity, identified partners, forwarded urgent alerts, and added cybersecurity resources to our website, including an ongoing list of recent guidance communications for emergency preparedness and security.

In 2021 we continued to modernize our communications to provide improved customer service, with virtual trainings and additional website content, such as an engineering application review status tracker and a Revised Total Coliform Rule page.

Concern about lead contamination of drinking water and per- and polyfluoroalkyl substances (PFAS) continued in 2021. Regarding lead, the US Environmental Protection Agency (EPA) announced their intent to strengthen the Lead and Copper Rule. The Lead and Copper Rule Revisions include a compliance date of October 16, 2024 for an initial lead service line inventory with guidance forthcoming. EPA also plans to promulgate the Lead and Copper Rule Improvements by October 16, 2024 to include updated requirements for lead service line replacements, compliance tap sampling, action and trigger levels, and prioritizing historically underserved communities. Regarding PFAS, EPA published a final determination to regulate PFOA and PFOS in drinking water with a proposed maximum contaminant level expected in fall 2022 and final regulation in fall 2023.

To address lead and PFAS, in addition to other drinking water supply needs, Rhode Island has been allotted millions of dollars in Bipartisan Infrastructure Law funding through the Drinking Water State Revolving Fund. This historic opportunity to improve critical drinking water infrastructure will greatly benefit public health in our State for years to come, and we encourage all eligible water systems to apply.

We welcome your comments and suggestions, and I encourage you to contact the Center for Drinking Water Quality at 401-222-6867, DOH.RIDWQ@health.ri.gov, or online at http://health.ri.gov/water/about/yourwater/.

Sincerely,

Amy B. Parmenter

Chief, Center for Drinking Water Quality
Division of Environmental Health
Rhode Island Department of Health

Financials

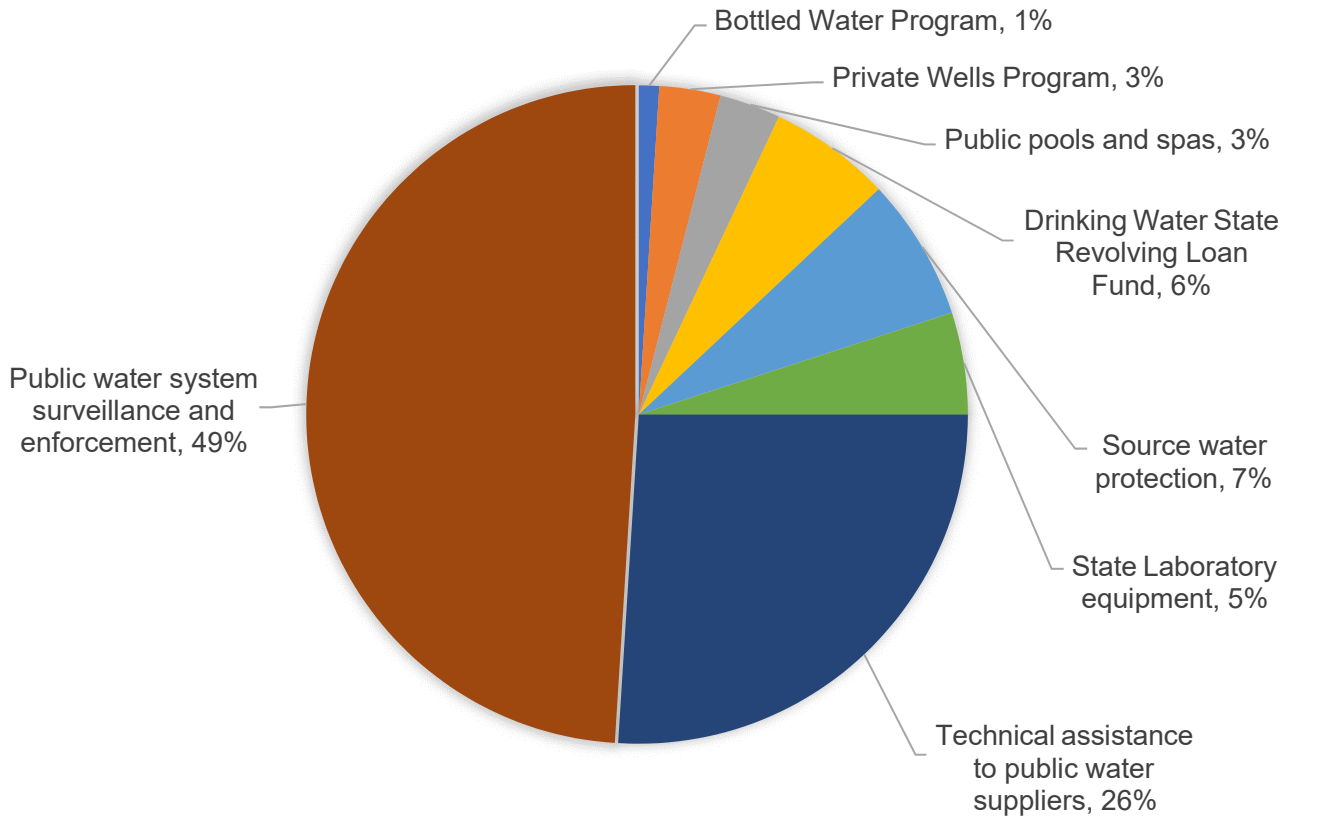
Since 1976, the EPA has received an annual Congressional appropriation under Section 1443(a) of the Safe Drinking Water Act (SDWA) to assist states, territories, and tribes in carrying out their Public Water System Supervision programs. Each year, the Rhode Island Department of Health (RIDOH) receives a grant to develop, implement, and enforce the requirements of the SDWA and to ensure that water systems comply with National Primary Drinking Water Regulations. Since 1996, when the SDWA was amended to create the State Drinking Water Revolving Fund, RIDOH has received additional federal funding in the form of set-asides from the loan fund capitalization grant to assure safe drinking water. In 2020, RIDOH applied for and received a grant from the Consumer Product Safety Commission for work on pool safety and compliance with the Virginia Graeme Baker Act. Work on this grant was conducted through the end of 2021.

In addition, RIDOH receives licensing fees for aquatic venues and bottled water that are applied as an investment back into Rhode Island's licensed aquatic venues and bottled water vendors through a Restricted Receipt account.

In 2021, RIDOH invested $3,790,214 in State and federal funds in Rhode Island's public water systems, aquatic venues, and bottled water vendors.

Federal Funds	**$3,386,648**
State Funds	**$256,399**
Restricted Receipts	**$147,167**
Total Budget:	**$3,790,214**

Distribution of Federal Funds, State Funds, and Restricted Receipts



Oversight

In Rhode Island, RIDOH is the agency responsible for carrying out the Public Water System Supervision program. Key activities include:

- Developing and maintaining State drinking water regulations;
- Developing and maintaining an inventory of public water systems throughout the state;
- Developing and maintaining a database to keep compliance information on public water systems;
- Conducting sanitary surveys, conformance inspections, and compliance inspections;
- Supporting technical, managerial, and financial capacity of public water systems;
- Reviewing public water system plans and specifications;
- Providing technical assistance to managers and operators of public water systems;
- Ensuring that public water systems regularly inform consumers about the quality of the water that they are providing;
- Certifying laboratories that can perform the analysis of drinking water used to determine compliance with the regulations; and
- Carrying out an enforcement program to ensure that the public water systems comply with State requirements.

Public Drinking Water

The mission of the Public Drinking Water Program is to protect and promote the health and safety of Rhode Islanders by ensuring the quality of the State's public drinking water supplies for use by Rhode Island households, businesses, hospitals, nursing homes, schools, restaurants, industry, and firefighting and emergency response services. RIDOH's Center for Drinking Water Quality works diligently and maintains an excellent record of meeting this high-priority public health responsibility.

Rhode Island Water System Customers by System Type, 2021

Water System Type	Customers Served
Public Water System	1,138,696[1]
Surface Water Systems	890,757[1]
Groundwater Systems	247,939[1]
Public Water Systems	484
Community Systems	90
Non-Transient, Non-Community Systems	81
Transient, Non-Community Systems	304
Active Non-Operational Systems	18
Systems using surface water	35
Systems using groundwater	450[2]

[1] *Includes all populations (transient, residential, and workplace).*

[2] *Some water systems use both groundwater and surface water (purchased and non-purchased).*

Private Drinking Water

In Rhode Island, an estimated 120,000 people rely on private water systems for drinking water. In 2021, the Private Wells Program responded to more than 1,000 inquiries regarding well water quality. These inquiries came from residents, realtors, lenders, and other State agencies.

