



Killington Builds a New Municipal Water System p.5

The Vermont Rural Water Association promotes public health and environmental protection through technical assistance and education for drinking water and wastewater systems.

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On the cover: Abbie Sherman and Brian Heaton at Killington's new 750,000-gallon water storage tank.



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Updates on This & That



by Katherine Boyk
Communication &
Association Coordinator

Normally our executive director, Liz Royer, would give you a big update on one of our major projects. But so many things have been happening this fall that I'm going to give you a quick update on several of them!

DROUGHT

After two summers with extreme flooding, I think we were all a bit surprised to find ourselves in a drought this year. It was certainly disheartening to see both public water systems and residents with private wells running out of water this fall. Unlike during a flood, there was little that we at Vermont Rural Water could do to assist water and wastewater systems with the impacts of drought. But there are a few takeaways that could benefit systems in the future.

First, the State of Vermont updated the lists of bulk water haulers and well drillers, and created a drought reporting tool and map of water systems with drought impacts. Links to all of these can be found at vtruralwater.org/emergency-response/

Second, there was a need for residents whose private wells had run dry to obtain water from local public water systems. Most towns do not have a formal process for supplying water in this way. Now is the time to think about implementing a policy for future droughts. How much water can



Low water levels on Lake Champlain's Shelburne Bay in early October.

you provide? Will you charge for water? Where can people access water? How will you prevent backflows and cross contamination?

FEDERAL FUNDING

Probably every federally funded organization has faced some level of anxiety and uncertainty this year, and Rural Water is no exception. USDA Rural Development's funding and staffing levels have both decreased, which has broad impacts on the water and wastewater sector.

During the government shutdown, one of Vermont Rural Water's federal funding sources was paused. We were fortunate that this did not impact our work or our staff because Liz and our board have worked hard to build a "rainy day" savings

fund to get us through just this sort of situation.

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Killington's New Drinking Water System



by Paula Jackson
*Apprenticeship Program
Coordinator*

The Town of Killington is currently developing Vermont's newest municipal drinking water system after the discovery of PFAS in a number of wells.

In 2019, the State of Vermont required all public water systems to sample and monitor for PFAS after discovering widespread contamination in Bennington and North Bennington.

During this sampling period, it was found that there was PFAS contamination at several public water systems along Killington Road. These included condo associations, hotels, and a school. All of these water systems had groundwater sources, so it is suspected that the local aquifer is contaminated with PFAS.

In 2022, the Town of Killington assumed the responsibility of creating a municipal water system that will provide safe and reliable drinking water to homes and busi-

nesses that had PFAS contamination in their wells, and allow other businesses and private residents to connect. The new water system will have fire hydrants, something Killington hasn't had before, so improved fire protection is an added benefit of the project.

Construction began on the new water system this summer. The town has drilled three wells that will be the water sources. Sam-

pling found no detections of PFAS in the new wells.

They have the capacity to pump 1.8 MGD to a pump station located on Route 4 Flats. The water will then be pumped to two water storage tanks on Shagback

Mountain, which will gravity feed the water system.

The first service connection is expected in the spring of 2026 while the remaining portion of the water system will be contracted out to finish water lines and service connections. The water system is projecting 770 service connections to begin with, and more will be added in time.

Abbie Sherman was Killington's Public Works Director when the town began planning the water system. She was the project manager and assisted in the procurement of funding. Abbie is a lifelong Vermonter who has two decades of experience as a municipal leader and in economic development. The Killington water system has been set in motion thanks to her perseverance and hard work. Abbie has recently taken on a new project as the first Director of Economic Development in Woodstock, Vermont.



Abbie Sherman, Killington's former public works director, and water operator Brian Heaton at one of the newly developed wells.

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The new well house.

Brian Heaton is the newly hired water system operator. Brian came to Killington from Lyme, Connecticut. He started in the water resources field as a distribution technician, working on meters, backflow testing, and cross connection surveys. Brian earned a Water Management Certificate from Connecticut State Community College and is now working on his Associate's degree in Public Utility Management.

