



DELAWARE HEALTH
AND SOCIAL SERVICES
Division of Public Health

**State of Delaware
Public Drinking Water
Annual Compliance
Report and Summary
for 2022**



State of Delaware Public Drinking Water Annual Compliance Report and Summary for 2022

For more information, contact:
Delaware Office of Drinking Water
Division of Public Health
Edgehill Shopping Center
43 South DuPont Hwy.
Dover, DE 19901
Phone: 302-741-8630
Fax: 302-741-8631

<http://www.dhss.delaware.gov/dhss/dph/hsp/odw.html>



DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health
Office of Drinking Water

Acknowledgements

This report is made possible with funding from the U.S. Environmental Protection Agency's (EPA) Public Water System Supervision Grant and the Drinking Water State Revolving Fund Grant, with strategic leadership and guidance provided by the EPA.

This report was prepared by the Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water.

Contents

Executive Summary3

State Public Drinking Water Summary, 20225

Summary of Violations for Regulated Analytes, Delaware, 2022..... 11

2022 Enforcement Actions 16

Program Operation 17

Systems Out of Compliance..... 20

Conclusion 27

Executive Summary

The State of Delaware Public Drinking Water Annual Compliance Report and Summary for 2022 covers the period of January 1 to December 31, 2022. It is provided by the Delaware Department of Health and Social Services, Division of Public Health (DPH), Office of Drinking Water (ODW) to the U.S. Environmental Protection Agency (EPA). Submission of this annual report is an EPA requirement.

Water systems in Delaware must provide safe drinking water to the public in accordance with the Safe Drinking Water Act (SDWA). *The State of Delaware Public Drinking Water Annual Compliance Report and Summary for 2022* provides a descriptive overview of all public water systems in Delaware and their compliance status. This document can serve as a quick reference to determine if public water systems are compliant with state and federal regulations.

Delaware residents get their drinking water from either groundwater or surface water sources, depending on where they live. About two-thirds of Delaware households are connected to public water systems that use groundwater sources; the remaining one-third obtains water from surface water sources. The major sources of groundwater are the Columbia Aquifer, the Cheswold Aquifer, and the Piney Point Aquifer. All surface water plants for Delaware reside in northern New Castle County. The major sources of surface water are the Brandywine River Basin, Christiana River Basin, Red Clay Creek, and White Clay Creek.

Drinking water sources

Community Water System (CWS): A public water system that serves at least 15 service connections used by year-round residents, or regularly serves at least 25 year-round residents. Examples are municipalities and public water utilities.

Non-Transient Non-Community Water System (NTNCWS): A public water system other than a community water system that regularly serves at least 25 of the same persons over six months per year. Examples are schools, daycares, and factories.

Transient Non-Community Water System (TNCWS): A public water system with at least 15 service connections or that regularly serves an average of at least 25 individuals daily at least 60 days of the year. Examples are restaurants, parks, and rest stops.

Surface Water: All water that is open to the atmosphere and subject to surface runoff. Examples are the Brandywine River Basin, Red Clay Creek, and White Clay Creek.

Groundwater: All water held underground in the soil or pores and crevices in rocks. Examples are the Columbia Aquifer, the Cheswold Aquifer, and the Piney Point Aquifer.

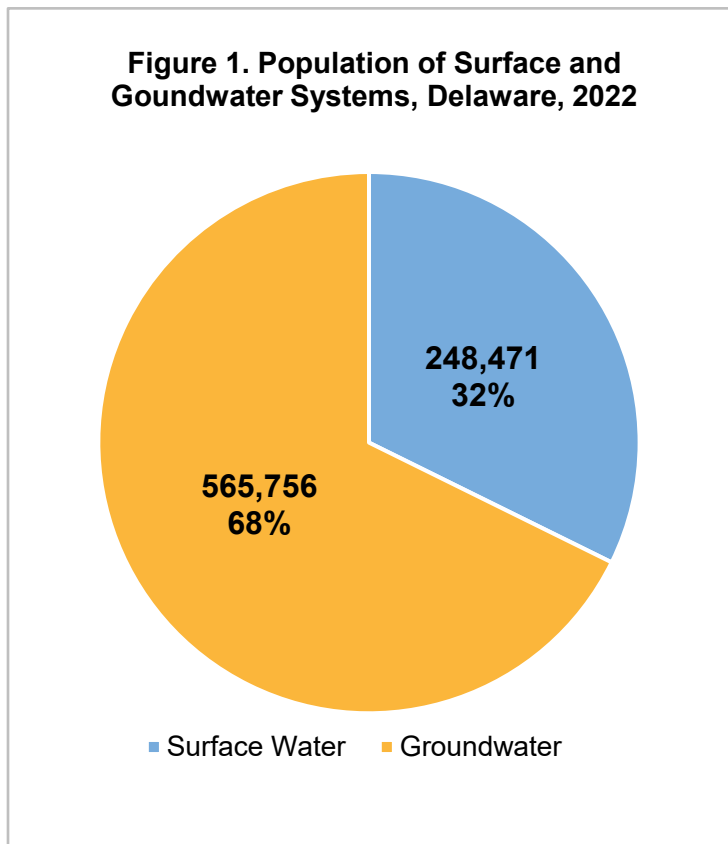
Due to Delaware’s small size, DPH monitors most public water systems. A few large water systems conduct their own monitoring and report the results to ODW. Since monitoring requirements increased in recent years, ODW requires community water systems (CWSs) serving more than 1,000 people to collect their own total coliform, nitrate, and monthly fluoride compliance samples. These CWSs must submit those samples to the Delaware Public Health Laboratory (DPHL) or a certified private laboratory for analysis, and then submit results to ODW. Additionally, all CWSs and the NTNCWSs are required to collect samples for compliance with Lead and Copper Rule standards. The samples are analyzed by a certified laboratory and the results are submitted to ODW. TNCWSs are not required to conduct lead and copper monitoring.

ODW performs two types of assessments related to bacteriological testing: Level 1 Assessments (a study of the water system after total coliform bacteria have been detected in the water system) and Level 2 Assessments (a detailed study of the water system after an *E. coli* Maximum Contaminant Level (MCL) violation, and/or multiple occasions when total coliform bacteria have been found in the water system).

