DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

State of Delaware Public Drinking Water Annual Compliance Report and Summary for 2023

June 2024

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DELAWARE HEALTH AND SOCIAL SERVICES
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Contents

Executive Summary

The State of Delaware Public Drinking Water Annual Compliance Report and Summary for 2023 covers the period of January 1 to December 31, 2023. 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 2023* 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. Approximately one-fifth of the residence in Delaware get their water from a well on their property. The remaining residence are connected to a public water system. 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.

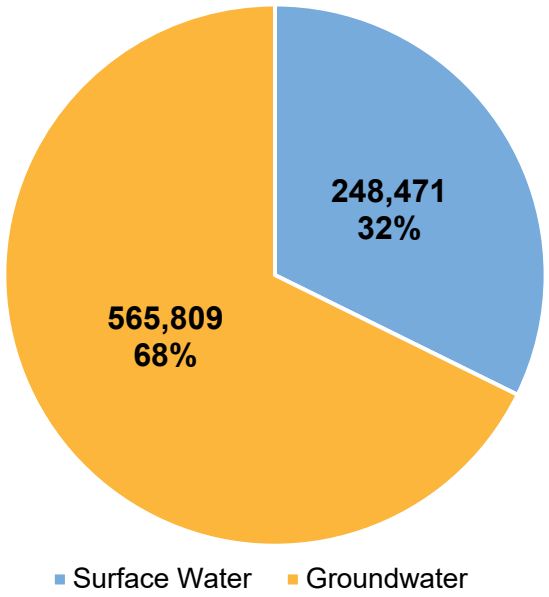
Due to Delaware's small size, DPH monitors most public water systems. The public water systems in Delaware use either groundwater or surface water for their source. In Figure 1, you can see what percentage of Delawareans receive either surface or groundwater. A few large water systems conduct their own 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 2023, ODW completed 18 Level 1 Assessments and three Level 2 Assessments. Level 1 Assessments match what was done in 2022. However, there was a decrease of 10 Level 2 Assessments. The reason for 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) increased from three in 2022 to 11 in 2023. The increase in violations is due to not following up with water systems to ensure they collected their samples. ODW is going to work with systems more and follow up with them in an effort to decrease these numbers.

Figure 1. Population of Surface and Goundwater Systems, Delaware, 2023

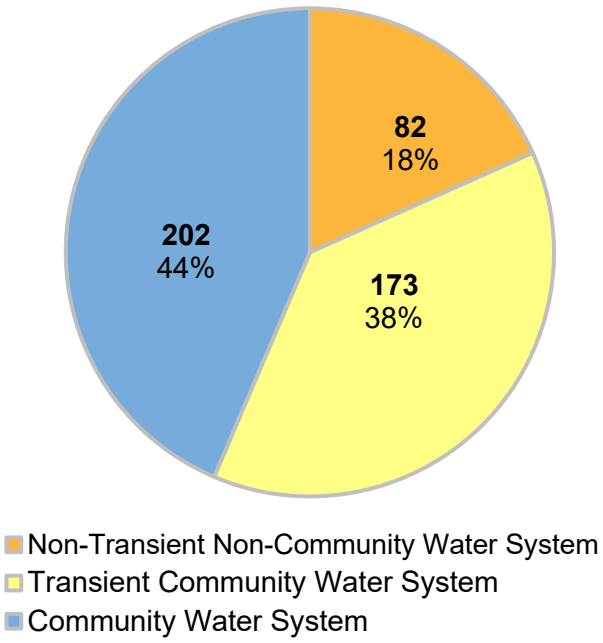


Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023.

There were five action level exceedances for lead and copper in 2023, a slight increase of two from 2022. ODW is working with all these systems to return to, and remain in, compliance.

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.

Figure 2. Types of Public Water Systems, Delaware, 2023



Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023.

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.

