

Acton Water District

SUMMER 2009

Water Words Notice

As we proceed into the summer season and demand for water is on the rise, conservation becomes a primary concern. As suppliers of the most critical natural resource, we constantly weigh the balance between supplying water and controlling demand. Revenue from the sale of water is what sustains our operation; we are not subsidized at all by Acton property taxes. We primarily operate from the revenues generated by metered sales, thus, water supply is what keeps us going.

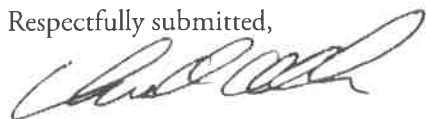
That said, the amount of water that we draw from the aquifer is limited, both from a natural resource perspective and from a regulatory perspective. The Massachusetts Water Management Act limits our groundwater withdrawals. Although the amount of water we are allowed to withdraw is incrementally increased a small amount each year, development and the subsequent increase in Acton's population continues at percentages greater than the state average. Unfortunately, Acton is not blessed by abundant, limitless aquifers. We find ourselves constantly looking for ways to make the most efficient use of the water we have in order to meet Acton's demand, while sustaining the natural resources.

They say that "necessity is the mother of invention," and our need to achieve a balance between supply and demand has prompted us to develop a myriad of innovative approaches, as well as a demand management program that has been heralded as one of the best in the state. Ten years ago, we hired our first Environmental Manager, Jane Ceraso, who was tasked with developing a robust demand management program, while allowing for Acton's growing need for water. At this point in time, we are pleased to say that we can consistently meet Massachusetts Department of Environmental Protection (DEP) rigorous performance standard of a demand of no more than 65 gallons per capita day, while at the same time providing water to Acton's existing population, new developments, and existing apartment units that have asked to hook up to the Water District when their wells have been compromised.

Now, ten years into the full implementation of our conservation program, most of our customers are compliant with our annual watering restrictions that begin May 1st and end on October 1st and understand the importance of controls on their irrigation systems and overall water use. While mandatory restrictions are helpful, the success of our program can probably be attributed to its variety of "kinder, gentler" approaches. Some of the most important things we do include coordination with town offices, the schools, and community groups, outreach and assistance to all customers such as providing a free "Irrigation 101" training, subsidized rain barrels for the collection of rain water for outdoor watering, a rebate program for water-efficient toilets and washing machines, an educational program on "WaterWise Gardening" that has been implemented jointly with the Acton Garden Club, sustainability "fixes" such as water conserving soil and grass seed, and better tools to allow groundwater infiltration, such as the Filterra box installed near the Kennedy and Marshall wells. While these approaches are instrumental, we certainly could not have achieved what we have without the participation of you, our customers, and for that we thank you!

I would like to thank Jane Ceraso for her role as our Environmental Manager these past ten years. During her time with us, Jane has worn many hats and been active in many organizations that do excellent work. Jane will be leaving us in June, and she will be sorely missed. I'd also like to thank our staff for their committed efforts to "get the job done", and the Board of Water Commissioners and Finance Committee for their guidance and wisdom.

Respectfully submitted,



Chris Allen

District Manager



Sedum, shown here lining the border of the Acton Water District's water-wise garden, is the perfect drought tolerant plant. It is pretty, easy to grow, grows in dense clumps that control weeds, thrives on rainfall alone, and with hundreds of varieties available, there are lots to choose from.



North Acton's Kennedy Marshall Treatment plant is on schedule for completion July 2009.

Kennedy/Marshall Treatment Plant Startup this Summer

The Kennedy and Marshall Wellfields are the main sources of drinking water supply in North Acton. As many of our customers in this area are aware, we have had persistent aesthetic water quality problems with the Kennedy wellfield—primarily organic color, manganese, and iron in these sources. The Marshall wellfield had not been used at all for the past decade due to unreliable water quality.

After extensive piloting of various treatment technologies at both these wellfields, the technology that was the most able to consistently remove high levels of raw water manganese and color was the Zenon ultrafiltration membrane system. This treatment process is significantly more complex than treatment processes utilized up to this point by the Acton Water District, involving multiple steps, including coagulation, membrane filtration, and aeration. The building of this 5.8 million dollar treatment plant will bring the Acton Water District state-of-the-art treatment technology and clear water to our customers in North Acton.

