MIDDLEBURY WATER DEPARTMENT
CONSUMER CONFIDENCE REPORT FOR 2019

The Town of Middlebury is pleased to provide you with our annual Consumer Confidence Report. The purpose of this report is to inform you about the quality of our water, the measures used to ensure water quality, protection of our water sources and distribution system improvements. This report is a summary of the quality of the water provided in 2019. It is a record reflecting work done to bring you water that satisfied all the requirements of the Safe Drinking Water Act. The report includes details about where the water comes from, what it contains, and how it compares to strict standards set by the EPA, the Health Department and other regulatory agencies. If you have questions concerning this report, please call William Glen at 388-4045 or e-mail the Water Department at publicworks@townofmiddlebury.org.

WHERE DOES OUR WATER COME FROM? Middlebury's water comes from three (3) drilled wells located on the east side of town. Well #2 located at Palmer Springs is our primary source supplying 1,550 gallons of water per minute (gpm). The other two wells, #3 and #4, serve as back-up water sources providing 450 gpm and 700 gpm, respectively. The State of Vermont Water Supply Rule requires Public Community Water Systems to develop a Source Protection Plan. The plan delineates a source protection area for our system and identifies potential and actual sources of contamination. A Source Protection Plan has been developed for each of our water sources and has been approved by the Vermont Agency of Natural Resources as meeting both State and Federal drinking water standards. Our system's susceptibilities to potential sources of contamination are sand and gravel pit operations, agriculture, individual on-site septic systems and its proximity to Route 116. The Source Protection Plan is available for review at the Town Manager's Office in the Municipal Building. Please contact us if you are interested in reviewing the plan.

WHAT'S IN DRINKING WATER? In general, sources of drinking water (both tap water and bottled water), may include ground water (wells and springs), and surface water (reservoirs, lakes, streams and rivers). As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals. It also may become contaminated by substances resulting from the presence of animals or from human activity. To ensure our tap water is safe to drink, the Environmental Protection Agency (EPA) and the State of Vermont prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. They also prescribe water treatment methods and strict testing procedures. The Food and Drug Administration (FDA) and state regulations also establish limits for contaminants in bottled water which must provide the same protections for public health. Contaminants that may be present in source water include microbial contaminants and inorganic, organic and radioactive chemicals. Microbial contaminates such as viruses and bacteria come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife. Inorganic chemical contaminants such as salts and metals may be naturally occurring and come from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining and farming. Organic chemical contaminates, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production and come from gas stations, urban storm water run-off, agriculture and septic systems. Pesticides and herbicides may come from a variety of sources including storm water runoff, agriculture and residential activities. Radioactive contaminates are naturally occurring and can be the result of mining activity. Some contaminates such as iron and sulfur are classified by the EPA as Secondary Contaminates and are not harmful to human health. The Secondary Maximum Contaminate Levels (SMCL), are used as a guide to assist public water systems in managing their drinking water for aesthetic considerations such as taste, color, and odor. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and their potential health effects can be obtained by calling the U.S. Environmental protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

OUR WATER NEEDS MINIMAL TREATMENT. Chlorine is added to our water as a disinfectant to control any harmful bacteria or viruses that may be present. Fluoride is added for dental health benefits. Our water treatment procedures are monitored by the Vermont Department of Environmental Conservation, Water Supply Division and by the Vermont Department of Health. Daily monitoring is performed for both chlorine and fluoride.

A GREAT VALUE. Your water rates pay for the delivery of high-quality water to your faucet and for keeping the water system in top condition. The Town has made and continues to make improvements to the system to ensure the reliability and quality of its water and service. Money we receive from our customers pays for wellhead protection efforts, planning and conservation programs, system operation and treatment, system maintenance and system improvements.

DISTRIBUTION OF WATER SYSTEM INFORMATION. Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place and by distributing copies by hand or mail.

PUBLIC PARTICIPATION OPPORTUNITIES. The Board of Selectmen schedule regular meetings on the second and fourth Tuesday of each month. Meetings are held in the Municipal Building Conference Room and start promptly at 7:00 PM. The Selectmen also serve as the Town's Water Commissioners. You are invited to attend the meetings, and you will be given the opportunity to discuss water issues or other concerns, either during the "citizen's comments" portion of the meeting or by contacting the Town Manager in advance to have your particular item or concern placed on the agenda for an upcoming meeting.

HEALTH INFORMATION REGARDING DRINKING WATER. Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders and some elderly, and infants, may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Guidelines from the Environmental Protection Agency and the Center for Disease Control on appropriate means to lessen the risk of infection by cryptosporidium and other water born microbial contaminants are available from the EPA's Safe Drinking Water Hotline (1-800-426-4791).

WATER QUALITY DATA. The table below lists all the drinking water contaminates that were detected during the past year. It also includes the date and result of any contaminates that were detected within the past five years if tested less than once a year. The presence of these contaminates in the water does not necessarily show that the water poses a health risk.

