



# WESTFORD WATER DEPARTMENT

# Resource

ISSUE 8 | Spring 2020

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## Water Commissioners

Hugh C. Maguire, *Chair*  
Titus Palmer, *Vice Chair*  
Chauncey Chu, *Secretary*  
Alternate, *Open*

## Department Contacts

Stephen Cronin, *Superintendent*  
Dave Crocker, *Operations Manager*  
Larry Panaro, *Business Manager*  
Mark Warren, *Environmental Compliance Manager*

## Contributors

Mark Warren, *Environmental Comp. Mgr.*  
Susan Silvia, *Administrative Asst.*

## Hours of Operation:

7am to 4pm Monday-Friday (except Holidays)

## How to Reach Us

Main Phone	(978) 692-5529
Superintendent	(978) 399-2455
Water Operations Manager	(978) 399-2456
Business Manager	(978) 399-2453
Environmental Compliance Manager	(978) 399-2457
Accounts Payable, Sandy Kane	(978) 399-2452
Billing, Dianne Tyman	(978) 399-2451

Visit our website: [www.westfordma.gov/water](http://www.westfordma.gov/water)

## After Hours

In the event of a water emergency outside of the work day, call the Police Department at (978) 399-2345. The police dispatcher will contact our on-call personnel for quick response.

## 2020 Water Department Projects

**Kirsi Circle.** Replacement of the existing 6 and 8" cast iron water main on Kirsi Circle, Douglas Road, and Anderson Lane will begin in summer 2020 (pending approval at Town Meeting). The mains in this area were installed in the 1970's and have been the source of numerous breaks over the years. This project will include the installation of new ductile iron water mains, valves, hydrants, and service connections to 52 homes. Approximately 5,700' of 8" water main on Kirsi Circle and Douglas Road, and 350' of 6" water main on Anderson Lane will be installed. Water will be available to all customers in the area during construction via a temporary bypass main.



**Above: Kirsi Circle project area. Water main breaks are depicted by the red stars.**

**Oak Hill/Plain Road/Moore Water Main, Roadway, and Drainage Improvements.** Replacement of existing undersized water main on Oak Hill, Plain, and Moore Roads will begin in the summer of 2020 (pending approval at Town Meeting). This project will include the installation of approximately 5,800' of 12" ductile iron, gate valves, hydrants, and new service connections to homes within the project area. In addition, several gaps in the main will be eliminated. This project will improve flow and water quality, and will be performed in conjunction with the roadway and drainage improvement work.



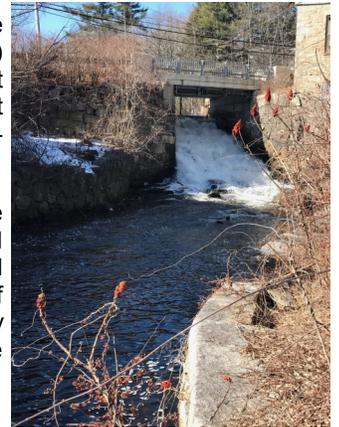
**Town Farm Tank Rehabilitation.** This 1907 water storage tank (pictured at left) will undergo full rehabilitation including interior and exterior re-coating, roof replacement, site improvements, and installation of a mixing system. Work is scheduled to begin in the winter of 2020.

**Town Farm Tank Rehabilitation.** This 1907 water storage tank (pictured at left) will undergo full rehabilitation including interior and exterior re-coating, roof replacement, site improvements, and installation of a mixing system. Work is scheduled to begin in the winter of 2020.

*These water infrastructure projects are funded entirely through the Water Enterprise Fund. The roadway and drainage improvement projects are funded through the General and Stormwater Funds, respectively.*

# Stony Brook Flow Restoration Project Phase 3

The Westford Water Department is pleased to announce that we have been awarded a grant from the Massachusetts Department of Environmental Protection (MassDEP) Water Management Act (WMA) grant program to continue work on the Stony Brook Flow Restoration Project (SBFRP). The Project Team will include the Westford Water Department, Littleton Electric Light and Water Department (LELWD), Geosyntec Consultants, and Comprehensive Environmental Consultants (CEI), in collaboration with several stakeholders.