The Acton Water District is happy to report that treatment plant construction has proceeded quite smoothly, and we are on schedule for a July start up. Because this new treatment plant represents a whole new chapter in water treatment for us, we have been busy gearing up for its opening. The mains in North Acton were flushed thoroughly this spring to remove built up iron and manganese sediment to ensure that that clean water is not pumped into dirty mains. "I believe our customers will be very pleased with the final product, and that is our main focus" said Water District Manager Chris Allen.

Matthew Mostoller Joins the Acton Water District

When Jane Ceraso, who has served as the Acton Water District's Environmental Manager for the past ten years, first announced her plans to leave, it wasn't clear where a suitable candidate could be found who would have a combination of educational background and training, experience within the water supply field, experience with the Safe Drinking Water Act, environmental compliance, and education/outreach skills. The Water District was thrilled when Acton resident Matthew Mostoller walked through the door. Matthew was seen as the perfect candidate for the job, possessing both the educational background and the variety of experience necessary to handle this multifaceted position.

Matthew holds both a B.S. in Environmental Science and a Masters in Public Administration. He has worked in a variety of water supply positions, including with a watershed association examining non-point source pollution issues in the Lake Winnepesaukee watershed, with a consulting firm working on groundwater remediation issues, and most recently as the Environmental and Regulatory Coordinator at the Concord Water Department.

Last year, Matthew and his wife Krista moved to South Acton. "We are looking forward to becoming involved in a community with values similar to ours" he says. Both Matthew and Krista grew up in Central Massachusetts, so they are happy to be locating close to their roots. "I am looking forward to bringing my interests and abilities to Acton to forward the great work going on here at the Acton Water District" says Matthew. He is especially eager to be involved in the startup of the Acton Water District's new treatment plant in North Acton.

In his free time, Matt enjoys photography, building kayaks, and spending weekends on Lake Winnepesaukee. This summer, Matt and Krista are looking forward to working their community garden plot at the Morrison Farm. We know Matt's garden plot will be as productive as his work here at the Acton Water District will be—welcome Matt!



Matthew Mostoller has recently joined the Acton Water District

Report on Water Quality

SUMMER 2009 PWS 2002000

Acton Water District

Testing for Your Drinking Water

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. In 2008, as in years past, water supplied by the Acton Water District met EPA, state, and our own local drinking water health standards for chemicals regulated under the Safe Drinking Water Act (SDWA). This report is a snapshot of water quality in 2008. Included are details about where your water comes from, what it contains, how it is treated and distributed, and how it compares to standards set by the Environmental Protection Agency.

The Acton Water District vigilantly safeguards your water supplies by employing multiple barriers for protection, including source water protection, distribution system protection, ongoing monitoring, and treatment. Last year, we collected more than 650 samples and tested them for over 100 different potential drinking water contaminants.

