Town of Tewksbury 2011 Consumer Confidence Report
Tewksbury Water Department (System ID#:3295000)

The purpose of this report is to educate all water users in the Town of Tewksbury about their water system; the drinking water quality, how the water is treated and the results of that treatment.

Water Billing: (978) 640-4350
Water Treatment Plant, Lewis Zediana: (978) 858-0345
Water /Sewer Division, George DeRoche: (978) 640-4440 ext. 5
Cross Connection Program: (978)-858-0345

Water is a precious resource, please conserve when possible.

A limited amount of Water Conservation Kits are available, at no cost, at the Department of Public Works.

Did you know? Irrigation metering is available to all water users. Water users who are interested in reducing sewer charges for irrigation water only, may install a secondary meter (at their own cost). The secondary meter may be used during the growing season and is subject to certain restrictions please contact us or check our website for more information.

Many lawns will flourish if a good, deep watering is performed once a week rather than every day. Deep water causes the grass to seek water deeper into the ground and develops a better root system. Mold and moss growth is eliminated since this type of growth requires constant wetness that daily watering would provide. During the summer, droplets of water on the blades of grass act as tiny magnifying glasses and may cause damage during hot sunny days. Watering at night/early morning is always best.

Water Production Statistics

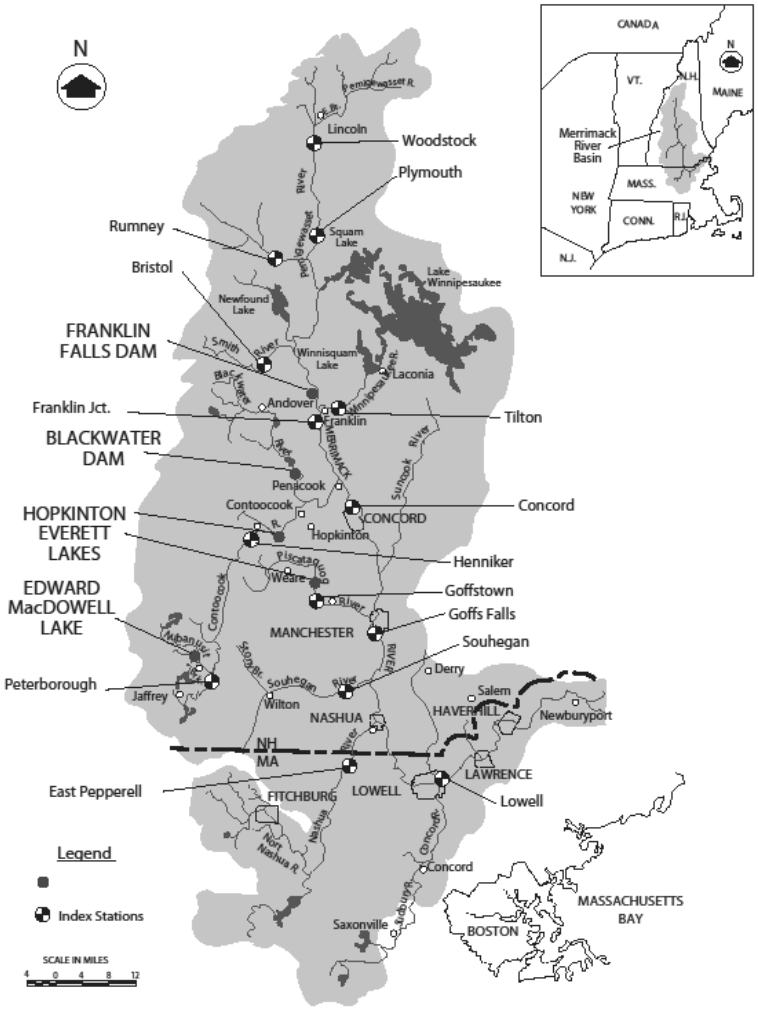
- In 2011 the Town of Tewksbury consumed 813 million gallons of water.
- The water plant treated an average of 2.23 million gallons of water per day.
- The peak treatment rate was 4.292 million gallons (24 hours) which occurred on 7/22/11.
- Residents consumed 50 gallons per day per person on average.
- Commercial and Industrial facilities used 146 million gallons of water or 18 %.
- Residential water use amounted to 554 million gallons or 68%.
- There are now 10,065 water connections to the distribution system.
- The unaccounted for water was 10.8 %

Why am I receiving this report? : This report is mandated by the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MaDEP). Much of this report consists of required language which may or may not be relevant to the Tewksbury Water System. Please feel free to contact the Treatment Plant for further clarification. If English is not your first language please have this report translated.