The Private Wells Program conducted ongoing private well workshops for residents, realtors, and regulators. These were moved to online platforms to safely continue outreach throughout the COVID-19 pandemic. In addition, there was increased development of new educational materials and resources for residents on topics such as preventing common household contamination risks and understanding water analysis results.

The Private Wells Program also completed the next phase of the Well Completion Report data integrity project started in 2020, which aims to create a complete electronic repository for all Well Completion Reports submitted to the Center for Drinking Water Quality since the reports were first required in 1972. Town and year files were audited for organizational accuracy, and the reports were scanned and indexed by location. The project also included creating and importing the indices into an ArcGIS-ready database. The Program is currently exploring potential data entry assistance opportunities for digitizing other well data on the reports, such as depth and stratigraphy.

The Private Wells Program also continued its work with both local and interstate community partners, assisting other agencies and educational institutions with data, resources, and other collaborative projects.

Licensed Aquatic Venues

In 2021, RIDOH licensed 426 aquatic venues. Indoor pools are licensed to operate year-round. Seasonal pools (typically outdoor pools) are licensed to operate from June 1 to September 30. Annually, RIDOH or the aquatic venue licensee collects and analyzes water quality samples for bacteria, free residual chlorine, combined chlorine, and potential of hydrogen (pH) levels. Compliance data are available in Appendix F.

Swimming Pools		**Therapy Pools (Hot Tubs)**	
Yearly	Seasonal	Yearly	Seasonal
129	**218**	**67**	**12**

Bottled Water

Bottled water continues to increase in popularity, with an estimated 240 billion dollars' worth sold in the US in 2021. The United States Food and Drug Administration (FDA) regulates bottled water as a food product. Under the federal Food, Drug, and Cosmetic Act manufacturers are responsible for producing safe, unadulterated, and truthfully labeled products. The FDA has established regulations for bottled water including identity standards that define bottled water as, "water that is intended for human consumption and that is sealed in bottles or other containers with no added ingredients except that it may optionally contain safe and suitable antimicrobial agents."

Bottled water may be well water, municipal water from public water systems, mineral water, purified water, sparkling water, or spring water. The requirements for obtaining a bottling permit are submission and approval of analytical data for the water source and product, label approval, satisfactory inspection reports, and approval of the permit application.

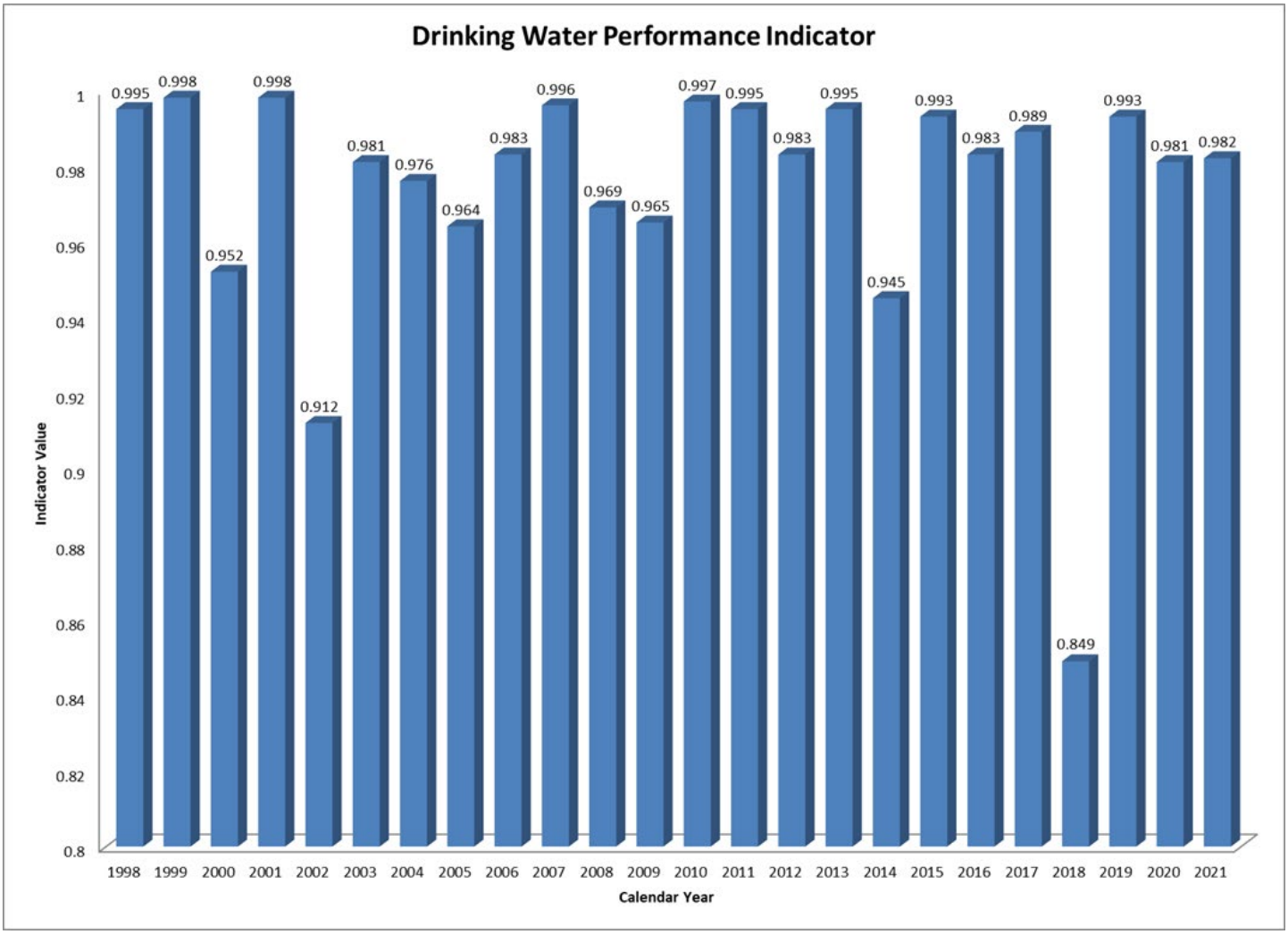
As of December 31, 2021, one licensed in-state water bottler and 182 licensed out-of-state water bottlers were selling bottled water in Rhode Island.

Impact and Performance

The performance of the State's public drinking water systems for 2021 is based on compliance with multiple water quality requirements specified in the Safe Drinking Water Act and is evaluated and compared to data from previous years. The outcome of the analysis is an overall performance indicator based on a composite of three metrics:

- Number of days each water system is in compliance with all maximum contaminant levels (MCLs) and treatment technique requirements;
- Number of customers each water system serves; and
- Number of days the water system operates.

A performance indicator value of 1.0 indicates that all public water systems (PWS) were in compliance with MCL and treatment technique requirements for the entire year (note that the performance indicator value can be significantly influenced by water systems with large populations). Much of the decrease in the 2018 indicator value was due to the impact of one maximum contaminant level violation at a water system with a very large population for a contaminant that is monitored approximately every 90 days. Without this violation, the performance indicator value was 0.948.



Indicator Value = $\frac{\Sigma \text{ (PWS Population Served) x (Days in Compliance with MCLs and Treatment Technique Requirements)}}{\Sigma \text{ (PWS Population Served) x (Total Days in Operation)}}$

Capacity Development Tools and Assistance

Rhode Island's public drinking water systems face a wide array of challenges in meeting the public health protection standards to ensure safe drinking water for community members, residents, and visitors.

RIDOH maintains a capacity development strategy aimed at developing the financial, managerial, and technical capacities of small public water systems that serve fewer than 10,000 people. The mission of the capacity development program is to identify methods for assisting water utilities in achieving sustainable operations over time.

To accomplish this mission, RIDOH maintains various contracts with industry professionals and organizations to provide wide-ranging services to the owners and operators of public water systems. These services and training initiatives are included in RIDOH's work plan and are funded through Drinking Water State Revolving Loan Fund.