The SBFRP was initiated to assess opportunities for improvement of streamflow within the 38 square miles Stony Brook Watershed downstream of several impoundments within Littleton and Westford through development of a Streamflow Restoration Plan (SRP). The goal being to conduct coordinated water releases to mimic natural conditions without compromising the ecologies and recreational uses of associated ponds and lakes. As MassDEP has identified the WWD supply source sub-basin as highly impacted by groundwater withdrawals, the SBFRP will benefit the WWD by providing means to minimize withdrawal impacts to streamflow.

The first two project phases included engagement of stakeholders, creation of a calibrated regional surface water model, evaluation of potential operational strategies for impoundments and streamflow improvement within the study area, installation of streamflow gages and in-stream testing to verify and update readings, empirical testing of low flow releases from impoundments, an optimization study of public water supply wells to minimize impacts to streamflow, and development of the SRP.

In addition, the Department of Ecological Restoration (DER) designated the SBFRP a Priority Project which provided funding and technical assistance to implement recommendations from the SRP. Several streamflow gaging events were conducted with DER, Westford Water, and Littleton Water staff in order to validate modeled impoundment discharge rates under different flow conditions. DER also conducted sampling of stream biota downstream of study impoundments. Several low flow releases were performed by Westford and Littleton staff throughout the summer.

Funding from the recently awarded grant will be used to re-engage stakeholders, develop a low flow release protocol, assess opportunities for automation, investigate expansion of the study area, and prepare long term permitting.

*This project has been financed partially with State Capital Funds from the Massachusetts Department of Environmental Protection (the Department) under a Sustainable Water Management Initiative Grant. The contents do not necessarily reflect the view and policies of the Department, nor does the mention of trade names or commercial products constitute endorsement or recommendations for use.*

## Private Wells

### Have a question about your private well?

The [Water System Council](#) has information on caring for your private drinking water well. The [Be Well Informed \(BWI\)](#) online tool allows homeowners to enter water quality results and compare to state and federal guidelines.

For more information visit the Health Department website at [www.westfordma.gov/health](http://www.westfordma.gov/health) and click on the "Private Wells" link or contact Rae Dick, Environmental Service Manager, Westford Health Dept.: 978-399-2531 or [rdick@westfordma.gov](mailto:rdick@westfordma.gov). The Private Wells webpage provides links to MassDEP and [EPA](#) for helpful information on wells and well services.

**Please note: There may be no connection between a private well and the public water system.**



## Chris Macpherson Retired

One of our long-time operators, Chris Macpherson, retired this January after 38 years of distinguished service to the Town of Westford.

Chris is a lifelong Nabnasset resident and a graduate of Nashoba Technical High School where he studied plumbing and heating. Chris started working for the town in 1981, transferring to the Water Department after 16 years with the Highway Department. Chris participated in many significant changes to the Water Department during his years here including construction of two treatment plants, three water storage tanks, two new groundwater supply wells, over 30 miles of water main and addition of 1200 new customers!

Chris's retirement plans include a little golf, fishing, and spending a lot of time with his granddaughter, Marissa. Sounds pretty good! We would like to thank Chris for his many years of dedicated service to the Town and Water Department, and wish him a happy, long, and fulfilling retirement.



# Stormwater Management for Industrial Facilities



## **Chemical Storage**

You can keep spills and leaks at bay by taking some simple steps to safely handle and store your chemicals. Make sure all chemicals are kept in containers that have tight-fitting lids. Check often for leaks and close any containers that are left open. Any chemicals that are stored outside should be placed under cover, such as in a shed or under a tarp, to protect from rain and snow.



## **Waste and Material Storage**

Rain that falls into and around your dumpsters can pick up trash, dirt, and other material as it drains away. You can keep a tidy facility and protect local waterways by sweeping up dust and dirt, keeping your dumpster closed, and checking for leaks. Scheduling regular trash pick-ups will help ensure that your dumpster is never too full.



## **Spill Prevention & Response**

It's important to be prepared in the event that a spill occurs. Have a plan in place that outlines what you must do to prevent and respond to a spill. Keep a spill kit handy and fully stocked, ready for use. Use absorbent materials, like sand and kitty litter, for liquid spills. Any chemical spills, especially those happening outside, should be swept up immediately. Never hose down a spill area. Always report chemical spills.