The total cost of the project is estimated at \$43 million, with \$32 million for construction costs. It is funded through a combination of sources, including tax increment financing (TIF), funding from the American Rescue Plan Act (ARPA), DWSRF loans, a Catalyst Program grant from the Northern Borders Regional Commission, and USDA Rural Development financing.

The water system is a major component of the "Killington Forward" initiative. The new water system will allow for growth and economic development, including new workforce housing and commercial properties. The water system will also provide drinking water for the proposed Six Peaks Ski Village that has been in the planning process for the last 30 years.

Vermont has seen few new municipal community water systems developed in recent decades. This project replaces a number of privately owned public water systems—including neighborhood CWSs, TNCs, and NTNCs—with a single municipal system. While the circumstances that led to this opportunity might not arise in other Vermont communities, it is exciting to watch it unfold in Killington. 💧

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allowed our staff to continue working during the government shutdown.

LEGISLATOR EDUCATION

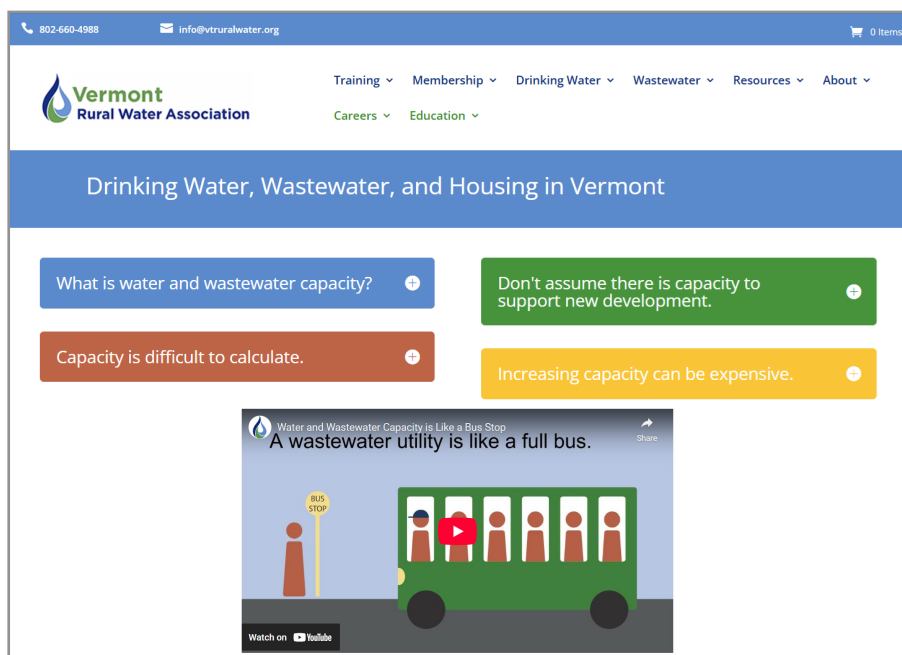
In our last newsletter, Liz mentioned that we were creating materials to educate legislators about the water industry. Our goal is to help legislators understand capacity limitations at water and wastewater systems and how this should be considered when making new policies about housing and development.

We've created a webpage with information, a video, and case studies. It can be found at vtruralwater.org/water-sewer-housing/

PFAS SETTLEMENT

There was a \$15 billion settlement against manufacturers of PFAS chemicals from a class-action lawsuit by the National Rural Water Association and the law firm Napoli Shkolnik PLLC.

Public water systems that have found detections of any PFAS chemical are eligible to receive payment from this settlement. Payment amounts will depend on



Find materials for educating state and local elected officials about water and wastewater capacity at <https://vtruralwater.org/water-sewer-housing/>

the PFAS compound detected, the level of detection, and the system's maximum daily flows.

So far, 18 public water systems in Vermont have received payments.

If your water system has tested for PFAS since June 22, 2023 and you did not join Phase 1, you are eligible to join Phase 2 of the settlement with 3M and DuPont. Go to www.napolilaw.com/nrwa-pfas to register your system.

Twelve other PFAS manufacturers are involved in this settlement. Stay tuned for more information about joining settlements with these companies.