In 2022, ODW completed 20 Level 1 Assessments and seven Level 2 Assessments, a slight decrease from 2021 (23 and 13, respectively). The decrease is primarily due to consistent enforcement of the Revised Total Coliform Rule.

The total number of monitoring and reporting violations under the Lead and Copper Rule (LCR) decreased from four in 2021 to three in 2022. The decrease in violations is due to enforcement and reminding systems of upcoming sampling deadlines and other LCR requirements.

There were three action level exceedances for lead and copper in 2022, the same as in 2021. ODW is working with all three systems to return to, and remain in, compliance.



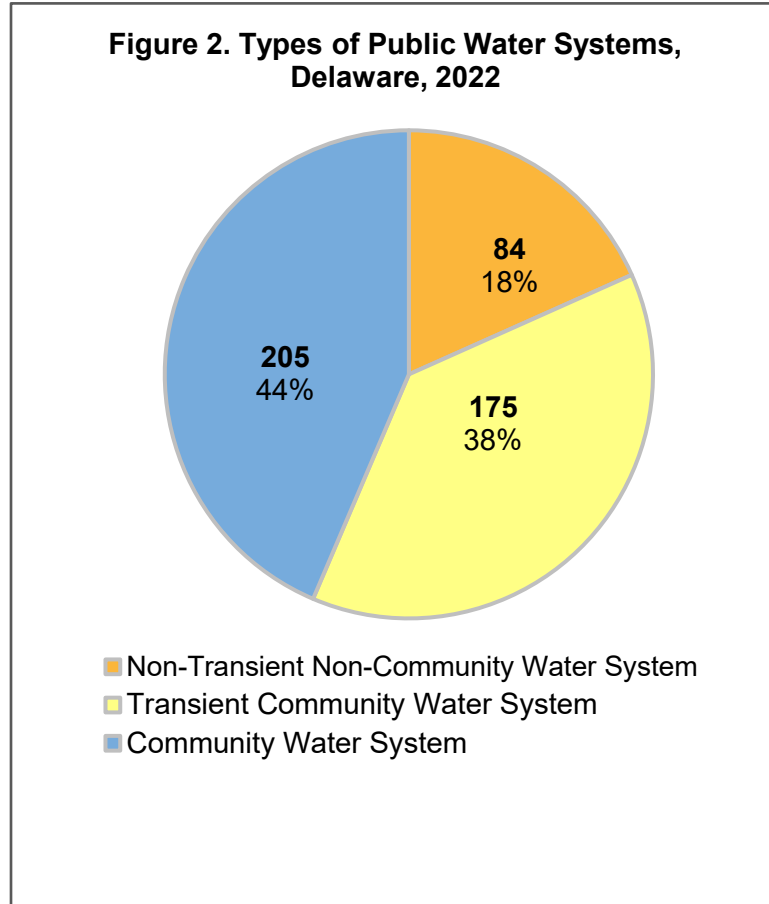
Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022.

The U.S. Congress passed the SDWA in 1974. The EPA established the Public Water System Supervision (PWSS) program under the authority of the SDWA to regulate drinking water provided by public water systems. Under the SDWA and its 1986 and 1996 amendments, the EPA set national limits on drinking water contaminant levels to ensure that water is safe for

human consumption. These limits are known as Maximum Contaminant Levels. When there is no reliable method that is economically and technically feasible to measure a contaminant at concentrations to indicate there is not a public health concern, EPA sets a “treatment technique” rather than an MCL. The State of Delaware adopted these limits for use in state regulations governing public drinking water systems.

The SDWA allows a state to seek primacy, an EPA approval to administer its own PWSS program. The State of Delaware was granted primacy in April 1978. For Delaware to continue to receive primacy, it must meet certain SDWA requirements, including adopting drinking water regulations that are at least as stringent as the federal regulations. The State must also demonstrate that it can enforce the program requirements. DPH is the entity responsible for monitoring and enforcing drinking water regulations; it does so through ODW.

Figure 2. Types of Public Water Systems, Delaware, 2022



Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022.

ODW staff generated the data in this report. Violation information was obtained from the Safe Drinking Water Information System/State (SDWIS/State) database and the federal operational data system, and includes information reported quarterly to the EPA. This report is available on ODW’s website: <https://www.dhss.delaware.gov/dhss/dph/hsp/odw.html>.

State Public Drinking Water Summary, 2022

This document provides an overview of the state’s public drinking water systems for 2022. Its contents range from general information to violations by contaminant and by water system. For additional information or clarification, contact ODW at 302-741-8630.

Table 1. Population, Delaware, 2022

Population of Delaware	1,018,396
Percentage served by individual wells	20.05%
Percentage served by public water supplies	79.95%
Year primacy granted to state by EPA	1978

Source: Delaware Census, 2022

Table 2. Land Usage, Delaware, 2022

Total land area of Delaware	1,533,500 acres	
Forest/Forested Wetlands	351,000 acres	23%
Agriculture	389,300 acres	25%
Developed	298,500 acres	19%
Wetland/Water/Waterways	302,900 acres	20%
Pastureland/other	167,300 acres	11%
Federal Land	24,500 acres	2%

Source: National Resource Inventory, 2022

Table 3. Public Water Systems, Delaware, 2022

Residents served by public water systems	814,227
Residents served by surface water systems	248,471
Residents served by groundwater systems	565,756
Number of Public Water Systems	465
Community Water Systems	205
Non-transient, Non-Community Water Systems	85
Transient Non-Community Water Systems	175
Number using surface water	3
Number using groundwater	462

Source: Safe Drinking Water Information System/State Version (SDWIS/State), Delaware Department of Health and Social Services, Division of Public Health, 2022

Table 4. Drinking Water Sources, Delaware, 2022

Major Sources of Surface Water
Brandywine River Basin
Christina River Basin
Red Clay/White Clay Creeks
Major Sources of Groundwater
Columbia Aquifer
Cheswold Aquifer
Piney Point Aquifer
Number of gallons of public water used in Delaware each day: 101 mgd ¹

¹ Million Gallons per Day
Source: Delaware Department of Natural Resources and Environmental Control, 2022

Definitions

Filtered Systems: Surface water systems that have installed filtration treatment [[40 CFR 141, Subpart H](#)].