Services provided during the reporting period included:

Vendor	Service	Outcomes
Global Environmental Consulting (GEC)	Consumer confidence reports for systems serving 10,000 or fewer	89 reports completed
Northeast Water Solutions, Inc.	Facilities Improvement Plans for Community (C) + nonprofit Non-Transient Non-Community (NTNC) + nonprofit Transient Non- Community (TNC) systems serving 10,000 or fewer	6 systems received services
Northeast Water Solutions, Inc.	Engineering services for C + nonprofit NTNC + nonprofit TNC systems serving 10,000 or fewer	6 systems received services
New England Water Works Association (NEWWA)	Free operator training opportunities	756 training contact hours delivered
RCAP Solutions	Financial and managerial training for small PWS receiving state revolving funds (SRF)	1 system received services

RIDOH also maintains a cooperative agreement with University of Rhode Island (URI) Cooperative Extension. Under this agreement, URI provides:

- Technical assistance and outreach to municipal officials, water suppliers, and private drinking water well users on assessment results and local protection measures;
- Outreach to professionals who play a role in public water supply protection; and
- Resources to build audience capacity to adopt source water protection measures.

Operator Certification

Ensuring a competent workforce is a key element in the protection of public health and the provision of safe drinking water. Individuals who operate public water supply treatment and distribution systems must be certified and licensed by RIDOH. Once licensed, operators adhere to continuing education and experience requirements prior to license renewal or upgrade.

There are approximately 771 licenses for treatment and distribution operators issued in the State, and some individuals hold multiple licenses and certifications. There are eighty-nine (89) community and eighty (80) non-transient, non-community public water systems that are required to comply with the State's operator certification rules and regulations. The State has classified these systems for distribution and/or treatment.

Training initiatives are included in RIDOH's work plan and are funded through Drinking Water State Revolving Loan Fund. RIDOH provides extensive opportunities for training and exam preparation through contracts with industry assistance providers.

In 2021, New England Water Works Association conducted five training sessions and granted a total of 756 contact hours. These training sessions were scheduled in fall 2020 for delivery in winter/spring 2021.

The program selected courses with topics that address compliance issues, violation trends, and small public water system compliance including:

- Selection, Application, and Maintenance of Water System Valves
- Operation and Maintenance of Drinking Water Pumping Facilities
- Operational Control of Coagulation and Filtration Treatment Processes
- Fundamentals of Cross Connection Surveying

RIDOH does not directly reimburse operators for expenses related to training and exams. These learning opportunities are free of charge, open to all operators, and target operators from small public water systems.

Drinking Water Operators by License Type, 2021

Distribution License Type	License Count
DO (Distribution Operator) Class 1-Full	125
DO Class 1-Grandfathered	17
DO Class 1-Operator in Training	22
DO Class 2-Full	75
DO Class 2-Grandfathered	1
DO Class 2-Operator in Training	5
DO Class 3-Full	103
DO Class 3-Grandfathered	0
DO Class 3-Operator in Training	5
DO Class 4-Full	43
DO Class 4-Grandfathered	1
DO Class VSS-Full	31
DO Class VSS-Grandfathered	18
DO Class VSS-Operator in Training	3
DO Provisional	1
Total	450

Treatment License Type	License Count
TO (Treatment Operator) Class 1-Full	91
TO Class 1-Grandfathered	8
TO Class 1-Operator in Training	8
TO Class 2-Full	78
TO Class 2-Grandfathered	4
TO Class 2-Operator in Training	7
TO Class 3-Full	69
TO Class 3-Grandfathered	1
TO Class 3-Operator in Training	8
TO Class 4-Full	27
TO Class 4-Grandfathered	1
TO Class VSS-Full	12
TO Class VSS-Grandfathered	5
TO Class VSS-Operator in Training	3
TO Provisional	0
Total	322

Drinking Water State Revolving Loan Program

The Safe Drinking Water Act amendments of 1996 authorized the creation of a Drinking Water State Revolving Loan Fund (DWSRF) program. This fund helps public water systems finance the costs of infrastructure needed to achieve or maintain compliance with the requirements and public health objectives of the SDWA.

In conjunction with the Rhode Island Infrastructure Bank, RIDOH's Center for Drinking Water Quality operates the Drinking Water State Revolving Loan Fund program with funds supplied by an annual EPA grant. RIDOH is responsible for compilation of a priority list for current, ongoing, and proposed projects; engineering and environmental review of proposed projects; oversight of construction; assuring all grantees and sub-grantees follow Drinking Water State Revolving Loan Fund requirements; and review and approval of contractor payment requests. Completion of capacity development and maintenance of operator certification are key eligibility requirements for the Drinking Water State Revolving Loan Fund and are reviewed during the application process.

In 2021, RIDOH approved and the Rhode Island Infrastructure Bank funded six new loans totaling $23.5 million.

2021 Rhode Island Infrastructure Bank Loan Projects

Pascoag Utility District
$195,000 for replacement of 17 lead service lines from the water main to the building structure.

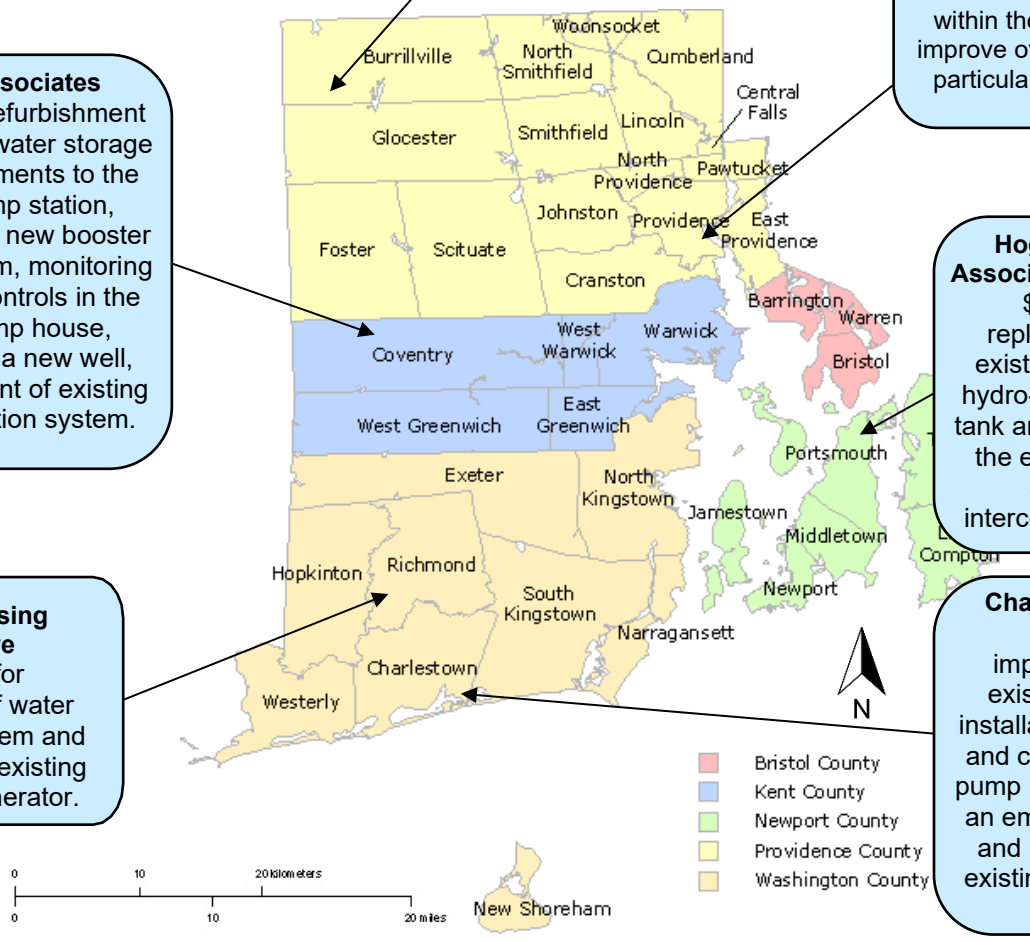
Providence Water
$21,000,000 for continued replacement and rehabilitation of water mains within their service area to improve overall water quality, particularly to control lead.

Paige Associates
$936,008 for refurbishment of the existing water storage tank, improvements to the existing pump station, installation of a new booster pumping system, monitoring system and controls in the existing pump house, installation of a new well, and replacement of existing water distribution system.

Hog Island Water Association – North End
$100,000 for replacement of the existing 1,000-gallon hydro-pneumatic water tank and replacement of the existing bag filter system and interconnecting piping.