The Claims Administrator has warned that class members have received spam notices or postcard reminders. Please be aware of potential spam or scams related to this settlement. 💧

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Training Calendar

Winter 2026

Date	Course	TCHs	Location	Cost (Member/Non)
Thur, Jan 8 9 am – 12:30 pm	Water Distribution Essentials	3 W	Williston ¹	\$24 / \$48
Thur, Jan 15 9 am – 12:30 pm	Coagulation, Jar Testing, and Chemical Handling	3 W WW	Montpelier ²	\$24 / \$48
Wed, Jan 21 9 am – 12:30 pm	Leadership in Safety	3 W WW	Zoom	\$24 / \$48
Thur, Jan 22 9 am – 1:30 pm	Protecting Source Water in Forested Watersheds	4 W	Johnson ³	No cost
Tue, Jan 27 9 am – 12:30 pm	TNC Operations	3 W	Zoom	No cost
Wed, Jan 28 8:30 am – 3:30 pm	Water & Wastewater System Maintenance	New! 6 W WW	Manchester ⁴	\$48 / \$96
Tue, Feb 3 9 am – 1:30 pm	Traffic Control Certification	4 W WW	Essex ⁵	No cost
Thur, Feb 5 9 am – 12:30 pm	Updating Your Source Protection Plan	3 W	Montpelier ^{6a}	No cost
Tue, Feb 10 9 am – 12:30 pm	Source Protection Plan and Guidance Doc	New! 3 W	Montpelier ^{6b}	No cost
Thur, Feb 12 9 am – 12:30 pm	PFAS & Water Supply Rule	New! 3 W	Zoom	No cost
Wed, Feb 18 9 am – 12:30 pm	Corrosion Control	3 W	Zoom	\$24 / \$48
Fri, Feb 20 9 am – 12:30 pm	Issuing a Boil Water Notice	3 W	Zoom	\$24 / \$48
TCH = Training Credit Hour W = Approved for Water Credit WW = Approved for Wastewater Credit				

Locations

- 1. Williston:** F.W. Webb Company – 80 Park Ave, Williston, VT
- 2. Montpelier:** Dewey Building – 1 National Life Dr, Montpelier, VT (furthest building in National Life Complex)
- 3. Johnson:** Vermont State University, Bentley Hall, room 207 – 337 College Hill Rd, Johnson, VT
- 4. Manchester:** Town Hall – 40 Jeff Williams Way, Manchester Center, VT
- 5. Essex:** Vermont Rural Water Association – 20 Susie Wilson Rd, Suite B, Essex Junction, VT



Register Online: vtruralwater.org/training

Date	Course	TCHs	Location	Cost (Member/Non)
Fri, Feb 20 9 am – 12:30 pm	TNC Operations	3 W	Zoom	No cost
Tue, Feb 24 9 am – 12:30 pm	Water Treatment: Chemical Addition	3 W	Zoom	\$24 / \$48
Thur, Feb 26 9 am – 12:30 pm	Safety: Water and Wastewater Facility Flooding	3 W WW	Zoom	\$24 / \$48
Wed, March 4 9 am – 12:30 pm	HazCom and Respiratory Protection	3 W WW	Zoom	\$24 / \$48
Thur, March 5 8:30 am – 2:30 pm	Basic Math for Water and Wastewater Operators	5 W WW	Montpelier ²	\$40 / \$80 Textbook sold separately
March 10 – April 23	Class 4 Water Treatment Course	48 W	Combined ⁷	\$384 / \$768 Textbooks sold separately
Tue, March 10 9 am – 12:30 pm	PFAS & Water Supply Rule New!	3 W	Zoom	No cost
Wed, March 11 9 am – 1:30 pm	Traffic Control Certification	4 W WW	Brattleboro ⁸	No cost
Mar 12 – April 30 8 am – 3 pm	Basic Wastewater Course	53 WW	Chester ⁹	\$750 Textbook sold separately
Mon, March 16 9 am – 12:30 pm	Advanced WW Series: Understanding Digester Operations New!	3 WW	Zoom	\$36 / \$72
Wed, March 18 9 am – 12:30 pm	Model Sewer Use Ordinance (SUO) and Fats, Oils, and Grease (FOG) Guidance	3 WW	Montpelier ¹⁰	No cost
TCH = Training Credit Hour W = Approved for Water Credit WW = Approved for Wastewater Credit				