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/annrepdw.html

State Public Drinking Water Summary, 2023

This document provides an overview of the state's public drinking water systems for 2023. 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, 2023

Population of Delaware	1,031,890
Percentage served by individual wells	21.1%
Percentage served by public water supplies	78.9%
Year primacy granted to state by EPA	1978

Source: Delaware Census, 2023

Table 2. Land Usage, Delaware, 2023

Land area type of Delaware	Number of acres	% of total
Forest/Forested Wetlands	351,000	23
Agriculture	389,300	25
Developed	298,500	19
Wetland/Water/ Waterways	302,900	20
Pastureland/other	167,300	11
Federal Land	24,500	2
Total	1,533,500	100

Source: National Resource Inventory, 2023

Table 3. Public Water Systems, Delaware, 2023

Residents served by public water systems	814,280
Residents served by surface water systems	248,471
Residents served by groundwater systems	565,809
Number using surface water	3
Number using groundwater	454
Number of Public Water Systems	457
Community Water Systems	202
Non-transient, Non-Community Water Systems	82
Transient Non-Community Water Systems	173

Source: Safe Drinking Water Information System/State Version (SDWIS/State), Delaware Department of Health and Social Services, Division of Public Health, 2023

Table 4. Drinking Water Sources, Delaware, 2023

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, 2023

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% 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 (µg/L; 1 µg/L = 1 part per billion).

Reporting Period: The reporting period for information to be included in this report is from January 1, 2023, through December 31, 2023.

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)*

The two types of assessments are:

- *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 5% 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, 2023

	(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, 2023

[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, 2023 *(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, 2023
[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, 2023 *(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, 2023

[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, 2023 *(continued)*

	MCL[1] (mg/L)[2]	MCLs		Treatment Techniques		Significant Monitoring/Reporting	
		Violations	Systems with Violations	Violations	Systems with Violations	Violations	Systems with Violations
Inorganic MCLs							
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)	13	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		**13**	**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 *E. coli*	2	2	N/A	N/A	0	0
Level 1 Assessment	Presence	18	17	N/A	N/A	0	0
Level 2 Assessment	Presence with *E. coli*	3	3	N/A	N/A	0	0
Sanitary survey	N/A	N/A	N/A	N/A	N/A	0	0
Subtotal		**23**	**22**	**N/A**	**N/A**	**0**	**0**

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

[1] MCL means Maximum Contaminant Level

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

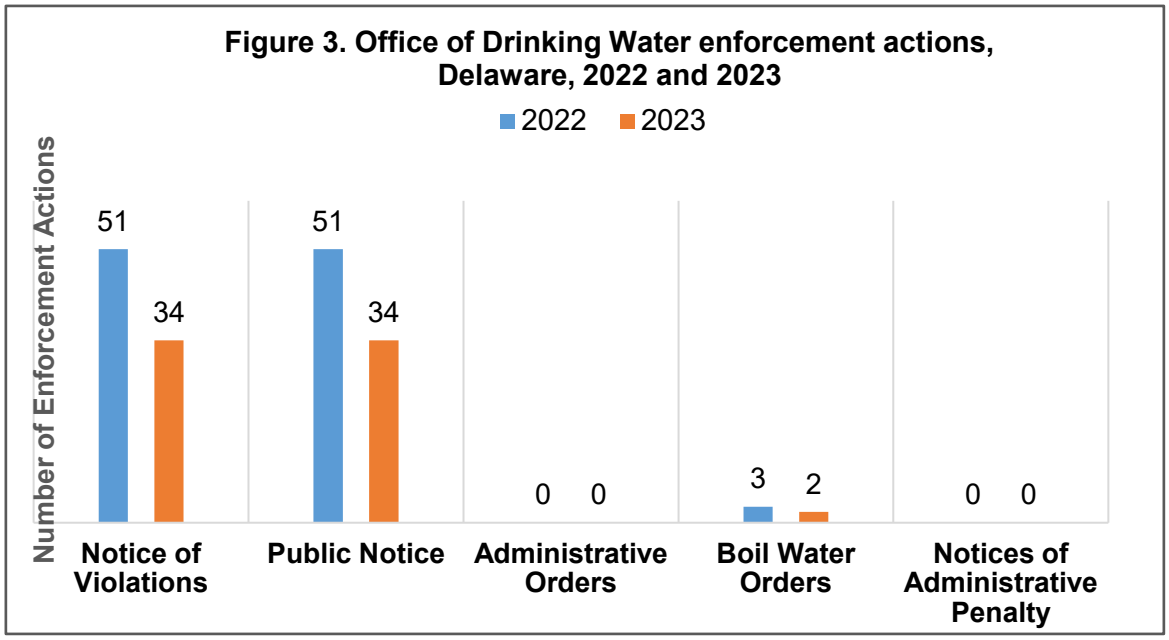
Table 5. Summary of Violations for Regulated Analytes, Delaware, 2023 *(continued)*