## **Equipment Maintenance**

Gasoline, oil, and grease from your equipment can wash into storm drains and pollute waterways. For repairs and routine maintenance, use drip pans to catch fluids and keep materials like sand and kitty litter close by to help dry up small spills. Fix leaks and clean up all spills as soon as possible.



## **Site Landscaping**

Excess fertilizer and lawn waste (think leaves and grass clippings) can wash away and pollute local waterways. To stop this, test your soil and read the label before you apply fertilizer. Use fertilizers sparingly and sweep up driveways, sidewalks and walkways. To manage erosion, cover piles of dirt and replant bare areas as quickly as possible.



## **Get Your Permit**

Many kinds of industrial facilities are required by federal law to take steps to prevent stormwater pollution, and these permit requirements are changing Massachusetts. Your site may be covered by a Multi-Sector General Permit, or may require its own permit.

***For more information visit: <https://www.thinkbluemassachusetts.org>***

**2020 Rain Barrel Sale** The Westford Water Department is pleased to once again partner with The Great American Rain Barrel Company to provide a town rain barrel program. Rain barrels will be sold at a discounted price. Rain barrels can be purchased online. Visit the Great American Rain Barrel Company website at [www.greatamericanrainbarrel.com](http://www.greatamericanrainbarrel.com) and under "Shop Community Programs" select "MA" and "Westford" (this link is also available on the Water Department website at [www.westfordma.gov/water](http://www.westfordma.gov/water)). The deadline for purchasing is May 13<sup>th</sup> at midnight. Order pickup is at the Water Department on May 20<sup>th</sup> between 4 and 6 pm.



# Ellen Swallow Richards— Water Quality Pioneer



Ellen H. S. Richards

**Early life.** Born in Dunstable, MA in 1842 to Peter and Fanny Swallow, Ellen Henrietta Swallow showed an early affinity to reading and learning. As both her parents happened to be teachers, Ellen was homeschooled until they had reached the limits of their abilities. Wanting the best for Ellen's education, Peter Swallow moved the family to Westford in 1859 so Ellen could attend the Westford Academy for a more advanced and sophisticated education. Ellen's new home was conveniently located across the common from the Academy (now the Westford Museum building, and since moved to its current location on Boston Road). Ellen's home and the adjacent general store Peter Swallow ran to support his small family are now gone, but were once located (facing) to the right of where the J.V. Fletcher Library now stands. Ellen graduated from Westford Academy in 1863, and eventually went on to attend Vassar – where she graduated in 2 years with a bachelors of science in chemistry. After Vassar, Ellen approached several chemical companies in Boston looking for work, but was unsuccessful. She instead applied to the new Massachusetts Institute of Technology (MIT).

**First Woman to Attend and Graduate from MIT.** At the time no women attended MIT so Ellen was admitted as a special student and not charged tuition. Only later on in life would Ellen come to realize that MIT excused payment of tuition not out of sympathy for