Inorganic Contaminant (IOC): A chemical compound identified in the National Primary Drinking Water Regulations (NPDWR), which may be naturally occurring or a result of human activities and does not contain both carbon and hydrogen. Examples include metals, nitrates, and asbestos. EPA has established MCLs for 15 inorganic contaminants [[40 CFR 141.62](#)].

Lead and Copper Rule: This rule established national limits on lead and copper in public drinking water [[40 CFR 141.80-91](#)]. Lead and copper enter the drinking water from household pipes and plumbing fixtures. Lead can pose various health risks when ingested at any level, while copper ingestion can pose health risks at elevated levels. States report violations of the LCR in the following five categories:

1. *Initial lead and copper tap monitoring/reporting:* A violation in which a system did not meet initial lead and copper testing requirements or failed to report the results of those tests to the state.
2. *Follow-up or routine lead and copper tap monitoring/reporting:* A violation in which a system did not meet follow-up or routine lead and copper tap testing requirements or failed to report the results.
3. *Treatment installation:* Violations for a failure to install an optimal corrosion control treatment system or source water treatment system that would reduce lead and copper levels in water at the tap.
4. *Lead service line replacement:* A violation for a system's failure to replace lead service lines on the schedule required by the regulation.
5. *Public education:* A violation in which a system did not provide required public education about reducing or avoiding lead intake from water.

Maximum Contaminant Level (MCL): The legal threshold limit on the amount of a substance that is allowed in public water systems under the SDWA. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. MCLs are defined in milligrams per liter (mg/L; 1 mg/L = 1 part per million) unless otherwise specified.

Monitoring: The EPA specifies which water testing methods public water systems and certified drinking water laboratories must use and sets schedules for the frequency of testing. A public water system that does not follow the EPA's schedule or methodology is in violation [[40 CFR 141](#)].

States must report monitoring violations that are significant as determined by the EPA Administrator in consultation with the states. For the purposes of this report, significant monitoring violations are major violations that occur when compliance sampling is not

Definitions (continued)

conducted or when results are not reported during a compliance period. A major monitoring violation for the Surface Water Treatment Rule occurs when at least 90 percent of the required compliance samples are not taken, or the results are not reported, during the compliance period. See Enforcement Actions for more enforcement actions, including administrative orders and penalties, that may be taken for continued non-compliance.

Organic Contaminant: A chemical compound identified in the NPDWR, which contains both carbon and hydrogen and originates from human activities. EPA has established MCLs for 54 organic contaminants [\[40 CFR 141.61\]](#).

Public Notification: When a public water system issues a public notice and notifies the Division of Public Health that the notice was delivered.

Radionuclides: Radioactive particles that can occur naturally in water or result from human activity. EPA has set legal limits on five types of radionuclides: radium-226, radium-228, gross alpha particles, beta particles and proton emitters, and uranium [\[40 CFR 141\]](#). Violations for these contaminants are reported using the following four categories:

1. *Gross alpha particles:* A violation for alpha radiation above the MCL of 15 picocuries/liter. Alpha particles include radium-226 but excludes radon and uranium.
2. *Combined radium-226 and radium-228:* A violation for combined radiation from these two isotopes above the MCL of 5 pCi/L.
3. *Beta particles and photon emitters:* A violation for beta particle and photon radiation from the decay of natural and man-made deposits of certain radioactive minerals above 4 millirem/year.
4. *Uranium:* A violation for uranium is above 30 micrograms/liter ($\mu\text{g/L}$; 1 $\mu\text{g/L}$ = 1 part per billion).

Reporting Period: The reporting period for information to be included in this report is from January 1, 2022, through December 31, 2022.

Revised Total Coliform Rule (RTCR): Establishes a MCL for *E. coli* and uses the presence of *E. coli* and total coliform bacteria to initiate a “find and fix” approach to address fecal contamination that could enter the distribution system. It requires public water systems to perform assessments to identify sanitary defects and subsequently take action to correct them:

Definitions (continued)

- **Level 1 Assessment:** A Level 1 Assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria were detected in the water system. For systems collecting fewer than 40 samples per month, more than one positive sample for total coliform triggers an assessment. For systems collecting 40 or more samples per month, more than five percent of the samples positive for total coliform triggers a Level 1 Assessment.
- **Level 2 Assessment:** A Level 2 Assessment is a detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria were found in the water system on multiple occasions. Level 2 Assessments are conducted when a water system detects *E. coli* in its water, or if the system triggers two Level 1 Assessments in a rolling 12-month period.

Four classifications of violations are issued under the purview of the RTCR:

- ***E. coli* MCL Violation:** Issued when the presence of *E. coli* is confirmed.
- **Treatment Technique (TT) Violation:** Issued when a water system fails to conduct a required process intended to reduce the level of a contaminant in drinking water. Non-compliance is based on the failure to take any of the following actions:
 - Failure To conduct a Level 1 or Level 2 Assessment within 30 days of learning of the Assessment trigger
 - Failure to correct sanitary defects from a Level 1 or Level 2 Assessment within 30 days of learning of the Assessment trigger
 - Failure of a seasonal water system to complete the state-approved start-up procedure prior to serving water to the public.
- **Monitoring Violations:** Issued to a system that fails to conduct routine or repeat monitoring, including:
 - Failure to take routine total coliform sample(s)
 - Failure to analyze for *E. coli* following a total coliform positive sample.
- **Reporting Violations:** Issued to a system that fails to report routine or repeat monitoring results, including:
 - Failure to submit a monitoring report
 - Failure to submit a completed Level 1 or Level 2 Assessment form within 30 days of learning of the Assessment trigger

Definitions *(continued)*

- Failure to notify ODW by the end of the next business day following an *E. coli*-positive sample or *E. coli* MCL violation
- Failure for a seasonal water system to submit a certification of completion for ODW-approved seasonal start-up procedure prior to serving water to the public.