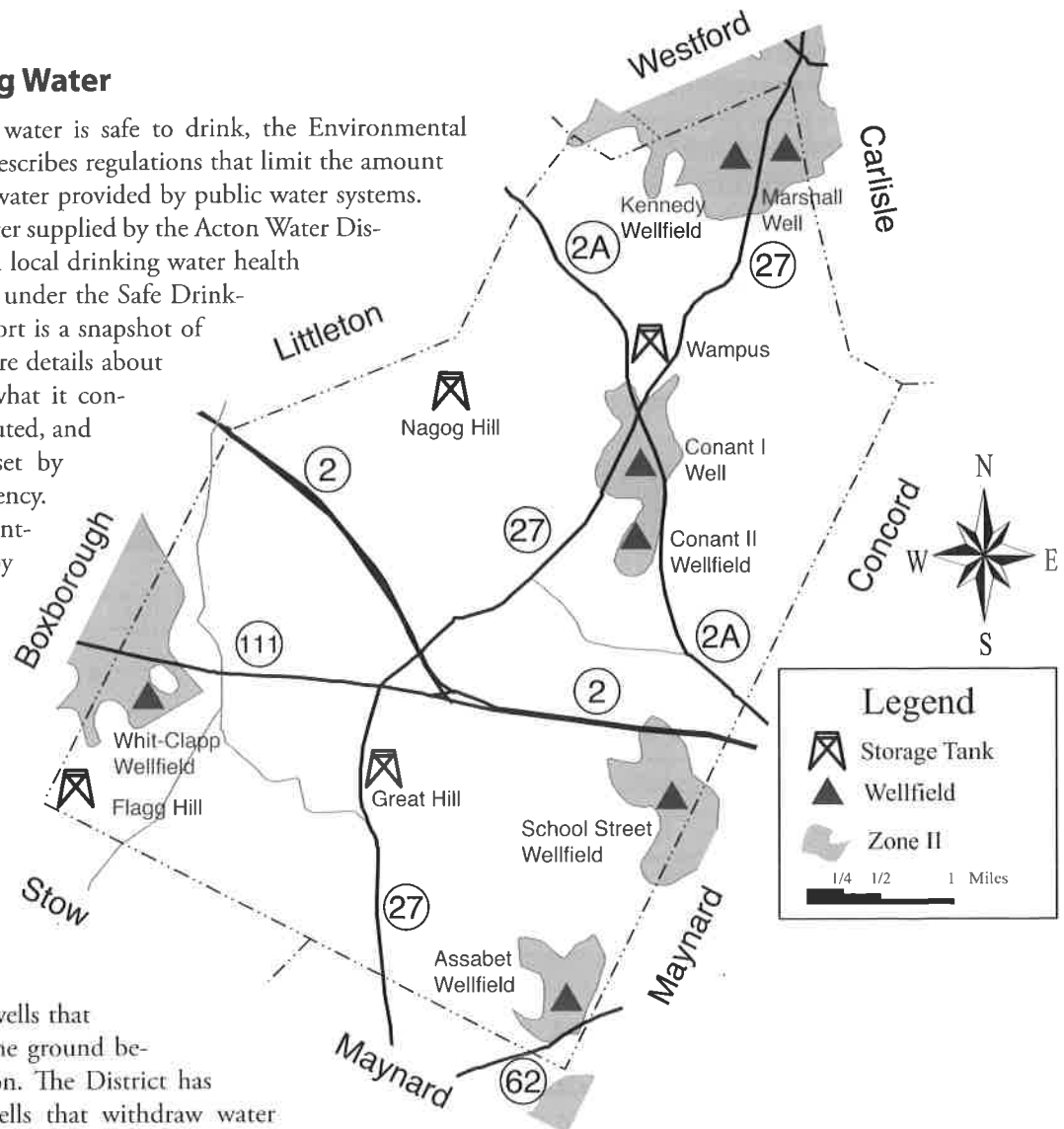
The Source of Your Drinking Water

Your water comes from wells that tap the water held in the ground beneath the town of Acton. The District has twenty-one different wells that withdraw water from seven wellfields located in various parts of town. Water from each well is pumped to treatment facilities located in each of the various wellfields, and then into the distribution system (a network of 120 miles of water mains) where it blends together and is delivered to homes, businesses, schools, and other public users. The map on this page shows the various wellfields and the critical, protective radius (called Zone II) around each wellfield.

Protection for Your Drinking Water

The Acton Water District employs three important "barriers" to maintain the highest possible quality of drinking water:

- A protective area called Zone II surrounds each of Acton's wells. Land use activities that could adversely affect water quality are restricted within the Zone II area.
- Each of Acton's wells is treated in order to remove impurities and improve the taste of the water. Water treatment specifics are listed below.
- The system of pipes that delivers water to your home is protected by a program that works to minimize "cross connections" between potable (intended for human consumption) and non-potable water. An example of a cross connection is a point where a drinking water pipe might connect to a sprinkler system or to an outside irrigation system.



Why are Impurities in Your Drinking Water?

As water travels through the ground it dissolves naturally occurring minerals. It can also pick up substances resulting from animal or human activity. Contaminants that may be present in source water include:

- **Microbiological** contaminants (such as viruses and bacteria) that may come from septic systems, agriculture, and wildlife.
- **Inorganic** contaminants (such as salts and metals) may be naturally occurring or result from storm runoff, wastewater discharge, mining and farming.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, storm water runoff, and residential uses.
- **Organic chemical** contaminants are byproducts of industrial processes, 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.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some impurities. The presence of an impurity does not necessarily indicate that the water poses a health risk. The Acton Water District has compiled information on drinking water and health in our drinking water resource center. Please feel free to visit or call us for information, or call the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Treatment for Your Water

To meet local, state, and federal requirements, and to improve taste and appearance, the Acton Water District treats all of its water before it is supplied to our customers. The table below shows the treatment provided at each wellfield.

