2009 Consumer Confidence Report

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Town of Tewksbury Water Department

PWSID#3295000
Water Billing: (978) 640-4350
Water Plant (Lewis Zediana): (978) 858-0345
Water / Sewer Division (George DeRoche): (978) 640-4440 ext. 5

Did you know?

Irrigation metering is now available in Tewksbury. Residents who are interested in reducing sewer charges for irrigation water may have a secondary meter installed at their own cost. The secondary meter may be used during the growing season only and is subject to certain restrictions, please contact us or check our website for more information.

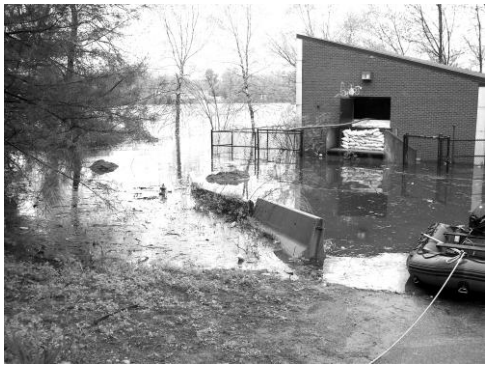
Water is a Precious Resource Please Conserve Water Whenever Possible

The Town of Tewksbury Consumer Confidence Report for 2009

2009 was a very wet year, due to the fact that there was little or no "summer" as water demand was flat throughout the summer season. This resulted in a total year's production of 907 million gallons of water.

Intake Protection System:

The Merrimack River, during some of the historical heavy rains, has threatened our intake facility with flooding. As a result of these historical conditions a new bulkhead system has been installed in front of the intake station doors, raising the flood level an additional two feet. A large pump capable of ejecting more than 450 gallons per minute also protects the station not only from flood waters but also in case of internal pipe breaks or leaks. What is not generally known is that the intake building is actually built as a 20 foot deep tank with 12 inch solid concrete walls. During the flood of May 2006 only about ½ cup of water seeped into the building. The building has been designed to withstand total immersion up to the door level without leaking. Now it can be submerged an additional two feet. These improvements were paid for through a flood grant program underwritten by MEMA and FEMA.



Old Main Street Valve

Other completed projects include the installation of a control valve at Old Main Street control valve. This control valve will balance the water system automatically and allow the Astle Street and Ames Hill storage tanks to work in harmony. Initial results have been excellent. Residents in the low-pressure area of the North residents should experience more water pressure.

Ames Hill Booster Pump Station

A new booster pump station has been added to the water system replacing the old Catamount Street station. The Ames Lodge booster pump station is equipped with three 15 horse power booster pumps and two 40 horsepower fire pumps. The station runs continuously to supply water to the top of Ames Hill and the new apartment development located there. This is a high quality above ground facility with computer controlled systems and a back-up generator. It is expected that this facility shall serve the Town well for many years to come. Residents of Ames Hill are now enjoying a 10 PSI increase in water pressure.

Colonial Drive Storage Tank.

Total Capacity: 5.0 million gallons of water. The brick structure at the left of the tank houses three vertical turbine pumps. Each pump is capable of pumping over 2 million gallons per day into the water system. A smaller structure behind the pump station (unseen) houses a diesel generator for back-up power. What is so unusual about this tank? It is the largest pumped tank in New England. Over 100 miles of wire rapping is used under more than 10,000 pounds of tensile strength along with thousands of yards of concrete keeps this tank together. Most of the tank is under ground. The dome section contains no water and the amazing strength of the support ring with fourteen layers of wires holds the dome section up without any internal columns. The dome "floats" on top of the support collar. The facility is monitored via Closed Caption Television 24/7 and is remotely controlled from the plant.

Town Receives Fluoride Upgrade Grant- This grant will be used to update and improve monitoring of the Fluoride feed systems. A grant in the sum of over $14,000.00, supplied by the Massachusetts Department of Public Health, Department of Oral Health shall be used to install a new fluoride monitor and to improve the safety of the entire system. Our facility has maintained excellent control over the Fluoride concentration for years. Our many awards from the Department of Public Health shall attest to this fact. However there is always room for improvement especially when the health of the public is at stake. This system shall be interlocked so that if any issues with the system occur, the chemical feed pumps shall be automatically shut-down and an alarm will be sounded. In addition the grant requires enhanced fluoridation training and improved data collection. This is a win-win for the plant and the public. Please remember using Fluoride promotes good dental health and helps to reduces cavities.