DETECTED CONTAMINATES

Disinfection Residual	RAA	Range	Unit	MRDL	MRDLG	Typical Source
Chlorine	0.258	0.100 - 0.480	mg/L	4.0	4.0	Water additive to control microbes.

Chemical Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
Fluoride	8/14/2019	0.7	0 - 0.7	ppm	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	2/20/2019	0.97	0.3 - 0.97	ppm	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage, erosion of natural deposits.

Radionuclides	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
Combined Radium (226 & 228)	7/24/2017	1.04	0.375 – 1.04	pCi/L	5	0	Erosion of natural deposits.
Radium-226	7/25/2017	0.375	0.375 – 0.375	pCi/L	5	0	Erosion of natural deposits.
Radium-228	7/24/2017	1.04	1.04 – 1.04	pCi/L	5	0	Erosion of natural deposits.

Disinfection By-products	Monitoring Period	LRAA	Range	Unit	MCL	MCLG	Typical Source
Total Trihalomethanes	2019	4	4-4	ppb	80	0	By-product of drinking water chlorination.

Copper and Lead	Collection Year	90th percentile	Range	Unit	AL*	Sites Over AL	Typical Source
Copper	2017	0.22	0.04 - 0.29	ppm	1.3	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.
Lead	2017	4	0 - 4	ppb	15	0	Corrosion of household plumbing systems; Erosion of natural deposits.

*The lead and copper Action Level (AL) exceedance is based on the 90th percentile concentration, not the highest detected result.

PER and POLYFLUOROALKYL SUBSTANCES (PFAS)**, are contaminates you may see reported in your Consumer Confidence Report for the first time.**

PFAS are a group of over 4,000 human-made chemicals (they do not occur naturally), that have been used in industry and consumer products since at least the 1950s. These chemicals are used to make household and commercial products that resist heat and chemical reactions and repel oil, stains, grease and water. Some common products that may contain PFAS include non-stick cookware, water resistant clothing and materials, cleaning products, cosmetics, food packaging materials and some personal care products. Due to their resilient chemical nature, they do not readily degrade once they are released into the environment. In addition, the common use of these chemicals in industry and consumer products has led to their widespread impact on the environment. The impact of these chemicals on your drinking water continues to be studied.

Why is Middlebury's water being tested for PFAS? In 2019, Act 21(S.49), an act relating to the regulation of per- and polyfluoroalkyl (PFAS) substances in drinking and surface waters was signed into law by Governor Scott. Act 21 provides a comprehensive framework to identify PFAS contamination and to issue new rules to regulate PFAS levels in drinking water. In August of 2019, Middlebury's three wells along with the source water of other public water systems in Vermont, were sampled for PFAS under the Act 21 mandate. No PFAS contamination was identified in Middlebury's 2019 source water samples. Following Act 21, the Water Supply Division of the VT Department of Environmental Conservation has integrated the PFAS rules into the VT Water Supply Rule. Middlebury's wells will again be sampled for PFAS contamination in October of 2020 under the VT Water Supply Rule mandate and the results of the PFAF monitoring will appear in next year's CCR along with our other water monitoring data. Currently, assuming that no PFAS are identified in future water samples, Middlebury's water monitoring schedule will include PFAS monitoring of our source water every three years.

What if PFAS are detected in my drinking water? Act 21 set an interim standard for the detection concentration of five PFAS in drinking water, or the combined concentration of any of the five PFAS, which should not exceed 20 parts per trillion (ppt). The interim standard is based on the Health Advisory established by the Vermont Department of Health. The five PFAS are;

(PFNA): Perfluorononanoic Acid
(PFOA): Perfluorooctanoic Acid
(PFOS): Perfluorooctane Sulfonic Acid
(PFHpA): Perfluoroheptanoic Acid
(PFHxS): Perfluorohexane Sulfonic Acid

If the sum of the five PFAS listed above is confirmed to exceed 20 ppt in a source water sample, a DO Not Drink notice will be issued informing you to not use the water for drinking of cooking, brushing teeth, making ice cube, making baby formula, washing fruits or vegetables or any other consumptive use. You will be advised to use another source of water for consumption which may include bottled water.

Act 21 required drinking source water to be tested for an additional thirteen PFAS. These additional PFAS are listed below. They currently do not have an established health-based standard and their concentration in drinking water are not counted toward the combined total PFAS concentration of 20 ppt. The additional thirteen PFAS that the drinking water samples are also tested for include;

(11Cl-PF3OUdS): 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid
(9Cl-PF3ONS): 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic Acid
(DONA): 4,8-Dioxa-3H-perfluorononanoic Acid
(HEPO-DA): Hexafluoropropylene Oxide Dimer Acid
(NEtFOSAA): N-ethyl perfluorooctane sulfonamidoacetic Acid
(NMeFOSAA): N-methyl perfluorooctanesulfonamidoacetic Acid
(PFBS): Perfluorobutane Sulfonic Acid
(PFDA): Perfluorodecanoic Acid
(PFDoA): Perfluorododecanoic Acid
(PFHxA): Perfluorohexanoic Acid
(PETA): Perfluorotetradecanoic Acid
(PFTrDA): Perfluorotridecanoic Acid
(PFUnA): Perfluoroundecanoic Acid

Where can I learn more about PFAS in drinking water? For more information about the health effects of PFAS, please visit www.healthvermont.gov/water/pfas or call the Vermont Department of Health at 1-800-439-8550. If you have specific health concerns, contact your health care provider.