Treatment	Conant I Well	Conant II Wellfield	Marshall Well	School Street Wellfield	Assabet Wellfield	Kennedy Wellfield	Clapp/Whitcomb Wellfield
Aeration VOC removal		•		•	•	•	•
Chlorination disinfection	•	•		•	•	•	•
Fluoridation tooth decay protection	•	•	•	•	•	•	•
pH Adjustment corrosion control	•						
Carbon Filtration taste/color control							•

Source Water Assessment and Protection Report Available

The Source Water Assessment and Protection (SWAP) program requires states to assess the susceptibility of public water supplies to potential contamination. The Department of Environmental Protection (DEP) has completed its assessment on each of the Zone IIs for the Acton Water District's wells. A susceptibility ranking of "high" was assigned to each Zone II using the information compiled by the DEP. Copies of the SWAP report are available at the Acton Water District, Acton Public Library, Health Office, and online at www.state.ma.us/dep/brp/dws.

The Acton Water District has long recognized the susceptibility of its sources, and has worked closely with the town and state to maximize the protection of all of its Zone IIs. The Water District is in compliance with the DEP's Source Water Protection Regulations. For more information, please call Matthew Mostoller at the Acton Water District (978) 263-9107.

Do You Want to Be More Involved?

The Board of Water Commissioners meetings are on the second and fourth Monday of each month at 7:30 p.m. Our Annual Meeting is always held on the third Wednesday of March. If you wish to attend a meeting, please call us to confirm dates. All Acton citizens are welcome to attend. Meeting schedules, agendas, and minutes can found on our website, www.actonwater.com.

For more information, additional copies, or comments on this report, contact:

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Water Quality Data Table

The data presented in the table below are from calendar year 2008. Only compounds that were detected are reported in this table. Because water from all wellfields is blended within the distribution system, these data represent the range of water quality in all wellfields.

Substance (units)	Range of Detects	Level Allowed (MCL)	Goal (MCLG)	Typical Source	Exceeds MCL?
Regulated Substances (MCL has been established)					
Total Coliform	0 - 1 positive samples	< 2 samples positive/month	0	Naturally present in the environment	No Monthly MCL Violations
Trihalomethanes (ppb)	5.0 - 8.0 average: 6.4	100	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
Nitrate (ppm)	0.00 - 4.5	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Fluoride (ppm)	0.5-1.2	4	4	Erosion of natural deposits, water treatment additive for dental health	No
Chlorine (ppm)	0.00 - 0.29 0.04: highest running annual average	4	No MCLG	Water additive used to control microbes	No
1,1 Dichloroethylene (ppb)	0.0-3.0	7	7	Discharge from industrial chemical factories	No
Unregulated Substances (MCL has not been established)					
Sodium (ppm)	18 - 76	No MCL	No MCLG	Erosion of natural deposits, road salting	Unregulated contaminants have no established MCL
MTBE (ppb)	0.0 - 2.0	No MCL	No MCLG	Gasoline additive	
Chloroform (ppb)	0.0-6.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Iron (ppm)	0.0-1.2	No MCL	No MCLG	Erosion of natural deposits	
Manganese (ppm)	0.0-4.5	No MCL	No MCLG	Erosion of natural deposits	
Chlorodibromomethane (ppb)	0.0-1.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Bromodichloromethane (ppb)	0.0-4.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
1,4 Dioxane	0.0 - 0.26	No MCL	No MCLG	Primarily used in industrial solvents	
Lead and Copper (30 sites sampled in July, 2007)					
Substance (units)	90th percentile	# sites above Action Level	Action Level	Typical Source	Exceeds AL?
Lead (ppb)	4.0	1	15	Corrosion of household plumbing systems; Erosion of natural deposits	No
Copper (ppm)	0.44	0	1.3	Erosion of natural deposits; Leaching; Corrosion of household plumbing systems; from wood preservatives	No

TERMS AND ABBREVIATIONS

MCLG: Maximum Contaminant Level Goal: 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.

MCL: Maximum Contaminant Level: 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.

AL: Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.

pCi/L: picoCuries per liter

ppm: part per million by volume

ppb: part per billion by volume

90th Percentile: The concentration of a substance that falls at the top ninety percent of all values for that substance.