Surface Water Treatment Rule: Establishes criteria under which water systems supplied by surface water sources or groundwater sources under the direct influence of surface water must filter and disinfect their water [[40 CFR 141, Subpart H](#)]. Violations of the Surface Water Treatment Rule are to be reported for the following four categories:

1. *Monitoring, routine/repeat (for filtered systems):* A violation for a system's failure to carry out required tests, or to report the results of those tests.
2. *Treatment techniques (for filtered systems):* A violation for a system's failure to properly treat its water.
3. *Monitoring, routine/repeat (for unfiltered systems):* A violation for a system's failure to carry out required water tests, or to report the results of those tests.
4. *Failure to filter (for unfiltered systems):* A violation for a system's failure to properly treat its water. EPA will supply data for this violation code to the states.

Treatment Technique: An enforceable procedure or level of technological performance which public water systems must follow to ensure control of a contaminant.

Unfiltered Systems: Surface water systems that do not need to filter their water before disinfecting it because the source is very clean [[40 CFR, Subpart H](#)]. There are no unfiltered surface water systems in Delaware.

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

Table 5. Summary of Violations for Regulated Analytes, Delaware, 2022

	(MCL ¹) (mg/L) ²	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Organic Contaminants							
1,1,1-Trichloroethane	0.2	0	0	N/A	N/A	0	0
1,1,2-Trichloroethane	0.005	0	0	N/A	N/A	0	0
1,1-Dichloroethylene	0.007	0	0	N/A	N/A	0	0
1,2,4-Trichlorobenzene	0.07	0	0	N/A	N/A	0	0
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	0	0	N/A	N/A	0	0
1,2-Dichloroethane	0.005	0	0	N/A	N/A	0	0
1,2-Dichloropropane	0.005	0	0	N/A	N/A	0	0
2,3,7,8-TCDD (Dioxin)	3x10 ⁻⁸	0	0	N/A	N/A	0	0
2,4,5-TP	0.05	0	0	N/A	N/A	0	0
2,4-D	0.07	0	0	N/A	N/A	0	0
Acrylamide	N/A	N/A	N/A	0	0	N/A	N/A
Alachlor	0.002	0	0	N/A	N/A	0	0
Atrazine	0.003	0	0	N/A	N/A	0	0
Benzene	0.005	0	0	N/A	N/A	0	0
Benzo[a]pyrene	0.0002	0	0	N/A	N/A	0	0
Carbofuran	0.04	0	0	N/A	N/A	0	0
Carbon tetrachloride	0.005	0	0	N/A	N/A	0	0
Chlordane	0.002	0	0	N/A	N/A	0	0
cis-1,2-Dichloroethylene	0.07	0	0	N/A	N/A	0	0
Dalapon	0.2	0	0	N/A	N/A	0	0
Di(2-ethylhexyl) adipate	0.4	0	0	N/A	N/A	0	0
Di (2-ethylhexyl) phthalate	0.006	0	0	N/A	N/A	0	0
Dichloromethane	0.005	0	0	N/A	N/A	0	0
Dinoseb	0.007	0	0	N/A	N/A	0	0
Diquat	0.02	0	0	N/A	N/A	0	0
Endothall	0.1	0	0	N/A	N/A	0	0
Endrin	0.002	0	0	N/A	N/A	0	0
Epichlorohydrin	N/A	N/A	N/A	0	0	N/A	N/A

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² Values are in milligrams per liter (mg/L), unless otherwise specified.

Table 5. Summary of Violations for Regulated Analytes, Delaware, 2022 (continued)

	MCL ¹ (mg/L) ²	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Organic Contaminants							
Ethylbenzene	0.7	0	0	N/A	N/A	0	0
Ethylene dibromide	0.00005	0	0	N/A	N/A	0	0
Glyphosate	0.7	0	0	N/A	N/A	0	0
Heptachlor	0.0004	0	0	N/A	N/A	0	0
Heptachlor epoxide	0.0002	0	0	N/A	N/A	0	0
Hexachlorobenzene	0.001	0	0	N/A	N/A	0	0
Hexachlorocyclopentadiene	0.05	0	0	N/A	N/A	0	0
Lindane	0.0002	0	0	N/A	N/A	0	0
Methoxychlor	0.04	0	0	N/A	N/A	0	0
Methyl tert-Butyl Ether (MTBE)	0.01	0	0	N/A	N/A	0	0
Monochlorobenzene	0.1	0	0	N/A	N/A	0	0
o-Dichlorobenzene	0.6	0	0	N/A	N/A	0	0
Oxamyl (Vydate)	0.2	0	0	N/A	N/A	0	0
para-Dichlorobenzene	0.075	0	0	N/A	N/A	0	0
Pentachlorophenol	0.001	0	0	N/A	N/A	0	0
Picloram	0.5	0	0	N/A	N/A	0	0
Simazine	0.004	0	0	N/A	N/A	0	0
Styrene	0.1	0	0	N/A	N/A	0	0
Tetrachloroethylene	0.005	0	0	N/A	N/A	0	0
Toluene	1	0	0	N/A	N/A	0	0
Total polychlorinated biphenyls (PCBs)	0.0005	0	0	N/A	N/A	0	0
Toxaphene	0.003	0	0	N/A	N/A	0	0
trans-1,2-Dichloroethylene	0.1	0	0	N/A	N/A	0	0
Trichloroethylene	0.005	0	0	N/A	N/A	0	0
Vinyl chloride	0.002	0	0	N/A	N/A	0	0
Xylenes (total)	10	0	0	N/A	N/A	0	0
Subtotal		0	0	N/A	N/A	0	0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² Values are in milligrams per liter (mg/L), unless otherwise specified.