CONTINUED »

6. Montpelier: ANR Davis Building – 1 National Life Dr, Montpelier, VT

a. Second Floor, Catamount Conference Room, D215

b. Fourth Floor, Orange Conference Room, D413

7. Combined: Most sessions will be on Zoom, three sessions will be in-person (see website for locations)

8. Brattleboro: Fire Department – 103 Elliot Street, Brattleboro, VT

9. Chester: Public Safety Building – 130 Pleasant St, Chester, VT

10. Montpelier: Associated General Contractors – 1 Graves St, Montpelier, VT

Date	Course	TCHs	Location	Cost (Member/Non)
March 18 – April 24	Water Distribution Course	36 W	Combined ⁷	\$288 / \$576 Textbooks sold separately
Thur, March 19 9 am – 12:30 pm	Corrosion Control: Alternatives to Phosphorus-Based Treatments	3 W	Essex ¹¹	\$24 / \$48
March 24 – April 23	Class 3 Water Treatment Course	36 W	Combined ⁷	\$288 / \$576 Textbooks sold separately
Wed, March 25 9 am – 12:30 pm	TNC Operations	3 W	Zoom	No cost
TCH = Training Credit Hour W = Approved for Water Credit WW = Approved for Wastewater Credit				

Locations

7. Combined: Most sessions will be on Zoom, three sessions will be in-person (see website for locations)

11. Essex: Police Department – 145 Maple St, Essex Junction, VT

Renewal Reminder

Class 2 and 4 water treatment certifications must be renewed by June 30, 2026. Class 2 operators need 10 training credit hours (TCHs). Class 4 operators need 20 TCHs.

Find the new renewal form at bit.ly/DWOpCertForm

Registration and Payments

Register online at vtruralwater.org/training to pay by credit card or check, or mail in the form below.

Members of the Vermont Rural Water Association receive a 50% discount on most registration costs.

Cancellations/Refunds

Cancellations received at least 24 hours in advance can receive a refund or transfer to another class.

No-shows will be charged the full course fee.

Registration Form

Duplicate this form to register for multiple classes.

Course and Date: _____

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Questions?

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A Vermont Dashboard for Wastewater Monitoring of Infectious Diseases



GUEST AUTHOR

Lynn Blevins

Vermont Department of Health

Vermonters can now check levels and trends of common respiratory viruses detected in wastewater on a new dashboard. The viruses currently include Influenza A, the most common flu virus, and SARS-CoV-2, the virus that causes COVID-19.

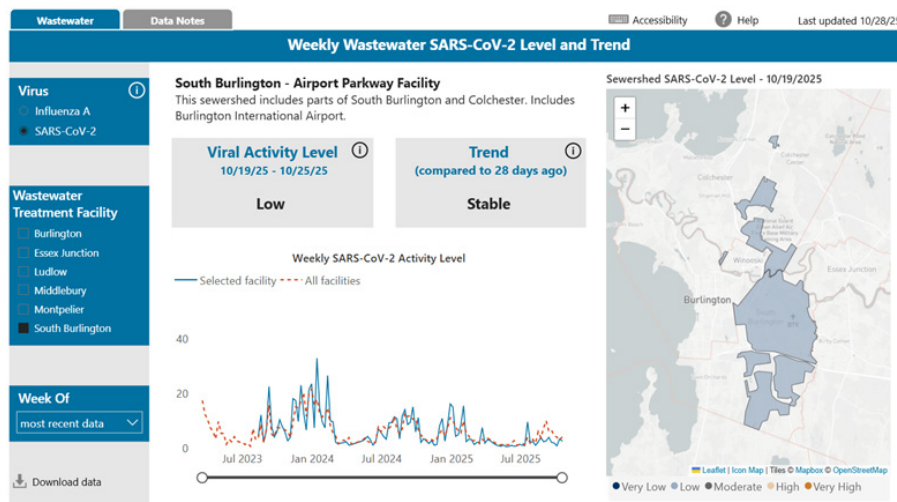
Wastewater treatment facilities currently participating in the surveillance program are: Burlington–Main, Essex Junction, Middlebury, Montpelier, Ludlow, and South Burlington–Airport Parkway.