Hillsdale Housing Cooperative
$361,975 for replacement of water distribution system and replacement of existing emergency generator.

Charlestown Cedars
$936,721 for improvements to the existing pump house, installation of a monitoring and control system in the pump house, installation of an emergency generator, and replacement of the existing water distribution system.



Engineering Review

The engineering approval process is designed to help ensure the sustainability of the system and the safety of water sources. Once an applicant has demonstrated that a project has adequately met the requirements for public water facilities on paper, projects may proceed. Inspections are conducted during and after construction.

There are four sections of the Engineering Review Program:

Drinking Water Source Approval

This process requires applicants to submit plans and supporting documentation that demonstrate that the location of the proposed new source is such that the source is protected from potential contamination.

Drinking Water Facilities Review and Approval

This process includes technical and engineering review of infrastructure projects under the PWSS program in accordance with the SDWA. Infrastructure review is required for wells, pumping, storage, and treatment, both new and rehabilitative.

Drinking Water State Revolving Loan Fund Plan Approval

Projects submitted for funding through the DWSRF program must comply with specific requirements of the funding program, including State and federal statutes and federal executive orders. As these projects are reviewed under the Drinking Water Facilities Plan review and approval process, the engineers ensure that the projects are compliant with all DWSRF requirements. In addition, the engineers inspect the projects during construction to ensure that all federal and state requirements are met.

Plan Review, Approval, and Inspections for Licensed Aquatic Venues

RIDOH ensures that licensed swimming pools and spas are constructed and operated in a safe and sanitary manner. Technical and engineering reviews are conducted for all new public pools and spas and for any alterations to existing pools and spas. Additionally, inspections of filtering systems, water quality, and other sanitary and safety concerns are performed by RIDOH and through a self-inspection and self-monitoring program.

Engineering Projects 2021	Received[1]	Approved[2]	Completed[3]
Non-SRF	20	13	9
SRF	12	12	2
In-Kind Replacement Forms	45	42	*n/a*

[1] The number of engineering applications received during 2021.

[2] The number of engineering applications that received preliminary approval in 2021. Some of these may be applications received in 2020 that were carried over into 2021.

[3] The number of applications that received final approval in 2021, meaning that the construction of the project was completed. Some of these applications received preliminary approval in previous years but construction of the project was not completed until 2021.

Inspections and Site Visits

All aspects of a public water system (water source, treatment facility, storage, pump stations, operations, and maintenance) require periodic inspection to help ensure that the water system continuously supplies safe drinking water to the public.

In 2021, RIDOH staff conducted 121 sanitary survey inspections. The inspection team coordinated with the Center for Drinking Water's compliance program and engineering team to ensure that all identified deficiencies were corrected. RIDOH staff also performed inspections at the request of water systems as part of the State's Capacity Development Program.

RIDOH staff conducted 7 Level 1 Assessments and 19 Level 2 Assessments in response to violations of the Revised Total Coliform Rule. In addition, RIDOH staff performed one conformance inspection of a new public water system.

2021 Sanitary Survey Inspections		
System Type	**Population Served**	**Inspections**
Community Water Systems	188,761	31
NTNC Water Systems	834	6
TNC Water Systems	14,545	84
TOTAL	**204,140**	**121**

Emergency Planning and Security

Developing proactive policies for emergency situations including significant weather and cybersecurity preparedness can improve conservation of resources, reduce repair expenses, minimize interruption of service, and enhance consumer confidence in the important services provided by drinking water utilities.

Program activities included:

- Dissemination of EPA planning tools to the water systems, including the *Vulnerability Self-Assessment Tool*, the *Water Health and Economic Analysis Tool*, and the Incident Action Checklists to assist drinking water and wastewater facilities of all sizes in enhancing their security and resiliency;
- Participation in the Statewide Water Resources Board's Drought Steering Committee;
- Use of the email marketing service MailChimp to keep public water systems informed of imminent or ongoing emergencies;
- Development and implementation of an emergency generator program;
- Training for Center for Drinking Water Quality staff in EPA, Federal Emergency Management Agency (FEMA), and Occupational Safety and Health Administration (OSHA) practices for emergency preparedness and response;
- Development of emergency response planning templates, guidance, and certification forms;
- Requiring the completion and certification of Emergency Response Plans for all public water systems; and
- Maintenance and curation of information for the *Emergency Information for Public Water Systems* website.

In 2021 the Center for Drinking Water Quality began providing public water systems with guidance in response to Cybersecurity incidents and better protecting themselves from cyberattacks. Information was promptly compiled and forwarded to our public water systems as it became available to our office. Guidance documents are also posted to the Emergency Information for Public Water Systems webpage (health.ri.gov/water/for/publicwatersystemsduringemergency/).

Water Quality Monitoring

Our nation's waters are monitored by local, state, and federal agencies, universities, dischargers, and volunteers. Water quality data are used to describe the physical aspects of the water, identify trends or emerging problems, evaluate pollution control efforts, and help respond to emergencies.

Maximum Contaminant Levels
Under the SDWA, the EPA sets maximum legal limits on the levels of certain contaminants in drinking water. The legal limits for these contaminants, known as Maximum Contaminant Levels (MCLs), are set at levels that protect the public's health and that are reasonably achievable with available technology. The EPA also sets treatment requirements, water-testing schedules, and sampling methods that all water systems are required to follow. RIDOH is responsible for ensuring that water systems in Rhode Island comply with EPA requirements.

Contaminant Rules
RIDOH regulates more than 90 contaminants in 6 contaminant groups: disinfectants, disinfection byproducts, inorganic chemicals, microorganisms, organic chemicals, and radionuclides. Drinking Water Standards and Advisory Tables summarizing all contaminants and their respective MCL are maintained on the EPA's website (epa.gov/sdwa/drinking-water-contaminant-human-health-effects-information).

A system's type, size, and water source determine which contaminants they must monitor. More than 60 of the regulated contaminants are in 2 of the contaminant groups: inorganic contaminants (IOCs) and organic contaminants (volatile organic contaminants, or VOCs, and synthetic organic contaminants, or SOCs).

Arsenic
Arsenic is a toxic element that naturally occurs in soil, rocks, and minerals. It is unevenly distributed and enters drinking water supplies from natural deposits in the earth and from agricultural and industrial practices.

Groundwater Rule (GWR)
Most of the State's water systems use groundwater sources to supply customers. The GWR aims to reduce disease incidence associated with microorganisms in drinking water. The Rule establishes a risk-based approach and targets groundwater systems that are at risk of fecal contamination. These vulnerable groundwater systems work to take corrective action to reduce potential illness from exposure to microbial pathogens. This rule applies to all systems that use groundwater as a source of drinking water.

Disinfectants and Disinfection Byproducts
Water that comes from a lake, river, reservoir, or groundwater aquifer must be disinfected to kill harmful bacteria. However, water suppliers are challenged to balance the risks associated with harmful bacteria against the risks associated with disinfection byproducts. In 2021, 63 water systems were required to comply with the Disinfection Byproducts Rule (DBPR) either because they added a disinfectant to the water or purchased and distributed water that had been treated with a disinfectant by the seller. The most recent changes to the DBPR require that compliance is based on MCL results at individual sample locations instead of calculating one average value of all distribution system sample results for all water systems subject to the DBPR.

Lead and Copper Rule
The Lead and Copper Rule is intended to minimize lead and copper in water provided by community and NTNC water systems. Most lead and copper contamination comes from pipes or solder that break down and mix with water. In order to treat water that contains lead or copper, the water must be collected from faucets that are inside homes and businesses. If the water is extremely corrosive or contains very fine lead particles, this triggers requirements for treatment, public education, and, if applicable, lead service line replacement.

Radionuclides
Most drinking water sources have low levels of naturally occurring radioactive contaminants; however, man-made nuclear materials can also contaminate drinking water sources. All community water systems are required to monitor for radionuclides.

Synthetic Organic Contaminants Waivers
Community and NTNC groundwater systems that serve less than 3,300 people and do not use SOCs within their wellhead protection areas may qualify for a waiver that exempts them from monitoring for individual SOCs. There are 145 public water systems that currently meet these criteria and are eligible to submit waivers on a rotating 3-year schedule. In 2020, 31 of 56 eligible systems took advantage of this opportunity and submitted applications for waivers for the 2021 monitoring year. SOC waivers will be offered again in 2022 for the 2022 monitoring year. The RIDOH waiver process requires a land-use and chemical-use review and evaluation by the water system and RIDOH staff before a waiver is granted. A waiver is valid for three years, after which water systems can reapply for another waiver.