Stormwater Issues and What You Can Do

Storm water can and does affect everyone. Storm water is best absorbed into the ground where it can recharge the aquifer and become purified and filtered naturally by the sand strata below grade. However when discharges go directly into small streams and ponds, any pollutants carried by that runoff can affect the health of the receiving body of water. Silt can clog gills of fish, oils, grease and gasoline can directly enter the water through drainage off impervious surfaces such as parking lots. Illegal drainage of sewerage or poorly constructed septic systems can increase bacterial levels too. The Town is undertaking a stormwater monitoring program to analyze the water from the many streams and outlets through-out Tewksbury. Recent efforts include procuring equipment and GPS mapping all of the outfalls in Tewksbury. Much of this exhaustive work has been performed by our Engineering Division staff, their interns, and Tewksbury Memorial High School students from some of Ms. Senechal's environmental classes. Once all of the outfalls are mapped, monitoring shall commence and the Town will then start to mitigate any discharges that are polluting the receiving body of water.

But what can you do? Direct your roof drains to maximize absorption into the ground or plant and maintain shrubbery and bushes to slow down water from draining directly into a stream or pond. Keep small streams clean and free from debris, a free flowing stream will exchange more oxygen and flush more debris than a clogged slow moving stream. Allow the natural cleansing action of the "good" bacteria to work vs. allowing a pond or stream to become an algae-clogged swamp. Please visit www.tewksbury.net/Pages/TewksburyMA _Engineering/storm for additional information.

DEP has prepared Source Water Assessment Reports known as SWAP. These reports can be viewed online at: www.state.ma.us/dep/brp/dws/.

Water Meter Change-out Program

The Water Meter Change-out Program is almost entering its final year; the project is anticipated for completion in the fall of 2011. About 3,000 residential meters, 150 commercial meters and some municipal meters and backflows remain in the final stages of this five year program. These new meters work on a "Fixed Network System" which sends daily meter readings to the networks receivers and the information is transferred into a server for billing. If you see the letters or door hangers requesting to schedule an appointment, please respond as soon as possible so that we can keep this important project, on schedule and under budget.

Any river is a summation of the whole valley. To think of it as nothing but water is to ignore the greater part.
Hal Borland, from "This Hill, This Valley, 1990

Why create this report: This report and much of its content is mandated by the EPA and MADEP. The Consumer Confidence Report is designed and meant to inform and educate water users about your water system and what is happening.

◄The Endicott Statue at Weirs Beach, Laconia. The start of the Merrimack River.

Where Does my Water Come From? How is it treated?

The Tewksbury WTP uses a comprehensive full treatment design with multiple barriers. This design allows for failure of several unit processes and will still produce safe drinking water. Redundancy and back-up systems are used in order to insure that the facility can continue to supply water to the public. Last year the plant was operating for 99.94 % of the year. The only shutdown was scheduled to allow maintenance.

Our raw water source is from the Merrimack River which supplies plentiful amounts of water and is designated by DEP as a class "B" river suitable for drinking water. The River water is treated using Chlorine Dioxide and Sodium Hypochlorite to insure that no bacteria or other microbe can survive the treatment process. Along with weekly quality control the plant has an outstanding 22 year record of no detectable bacteria in the distribution system.

Aluminum sulfate is used to coagulate and settle out any debris such as silt, plant material and even particles as small as microbes. Alum Residuals are drawn off as a by-product of the treatment process. Alum residuals are dried on site using a unique pre-coated vacuum filter rotary dryer which produces a solid waste which is easily disposed of by several methods. Annually we produce over 900 wet tons of filter cake from 1-2 million gallons of Alum sludge.

Yes we are "green"! 99.997 % of all the water taken from the Merrimack River ends up as potable drinking water. This "green" approach is the result of internal recycling of water from various processes such as filter backwashing, sample sink water taps and even the Alum residuals drying system recycles almost all of its water.

◄ GAC Filter being changed out with new Activated Carbon

The final process includes passing the water through four (4) massive filters which contain a total of 140,000 pounds. of granulated activated carbon and several tons of filter grade sand. This step removes virtually all particles and the water becomes crystal clear.

