

## PUBLIC DRINKING WATER SYSTEMS IN VERMONT

### Federal & State Drinking Water Laws & Regulations

The goal of the Safe Drinking Water Act (SDWA) is to protect public drinking water supplies in the United States. Under the Act, the Environmental Protection Agency (EPA) sets standards for drinking water quality, and the states implement the various technical and financial programs to ensure drinking water safety. In 1974 the SDWA was enacted by Congress. It established the current federal-state relationship, delegating implementation and enforcement to the State of Vermont. EPA provides funding to the Vermont Department of Environmental Conservation (DEC) to administer the Public Water Supply Supervision program.

In 1986, major amendments were made to the SDWA, requiring the disinfection and filtration of surface water systems, lead and copper control, expanded monitoring, and a focus on wellhead protection areas. In 1996, additional major amendments occurred in response to the Milwaukee water-borne disease outbreak of cryptosporidiosis, when 400,000 people fell ill and at least 70 died. These amendments increased focus on turbidity, treatment, and put into motion a host of other drinking water regulations, such as control of naturally-occurring contaminants like arsenic and radionuclides, enhanced regulation of disinfectant by-products, the Drinking Water State Revolving Fund, capacity and operator certification programs, new public notice requirements (e.g. Consumer Confidence Report), and a new emphasis on public water systems using groundwater.

Vermont's Water Supply Rule guides all drinking water regulation. It incorporates the Federal requirements, sets the permitting framework, as required by State statute, and includes technical standards for new and modified public water systems. The Rule goes beyond the federal requirements by requiring specific engineering standards for new and modified systems.

Protection of drinking water relies on a "multi-barrier approach"; that is, reducing risks of contamination from the initial source, through treatment, storage and distribution, and then finally to the consumer's tap. Early in its history, the Safe Drinking Water Act promoted source protection as a primary focus. Vermont's source protection program is one of the best in the country, and requires protection areas to be developed that restrict sources of contamination near the well and encourage land use controls nearby. The next level of protection is treatment. Maximum contaminant levels (MCLs) and treatment technique standards (for microbial and chemical contamination) are required to be met. Drinking water must meet either MCL standards, or treatment techniques standards which are used in lieu of MCLs when it is prohibitively expensive to monitor for the contaminant of concern. For example, *Cryptosporidium* in surface waters is managed through filtration and disinfection instead of being routinely monitored. Corrosion control is another example of a treatment technique, as there is no MCL for lead. Today, with the 2015 tragedy in Flint, Michigan, lead has become an even greater focus for drinking water systems. In Flint, when managers changed their water supply they failed to use corrosion

control, resulting in corrosive water scouring the pipes, and which then caused multiple public health issues, including leaching lead into drinking water.

Storage and distribution infrastructure is the next level of protection necessary. DEC's drinking water program has been monitoring the presence of disinfection by-products, which are in part due to aging infrastructure or insufficient surface water treatment, and requiring plans and upgrades to address the problem. The deteriorating physical drinking water infrastructure of Vermont is an important issue to be addressed now and in the future. The Vermont Chapter of the American Society of Civil Engineers has graded Vermont's drinking water infrastructure a C- in terms of sustainability.

## **Vermont's Assistance & Permitting Programs**

Vermont's drinking water assistance and permitting programs go beyond federal requirements. State permits are issued for modified or new water supply sources (source permits), and engineering plans when modifying an existing system or constructing a new system (construction permits), and also for operation (see below).

Source protection plans are updated every three years, and provide the program a way to engage the water systems with establishing local ordinances or other controls to protect their sources. The zone directly surrounding the well (typically 200' radius) has prohibited land uses in the Water Supply Rule (i.e. application of pesticides, parking, chemical or fuel storage, wastewater systems, underground storage tanks, and other potential contaminating activities). Operating permits are issued to all existing systems, which detail the federal and state requirements for operation. Sanitary surveys (inspections) are performed every three years for the most widely used systems. If deficiencies are found in the physical structure or operation of the water system during the sanitary survey, a schedule of compliance is included in the permit. Quarterly checks of operating permit compliance result in enforcement action if a reminder does not produce results.

Extensive assistance is provided for public water systems. Monitoring schedules are provided annually, and reminders are sent. Numerous follow-up phone calls and emails are made, and site visits are performed. Operating permits clarify the expectations of the state for public water systems. Attendance at night meetings of water system boards, selectmen councils, or prudential committees are attended, to explain improvements that need to be made to protect public health. State engineers evaluate preliminary engineering plans, and assist consulting engineers with interpretations of state and federal requirements. Assistance and training is also provided by our non-governmental partners Vermont Rural Water Association and Rural Community Assistance Partnership, through federal funding.

## Vermont's Drinking Water Systems

There are three types of regulated drinking water systems: public water systems, non-transient non-community systems, and transient systems. Standards for public water systems are categorized by system type.

<b>Water System Type</b>	<b>Definition</b>	<b>System Sub-Type &amp; Population</b>	<b>Monitoring</b>	<b>Examples</b>
<b>Community</b>	25+ year-round residential people each day or 15+ service connections	<u>Community</u> 420 systems Population: 450,000	Inorganics, SOCs (e.g. pesticides), Volatile Organic Compounds (e.g. solvents and petroleum), radionuclides, disinfection by-products, microbial contaminants, turbidity. Frequency depends on EPA requirements.	Municipalities, Fire Districts, Condominiums
<b>Non-Community</b>	25+ non-residential people each day, but the same people, for more than 6 calendar months	<u>Non-transient (NTNC)</u> 250 systems Population: 44,500	Same as above, except for radionuclides are not required	Businesses, schools w/ own source
	25+ non-residential people each day, for more than 2 calendar months	<u>Transient (TNC)</u> 705 systems Population: NA	Coliform quarterly and nitrate yearly	Restaurants, hotels, convenience stores, campgrounds w/own source

Community systems are subject to the highest regulatory standards because the population served is year-round residents. In addition to the monitoring requirements outlined above, EPA and Vermont require that community systems have source protection plans, issue an annual Consumer Confidence Report to the public, and submit monthly operating reports. The system must be managed by a certified operator. In addition, systems must have an operations and maintenance manual, issue public notices of violations, provide surface water treatment, corrosion control, disinfection, and other treatment as applicable. DEC does sanitary survey inspections of 100% of community systems.

Non-Transient Non-Community systems have nearly the same level of regulation as community systems because the same population is drinking the same water each day for more than six months in a year. EPA and Vermont require that NTNC systems have source protection plans and submit monthly operating reports, and the system must be managed by a certified operator. In addition, systems must have an operations and maintenance manual, issue public notices of violations, provide surface water treatment, corrosion control, disinfection, and other treatment as applicable. DEC does sanitary survey inspections of 100% of NTNC systems.

Transient Non-Community systems have fewer requirements because different people are exposed to the water each day, for. Vermont requires a certified operator and an operating permit. EPA requires coliform and nitrate monitoring only.