Drawing on material found in River Network's Drinking Water Guide!

Drinking Water Guide Fact Sheet: Community Water Systems

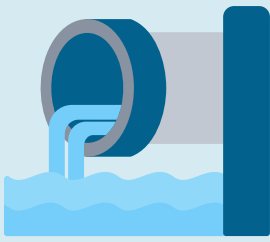
Key Points

- A community water system (CWS) supplies water to the same population throughout the year and is either publicly or privately owned.
- Water sources, both above ground and underground, may have contaminants that are regulated by the EPA and treated with technologies to improve quality and safety.
- Growing awareness of contaminants, along with water monitoring, replacement and remediation efforts help to keep drinking water safe for everyone involved.

What Is a Community Water System?

Community water systems (CWS) are a type of public water system that supplies water to the same population throughout the year and is not transient. Of the approximately 151,000 public water systems in the US, about 51,500 are CWSs. They are required to send out Consumer Confidence Reports (CCRs) to customers annually (for more info, read the CCR fact sheet).

In general, public water systems are also responsible for:



- Maintaining an adequate supply of water
- Assessing water sources and identifying potential threats
- Treating water to potable (drinkable) standards
- Communicating essential information about drinking water safety to customers
- Maintaining the infrastructure needed to deliver potable water

Other Factors - Ownership & Size

In the US, around 10% of these water systems are privately owned, while the rest are publicly owned. Utility ownership data is not well documented - the EPA could improve efforts to accurately report utility ownership. Privately owned systems are regulated by Public Utilities Commissions (PUCs) or Public Service Commissions (PSCs) and are managed by their boards of directors and executive staff.

CWS range vastly in size and population size served. A relatively small number of large/very large systems serve the majority of the people in the US. Customers of smaller CWS may deal with higher costs of service due to the expenses of addressing evolving regulatory requirements, keeping up with operational and managerial best practices and technological advancements, as well as the strain of servicing large areas with low population levels. (Read more in the Drinking Water Guide.)

Overview of Community Water Systems in the United States[1]

System Service Population	Very Small <=500	Small 501-3,300	Medium 3,301-10,000	Large 10,001-100,000	Very Large >100,000	Total
% Total Systems (of 51,535)	55	27	10	7	0.8	100
Service Population	4,738,080	19,688,745	28,758,366	109,769,304	137,250,793	300,205,288
% Total Population	1.6	6.6	10	37	45.7	100

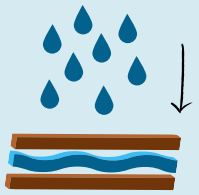
How Do Sources and Contaminants Impact a CWS?

Water Sources

To the extent feasible, water systems seek out raw water of the highest quality and of sufficient quantity. Raw water (or source water) is water, including rainwater and water collected directly from lakes, rivers, wells, and springs, that has not been treated and does not have any of its minerals, particles, bacteria, or parasites removed by water treatment processes.

In general, groundwater sources are less vulnerable to microbiological contaminants because of the filtration provided by soil and sediments as water moves through the ground. Groundwater sources can, however, be vulnerable to naturally occurring chemical contaminants, as well as human-made chemicals. Some examples include:

- Trichloroethylene (TCE)
- Tetrachloroethylene (PCE)
- Per- and Poly-fluoroalkyl Substances (PFAS)



Because of the slower movement of groundwater and lack of sunlight and airflow, once chemicals enter groundwater, many do not break down and can accumulate over time.

Concerns with Contamination

Various concerns with contamination impact CWS. In the past, the materials used in building water infrastructure included lead, which poses several health and developmental risks. Industrial pollution such as PFAS are also widespread in our drinking water sources. The EPA has established legal limits on more than 90 contaminants in drinking water through National Primary Drinking Water Regulations (NPDWRs). The legal limit for a contaminant reflects the level that protects human health and that water systems can achieve using the best available technology. EPA rules also set water sampling schedules and methods that water systems and laboratories must follow.

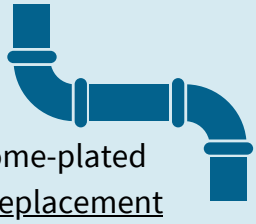
For water storage, uncovered storage reservoirs are being replaced by underground systems to avoid contamination problems and meet drinking water regulations. Water systems that still use uncovered finished water reservoirs have developed strategies to protect their water.

Common water treatment technologies include membrane technologies, ozone, ultraviolet (UV) light, ion exchange, and granular activated carbon (GAC).

Case Studies

Installing Advanced Treatment to Address PFAS Contamination

The former Pease Air Force Base is located in Portsmouth and Newington, New Hampshire. Officially closed in 1991, historical fire-fighting and training activities conducted by the U.S. Air Force resulted in PFAS contamination of public and private water supply wells. Under an EPA Administrative Order, the Air Force has been required to design and construct two treatment systems to address groundwater contamination that continues to threaten drinking water supplies. Based on a treatment cost alternative report, installation of granular activated carbon treatment at three well sources is estimated to have an upfront one-time capital cost of approximately $13 million and an ongoing annual operating and maintenance costs of approximately $163,000.



Lead Service Line Replacement

Homes built in the U.S. before 1986 are more likely to have lead pipes, brass or chrome-plated brass fixtures containing lead and fixtures with lead solder. The Lead Service Line Replacement Collaborative provides information to help communities to learn about and facilitate full lead service line replacement with examples of policies, mapping and financing for this work. The goal of the Collaborative is to "accelerate voluntary leaded service line replacement" across the country by providing models for lead service line replacement. The Collaborative also has produced fact sheets in English and Spanish. One of the Collaborative's members, Environmental Defense Fund, also tracks state and local initiatives to replace lead service lines. Some communities, like Madison, Wisconsin, have already replaced lead service lines.

Advocacy Opportunities

- Read your community water system's Consumer Confidence Report each year to stay knowledgeable on your water's quality and potential concerns.
- Learn the basics of utility oversight, governance, rate setting, and billing practices. You can then better understand what informs decisions and how to influence them.
- Ask questions and stay informed! How is your water being treated? Where is it coming from, and, if relevant, what is upstream of that source? Keep up to date with news about PFAS, lead service lines, and other contaminants that may impact your drinking water.

Resources

- Guide to Community Drinking Water Advocacy (CWC)
- Public Water Systems (CDC)
- Source Water Protection Resources & Tools (AWWA)
- Infographic: How does your water system work? (EPA)
- How do we get clean drinking water? (IE)
- Equitable Water Infrastructure Toolkit (RN)