These are called Automatic Backwash Filters (ABF). The process of backwashing the filters involves the bridge in the background and the individual cells. Each cell is backwashed separately; allowing the filter to stay in operation while being cleaned. Carbon is off loaded using a water-powered vacuum system which wets the carbon and allows the operator to spray the carbon into place. One filter requires about 8-10 hours of time to remove and replace the activated carbon. This filter will continue to operate for two years before it will need to be replaced. Each filter is filled with a bout 40,000 lbs. of activated carbon and about 12" of a fine filter sand. Total filtering capacity is about: 1.75 Million gallons per day for each filter. Total filter capacity is: 7.0 Millions gallons per day.

Final Treatment Before it is Sent Out to the Consumers:

Final treatment of the water includes a dose of chlorine to maintain a healthy distribution system, Sodium Hydroxide to adjust the pH to 7.5, Zinc ortho phosphate which is to prevent corrosion of lead and copper and Hydrofluosilicic acid used to add fluoride ion to the water.

Yearly Compilation of Detected Contaminates and their Maximum Allowable Levels

Contaminant	Highest Level	Range Detected	Average Detect	MCL/ MRDL	MCLG/ MRDLG	Violation Y/N	Possible Source
Perchlorate (PPB)	0.233	N/A	0.233	2	0	N	Oxygen additive for solid fuel rockets & missiles; Industrial waste.
Fluoride (PPM)	1.1	N/A	1.0	4	4	N	Water additive which promotes strong teeth.
Sodium (PPM)	37.7	N/A	37.7	N/A	N/A	N	Natural Sources; runoff from salt used on roadways; by-product of treatment process
Nitrate (PPM)	0.20	N/A	0.20	10	10	N	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits.
Turbidity (NTU)	0.10	0.02-0.10	0.03	0.30	<5% over 0.3 NTU	N	Soil runoff
Sulfates (PPM)	16.0	N/A	16.0	N/A	N/A	N	Soil runoff and detergents; by-product of treatment process
TTHM's (PPB)	76	28-76	42	80 Running average	N/A	N	By-product of drinking water chlorination
HAA'S (PPB)	11	4.2-11	8.3	60 Running average	N/A	N	By-product of drinking water chlorination
VOC's (PPB)	None Detected	None Detected	None Detected	Varies	0	N	Discharge from industrial chemical factories
Chlorite (PPM)	0.25	0.01-0.25	0.097	1	N/A	N	Disinfection by-product
Total Coliform	0	0	0	<5%	0	N	Naturally present in environment
Contaminant	90^{th} percentile	# of sites exceeded	# of sites sampled	Action level	MCLG	Violation	Testing date: July 2008. Next testing date: July 2011
Lead (PPM)	0.004	0	31	0.015	0	N	Corrosion of household plumbing systems; erosion of natural deposits
Copper (PPM)	0.066	0	31	1.3	0	N	Corrosion of household plumbing; erosion of natural deposits; leaching from wood deposits

1. **Maximum Contaminant Level or MCL:** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
2. **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.
3. **Maximum Contaminant Level Goal or MCLG:** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
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

"Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contamination. 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 (1-800-426-4791.)"

Contaminants that may be present in source water include:

***Microbial contaminants**, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.*

***Inorganic contaminants,** such as salts and metals, can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.*

***Pesticides and herbicides** may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.*

***Organic chemical contaminants** include synthetic and volatile organic chemicals that 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** 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 Department and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. FDA and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health."

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 infants can be particularly at risk from infections. These people should seek advice from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791)."

Lead and Copper Analysis

"If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Tewksbury 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 for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your 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 http://www.epa.gov/safewater/lead."

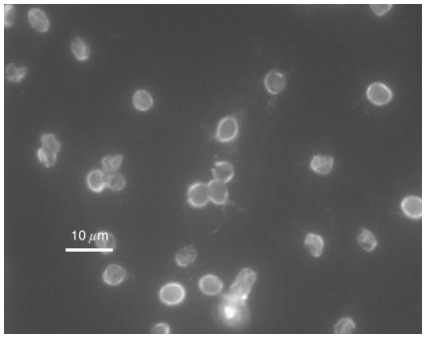
"This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it."

This report is also available in Spanish, Portuguese and Vietnamese. Please see our website

Safe Water Drinking Act

The Safe Water Drinking Act mandates that the EPA continuously investigate other contaminants and/or bacterium that may be harmful if allowed to exist in the drinking water. For Approximately two years our facility has participated in two studies designed to investigate such issues. This approach will allow the EPA to make decisions such as the possibility of regulating or changing our treatment process to protect the public. Then end result is higher quality of water for all and better protection for the public.

Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR or LT2)



A microscopic picture of Cryptosporidium ►

addition to the many sampling cycles that are completed throughout each year, all water systems serving at least 10,000 people were required to monitor their source water for *Cryptosporidium and Giardia* in conjunction with the usual *E. coli*, and turbidity. *Cryptosporidium and Giardia* are dangerous parasites that may cause intense intestinal distress. Since Tewksbury serves over 30,000 people our water system tested the raw water (Merrimack River) monthly for two years. Over 270 liters of water was collected, filtered and sent to Analytical Services Inc. in Vermont to be analyzed. We are happy to report that over the entire sampling period there was no detection of *Cryptosporidium* or *Giardia* through out the study.

◄A microscopic picture of Giardia

Even if any of the parasites were detected, our facility is required to treat for and prove that our treatment process is constantly effective for the removal of these parasites.

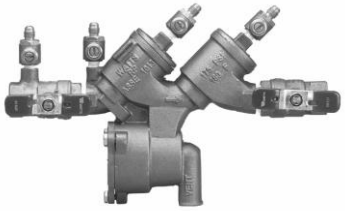
Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR)

Under the Stage 2 DBPR some water systems were required to conduct Initial Distribution System Evaluation (IDSE) monitoring for trihalomethanes (THM) and haloacetic acids (HAA5). Since Tewksbury had seen an elevation in their THM values; great pains were taken to find the potentially highest areas for future sampling points. The chemist with help from the Water Distribution supervisor worked tirelessly in order to find areas within the town that may have water with the longest residence time (oldest water). We are happy to report the findings proved all but one of the original sites were considered the best sampling sites (highest possible THM values). The results from this IDSE sampling is not currently used to determine the running averages but the ranges were found to be:
TTHM Range: 23.1 PPB – 117 PPB and HAA5 Range: 1.5 PPB – 23.3 PPB.

Is my water tested? We are required to perform in process testing every four hours. This lab-work insures that the process is working correctly and collects information used to produce monthly and annual reports such as this one you are reading. Our facility also performs many other tests which are either performed in house or sent out to certified analytical laboratories for analysis. It is estimated that in excess of over 250,000 data points are collected and stored between on-line instruments or daily laboratory testing. So to answer the question; yes your water is tested.

Backflow Prevention

Pressure Vacuum Breaker



RPZ Backflow Preventor

Double Check Valve Assembly

Do you have one of these devices? Backflow devices are used to protect the drinking water system from contamination from pollutants or any other hazardous chemicals such as antifreeze used in fire systems, to industrial processes. All owners of these devices are responsible for the proper maintenance of these devices and to keep a repair kit on hand at all times. Periodic inspections are made to insure that the devices are operating correctly. Our backflow inspector will contact your facility to schedule an appointment to inspect your device. Fire-line devices require the presence of your sprinkler technician in order to properly test the device. Please remember to keep a rebuild kit for your devices on site.

Town wide survey: A Town wide survey will commence in 2011 of all industrial, commercial, municipal, and agricultural facilities. These surveys are required by Mass General Laws 310 22.22 and are designed to insure that all required devices are installed and all cross connections are either eliminated or protected.

Do you have an irrigation system: If yes; you should have a testable pressure vacuum breaker installed to protect your house water and the water system of the Town. A water break or a fire nearby can cause negative pressure whereby containments found in the soil such as dirt, pesticides, herbicides, fertilizers and bacteria will quickly be drawn into your house plumbing. With a protective device like a pressure vacuum breaker situations like this can be eliminated. Call the plumbing department for more information at 978-640 4435.

The Tewksbury Water Department recommends the installation of backflow prevention devices, such as a low cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in your town. For additional information on cross connections and on the status of your water systems cross connection program, please contact the cross connection coordinator at 978-858-0345.

Do you want to know more? Try: WWW.EPA.gov & WWW.Mass.gov/DEP

Also try: WWW.Merrimack.org & WWW.Cleanriverproject.org

Both of these organizations are volunteered supported and manned. If you want to help the Merrimack River and have some fun too, check out these websites.

Our website is: Tewksbury-ma.gov CLICK on 'Departments' then the 'Water Treatment Plant'