SARS-CoV-2 data will be added soon for Brattleboro, Milton, St. Albans, St. Johnsbury, and Springfield.

The dashboard shows virus levels (very low, low, moderate, high, very high) for a sewershed of interest or all sites combined. Trends over the last 28 days (decrease, stable, increase) are available for each sewershed. A graph shows levels over time while a map displays the sewershed selected.

The dashboard is intended for a general audience, with additional statistics and explanations available for those interested in understanding how the data are calculated.

Wastewater surveillance can identify the presence and estimate the amount of a pathogen in a population (sewershed) without relying on clinical data, such as from hospitals and laboratories. It



An example of the new dashboard for SARS-CoV-2 at the South Burlington Airport Parkway wastewater treatment facility.

compliments other types of public health data, often providing signals sooner than other surveillance systems.

Data from a wastewater treatment facility represent people who live, work, play, or travel within a sewershed. People using septic systems or disposable diapers, or who are connected to treatment facilities not participating in wastewater surveillance may not be represented. Wastewater levels and trends can be influenced by external factors, such as heavy rain which can cause pathogens (e.g., from animals) present in the environment to be detected in influent.

The dashboard can be found on the Vermont Department of

Health Respiratory Illness Activity website at bit.ly/ww-monitoring. Scroll down to “Wastewater Monitoring.”

Take steps to protect you and your family from getting sick this cold and flu season. Learn more at HealthVermont.gov/StayHealthy.

For more information on the wastewater dashboard, contact lynn.blevins@vermont.gov. 💧

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De-escalation Training Can Benefit Water and Wastewater Workers



by Elijah Lemieux
Wastewater Systems Specialist

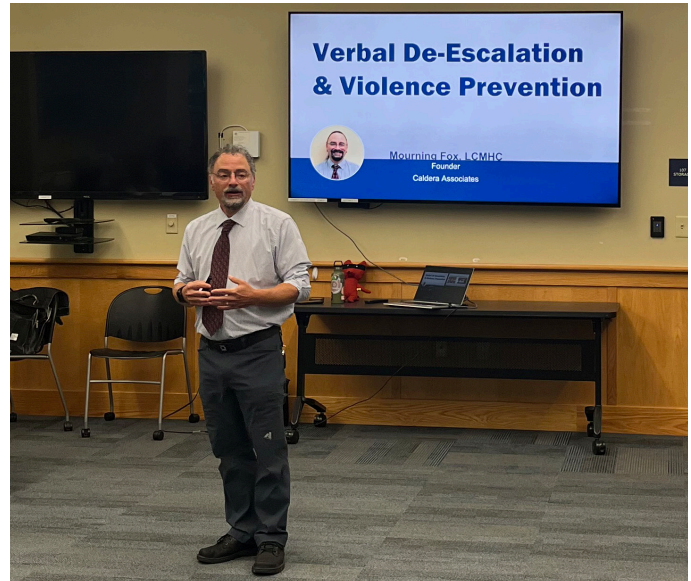
Public works employees regularly interact with the community, sometimes in situations that can become tense, emotionally charged, and potentially unsafe. Who among us hasn't dealt with an upset customer, been in a stressful situation with a coworker, or had to break some bad news to local leaders?

Vermont Rural Water recently hosted a training class on verbal de-escalation to teach water and wastewater operators communication strategies to navigate difficult situations and maintain trust and respect between public employees and the communities we serve.

The class, De-Escalating High Intensity Situations, was taught by Mourning Fox, LCMHC, the Director of Mental Health Programs for the Vermont Department of Public Safety. He leads trainings like this for law enforcement personnel and social service staff.

I, somewhat begrudgingly, attended the class at my boss's (Liz Royer) suggestion. I was dreading the idea that the training would involve role-playing some made-up situation, something that the mere thought of makes me cringe.

At the very onset of the training, Fox began by telling us there would be



Mourning Fox taught De-Escalating High Intensity Situations in September.