	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	5	5	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**	**5**	**5**	**0**	**0**	**3**	**3**
Public Notification	**Violations**		**N/A**	**Systems with Violations**			
Consumer Confidence Reports Violations	5		N/A	5			
Public Notification	0		N/A	0			
Ground Water Rule	2		N/A	2			
Subtotal	**7**		**N/A**	**7**			

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023
[1] MCL means Maximum Contaminant Level
[2] Values are in milligrams per liter (mg/L), unless otherwise specified.

2023 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 34 Notice of Violations in 2023, compared to 51 in 2022. DPH issued no Administrative Orders or Notices of Administrative Penalty in 2023. (Figure 3.)



Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

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 2023

Total Budget	$1,003,593
Federal Budget	$615,000
State Budget	$388,593
Number of Full-time Staff	13.40

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

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, 2023

Inspections	204
Plan Reviews	202

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

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, 2023

Number of Certified Operators	480
Number of Approved Sampler/Testers	130

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

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, 2022 and 2023

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	
					2022	2023
Bacteriological	11,271	457	100	100	0	0
Bacteriological, Acute (*E. coli*)	11271	455	99.9	99.6	3	2
Surface Water Treatment Rule[1]	N/A	3	100	100	0	0
Nitrates	2236	449	99.9	98.2	13	8
Fluoride	2608	457	100	100	0	0
Inorganic (IOC) Excluding Nitrate and Fluoride	2259	456	95.2	99.8	0	1
Volatile Organic Chemicals (VOC)	189	457	100	100	0	0
Synthetic Organic Chemicals (SOC)	110	457	100	100	0	0
Lead and Copper	1241	452	99.7	98.9	3	5
Lead and Copper/ M&R Violations	N/A	446	99.8	97.6	3	11
Consumer Confidence Rule – Failure to Report	N/A	454	99.9	99.3	23	3
Consumer Confidence Rule – Inadequate Report	N/A	455	99.9	99.6	0	2
Disinfection Byproducts (DBPs)	777	457	100	100	0	0
Radiological	206	457	100	100	0	0
Ground Water Rule	N/A	456	99.9	99.8	0	1

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

[1] Systems with no action level exceedance.

Systems Out of Compliance

Table 10. Level 1 Assessments, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Municipality	Population Served
Ashland Nature Center System #1	Hockessin	200
Bayshore Mobile Home Park	Ocean View	533
Boondocks Restaurant	Smyrna	450
Central Christian School	Dover	100
Childrens Secret Garden	Dover	60
Country Center Girl Scout Camp	Hockessin	100
Flying Dutchman Mobile Home Park 2	Felton	30
Hedgerow Hollow Trailer Park	Smyrna	147
Pine Haven Mobile Home Park and Campsites	Lincoln	267
Pine Haven Mobile Home Park and Campsites	Lincoln	267
Sambo's Tavern	Leipsic	212
Serenity Manor Estates	Felton	110
Sports at the Beach System 3	Georgetown	25
Steamboat Landing System 2	Lewes	200
Strimel's Mobile Home Park, LLC	Cheswold	40
Summit Aviation	Middletown	50
Townsend Tavern & Liquor Store	Townsend	50
Willis Auto Mall	Smyrna	65
Level 1 Assessment Totals		
Number of Assessments	18	
Number of Systems Affected	17	
Number of Repeat Violators	1	
Total Population at Risk	2,906	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