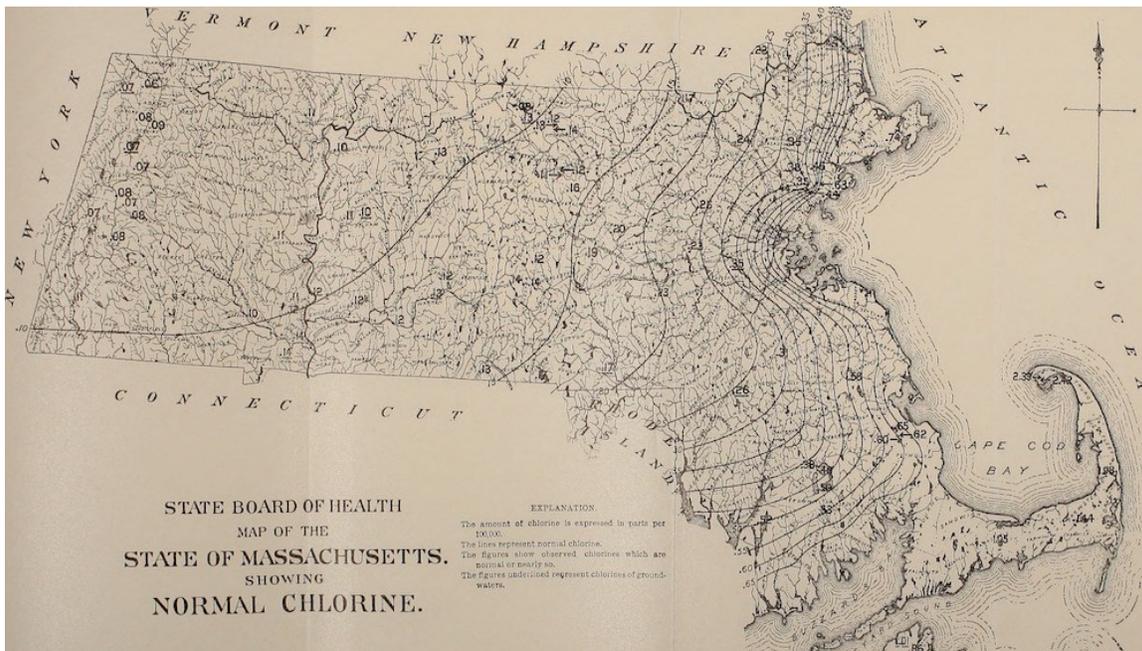
her financial situation, but in order to minimize any backlash from faculty or students for accepting a female student. Ellen graduated from MIT in 1873 with a BS degree in chemistry, and earned a masters degree from Vassar the same year for her work with vanadium. Ellen wished to pursue a doctorate in chemistry from MIT but at the time they were not interested in awarding the first doctorate to a woman.

**MIT Women's Laboratory.** Ellen wanted to get more women involved in scientific study, so with permission from MIT and donation of garage space on campus, she started the Women's Chemistry Laboratory. Still, Ellen needed to purchase the necessary lab equipment, which she did with funding from the Women's Education Association of Boston. In addition, Ellen created a correspondence course for women unable to attend the MIT Laboratory. After Ellen's graduation from MIT she became an assistant in the chemistry lab and eventually professor where she taught chemistry, mineralogy, and other subjects. Not only did Ellen work without pay, but even donated \$1,000 of her own money annually to the Women's Laboratory. Ellen met her eventual husband Robert Richards, a professor in mining at MIT, while working as an assistant in the chemistry lab. Ellen and Robert Richards eventually moved out of the city to Jamaica Plain where she would use her home as a laboratory to investigate more scientific, healthy, and economic approaches to domestic life (Ellen's home in Jamaica Plain is now registered as a National Historic Landmark). The Woman's Laboratory closed in 1883 when MIT began accepting female students, and Ellen was subsequently appointed as a (now paid) faculty member to MIT's new Laboratory of Sanitation Chemistry, where she was an instructor from 1884 until her death in 1911. During this time, Ellen co-founded the American Association of University Women.

**Contributions to Water Quality.** Outside of MIT, Ellen consulted with companies eager to use her expertise in water sampling and chemistry, and became an expert on water quality and sewerage. Additionally, Ellen served as a consulting chemist for the Mass Board of Health from 1872 to 1875, and serving as an official water analyst from 1887 – 1897. In the 1880's Ellen collaborated with Dr. Thomas Drown for a study funded by the Massachusetts Board of Health. This study included the collection and analysis of 40,000 surface and groundwater samples from the state's water supplies (mostly surface water samples were collected). However, Dr. Drown soon left the study to go on sabbatical, and most of the work was performed or supervised by Ellen. From this study a map of normal chlorine (chloride) concentrations was developed that became known as the "Richards Normal Chlorine Map". This map shows the natural oceanic deposition concentrations of chloride throughout the state, which are inherently highest near the coast and drop off further west. Elevated chloride concentrations that did not correlate with the map could be considered as being caused by human pollution. Consequently, chloride concentrations in water became a surrogate for pollution. This landmark study has been credited with the establishment of the first state water quality standards and creation of the first modern (Cont. on page 5)



To right: Ellen Swallow Richards collecting water samples



**Above: Normal Chlorine (Chloride) Map showing natural levels of chloride**

(Cont. from page 4)

sewerage treatment plant in the country—located in Lowell, Massachusetts.