Verbal de-escalation skills can help you:

- Prevent confrontations from escalating into dangerous situations.
- Reduce tension and build trust with community members.
- Maintain professionalism and represent your municipality or organization positively.
- Help prevent your workplace from becoming a hostile environment.

no quiz or test and there would be no role-playing. I was relieved and I suspect others in the room may have been too, and this was no accident—it was the first lesson.

Fox explained that he likes to give his audiences an overview of what they can

expect from the training. This is because having the “unknowns” identified and addressed helps make everyone more comfortable, and therefore better able to learn. I know that I was relieved and more able to focus once I knew I wasn't expected to act out a scenario.



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Not only did Fox give us strategies to make people more comfortable, but he also gave insightful explanations for why people act the way we do. If I tried to summarize all of Fox's presentation I wouldn't be able to do it justice, so the next time we offer this class, I highly recommend you sign up for it yourself.

In the meantime, I will relay some of Fox's insights in hopes that you may find them as useful as I did:

• **Acknowledge and address the unknowns.**

Fox did this for us by making it clear that the class wouldn't involve role-playing exercises. Water and wastewater operators could do this by explaining to customers how long a repair will take, how long water will be shut off, and where customers can get drinking water in the meantime.

• **Avoid words that minimize someone's experience,** like "just" and "only." Consider, for example, if you told a coworker, "You just need to try again." If the first attempt was challenging, then trying again is not *just* so easy. Using carefully chosen words can be the difference between de-escalating a situation or escalating it.

• **"You need to" is another phrase that can be triggering.** Telling someone that they need to do something could make them less likely to do what you want. Telling someone "You need to calm down" is not going to make them feel calm.

• **Recognize other people's values.** It's easier to respect others, even when you disagree, if you can figure out what they value. Their values may be different from yours but are equally valid. For example, if someone is upset because you need to dig a hole in their lawn to make a repair. You might think, "It's just grass, it'll grow back." But if they value the aesthetics of their property, then a hole in the lawn is going to be upsetting to them.

• **Build relationships.** When we build relationships with the people we interact with, we develop mutual respect, which allows us to bestow more grace upon each other when we disagree. This is important with coworkers you see daily, municipal leaders you inter-

Through respect we build rapport, through rapport we build relationship, through relationship comes influence, which helps us get to successful resolutions.

- Mourning Fox

act with occasionally, and even community members you only meet once.

• **Avoid judgment.** One of the most important parts of Active Listening is to use a non-judgmental attitude. If someone feels judged, they will not feel comfortable enough to continue discussing until the issue is resolved.

To summarize, your words and actions affect your interactions. You have the power to escalate or de-escalate any situation.

Following the training, a number of us commented that these skills might be helpful to us in our parenting and other areas of life outside work. I felt

that this was one of the most useful trainings I have attended and wished that there was a second day of class to dive deeper. 💧

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Leak Audits Can Help Prepare for Drought



by Aaron Perez
Water Systems
Specialist

After the drought challenges we have had this summer, I thought it would be a good idea to revisit this article that I wrote back in 2012. I spent a lot of hours this summer looking for very small leaks, some a gallon per minute or less. I did this because systems experiencing water shortages from the drought could not afford to lose any water at all.

So this article is a reminder to stay vigilant and keep a close eye on your system this winter. Who knows what next year will bring!

If your system is metered, it is important to take the time compare your water production with your water usage to get a sense of how much water is being lost. There are a number of water auditing software tools available online ranging from free to several hundred dollars.



Aaron Perez (right) and Bradley Danforth find a line at Brandon Fire District #1.

Also consider authorized but unmetered usage in the system, such as water lines feeding town properties like cemeteries or recreation fields. Look back on the previous year's usage for the same month or quarter and compare it to the current usage after subtracting the totaled billed usage. This is a great way to keep an eye on

whether unmetered usage is increasing, which could indicate a leak.

Small water systems without customer meters have a greater challenge detecting water loss. Closely tracking your water production and

well pump run times is a great place to start. Be sure to compare these numbers to previous years because seasonal changes can influence the way people use water. But without knowing what the actual consumption numbers are, other techniques can also prove helpful.