Table 11. Level 2 Assessments, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Municipality	Population Served
Country Center Girl Scout Camp	Hockessin	100
Pine Haven Mobile Home Park and Campsites	Lincoln	267
Serenity Manor Estates	Felton	110
Level 2 Assessment Totals		
Number of Assessments	3	
Number of Systems Affected	3	
Number of Repeat Violators	0	
Total Population at Risk	477	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

Table 12. Nitrate Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Municipality	Population Served	Return to Compliance Date
Bethany Crest, LLC	Millville	115	04/08/2024
Cherry Creek Valley	Dewey Beach	78	12/06/2023
Delaware Beaches Jellystone Park	Lincoln	412	Pending*
Delaware Beaches Jellystone Park	Lincoln	412	Pending
Delaware Beaches Jellystone Park	Lincoln	412	Pending
Fish Hook Mobile Home Park	Georgetown	72	03/13/2023
Home Town Village of Cool Branch	Seaford	654	Pending**
Home Town Village of Cool Branch	Seaford	654	Pending**
Meding and Sons	Milford	515	06/16/2023
Meding and Sons	Milford	515	06/16/2023
Pine Haven Mobile Home Park and Campsites	Lincoln	267	12/21/2023
Pine Haven Mobile Home Park and Campsites	Lincoln	267	12/21/2023
The Old Time Grill	Gumboro	25	11/20/2023

Nitrate Violation Totals	
Number of Violations	13
Number of Systems Affected	8
Number of Repeat Violators	4
Total Population at Risk	2,138

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023
*Pending the installation of treatment
**Pending the approval to operate of new wells

Table 13. Radiological Compounds Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Population Served	Contaminant	MCL[1] in pCi/L[2]	Level Found in pCi/L	Return to Compliance Date
None	None	None	None	None	None

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, 2023
[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, 2023

System Name	Population Served	Contaminant	MCL[1] in mg/L[2]	Level Found in mg/L
None	None	None	None	None
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, 2023
[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, 2023

System Name	Municipality	Population Served	Contaminant	MCL[1] in mg/L[2]	Level Found in mg/L
None	None	None	None	None	None
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, 2023
[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, 2023

System Name	Population Served	Contaminant	MRDL[1] in mg/L[2]	Level Found in mg/L
None	None	None	None	None
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, 2023.
[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, 2023

System Name	Population	Return to Compliance Date
County Seat Gardens	297	Pending*
Ground Water Rule Violation Totals		
Number of Violations		1
Number of Systems Affected		1
Number of Repeat Violators		0
Total Population Affected		297

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023
*Pending completion of a Level 1 Assessment.

Table 18. Surface Water Treatment Rule (Turbidity Violation), Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Population Served
None	None
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, 2023

Table 19. Lead and Copper Rule (LCR) Monitoring Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2023

Systems that failed to collect the required number of samples including tap samples and/or water quality parameters during any monitoring period in 2023

System Name	City	Population	Return to Compliance Date
Barkers Landing	Magnolia	498	Pending*
County Seat Gardens	Georgetown	297	Pending*
Crossroad Christian Church Academy	Dover	68	Pending*
Greenwood Country Retirement	Greenwood	50	Pending*
Kent Co. Regional Sports Complex - System 2	Frederica	45	Pending*
Mamie A. Warren Center	Smyrna	120	Pending*
Northside Professional Center	Millsboro	35	Pending*
Perdue Feed Mill	Bridgeville	47	Pending*
Shells Learning Center III	Harrington	83	Pending*
Stockley Center	Georgetown	749	Pending*
LCR Monitoring Violation Totals			
Number of Violations		11	
Number of Systems Affected		11	
Number of Repeat Violators		0	
Total Population at Risk		2,000	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023
**Pending the completion of 2 – 6 Month rounds of Lead and Copper samples below the action levels*

Table 20. Lead and Cooper Rule (LCR) 90th Percentile Action Level (AL) Exceedances, Delaware, 2023