Surface Water Treatment Rule
The Surface Water Treatment Rule establishes filtration and disinfection treatment requirements for any public water system supplied by surface water sources or groundwater sources under the influence of surface water. Nine water systems in Rhode Island are covered by these rules that are designed to reduce or eliminate harmful bacteria. These water systems include filtration and disinfection as part of their treatment processes. An additional 33 water systems purchase filtered and treated water to sell to consumers. These systems are required to maintain a chlorine residual throughout their distribution system.

Total Coliform
There are a variety of bacteria, parasites, and viruses that can make people sick if they are present in drinking water. Instead of testing for each different kind of bacteria, water systems test for coliform bacteria. The detection of coliform bacteria indicates that disease-causing contaminants may be in the water.

Algal Toxin Rule
Active as of May 2019, the Algal Toxin Rule applies to all public water systems that have a surface water source. Colonies of naturally occurring bacteria (also known as blue-green algae) in a lake or reservoir can become harmful (also called harmful algal blooms) when they start producing algal toxins, which can affect the liver and brain. The standard monitoring period for the rule is May through October, and systems are required to check their surface water sources daily for signs of a harmful algal bloom (HAB), sample any harmful algal blooms to identify and count bacteria, and test their raw and finished water for algal toxins when certain risk criteria is met. Public water systems must also submit plans that detail their treatment options and emergency response plans in the event of a harmful algal bloom or algal toxin detection. As of 2021, this rule applies to nine public water systems. Rhode Island is currently one of the few states that have successfully established public water algal toxin regulations.

Water Quality Sampling

Water quality sampling and testing ensures the quality of the State's drinking water and that each water system is in compliance with monitoring requirements. RIDOH's State Health Laboratories continue to assist water systems with required water quality testing.

In 2021, the State Health Laboratories analyzed 4,442 water samples. The Center for Drinking Water Quality evaluated 32,341 analytical results from the State Health Laboratories and other State-certified labs.

In support of the Center for Drinking Water Quality, the State Health Laboratories:

- Tested drinking water for bacteria, organic and inorganic contaminants, minerals, and trace metals to determine safety and compliance with the Safe Drinking Water Act;
- Tested potability of water from private wells;
- Analyzed water samples in support of special pollution-monitoring programs;
- Maintained analytical instruments to detect and measure the concentration of a variety of pesticides and VOC and SOC pollutants in drinking water;
- Performed continuous quality improvement of testing processes;
- Operated the analytical laboratory certifications program; and
- Maintained a list of laboratories that are certified for the analysis of drinking water, non- potable water, and environmental lead.

Compliance

The complete 2021 Compliance Table summary, as required by the Safe Drinking Water Act amendments of 1996, can be found in Appendix E. In 2021, a total of 317 violations of the Safe Drinking Water Act and Public Drinking Water Regulations [216-RIRC-50-01-1] were reported in the State's public water systems. Of these 317 violations, 25 were water quality violations, 224 were monitoring and reporting violations, 29 were treatment technique violations, and 39 were notification violations. A summary of the violations is presented in Appendices B, C, and D.

Quality Violations
Quality violations occur when the monitoring results for a particular contaminant exceed the maximum allowable standard within a specific time period. Public water systems must monitor for more than 90 contaminants including inorganic compounds, VOCs, SOCs, radionuclides, and pathogens.

In 2021, 13 public water systems exceeded a maximum allowable amount of a contaminant for a total of 25 violations. Of those 25, 7 were bacteriological violations, 3 for inorganic contaminants, and 15 were for disinfection by-products (total trihalomethanes).

Monitoring and Reporting Violations
Monitoring and reporting violations occur when a water system fails to perform the required monitoring for a contaminant in a specified time period and/or fails to report the results or required actions on time. In 2021, a total of 224 monitoring violations occurred.

Lead and Copper Rule (LCR) Violations
Five public water systems exceeded the lead action level in 2021. Nine public water systems exceeded the copper action level in 2021. Thirty-three public water systems received a total of 71 lead and copper rule violations in 2021. Of these, violations, 11 were failure to properly collect, analyze, or report lead and copper rule monitoring samples; 24 were for failure to report water quality parameters on time; 26 were failure to report lead results to consumers within 30 days of receiving results from laboratory; 7 were for failure to submit a corrosion control proposal by the due date; and 3 were for failure to adequately submit required public education to consumers by the due date.

Public Notification (PN) Violations
Public Notification violations occur when a water system does not notify customers of a violation within the required time period. In 2021, 19 public water systems failed to perform Public Notification as required.

Consumer Confidence Report Violations
Consumer Confidence Report (CCR) violations whenever a community public water system does not provide a CCR to their customers and/or does not submit a CCR Certification Form to RIDOH by the required deadline. In 2021, 8 community public water systems did not provide a CCR or a CCR Certification Form by the required deadline.

Treatment Technique Violations
Treatment technique violations occur when a public water system does not comply with the required treatment, does not correct a significant deficient/sanitary defect in the required timeframe does not complete a Level 1 or Level 2 Assessment by the required deadline, or does not complete State-approved seasonal start-up procedures before providing water to customers. In 2021, 15 public water systems were issued a total of 29 treatment techniques violations.

Appendix A: Compliance Table Definitions

Filtered systems: Surface water systems that have installed filtration treatment.

Inorganic contaminants: Non-carbon-based compounds, such as metals, nitrates, and asbestos, naturally occur in some water and can also get into water through farming, chemical manufacturing, and other human activities. The EPA has established MCLs for 15 inorganic contaminants.

Lead and Copper Rule (LCR: Established national limits on lead and copper in drinking water; states report violations of the Lead and Copper Rule in the following categories:

- Initial lead and copper tap monitoring and reporting: Water system did not meet initial lead and copper testing requirements or failed to report the results of those tests to the State.
- Follow-up or routine lead and copper tap monitoring and reporting: Water system did not meet follow-up or routine lead and copper tap-testing requirements or failed to report the results of those tests to the State.
- Water Quality Parameters (WQP): Water system did not collect or report water quality parameter samples properly.
- OCCT/SOWT RECOM/STUDY: Water system did not properly complete or submit an Optimal Corrosion Control Treatment (OCCT) or Source Water Treatment (SOWT) recommendation or study for a lead and/or copper exceedance.
- Treatment installation: Water system did not install optimal corrosion-control treatment system or source-water treatment system to reduce lead and copper levels in water at the tap.
- Public education/Lead Consumer Notice: Water system did not provide required public education about reducing or avoiding lead intake from water or notification of lead results to individuals served by taps used for Lead and Copper Rule tap monitoring or did not adequately report either to the State.

Maximum Contaminant Level (MCL): Highest amount of a contaminant that the EPA allows in drinking water while ensuring no short-term or long-term health risk; quantified as milligrams per liter (parts per million) unless otherwise specified.

Monitoring: EPA-specified water-testing methods and schedules for testing frequency, which water systems are required to follow (for purposes of this report, a major monitoring violation occurs when at least 90% of the required samples were not taken or results were not reported during the specified period).

Organic Contaminants: Carbon-based compounds, such as industrial solvents and pesticides, that generally get into water through runoff from cropland or discharge from factories; the EPA has set MCLs for 54 organic contaminants.

Radionuclides: Radioactive particles occurring in water naturally or from human activity; the EPA has MCLs for five types of radionuclides: radium-226, radium-228, gross alpha, uranium, and beta particle/photon radioactivity; violations are reported in the following categories:

- Gross alpha: Alpha radiation higher than MCL of 15 picocuries/liter (pCi/L); includes radium-226 but excludes radon and uranium.
- Combined radium-226 and radium-228: Combined radiation from two radium isotopes higher than MCL of 5 pCi/L.
- Uranium: Combined uranium higher than MCL of 30 micrograms per liter (µg/L).
- Gross beta: Beta particle and photon radioactivity from man-made radionuclides higher than four millirems/year.

Reporting Interval: January 1, 2021 - December 31, 2021; includes violations in previous years which did not return to compliance until 2021.

Safe Drinking Water Information System (SDWIS) Code: Specific numeric code assigned to each violation type or contaminant; two-digit code for violation type; four-digit code for contaminant.