Table 5. Summary of Violations for Regulated Analytes, Delaware, 2022 (continued)

	MCL ¹ (mg/L) ²	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Disinfection Byproducts							
Total trihalomethanes	0.08	0	0	N/A	N/A	0	0
Haloacetic Acid 5	0.06	0	0	N/A	N/A	0	0
Maximum Residual Disinfection Level	4.0	0	0	N/A	N/A	0	0
Subtotal		0	0	N/A	N/A	0	0
Inorganic Contaminants							
Antimony	0.006	0	0	N/A	N/A	0	0
Arsenic	0.05	0	0	N/A	N/A	0	0
Asbestos	7 million fibers/L, with fiber length >10 microns	0	0	N/A	N/A	0	0
Barium	2	0	0	N/A	N/A	0	0
Beryllium	0.004	0	0	N/A	N/A	0	0
Cadmium	0.005	0	0	N/A	N/A	0	0
Chromium	0.1	0	0	N/A	N/A	0	0
Cyanide (as free cyanide)	0.2	0	0	N/A	N/A	0	0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² Values are in milligrams per liter (mg/L), unless otherwise specified.

Table 5. Summary of Violations for Regulated Analytes, Delaware, 2022 (continued)

Inorganic MCLs							
	MCL¹ (mg/L)²	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Fluoride	2.0	0	0	N/A	N/A	0	0
Mercury	0.002	0	0	N/A	N/A	0	0
Nitrate	10 (as Nitrogen)	14	8	N/A	N/A	0	0
Nitrite	1 (as Nitrogen)	0	0	N/A	N/A	0	0
Selenium	0.05	0	0	N/A	N/A	0	0
Thallium	0.002	0	0	N/A	N/A	0	0
Total nitrate and nitrite	10 (as Nitrogen)	0	0	N/A	N/A	0	0
Subtotal		14	8	N/A	N/A	0	0
Radionuclide MCLs							
Gross alpha	15 pCi/l	0	0	N/A	N/A	0	0
Radium-226 and radium-228	5 pCi/l	0	0	N/A	N/A	0	0
Gross beta	4 mrem/yr	0	0	N/A	N/A	0	0
Subtotal		0	0	N/A	N/A	0	0
Revised Total Coliform Rule							
Acute MCL violation	Presence with <i>E. coli</i>	3	3	N/A	N/A	0	0
Level 1 Assessment	Presence	20	20	N/A	N/A	0	0
Level 2 Assessment	Presence w/ <i>E. coli</i>	7	7	N/A	N/A	0	0
Sanitary survey	N/A	N/A	N/A	N/A	N/A	0	0
Subtotal		27	27	N/A	N/A	0	0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² Values are in milligrams per liter (mg/L), unless otherwise specified.

Table 5. Summary of Violations for Regulated Analytes, Delaware, 2022 (continued)

	MCL ¹ (mg/L) ²	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Surface Water Treatment Rule							
Filtered systems	N/A	N/A	N/A	0	0	N/A	N/A
Monitoring, routine/repeat	N/A	N/A	N/A	N/A	N/A	0	0
Treatment techniques	N/A	N/A	N/A	0	0	N/A	N/A
Turbidity	N/A	N/A	N/A	N/A	N/A	0	0
Monitoring, routine/repeat	N/A	N/A	N/A	N/A	N/A	0	0
Failure to filter	N/A	N/A	N/A	0	0	N/A	N/A
Subtotal	N/A	N/A	N/A	0	0	0	0
Lead and Copper Rule							
	Action Level (mg/L)	Exceedance	Systems with Exceedance	Violations	Systems with violations	Violations	Systems with Violations
Initial lead and copper tap M/R	N/A	0	0	N/A	N/A	0	0
Follow-up or routine lead and copper tap M/R	N/A	3	3	N/A	N/A	3	3
Treatment installation	N/A	0	0	0	0	N/A	N/A
Public education	N/A	N/A	N/A	0	0	N/A	N/A
Subtotal	N/A	3	3	0	0	3	3
Public Notification							
Public Notification		Violations		N/A	Systems with Violations		
Consumer Confidence Reports Violations		24		N/A	24		
Public Notification		0		N/A	0		
Ground Water Rule		2		N/A	2		
Subtotal		26		N/A	26		

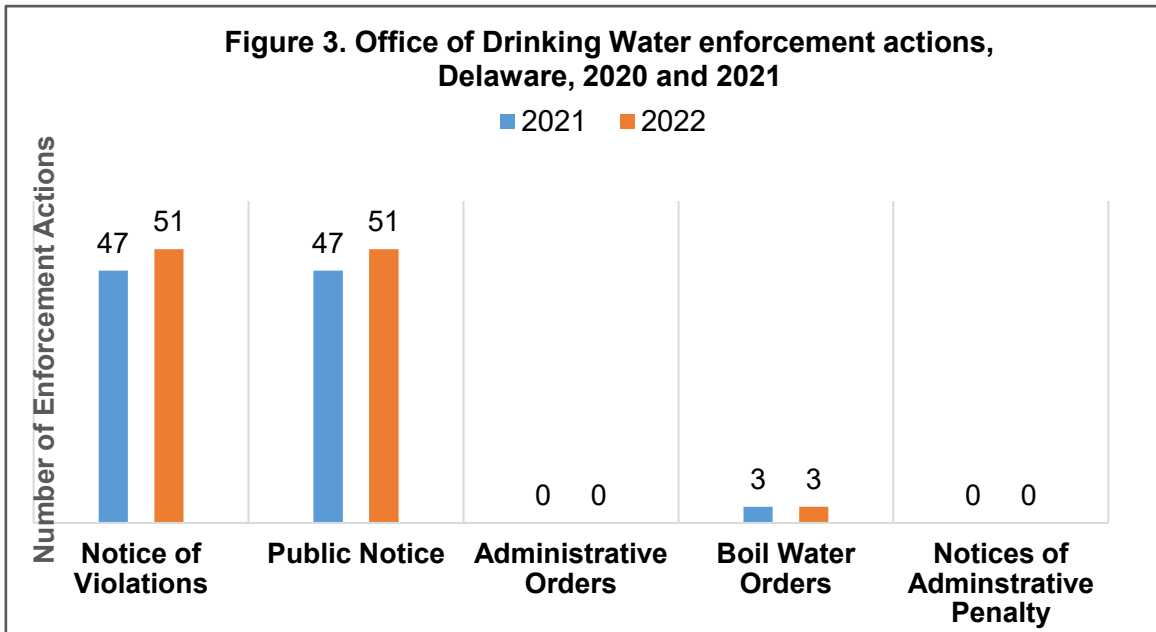
Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² Values are in milligrams per liter (mg/L), unless otherwise specified.