System Name	City	Population Served	Contaminant	AL in mg/L[1]	90th percentile in mg/L
Carey Estates, LLC	Millsboro	312	Lead	0.015 mg/L	0.0169
Centreville Layton School System II	Centreville	47	Lead	0.015 mg/L	0.0303 mg/L
Pinnacle Rehabilitation & Health Center	Smyrna	256	Copper	1.3 mg/L	2.078 mg/L
Stage Village Mobile Home Court	Delmar	93	Copper	1.3 mg/L	3.537 mg/L
Sussex Technical School District	Georgetown	1,800	Copper	1.3 mg/L	1.401 mg/L

LCR 90th Percentile Action Level Exceedance Totals	
Number of Exceedances	5
Number of Systems Affected	5
Number of Repeat Violators	0
Total Population at Risk	2,508

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023
[1]mg/L means milligrams per liter

Table 21. Failure to have Licensed Operator Violations, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	City	Population Served
Hartly Mobile Home Park	Hartly	90
J & J Mobile Home Park	Felton	84
Lake Forest Estates	Felton	225
Summit Aviation	Middletown	50

Failure to have Licensed Operator Violation Totals	
Number of Violations	4
Number of Systems Affected	4
Number of Repeat Violators	0
Total Population Affected	449

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

Table 22. Monitoring Violations, Non-Compliant Public Drinking Water Systems, Delaware 2023[1]

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

System Name	Population	Rule
Wilmington Water Department	107,976	Revised Total Coliform Rule
Monitoring Violation Totals		
Total Number of Violations		1
Number of Systems Affected		1
Number of Repeat Violators		0
Total Population Affected		107,976

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

[1] Excluding lead and copper

Table 23. Consumer Confidence Report (CCR) Rule Inadequate Reporting, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Population served	Return to Compliance Date
Countryside Estates	Viola	50
Maranatha Court	Lebanon	54
CCR Violation Inadequate Reporting Totals		
Number of Violations		2
Number of Systems Affected		2
Number of Repeat Violators		0
Total Population Affected		104

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

Table 24. Consumer Confidence Report (CCR) Rule, Failure to Report, Non-Compliant Public Drinking Water Systems, Delaware, 2023

System Name	Municipality	Population served	Return to Compliance Date
Bethany Crest LLC	Millville	115	07/12/2023
County Seat Gardens	Georgetown	297	10/20/2023
J & J Mobile Home Park	Felton	84	Pending*
CCR Violation Failure to Report Violation Totals			
Number of Violations		3	
Number of Systems Affected		3	
Number of Repeat Violators		0	
Total Population Affected		496	

Source: Delaware Department of Health and Social Services, Division of Public Health, Office of Drinking Water, 2023

**Pending the submission of a CCR*

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 2023. Of the state's 1,031,890 residents, 949 (0.09%) were exposed to health-based contaminants such as *E. coli* and nitrates. This means that 99.91% 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%. Of the 457 public water systems, 5 (1.1%) had a violation for health-based contaminants. Therefore, 98.9% of water systems were in compliance with health base standards, which is slightly above ODW's goal of having 98% 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. Twelve additional water systems (2.6%) reported monitoring and reporting violations; 11 were LCR violations and one was a revised total coliform rule (RTCR) violation. The 11 systems that had monitoring violations for LCR are on the path to returning to compliance. The one system that had the RTCR violation returned to compliance the following month.

Additionally, three water system received a violation for failing to submit their Consumer Confidence Reports (CCR) and delivery certification to ODW by July 1, 2023, a decrease of 21 compared to 24 in 2022. All but one submitted their CCRs and returned to compliance. ODW is working with this system.

In 2023, four of the 284 public water systems required to have an operator failed to do so, leading to a 98.6% compliance rate. Three of the water systems without a licensed water operator are CWSs and one is a NTNCWS. Two of the CWSs have obtain a water operator (Hartly Mobile Home Park and J & J Mobile Home Park) and are not back in compliance.

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.