State Compliance (SC): Compliance requirement regulated by the state but not regulated under the Safe Drinking Water Act. Usually failure to correct minor deficiencies or failure to submit license renewal application.

State Level (SL): MCL for a contaminant regulated by the state but not regulated under the Safe Drinking Water Act.

State Monitoring (SM) or State Reporting (SR): Monitoring or reporting requirement for a contaminant regulated by the state but not regulated under the Safe Drinking Water Act.

Surface Water Treatment Rule (SWTR): Establishes criteria under which water systems supplied by surface water sources, or ground water sources under the direct influence of surface water, must filter and disinfect their water; violations are reported in four categories:

- Monitoring, routine/repeat (filtered systems): Water system does not perform required tests or does not report the results of those tests.
- Treatment techniques (filtered systems): Water system does not properly treat its water.
- Monitoring, routine/repeat (unfiltered systems): Water system does not perform required water tests or does not report the results of those tests.
- Failure to filter (unfiltered systems): Water system does not properly treat its water.

Total Coliform Rule (TCR): Effective until October 31, 2018; established regulations for microbiological contaminants in drinking water that can cause short-term health problems; violations were reported in two categories:

- Non-acute MCL violation: Water system detected total coliform in its water at a frequency or level that exceeds the standard.
- Routine/repeat monitoring or reporting: Water system did not perform the required monitoring and/or reporting.

Revised Total Coliform Rule (RTCR): Effective April 1, 2016; established regulations for microbiological contaminants in drinking water that can cause short-term health problems; acute MCL violation refers to confirmed E. Coli not total coliform; presence of total coliform results in assessment; established additional requirements for seasonal water systems.

Treatment Techniques: EPA-required water treatment process (instead of an MCL) for contaminants that laboratories cannot adequately measure; also, failure to correct a significant deficiency discovered during a sanitary survey, failure to correct a sanitary defect discovered during an assessment, failure to perform a Level 1 or Level 2 assessment, or failure to adequately perform seasonal start-up procedures.

Unfiltered Systems: Water systems that do not need to filter water before disinfecting it because the source is very clean.

Violation: Failure to meet any state or federal drinking water regulation.

Appendix B: Community Water Systems Violations

Quality Violations	
Canonchet Cliffs Water Association Inc. (E.Coli)	1
Narragansett Water Dept-North End (trihalomethanes [TTHM])	3
Narragansett Water System-Point Judith (TTHM)	9
Providence-City-of- Whipple (TTHM)	1
Suez Water (TTHM)	2
Monitoring and Reporting Violations	
Bethel Village Water Assn (Asbestos, LCR)	3
Block Island Water Company (SOC)	1
Central Beach Fire District (LCR)	1
Church Woods (State Reporting)	1
Exeter Job Corps Center (LCR)	2
Four Seasons MHP Co-op Assn. (LCR)	1
Glendale Water Assn. (Sodium)	1
Heritage Park Home Co-operative (LCR)	1
Hillsdale Housing Cooperative, Inc. (LCR)	1
Hopkinton, Town of (LCR)	1
Kingston Center (LCR)	2
Ladd Center Water System (LCR, Sodium, RTCR)	4
Liberty Hill (LCR)	1
Lindhbrook Water Company (LCR, SOC, State Reporting)	7
Nasonville Water District (LCR)	1
North Kingstown Town of (DBPR)	2
Paige Associates (RTCR, SOC)	2
Pascoag Utility District, Water Division (DBPR, RTCR, LCR)	3
Providence-City of (LCR, Sodium)	4
Quonochontaug East Beach Water Assn. (LCR)	1
Richmond Ridge Development (LCR)	1
Rockland Oaks (RTCR, State Reporting)	2
Scituate Commons (RTCR)	1
Split Rock Corporation (LCR)	3
The Dawn Hill Home Rehab and Healthcare (Asbestos, LCR)	2
Warwick-City of (Asbestos, RTCR)	2
Warwick-Potowomut (Asbestos, LCR)	2
Westerly Water Department (E. Coli, SOC)	3
Woonsocket Water Division (DBPR, LCR)	7
Public Notification Violations	
Bethel Village Water Assn (CCR, PN)	3
Downing Village (PN)	1
Foster Senior Housing Inc. (CCR)	1
Kingston Center (PN)	1
Nasonville Water District (CCR)	1
Prudence Island Water District	1

Scituate Commons (CCR, PN)	2
Touisset Point Water Trust (CCR)	1
Warwick-City-of (CCR, PN)	2
Treatment Technique Violations	
Kingston Center (LCR)	1
Ladd Center Water System (LCR)	1
Lindhbrook Water Company (LCR)	2
Split Rock Corporation (LCR)	1
Public Water System Licensing	
(none)	0
Total	97

Appendix C: Non-Transient Non-Community Water Systems Violations

Quality Violations	
Rochs Fresh Foods Facility (Beryllium)	1
Monitoring and Reporting Violations	
Alpine Country Club (LCR)	2
Ashaway Line & Twine Mfg. Co. - Lower Mill (DEHP [Di(2-ethylhexyl)phthalate])	1
Briarwood Child Academy Smithfield (LCR)	1
Carousel Industries (LCR)	1
Charlestown Elementary School (LCR)	1
Charlestown Police Station (E. Coli)	1
Dean Warehouse Services (RTCR)	1
Dr. Daycare Child Development Center (LCR)	1
Fogarty Memorial School (LCR)	3
Glocester Town Hall- School Administration (LCR)	1
Mildred E Lineham School (LCR)	1
North Smithfield Air National Guard Syst (LCR)	1
Phoenix House of New England (LCR)	1
Pinewood Park School (LCR)	1
Ponaganset High School (LCR)	1
Quonset Business Park (LCR)	11
Sakonnet Early Learning Center, Inc. (LCR)	3
Scituate Early Learning Center (LCR)	1
Ski Pro, Inc. (LCR)	1
The Greene School - Building 1 (LCR)	1
Washington Oak Elementary School (Asbestos)	1
Wrights Farm Corp. (Fluoride, SOC, VOC, Nitrate, Nitrite, IOC)	6
Public Notification Violations	
Glocester Town Hall School Administration (PN)	1
Treatment Technique	
Charlestown Police Station (State Compliance)	2
Exeter-West Greenwich Jr/Sr High School (LCR)	1
Fogarty Memorial School (LCR)	1
Glocester Town Hall School Administration (LCR)	1
Lakeview Charlestown Early Lrning Ctr. (State Compliance)	2
Ponaganset High School	1
Public Water System Licensing	
(none)	0
Total	52

Appendix D: Transient Non-Community Water Systems Violations

Quality Violations	
Charlestown Commons (E. Coli)	1
Confreda Greenhouses & Farms, LLC (Nitrate)	2
Michaels Shell Station (E. Coli)	1
Rocky Mountain Spring Water Co-Front St (E. Coli)	1
Rocky Mountain Spring Water Co-No Prov (E. Coli)	1
Seacrest Inn Inc. (E. Coli)	1
Westwood YMCA (E. Coli)	1
Monitoring and Reporting Violations	
1195 Putnam Pike, LLC (VOC)	1
Andrews Realty Inc. DBA Richmond Plaza (RTCR)	1
Ayoho Campground (Nitrate, Nitrite)	2
Barn Restaurant (RTCR)	1
Blue Shutters (RTCR)	1
Bowdish Lake Camping Area, Brown 1 & 2 (Nitrate, Nitrite, GWR, RTCR)	5
Breachway Properties (State Reporting)	1
BRIGGS-BOESCH FARM (RTCR)	1
Cadys Tavern (Nitrate)	1
Camp Cookie (RTCR)	2
Camp Hoffman (GWR, RTCR)	3
Camp Watchaug (RTCR)	1
Chapmans Food and Drink (Nitrate)	1
Charlestown Commons (GWR)	1
Charlestown Mini-Super Inc. (RTCR)	1
Classic Acres Inc. DBA Wood River Golf (Nitrate, State Reporting)	2
Classic Motor Lodge, Inc. (GWR, Nitrate, RTCR)	3
Cold Brook Cafe (GWR, Nitrate, RTCR)	6
Corner Bistro (RTCR)	1
Cumberland Farms Store # 1262 Charlestown (Nitrite)	1
Echo Lake Campground (RTCR)	1
Exeter Public Library (Nitrate, Nitrite, RTCR)	3
Foster Country Club (Nitrate)	1
Foster Extra Mart (RTCR, VOC)	2
Fresco Ditto Inc Dba Fresco (RTCR)	1
Gemelli Bistro – ANO (Active Non-Operational)- (RTCR)	4
George Washington Campground Rest Rm Fac (RTCR)	1
Glad Tidings Community Church (GWR, RTCR)	2
Harborside Inn. (RTCR)	1
Harmony Corner Store (RTCR)	1
Hickory Ridge RV Resort LLC (RTCR)	1
Hilltop Inn (GWR, RTCR)	3
Hog Island Water Association-South End (GWR, RTCR)	1
Homestead Restaurant, M.S.T. Inc. (Nitrite)	1