2022 Enforcement Actions

ODW takes enforcement actions when a public water system violates a MCL or treatment technique (TT), as specified in *State of Delaware Regulations Governing Public Drinking Water Systems*; or if a system fails to properly monitor and/or report a particular contaminant. DPH issued 51 Notice of Violations in 2022, compared to 47 in 2021. DPH issued no Administrative Orders or Notices of Administrative Penalty in 2022. (Figure 3.)



Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Issuing a Notice of Violation (NOV) is the first action taken. This notifies the owner/operator of a public water system that there was a violation. The next action is for the owner/operator to issue a public notice (PN). The owner/operator is required to mail, hand deliver, or post the PN in a conspicuous place. The PN informs consumers of the water that there was a violation, what the violation was, possible related health effects, preventive measures the consumer can take until the violation is corrected, what the public water system is doing to correct the violation, and when the public water system anticipates its return to compliance. A water system issues a boil water notice when they violate the *E. coli* MCL. This requires immediate notice (within 24 hours of being notified of the violation) to all consumers and includes instructions for what actions to take to make their water safe for consumption, or if they should use an alternate source such as bottled water.

The Revised Total Coliform Rule requires Level 1 or Level 2 Assessments to be performed on public water systems with the presence of Total Coliform or *E. coli*. The purpose of a Level 1 Assessment is to determine a likely cause of contamination. A Level 2 Assessment is performed whenever *E. coli* is detected, or when the system has had two Level 1 Assessments in a rolling 12-month period. A Level 2 Assessment is an in-depth inspection of the water system to determine the likely source of contamination.

Additional enforcement actions can be used when a water system repeatedly violates a MCL or when a history of violations is present. The issuance of an Administrative Order (AO) can mandate the installation of treatment or the abandonment of a well for persistent violations. A bilateral compliance agreement (BCA) can also be issued. A BCA is a written contract between the system and ODW in which the violations, corrective steps, and the deadline for completing the work are established in writing and are enforceable.

If a public water system fails to correct a violation or continues to be unresponsive to DPH requirements, an AO with or without penalty may be issued. The penalty can range from \$100 per day to \$10,000 per day, per violation.

Program Operation

ODW uses an Oracle®-based system to inventory water supplies, record sampling results, and track compliance with monitoring and MCL requirements. The SDWIS/State database includes information about public water system facilities, water sources, treatments used, and sampling results. Information from SDWIS/State is reported to EPA quarterly.

ODW provides many services to consumers and public water systems. Funding comes from both state and federal monies allotted to Delaware's public drinking water program. ODW and DPHL use these funds to provide services for the drinking water program, including sample collection and analysis, technical assistance, and operator certification.

Table 6. Budget Information (Public Water System Supervision Grant), Delaware Office of Drinking Water, Fiscal Year 2022

Total Budget	\$1,132,338
Federal Budget	\$586,000
State Budget	\$546,338
Number of Staff	13.35

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

To ensure that Delaware's drinking water meets or exceeds SDWA requirements, ODW and DPH's Office of Engineering reviews and approves plans for new or existing water treatment systems and/or new or upgraded distribution systems. ODW staff also inspects water systems, provides technical assistance, responds to emergencies, makes compliance determinations based on monitoring results, and takes enforcement actions when necessary. DPHL performs water analyses for water quality parameters as outlined in the SDWA. ODW also contracts with private laboratories to analyze some regulated parameters.

Table 7. Operations of the Delaware Office of Drinking Water, 2022

Inspections	151
Plan Reviews	227

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

ODW provides system operation training to water system operators and owners that includes compliance with rules and regulations. Additionally, DPH contracts with the Environmental Training Center at Delaware Technical Community College (DTCC) and the Delaware Rural Water Association to provide training and technical assistance to water system operators.

Table 8. Water Operator Certification, Delaware, 2022

Number of Certified Operators	443
Number of Approved Sampler/Testers	119

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

DPH requires individuals collecting compliance samples or conducting daily monitoring of a public water system to be a licensed operator or certified as an approved sampler/tester. This requirement helps to ensure the integrity of the sampling.

Table 9. Compliance Highlights, Public Water Systems, Delaware, 2021 and 2022

Compliance Area	Samples Collected	Systems in Compliance	Percentage of Population Served by Compliant Systems	Percentage of Water Systems Served by Compliant Systems	Systems not in Compliance	
					2021	2022
Bacteriological	9,727	465	100%	100%	0	0
Bacteriological, Acute (<i>E. coli</i>)	9,727	462	99.9%	99.4%	3	3
Surface Water Treatment Rule ¹	N/A	3	100%	100%	0	0
Nitrates	1984	452	99.6%	97.2%	10	13
Fluoride	2302	465	100 %	100 %	0	0
Inorganic (IOC) Excluding Nitrate and Fluoride	2,180	465	100%	100%	0	0
Volatile Organic Chemicals (VOC)	40	465	100%	100%	0	0
Synthetic Organic Chemicals (SOC)	486	465	100%	100%	0	0
Lead and Copper	1,099	462	99.8%	99.3%	3	3
Lead and Copper/M&R Violations	N/A	462	99.9%	99.3%	4	3
Consumer Confidence Rule – Failure to Report	N/A	442	98.8%	95.0%	9	23
Consumer Confidence Rule – Inadequate Report	N/A	465	100%	100%	1	0
Disinfection Byproducts (DBPs)	904	465	100%	100%	0	0
Radiological	486	465	100%	100%	1	0
Ground Water Rule	N/A	465	100%	100%	0	0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022
¹ Systems with no action level exceedance.