Having service connections in the system with pressure gauges located in accessible places—and before pressure reducers—can give a water operator a way to check system pressure fluctuations, which can indicate problems such as leaks in the distribution system.

Public education can also be a valuable tool to an operator. Educating customers about signs of water leaks such as low pressure, air in the water line, and dirty water is important. A customer may not (and often times doesn't) report minimal decreases in pressure or a small amount of air in their lines. Many small water systems are alerted to leaks when a member of the public reports either low water pressure or water surfacing on a roadway.

Keeping a vigilant eye and ear out for signs of trouble can not only save a system money, but can also save an operator from having to do unplanned repairs which seem, in my experience, to happen late at night, in the freezing cold, or on Friday afternoons. 💧

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Manganese in Your Well Water?

Why and how it should be treated



GUEST AUTHOR

Miles E. Waite, PhD, PG

Waite-Heindel Environmental Management

In Vermont, manganese is a common mineral found in rocks, soil, groundwater, and some surface water. It can be problematic for both public water systems with a groundwater source and private wells.

A 1980s USGS study of Vermont aquifers identified that crystalline bedrock aquifers, which are common throughout Vermont, have the highest prevalence of manganese as compared to less common carbonate bedrock and gravel aquifers.

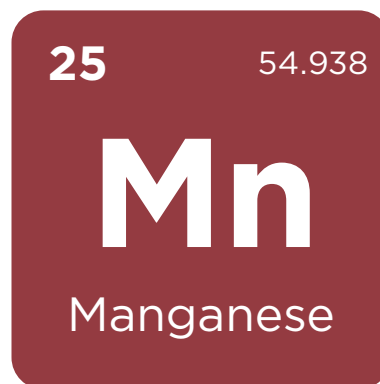
The concentration of manganese in groundwater can fluctuate with changes in temperature and geochemical conditions. Manganese can also be present in groundwater as a non-naturally occurring contaminant, for instance leached from mine tailings, such as at Vermont's Elizabeth Mine Superfund Site.

At low doses, manganese is essential for human health, as it is a mineral required for many metabolic and cellular functions. However, at high doses over a long time, manganese exposure can harm the nervous system.

The Vermont Department of Health (VT DOH) has issued a Vermont Health Advisory (VHA) for manganese at 0.300 mg/L. The VT DOH warns that special care should be taken to avoid making infant formula with water containing a manganese concentration above the VHA.

However, the EPA has not promulgated a primary maximum contaminant level (MCL) for manganese, which would be for health-related concerns. Instead, the EPA regulates manganese as a secondary contaminant due to aesthetic concerns, which include metallic taste, black staining of fixtures, and mineral build-up within plumbing systems. The EPA's secondary maximum contaminant level (SMCL) is 0.05 mg/L.

There are several ways to reduce manganese in well water, for both private wells and public water systems. One method is modification of the well. If it



Manganese is a metal that can be a naturally occurring or non-natural contaminant in groundwater.

is possible to identify a specific fracture, or fracture zone, that is transmitting the manganese-laden water into the well, then casing sealing or well packers could be used to isolate the zone and improve overall well water quality.

The other method is water treatment. Both ion exchange and chemical oxidation are commonly used to reduce manganese in water. In ion exchange systems, also known as water softeners, the water flows from the well through resin beads to which metals, including manganese, adhere. The resin beads are regularly regenerated by flushing with a saltwater brine which flushes out the ions.

For residential use, it is important to note that the backflush liquid needs to be discharged. It should not be piped to a conventional septic system typical of Vermont homes.

In chemical oxidation systems, a chemical oxidant, often potassium permanganate, is added to the well water causing the manganese to precipitate out of solution. The water is then forced through a filter, often comprised of sand and catalyzed carbon, to capture the precipitated manganese. Sand filters can also require regular backflushing and regeneration. 💧

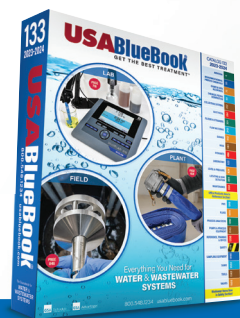
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