Howards Country Chowder Shack (RTCR)	1
Long Cove Marina & Campground (GWR)	1
Middletown Fop Lodge 21 (Nitrite, RTCR)	6
Midville Golf Course (GWR, RTCR)	2
Mother Of Hope Day Camp (Nitrate)	1
Murphy's Mobil, Inc. (Nitrite)	1
New England Farms (RTCR)	1
Ninigret Inn (RTCR)	1
Paradise Motel Park (RTCR)	1
Partners Auto Auction RI (GWR)	2
Phil & Anns Sunset Motel, Inc. (Nitrate)	1
Powder Mill Creamery (Nitrate, Nitrite)	2
Prudence Park Water Coop (State Reporting)	1
R.L. Flounders (Nitrate, Nitrite)	2
RI Sports Center, Inc. (GWR)	1
Richmond Town Hall (RTCR)	1
Rocky Mountain Spring Water Co-No Prov (GWR, RTCR)	2
Seacrest Inn, Inc. (GWR, RTCR)	3
Shady Acres Fry Shack LLC (RTCR)	1
Simmons Cafe and Marketplace (RTCR)	1
Slatersville Medical Complex (Nitrate, Nitrite, GWR, RTCR)	13
Sly Fox Den Too (RTCR)	2
Sophies Brew House Inc (RTCR)	1
St. Mary & St. Mena Coptic Church of RI (Nitrate)	1
Summit General Store Ltd. (Nitrate)	1
TDM Enterprises Inc. DBA Gators Pub (Nitrite)	1
The Hitching Post Inc. (Nitrate)	1
Water's Edge Campground (Nitrate, Nitrite, RTCR)	4
Westwood YMCA (GWR, Nitrate)	2
Windmill Hill Golf Course, Inc. (RTCR)	1
YMCA Camp Fuller (GWR)	1
Public Notification Violations	
A-1 Pizza	2
Charlestown Commons (PN)	1
Charlestown Mini-Super, Inc. (PN)	1
Famous Pizza (PN)	2
Gemelli Bistro -ANO- (PN)	2
Phil & Anns Sunset Motel, Inc. (PN)	1
Slatersville Medical Complex	14
Sophies Brew House Inc	1
TRI State Golf Company (PN)	1

Treatment Technique	
Famous Pizza (GWR, RTCR)	3
Glad Tidings Community Church (RTCR)	1
Harmony Lodge Restaurant (GWR)	1
Seaconnet Point Farm (RTCR)	1
Slatersville Medical Complex (GWR)	10
Public Water System Licensing	
(none)	0
Total	168

Appendix E: Compliance Table (January 1, 2021 – December 31, 2021)

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
Organic Contaminants								
2981	1,1,1-Trichloroethane	0.2	0	0			2	2
2977	1,1-Dichloroethylene	0.007	0	0			2	2
2985	1,1,2-Trichloroethane	.005	0	0			2	2
2378	1,2,4-Trichlorobenzene	0.07	0	0			2	2
2931	1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0	0			4	3
2980	1,2-Dichloroethane	0.005	0	0			2	2
2983	1,2-Dichloropropane	0.005	0	0			2	2
2063	2,3,7,8-TCDD (Dioxin)	$3x10^{-8}$	0	0			0	0
2110	2,4,5-TP	0.05	0	0			4	3
2105	2,4-D	0.07	0	0			4	3
2051	Alachlor (LASSO)	0.002	0	0			4	3
2050	Atrazine	0.003	0	0			4	3
2990	Benzene	0.005	0	0			2	2
2306	Benzo[a]pyrene	0.0002	0	0			4	3

2046	Carbofuran	0.04	0	0			5	4
2982	Carbon tetrachloride	0.005	0	0			2	2
2959	Chlordane	0.002	0	0			4	3
SDWIS Codes		**MCL[1] (mg/l)**	**MCLs**		**Treatment Techniques**		**Monitoring/ Reporting**	
			Number of violations	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**
2380	cis-1,2 Dichloroethylene	0.07	0	0			2	2
2031	Dalapon	0.2	0	0			4	3
2035	Di(2-ethylhexyl)adipate	0.4	0	0			4	3
2039	Di(2-ethylhexyl)phthalate	0.006	0	0			4	3
2964	Dichloromethane	0.005	0	0			2	2
2041	Dinoseb	0.007	0	0			4	3
2032	Diquat	0.02	0	0			0	0
2033	Endothall	0.1	0	0			0	0
2005	Endrin	0.002	0	0			4	3
2992	Ethylbenzene	0.7	0	0			2	2
2946	Ethylene dibromide	0.00005	0	0			4	3
2034	Glyphosate	0.7	0	0			0	0
2065	Heptachlor	0.0004	0	0			4	3
2067	Heptachlor epoxide	0.0002	0	0			4	3
2274	Hexachlorobenzene	0.001	0	0			4	3
2042	Hexachlorocyclo-pentadiene	0.05	0	0			4	3
2010	Lindane	0.0002	0	0			4	3

2015	Methoxychlor	0.04	0	0			4	3
2989	Monochlorobenzene	0.1	0	0			2	2
2968	o-Dichlorobenzene	0.6	0	0			2	2
2969	para-Dichlorobenzene	0.075	0	0			2	2
SDWIS Codes		**MCL[1] (mg/l)**	**MCLs**		**Treatment Techniques**		**Monitoring/ Reporting**	
			Number of violations	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**
2383	Total polychlorinated biphenyls (PCB's)	0.0005	0	0			4	3
2326	Pentachlorophenol	0.001	0	0			4	3
2987	Tetrachloroethylene	0.005	0	0			2	2
2984	Trichloroethylene	0.005	0	0			2	2
2996	Styrene	0.1	0	0			2	2
2991	Toluene	1.0	0	0			2	2
2979	trans-1,2-Dichloroethylene	0.1	0	0			2	2
2955	Xylenes (total)	10	0	0			2	2
2020	Toxaphene	0.003	0	0			4	3
2036	Oxamyl (Vydate)	0.2	0	0			5	3
2040	Picloram	0.5	0	0			4	3
2037	Simazine	0.004	0	0			4	3
2976	Vinyl chloride	0.002	0	0			2	2
Subtotals			**0**	**0**	**0**	**0**	**9[2]**	**7[2,4]**
Stage 2 Disinfection Byproducts Rule								

1009	Chlorite	1.0	0	0			6	1
1011	Bromate	0.010	0	0			0	0
1006	Chloramines	4.0	0	0			0	0
1008	Chlorine Dioxide	0.8	0	0			0	0
0999	Chlorine	4.0	0	0			0	0
2950	Total Trihalomethanes	0.080	15	4			2	2
2456	Total Haloacetic Acids	0.060	0	0			2	2
SDWIS Codes		**MCL[1] (mg/l)**	**MCLs**		**Treatment Techniques**		**Monitoring/ Reporting**	
			Number of violations	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**
2920	Total Organic Carbon Removal Ratio	1.0			0	0	0	0
Subtotals			**15**	**4**	**0**	**0**	**10[2]**	**3[4]**
Inorganic Contaminants								
1074	Antimony	0.006	0	0			1	1
1005	Arsenic	0.010	0	0			1	1
1094	Asbestos (>10 micrometers)	7 million fibers/ L	0	0			5	5
1010	Barium	2	0	0			1	1
1075	Beryllium	0.004	1	1			1	1
1015	Cadmium	0.005	0	0			1	1
1020	Chromium	0.1	0	0			1	1
1024	Cyanide (as free cyanide)	0.2	0	0			1	1