Systems Out of Compliance

Table 10. Level 1 Assessments, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population Served
Ashland Nature Center System #1	Hockessin	200
Bavarian Bakery and Deli	Camden-Wyoming	100
Bayshore Mobile Home Park	Ocean View	533
Children's Secret Garden	Dover	60
Crossroad Christian Church Academy	Dover	68
Crosswinds MHP, LLC	Lincoln	210
Dover Skating Center	Camden-Wyoming	500
Fieldstone Golf Club	Greenville	124
Fish Hook Mobile Home Park	Georgetown	72
Flying Dutchman Mobile Home Park 1	Felton	30
Flying Dutchman Mobile Home Park 3	Felton	81
Holly Lake Campsites System 3	Millsboro	900
Momma G Soul Food & Jamaican Restaurant	Cheswold	25
Rookery South	Milford	222
Sand Hill Mobile Home Park	Georgetown	90
Serenity Manor Estates	Canterbury	110
Shawnee Country Store	Milford	60
Shells Learning Center III	Harrington	83
Summit Aviation	Middletown	50
Teal Point (tui)	Milton	117
Level 1 Assessment Totals		
Number of Assessments		20
Number of Systems Affected		20
Number of Repeat Violators		0
Total Population at Risk		3,635

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 11. Level 2 Assessments, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population Served
Ashland Nature Center System #1	Hockessin	200
Country Rest Home	Greenwood	65
Fieldstone Golf Club	Greenville	124
Lakeside Home LLC	Seaford	32
Lynch Heights Fuel Corp	Milford	100
Momma G Soul Food & Jamaican Restaurant	Cheswold	25
Slaughter Beach PWS	Slaughter Beach	978
Level 2 Assessment Totals		
Number of Assessments		7
Number of Systems Affected		7
Number of Repeat Violators		0
Total Population at Risk		1,524

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 12. Nitrate Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population Served	Return to Compliance Date
Cherry Creek Valley - June	Dewey Beach	78	N/A
Cherry Creek Valley - September	Dewey Beach	78	N/A
Cherry Creek Valley - November	Dewey Beach	78	N/A
Delaware Beaches Jellystone Park - May	Lincoln	412	N/A
Delaware Beaches Jellystone Park - September	Lincoln	412	N/A
Lighthouse Point and Community Center	Millsboro	36	February 22, 2022
Meding And Sons - May	Milford	515	March 31, 2023
Meding And Sons - October	Milford	515	March 31, 2023
Pine Haven MHP And Campsites - May	Lincoln	267	N/A
Pine Haven MHP And Campsites - October	Lincoln	267	N/A
Shell We Bounce	Lewes	88	July 20, 2022
Shore Stop #256 Milford	Milford	150	July 13, 2022
Shore Stop #270 Milton - March	Milton	25	July 13, 2022
Shore Stop #270 Milton - April	Milton	25	July 13, 2022
Nitrate Violation Totals			
Number of Violations		14	
Number of Systems Affected		8	
Number of Repeat Violators		5	
Total Population at Risk		1,571	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 13. Radiological Compounds Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population Served	Contaminant	MCL ¹ in pCi/L ²	Level Found in pCi/L	Return to Compliance Date
None	N/A	N/A	N/A	N/A	N/A
Radiological Compounds Violation Totals					
Number of Violations			0		
Number of Systems Affected			0		
Number of Repeat Violators			0		
Total Population at Risk			0		

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² pCi/L means picocuries per liter

Table 14. Inorganic/Volatile/Synthetic Organic Compound Rule (IOC/VOC/SOC) Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population Served	Contaminant	MCL ¹ in mg/L ²	Level Found in mg/L
None	N/A	N/A	N/A	N/A
IOC/VOC/SOC Rule Violation Totals				
Number of Violations			0	
Number of Systems Affected			0	
Number of Repeat Violators (Systems)			0	
Total Population at Risk			0	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² mg/L means milligrams per liter

Table 15. Disinfection Byproducts Rule (DPB) Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population Served	Contaminant	MCL ¹ in mg/L ²	Level Found in mg/L
None	N/A	N/A	N/A	N/A	N/A
Disinfection Byproducts Rule Violation Totals					
Number of Violations				0	
Number of Systems Affected				0	
Number of Repeat Violators				0	
Total Population at Risk				0	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ MCL means Maximum Contaminant Level

² mg/L means milligrams per liter

Table 16. Maximum Residual Disinfection Level (MRDL) Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population Served	Contaminant	MRDL ¹ in mg/L ²	Level Found in mg/L
None	N/A	N/A	N/A	N/A
Maximum Residual Disinfection Level Violation Totals				
Number of Violations			0	
Number of Systems Affected			0	
Number of Repeat Violators			0	
Total Population at Risk			0	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022.

¹ MRDL means Maximum Residual Disinfectant Level

² mg/L means milligrams per liter

Table 17. Ground Water Rule Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population	Return to Compliance Date
Blades, Town Of	1,200	04/20/2022
Stage Village MHC	93	12/09/2022
Ground Water Rule Violation Totals		
Number of Violations		2
Number of Systems Affected		2
Number of Repeat Violators		0
Total Population Affected		1,293

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 18. Surface Water Treatment Rule (Turbidity Violation), Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population Served
None	N/A
Surface Water Treatment Rule Violation Totals	
Number of Violations	0
Number of System Affected	0
Number of Repeat Violators	0
Total Population Affected	0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 19. Lead and Copper Rule (LCR) Monitoring Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

Systems that failed to collect the required number of samples including tap samples and/or water quality parameters during any monitoring period in 2022

System Name	City	Population	Return to Compliance Date
Guardian Angels Daycare	Georgetown	35	08/30/2022
Fish Hook Mobile Home Park	Georgetown	72	05/08/2023
Long Neck Village	Millsboro	345	05/08/2023
LCR Monitoring Violation Totals			
Number of Violations		3	
Number of Systems Affected		3	
Number of Repeat Violators		0	
Total Population at Risk		452	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 20. Lead and Cooper Rule (LCR) 90th Percentile Action Level (AL) Exceedances, Delaware, 2022