**Westford Chloride Levels.** Based on this map, the approximate natural concentrations of chloride for Westford back in the 1880s was between 2-3 ppm. Today they range from 140 to 175 ppm – a likely result of the use salts for road treatment, which was not practiced during the time of Ellen’s study (significant use of salt for road treatments did not begin until the 1940s). Chloride has a secondary maximum contam-

inant level (SMCL) of 250 mg/L. Although not directly a human health concern, high chloride concentrations can negatively impact aquatic organisms, degrade water mains, drainage structures and other infrastructure, and corrode plumbing causing lead and copper drinking water contamination. Fortunately, Westford has taken an innovative approach to reduction of salt use for road treatment. Refer to the Fall 2019 edition of the Resource for information on how Westford is working to reduce both sodium and chloride levels in road treatment.

This small article in no way does justice to Ellen Swallow Richards’ prolific contributions to science, education, food and water quality, sanitation, and society in general. The life and work of this accomplished and fascinating Westford Academy alumnus is worthy of deeper examination. Sources include the Westford Historical Society, Joseph Duggan of the Massachusetts Water Works Association and the Metropolitan Waterworks Museum, MIT, Vassar College, American Chemical Society, American Society of Civil Engineers, and the Science History Institute.

## Voluntary Outdoor Water Use Restrictions Begin May 1

Starting May 1 we ask our customers to follow the odd/even watering schedule as follows: Odd-numbered addresses water on odd-numbered days; even-numbered addresses water on even-numbered days; **Water only between the hours of 6:00 pm and 9:00 am.**

**Why this schedule?** The odd/even watering schedule allows us to keep up with consumer demand by spreading out usage. Watering between 6 pm and 9 am when evapotranspiration is at the lowest level makes watering more effective and reduces waste. Any increase to mandatory restrictions will be communicated by signage, in the Westford Eagle, on the Town and Water Department websites, and using the electronic notification system. **Mandatory restrictions will be enforced!**

## Spring Hydrant Flushing

The Westford Water Department will flush water mains in Nabnasset this spring as part of our comprehensive maintenance program once conditions allow. Visit the Water Department website at [www.westfordma.gov/water](http://www.westfordma.gov/water) to find out when flushing will start. **Flushing will be performed between the hours of 8:00 am and 3:00 pm, Monday through Friday.** This program involves opening fire hydrants and valves to create increased water flows which dislodge and remove naturally occurring sediment in the water mains. Flushing is critical to maintain water quality and main carrying capacity. We anticipate completion of the fall flushing program in May. As a result of the flushing process, residents in the immediate vicinity of the work may experience temporary discoloration of their water and/or low pressure. This discoloration is harmless, and does not affect the safety of the water. If you experience discolored water, run your **cold water after flushing is completed for the day**, until clear (may take up to 20 minutes). Accordingly, we recommend you avoid doing laundry during flushing in your area. For streets being flushed visit the Westford Water Department website at [www.westfordma.gov/water](http://www.westfordma.gov/water), and click on Hydrant Flushing Schedule.





# Consumer Confidence Report

**How do I learn about my public water quality? Check out the most recent Consumer Confidence Report (CCR)!**

The Water Department provides our customers with a direct link to the current electronic copy of the CCR on the Water Department website. **Visiting the following website address will take you to the current (2019) CCR:**

**<https://www.westfordma.gov/DocumentCenter/View/1355>**

The CCR contains important information about the source and quality of your drinking water, and is well worth the time to review. Since electronic delivery has become our primary method for providing the annual CCR, it's important to note the following:

- **The Westford Water Department no longer mails out paper copies of the CCR unless requested.**
- **If you have previously requested a paper copy then one will automatically be sent to you each year (there is no need to make additional requests).**
- **Please call at 978-399-2457 (or send email to [mwarren@westfordma.gov](mailto:mwarren@westfordma.gov)) if you would like a paper copy delivered to your home or business.**

In addition, paper copies of the CCR will still be available at the Water Department, Town Hall and other municipal and community buildings.



**Westford Water Department  
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