Si Ingles no es su primer idioma, por favor traduzca el informe.

Where does my water come from?

In the graphic to the right, the entire Merrimack River Basin is outlined in light gray.
Most of the water originates from Lake Winnipesauke and along with several other tributaries forms the Merrimack River, which eventually exits into the Atlantic Ocean.
The river basin covers 4,672 square miles of area and is located in two different states. Because of this large basin area the Merrimack River always has water and is not considered a "stressed basin".

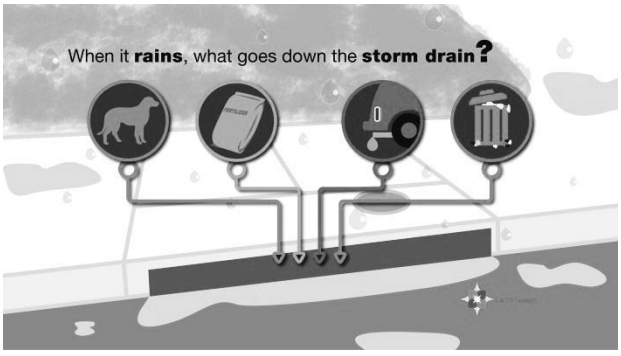


Is it clean?

In the last 25 years, mostly due to installation of wastewater plants and elimination of various discharges, the Merrimack River has under gone a great transformation into a class "B" water source. Class "B" rivers are suitable for drinking water, recreation and other uses.

Stormwater Programs and how it can help you!

Storm water is nature's way of cleansing the land and carrying off debris and pollutants. This naturally occurring cleaning process carries sediments and dissolved material into the river by way of percolating into the soil and allowing the land to filter out harmful material before it gets into streams or smaller rivers. However when large sections of land are covered using impervious material like asphalt or concrete, it interferes with this natural process. Instead of the water percolating into the land, the storm water runs off into the body of water, directly carrying silt and dissolved material into the river or stream.



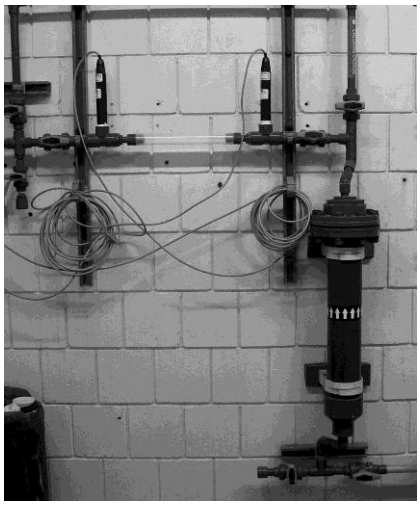
What small part can you do?

- Plant vegetation or small trees that will retain silt and other material from flowing directly into nearby streams.
- Use the correct amount of fertilizer, twice as much recommended does not produce greener grass.
- Keep as much of your property open to storm water percolation.
- Storm Drains are not to be used for disposal

The Water Treatment Process and how it Works

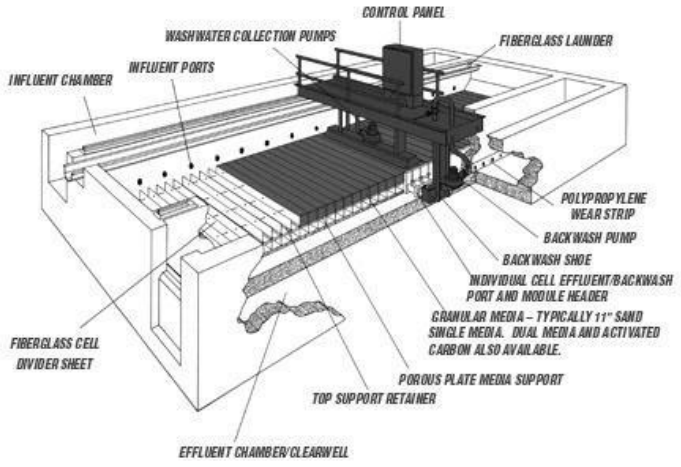
1. **Screening:** The first and most unseen process is called screening. Several large screens shaped like torpedoes, are used to prevent debris, fish and other objects from entering the treatment process. Large stainless screens located on the bottom of the river allow water to pass through 1/8" slots therefore "screening out" any debris. Compressed air is used to occasionally clean the screen surface.
2. **Primary Disinfection:** Chlorine Dioxide (a compound related to chlorine) is used to disinfect and oxidize any material which may be found in the water. Typically all bacteria are destroyed and any Iron or Manganese is converted to an easier compound to remove later in the process. Chlorine Dioxide cannot be stored and is generated on site.