System Name	City	Population Served	Contaminant	AL in mg/L ¹	90 th percentile in mg/L
Allen Harim Foods Inc.	Harbeson	1,500	Copper	1.3 mg/L	3.88 mg/L
Centreville Layton School System II	Centreville	47	Lead	0.015 mg/L	0.042 mg/L
Centreville Layton School System II	Centreville	47	Copper	1.3 mg/L	2.66 mg/L
Pinnacle Rehabilitation & Health Center	Smyrna	256	Lead	0.015 mg/L	0.0193 mg/L
LCR 90th Percentile Action Level Exceedance Totals					
Number of Exceedances				4	
Number of Systems Affected				3	
Number of Repeat Violators				0	
Total Population At Risk				1,803	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022
¹mg/L means milligrams per liter

Table 21. Failure to have Licensed Operator Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population Served
Lake Forest Estates	Felton	225
Mamie A Warren Center	Smyrna	120
Upcountry Manufactured Home Community	Seaford	65
Failure to have Licensed Operator Violation Totals		
Number of Violations		4
Number of Systems Affected		4
Number of Repeat Violators		0
Total Population Affected		410

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 22. Monitoring Violations, Non-Compliant Public Drinking Water Systems, Delaware 2022¹

Systems that failed to collect the required number of samples during any monitoring period

System Name	Population	Rule
N/A	N/A	N/A
Monitoring Violation Totals		
Total Number of Violations		0
Number of Systems Affected		0
Number of Repeat Violators		0
Total Population Affected		0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

¹ Excluding lead and copper

Table 23. Consumer Confidence Report (CCR) Rule Inadequate Reporting, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	Population served	Return to Compliance Date
N/A	N/A	N/A
CCR Violation Inadequate Reporting Totals		
Number of Violations		0
Number of Systems Affected		0
Number of Repeat Violators		0
Total Population Affected		0

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Table 24. Consumer Confidence Report (CCR) Rule, Failure to Report, Non-Compliant Public Drinking Water Systems, Delaware, 2022

System Name	City	Population served	Return to Compliance Date
Angola Beach Estates	Lewes	1,400	October 31, 2023
Bayshore Mobile Home Park	Ocean View	533	November 1, 2022
Bethany Crest LLC	Millville	115	November 1, 2023
Brumbley's Family Park	Milton	48	January 30, 2023
Cape Windsor Community Association Inc.	Fenwick Island	600	November 1, 2022
Colonial Estates Mobile Home Park	Millsboro	165	August 29, 2022
Countryside Estates	Viola	50	November 1, 2022
County Seat Gardens	Georgetown	297	N/A
Dagsboro Water Department	Dagsboro	900	November 1, 2022
Delaware Correctional Center	Smyrna	2,000	November 1, 2022
Fish Hook Mobile Home Park	Georgetown	72	10/31/2022
Fox Pointe Subdivision	Cheswold	500	November 1, 2022
Greenwood Water Department	Greenwood	973	November 1, 2022
Hilltop Trailer Park	Rising Sun	65	November 1, 2022
Lake Forest Estates	Felton	225	November 1, 2022
Lynch's Mobile Home Park	Milford	32	09/2/2022
Maranatha Court	Lebanon	54	November 1, 2022
Mt. Pleasant Trailer Park	Middletown	117	October 31, 2022
New Market Village	Ellendale	321	October 31, 2022
Shady Acres Mobile Home Park	Laurel	150	October 31, 2022
Stage Village Mobile Home Court	Delmar	93	November 1, 2022
Stockley Center	Georgetown	749	N/A
Sussex Manor Mobile Home Park	Seaford	195	May 9, 2023
Up Country Manufactured Home Community	Seaford	65	October 31, 2022
CCR Violation Failure to Report Violation Totals			
Number of Violations		24	
Number of Systems Affected		24	
Number of Repeat Violators		0	
Total Population Affected		9,719	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2022

Conclusion

ODW, the EPA, other state agencies, and non-governmental organizations work with Delaware's public drinking water systems to ensure compliance with all applicable state and federal drinking water regulations. Together, they ensure that violations are corrected in a timely manner and provide technical assistance as needed. These cooperative efforts ensure that all Delaware residents and visitors receive safe sources of drinking water.

The majority of public water systems in Delaware supplied drinking water that met the requirements of the SDWA in calendar year 2022. Of the state's 1,018,396 residents, 1,960 (0.19 percent) were exposed to health-based contaminants such as *E. coli* and nitrates. This means that 99.81 percent of the residential population in Delaware were served water that meets the SDWA for health-based contaminants, which is above ODW's goal of 95 percent. Of the 465 public water systems, 11 (3.0 percent) had a violation for health-based contaminants. Therefore, 97.6 percent of water systems were in compliance with health base standards, which is slightly under ODW's goal of having 98 percent of water systems in compliance with health base standards. ODW will work with all public water systems to ensure they are maintaining any expected treatment. For systems without treatment, ODW will work with them to ensure they install treatment to bring them back into compliance. Three additional water systems (0.6 percent) reported monitoring and reporting violations; all three were LCR violations. The three systems that had monitoring violations for LCR are on the path to returning to compliance.

Additionally, 24 water system received a violation for failing to submit their Consumer Confidence Reports (CCR) and delivery certification to ODW by July 1, 2021, an increase of 15 compared to only eight in 2021. All but two submitted their CCRs and returned to compliance. ODW is working with these systems.

In 2022, three of the 289 public water systems required to have an operator failed to do so, leading to a 98.96 percent compliance rate. Two of the water systems without a licensed water operator are CWSs and one is a NTNCWS. All three are working toward obtaining a water operator.

For detailed information about Delaware's public water systems, visit EPA's Envirofacts webpage at www.epa.gov/enviro/html/sdwis/sdwis_query.html. Additional information can be found on ODW's website: www.dhss.delaware.gov/dhss/dph/hsp/odw.html. To view water system test results and other Delaware public water system data, visit the Drinking Water Watch website at <https://drinkingwater.dhss.delaware.gov/>. More information is available at this water quality website maintained by the Governor's Office: <http://www.delaware.gov/topics/waterquality/index.shtml>.