1025	Fluoride	4.0	0	0			1	1
1035	Mercury	0.002	0	0			1	1
1040	Nitrate	10 (as N)	2	1			22	21
1041	Nitrite	1 (as N)	0	0			14	13
1045	Selenium	0.05	0	0			1	1
SM	Sodium						4	3
1085	Thallium	0.002	0	0			1	1
1038	Total nitrate and nitrite	10 (as N)	0	0			0	0
Subtotals			**3**	**2**	**0**	**0**	**47_2**	**34_4**
SDWIS Codes		**MCL[1] (mg/l)**	**MCLs**		**Treatment Techniques**		**Monitoring/ Reporting**	
			Number of violations	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**
Radionuclides								
4000	Gross alpha particle activity	15 pCi/l	0	0			0	0
4010	Combined Radium 226/228	5 pCi/l	0	0			0	0
4006	Combined uranium	30 µg/l	0	0			0	0
4101	Gross beta	4 mrem/yr.	0	0			0	0
Subtotals			**0**	**0**	**0**	**0**	**0**	**0**
Revised Total Coliform Rule								
1A	Acute (*E. Coli*) MCL	Presence [3]	7	7				
2A	Level 1 Assessment missing or incomplete				2	2		

2B	Level 2 Assessment missing or incomplete				0	0		
2C	Corrective/Expedited Actions				1	1		
2D	Seasonal Startup Procedures				0	0		
3A/3B	Major or minor routine/additional routine						46	30
3C	Monitor extra coliform after turbidity exceedance (unfiltered SW)						N/A	N/A
3D	Lab/Analytical Method Error						0	0
4A	Reporting, Assessment Forms						0	0
4B	Reporting, Sample Results						17	16
4C	Reporting, Seasonal Startup Procedures Certification						0	0

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
4D	Notification to Statew/in 24 hrs. of E. Coli result						1	0
4E	Notification to Statew/in 24 hrs. of E. Coli MCL						0	0
4F	Notification to Statew/in 24 hrs. of Assessment or Corrective Action Violation						1	1
5A	Sample Siting Plan Errors						0	0
5B	Recordkeeping						0	0
SC	State Compliance (failed to conduct LV1A in 10 days)				0	0		
SR	State Reporting (failed to electronicall y upload the data by the due date)						2	2
Subtotal			**7**	**7**	**3**	**3[4]**	**67**	**46[4]**

Groundwater Rule

SDWIS Codes		MCL[1] (mg/l)	MCLs		Treatment Techniques		Monitoring/ Reporting	
			Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations	Number of violations	Number of PWSs with violations
05	State notification of treatment failure						0	0
28	SanitarySurvey Coop Failure				1	1		
19	Assessment monitoring of well						3	3
31	Failure to monitor treatment						3	3
34	Triggered monitoring of well						17	14
41	Failure maintain microbial treatment				0	0		
45	Failure address significant deficiency				9	1		
73	Failure notify otherwater system of E. Coli result(s)						0	0
SC	State-compliance (failure to correct deficiency)				7	4		
SR	State-reporting (Failure to report correction of deficiency)						0	0
Subtotal			**0**	**0**	**17**	**5[4]**	**23**	**18[4]**

Surface Water Treatment Rule								
36	Monitoring & Reporting SWTR						0	0
38	Monitoring & Reporting IESWTR						0	0
40 - 45	Treatment techniques				0	0		
32	Monitoring, routine/repeat (Source, LT2)						0	0
SR	State-reporting (failure report CTparameters)						0	0
Subtotal			**0**	**0**	**0**	**0**	**0**	**0**
SDWIS Codes		**MCL[1] (mg/l)**	**MCLs**		**Treatment Techniques**		**Monitoring/ Reporting**	
			Number of violations	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**	**Number of violations**	**Number of PWSs with violations**
Lead and Copper Rule								
51	Initial lead and copper tap M/R						1	1
52,56	Follow-up or routine lead andcopper tap M/R						10	9
53	Water Quality Parameters						23	10
57	OCCT/SOWT RECOM/STU DY				6	6		
58, 63	Treatment Installation				1	1		
65, 66	Public education, Lead Consumer Notice				2	2	26	26

SR	State Reporting (priority results)						1	1
Subtotal			**0**	**0**	**9**	**8**	**61**	**36[4]**

Consumer Confidence Reports (CCR)								
71	CCR failure to report (major)						4	4
72	CCR inadequate content or reporting(minor)						5	5
Public Notice Rule (PN)								
75	Public Notification						32	17
76	Public Notification for state-only violation						2	2
Subtotal (total CCR & PN)			0	0	0	0	**43**	**22[4]**
State Violations (Miscellaneous)								
SC	State-compliance (Operator License)				0	0		
SR	State-reporting (failed to notify pressure <20psi)						7	7
Subtotal			0	0	**0**	**0**	**7**	**7**
Totals			**25**	**13[4]**	**29**	**15[4]**	**267**	**124[4]**

[1] Values are in milligrams per liter (mg/l), unless otherwise specified.

[2] Monitoring violations for Volatile Organic Chemicals, Synthetic Organic Chemicals, Inorganic Chemicals, Disinfection Byproducts,and Long Term 2 Enhanced Surface Water Treatment Rule (LT2) are issued as a single violation for the suite of contaminants, not as violations for each of the regulated contaminants.

[3] The coliform maximum contaminant level (MCL) is based on presence or absence of total coliforms in a sample, rather than coliform density. For total coliforms: if a public water system collects at least 40 samples per month, the MCL is exceeded when more than 5% of samples collected during the month are total coliform positive; if a public water system collects fewer than 40 samples per month, the MCL is exceeded if more than one sample is total coliform positive. For E. coli, the MCL is exceeded when a single E. coli positive sample is confirmed by a consecutive total coliform positive or E. coli positive sample.

[4] The subtotal and total number of public water systems with violations is not necessarily the sum of the number of public water systems within each rule category. This is because each public water system might have more than one violation within each rule category.

Appendix F: Compliance Data for Licensed Aquatic Venues

Figure 1: 2021 Total, Water Quality Samples (Bacteria, Free Residual Chlorine, pH level), Swimming Pools and Therapy Pools, collected by RIDOH

Swimming Pools		Therapy Pools	
Indoor	Outdoor	Indoor	Outdoor
234	296	50	0

Figure 2: 2021 Swimming and Therapy Pools Violations, By Violation Type

Bacterial Violations				Chlorine Violations				pH Violations			
Swimming Pools		Therapy Pools		Swimming Pools		Therapy Pools		Swimming Pools		Therapy Pools	
Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
2	4	1	0	10	0	2	0	1	0	4	0

Staff Acknowledgments

This list reflects staff names and titles/roles as of December 31, 2021.

Seema Dixit – Director, Division of Environmental Health
Mary Barbar Askar – Data Management
Brenda Cheaye – Operator Certification, Capacity Development
Barbara (Hui) Chen – Engineering Plan Review, SWTR and DBPR Assistance, Cross-Connection Control, Licensed Aquatic Venues, Private Wells Program Oversight, Bottled Water Program Oversight
Grace Clancy – Administrative Officer
Linda Correia – Data Management
Sonia Frias – Licensed Aquatic Venues, Bottled Water Licensing/Surveillance, SWTR and DBPR
Sarah Giorgi – Executive Assistant
Andrew Hall – Water System Inspections, Sanitary Surveys, Level 2 Assessments
Garth Hoxsie-Quinn – Sanitary Survey Program, Level 2 Assessments, Public Water System Preparedness, Emergency Planning and Security
Evan Jones – VGB Program Coordinator and Facilitator
Colin Millar – Lead and Copper Rule, Radionuclides, SOC waivers, Compliance and Enforcement, GUDI Rule, Arsenic Rule, Unregulated Contaminant Monitoring Rule
Chrissy Millar – Bacteria/Total Coliform Rule, SOCs, VOCs, IOCs, General sampling requirements, Groundwater Rule
Alicyn Murphy – Operator Certification, Outreach and Training
Shannon Harrower-Nakama - Private Wells, Water Sampler/Interpreter Licensing, Source-Water Protection, HABs
Carlene Newman – Drinking Water State Revolving Loan Fund, Engineering Plan Review
Erin O'Neill – Environmental Scientist, Level 1 Assessments
Amy Parmenter – Chief
Jack Sahlin – Engineering Plan Review
Thomas Tremblay – Water Quality Sampling Data Entry
Bill Walaska, Jr. – Water Quality Sampling
David Zanfagna – Water System Inspections, Sanitary Surveys, Level 2 Assessments