LEAD IN DRINKING WATER. If present, elevated levels of lead can cause serious health problems, especially for pregnant woman and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Middlebury's Water Department is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting in your buildings plumbing for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using the water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

UNCORRECTED SIGNIFICANT DEFICIENCIES. The Middlebury Water Department is required to inform you of any significant deficiencies identified during a sanitary survey conducted by the VT DEC Drinking Water and Ground Water Protection Division that have not been corrected. For more information please refer to the schedule for compliance in the system's Operating Permit.

Date Identified	Deficiency	Facility
02-23-2015	Inadequate Chemical Application Facilities	Palmer Springs Well #2
09-29-2017	Required storage facility inadequate.	New Chipman Hill Reservoir

INADEQUATE CHEMICAL APPLICATION FACILITIES. Changes in the Water Rule now require monitoring of our water's chlorine level to change from daily monitoring in the water distribution system to continuous monitoring at the two locations where the chlorinated water enters the distribution system. Although the chlorine monitoring requirement has changed, the equipment and method used to chlorinate our water has not. New chlorine and fluoride monitoring facilities have been constructed however the data produced by the new monitoring equipment is inconsistent. Currently, while we work with our design engineer and equipment vendor to troubleshoot the new monitoring equipment, we continue our normal manual monitoring procedures for chlorine and fluoride levels at these two locations as well as at a third location in the water distribution system.

REQUIRED STORAGE FACILITY INADEQUATE. Middlebury has grown over the past decades and it's 1.5-million-gallon reservoir is now too small to meet the combined daily domestic water and fire flow storage requirements during peak water demand periods in the summer. The water production rate at the Town's main water source at Palmer Springs helps to mitigate this, however. To address the inadequate reservoir capacity the Town will need to begin the process of engineering increased water storage. Details needing consideration during the engineering and design process include Middlebury's projected increase in water demand over the next twenty years, water conservation options during high demand periods and how an additional reservoir will function within the water distribution system in regards to system hydraulics, fire flows and water quality.

GLOSSARY OF TERMS. Below is a list of terms and abbreviations with their definitions. They are included here so that you may better understand them as they are used in this Consumer Confidence Report.

ACTION LEVEL (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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 have been found in the water system.

LEVEL 2 ASSESSMENT – A Level 2 Assessment is a very 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 have been found in the water system on multiple occasions.

LOCATIONAL RUNNING ANNUAL AVERAGE (LRAA) – The average of sample analytical results for samples taken at a particular monitoring location during four consecutive calendar quarters.

MAXIMUM CONTAMINATION LEVEL (MCL) - The "Maximum Allowed" MCL is the highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG as feasible using the best available treatment technology.

MAXIMUM CONTAMINATION LEVEL GOAL (MCLG) - The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MAXIMUM RESIDUAL DISINFECTANT LEVEL (MRDL) - The highest level of a disinfectant allowed in drinking water. Addition of a disinfectant may help to control microbial contaminates.

MAXIMUM RESIDUAL DISINFECTANT LEVEL GOAL (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of disinfectants in controlling microbial contaminants.

NEPHELOMETRIC TURBIDITY UNIT (NTU) – NTU is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

PARTS PER MILLION (ppm) – Also expressed as milligrams per liter (mg/L), one ppm is analogous to one penny in ten thousand dollars.

PARTS PER BILLION (ppb) – Also expressed as micrograms per liter (µg/L), one ppb is analogous to one penny in ten million dollars.

PARTS PER TRILLION (ppt) – Also expressed as nanograms per liter (ng/L). one ng/L is analogous to one penny in ten billion dollars.

PICOCURIES PER LITER (pCi/L) - A curie is a measurement of radioactivity based on the decay rate of radium. A picocurie is one trillionth of a curie.

RUNNING ANNUAL AVERAGE (RAA) – The average of 4 consecutive quarters (when on quarterly monitoring); values in table represent the highest RAA for the year.

TREATMENT TECHNIQUE (TT) - A required process intended to reduce the level of a contaminant in drinking water.

90th PERCENTILE – 90% (9 out of 10), of the samples in a sample set that are below the action level.

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(**PFTrDA):** Perfluorotridecanoic Acid
(PFUnA): Perfluoroundecanoic Acid

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Specific questions or comments may also be directed to any of the following:

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