Chlorine Dioxide Generator



3. **Secondary Disinfection and Destruction of Ammonia:** Sodium Hypochlorite (bleach) is added along with Sodium Hydroxide. The bleach is added to help remove naturally occurring ammonia compounds which may impart taste and odor to the water and to help stabilize the chlorine content in the water. The added bleach also helps to disinfect the water a second time to help prevent any problems with cryptosporidium or giardia (protozoa's). The sodium hydroxide adds alkalinity to the water to help in the coagulation process. This step also disinfects the water a second time.
4. **Aluminum Sulfate (aka Alum):** Is added to coagulate and coat tiny particles such as silt, plant debris and other microscopic material which causes the water to become cloudy (we call this turbidity). Over 80% of the turbidity is removed through the pre-treatment process, which takes over several hours to complete.
5. **Powered Activated Carbon (aka PAC):** A small amount of this finely powered material is added to help absorb a variety of problems that may be found in the water. The PAC can absorb Taste and Odor compounds, destroy Chlorine in the alum sludge and can help the floc particles to settle faster.
6. **Filtration:** All of the water is filtered through four (4) dual media filters. Dual media means that two different types of filter media are used in our filters. 36 inches of Granulated Activated Carbon (GAC) sits on top of 12inches of fine filter sand. Our filters are automatic Backwash Filters (ABF) (see schematic at right) which allows us to backwash (clean) the filters while still filtering water. Each filter contains over 35,000 lbs. of GAC which is replaced every two years with newly activated GAC. The water upon exiting the filter is monitored for turbidity on a continuous basis. It is not unusual for our facility to consistently produce water under 0.05 turbidity units. As a comparison, distilled water has a value of about 0.02 turbidity units.

Automatic Backwash Filter (ABF)



7. **Final Treatment:** The final or what we call "Post Treatment" includes adjusting the pH of the water to about 7.5 standard units using more sodium hydroxide, adding a fluoride compound for promoting good dental health, zinc ortho phosphate to reduce corrosion of pipe material (reduces leaching of lead and copper), And finally another dose of bleach to maintain chlorine through-out the water distribution system.

Yearly Compilation of Detected Compounds & Maximum Allowable Limits

Contaminant	Highest Level	Range Detected	Average Detected	MCL MRDL	MCLG MRDLG	Violation Y/N	Possible Source
Perchlorate (PPB)	0.56	N/A	0.56	2	0	N	Oxygen additive for solid fuel rockets & missiles; Industrial waste
Fluoride (PPM)	1.4	N/A	0.8	4	4	N	Water additive which promotes strong teeth
Sodium (PPM)	72.1	N/A	72.1	N/A	N/A	N	Natural Sources; runoff from salt used on roadways; by-product of treatment process
Nitrate (PPM)	0.24	N/A	0.24	10	10	N	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Turbidity (NTU)	0.14	0.02-0.14	0.06	0.30	<5% over 0.3 NTU	N	Soil runoff
Sulfates (PPM)	26.0	N/A	26.0	N/A	N/A	N	Soil runoff and detergents; by-product of treatment process
TTHM's (PPB)	72	29-72	48	80 running average	N/A	N	By-product of drinking water chlorination
HAA's (PPB)	29	6-29	18	60 running average	N/A	N	By-product of drinking water chlorination
VOC's (PPB)	None Detected	None Detected	None Detected	Varies	0	N	Discharges from industrial chemical factories
Chlorite (PPM)	0.52	0.05-0.52	0.10	1	N/A	N	Disinfection by-product
Total Coliform	0	0	0	<5%	0	N	Naturally present in environment
Lead & Copper Program	90th percentile	# of sites exceeded	# of samples sampled	Action Level	MCLG	Violation Y/N	Testing date: 2011 Next testing date: 2014
Lead (PPM)	0.009	0	31	0.015	0	N	Corrosion of household plumbing systems; erosion of natural deposits
Copper (PPM)	0.12	0	31	1.3	0	N	Corrosion of household plumbing systems; erosion of natural deposits

Thank you to our "Lead & Copper" volunteers, who assist us in this important program.

Terms and other related information required by the EPA in this document

1. **Maximum Contaminant Level (MCL)** – the highest level of a contaminant that is allowed in drinking water.
2. **Maximum Contaminant Level Goal (MCLG)** – the level of a contaminant in drinking water below which there is no known or expected risk to health.
3. **Maximum Residual Disinfectant Level (MRDL) --** The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
4. **Maximum Residual Disinfectant Level Goal (MRDLG)** -- The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known of expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
5. **Treatment Technique (TT)** – A required process intended to reduce the level of a contaminant in drinking water.
6. **Action Level (AL)** – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
7. **PPB –** Parts per billion or micrograms per liter (μg/L).
8. **PPM –** Parts per million or milligrams per liter (mg/L).

Substances found in tap water

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material. It can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants -such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
Inorganic contaminants -such as salts and metals, which can be naturally-occurring or result from urban storm-water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming.
Pesticides and herbicides -which may come from a variety of sources such as agricultural, urban storm-water runoff, and residential uses.
Organic chemical contaminants -including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm-water runoff, and septic systems.
Radioactive contaminants -which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All 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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800.426.4791.

Important Information

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, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 800.426.4791.

Lead: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at 800.426.4791.
THM: Some people who drink water containing trihalomethanes in excess of the MCL over many years experience problems with their liver, kidneys, or central nervous systems, and may have increased risk of getting cancer.
Turbidity: Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Do you want to know more? Try: WWW.EPA.gov & WWW.Mass.gov/DEP
Also try: WWW.Merrimack.org & WWW.Cleanriverproject.org
These organizations are volunteered supported and manned. If you want to help the Merrimack River check out these websites.
Our website is: Tewksbury-ma.gov CLICK on 'Departments' then the 'Water Treatment Plant'

Tewksbury Cross Connection Program

What is a Cross Connection?

A cross connection occurs when the potable drinking water system is physically connected to a possible source of contamination.

A low hazard cross connection may be:

A hose left in a pool, a bucket of soap or a slop sink.

A high hazard cross connection may be:

A connection to a private well, an industrial process containing harmful chemicals or a fire water storage tank or even a hose left in a bucket of insecticide.

In either case, if a sudden drop in pressure occurs, caused by a fire or a broken water main, someone may get hurt. Learn how to prevent this and other situations.

What is the Owners Responsibility?

Owners of any industrial, commercial, agricultural, municipal and/or private residence are required to eliminate any cross connections. In the simplest cases, a hose bib will protect a facility or house from most cross connections. If you install an irrigation system you will need to install (in most cases) a pressure vacuum breaker (PVB). A PVB is a backflow device that prevents water from reversing direction and siphoning debris and other pollutants from your lawn into your household water supply. Not sure, call us for information (978) 858-0345.

If you have a private well there cannot be any physical connection between the well and the Towns water system!

Industrial, Commercial, Agricultural, Municipal and Institutional Facilities FYI !

- The Towns' backflow Tester/Survey will be surveying all non-residential facilities for Cross Connections and un-tested devices. There are over 438 facilities to survey in Tewksbury. Your cooperation in this inspection process is greatly appreciated.
- The Towns backflow Tester/Surveyor will assist facilities in either eliminating Cross Connections or by protecting the Towns water system by installing a backflow device.
- It is the responsibility of the backflow Tester/Surveyor to approve the type of device used (310 CMR 22.22).
- Installation of a backflow device requires a plumbing permit along with design data sheets to insure a proper installation. Design and data sheets may be found on our website (Tewksbury-ma.gov / Water Plant).
- Please remember! All facilities with backflow devices are required by law to keep a re-build kit on-hand.
- The backflow Tester/Surveyor will be testing all backflow devices on residential deduct meters.
- What is cluster designation? If you have more than one device at a location, we offer a discount for testing. Call us for more information to see if you qualify.