Discussion of Data Table Detections

TOTAL COLIFORM: Coliform bacteria are naturally present in the environment and are generally not harmful themselves. They are tested as indicators of the presence of other, potentially harmful, bacteria which may cause symptoms including diarrhea, cramps and nausea and associated headaches and fatigue. During the month of March 2009, two of our distribution samples showed the presence of coliform bacteria. More than one sample positive for total coliform is considered a monthly MCL violation for total coliform. During each instance, the Water District increased the level of chlorination at the sites involved, conducted immediate resamples, and notified customers of a temporary violation in a notice printed in the *Beacon* newspaper and posted around town. Following each instance, resamples showed no coliform present, indicating that the problem had been abated.

SODIUM: Although sodium does not have a Maximum Contaminant Level, the Commonwealth of Massachusetts does have a guideline of 20 parts per million (ppm) for sensitive individuals, such as those on very salt-restricted diets. The Acton Water District notifies the Board of Health of all sodium results, and results of the most recent sodium tests are posted at: the Acton Public Health and Nursing Service offices; the Acton Water District Information Center and website; the Acton Public Library; and the Acton Senior Center. Sodium levels in drinking water vary considerably from well to well and month to month. For the most accurate data on sodium levels at your home, an individual tap sample would be necessary.

SOCs: In 2007 the Acton Water District monitored all wells for regulated synthetic organic chemicals (SOCs). These SOC's are primarily pesticides and herbicides, and are required to be monitored in all public water supplies at regular intervals. The Acton Water District has received a waiver from frequent monitoring from the Department of Environmental Protection because no SOC's were detected in this or previous cycles of testing.

MTBE: MTBE (methyl tertiary-butyl ether) is commonly used as a fuel additive to increase the octane rating of gasoline. Health effects (based upon animal studies) associated with MTBE include kidney problems and higher tumor incidence. Recent national surveys indicate that MTBE is being found with increasing prevalence in drinking water, most commonly due to leaks in above and below ground petroleum storage tanks and pipelines. The Acton Water District has detected a very low level of MTBE—well below the EPA Guideline—in the water leaving the Assabet treatment facility. Because treatment at this well-field does not fully remove MTBE, when the Assabet treatment facility is upgraded, we will design modifications to more effectively remove MTBE.

1,1 DICHLOROETHYLENE: This volatile organic chemical, more commonly known as VDC, has been found throughout the plume of groundwater near the former WR Grace site in

South Acton. The Acton Water District monitors both the raw and treated water from all the wells in the area of the plume. All detections of VDC are in raw water only; there was no VDC detected in treated water (the water that enters the distribution system) in 2008.

1,4 DIOXANE: In 2008, the Acton Water District tested the Assabet and School Street wells for 1,4 Dioxane due to the detection of this compound in a few test wells associated with the nearby WR Grace Superfund site. 1,4 Dioxane is not a regulated contaminant, and there are no required MCLs or laboratory procedures for this chemical. The EPA has listed this chemical as a probable human carcinogen, so the District hired a laboratory that had the capability to test for it at the very low quantitation level (PQL) of 0.20 ppb. Massachusetts DEP has set an Office of Research and Standards Guideline (non-regulatory level) of 3 ppb for 1,4 Dioxane. The highest level detected by the Acton Water District in these wells was 0.26 ppb.

LEAD AND COPPER: 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 Acton Water District 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>.

VOLUNTARY MONITORING: In addition to the monitoring required by the Safe Drinking Water Act, the Acton Water District voluntarily conducts dozens of additional tests each year to ensure high quality water. For more information on our voluntary monitoring, please contact us.

VULNERABILITY: Some people may be particularly vulnerable to impurities in drinking water. 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 about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Conservation Rebates Program Launches

Toilets and clothes washers are the top two water consuming appliances in the home. According to a study conducted by the American Water Works Association, toilets account for nearly 27% of the water used in an average home. And while toilets installed prior to 1982 generally use between 5 and 7 gallons per flush, today's EPA WaterSense labeled high efficiency toilets use 1.28 gallons per flush or less.

Clothes washers are the second largest water consumer in the average home, accounting for more than 20% of indoor water use. And technology has made great strides in clothes washer efficiency, with the most efficient clothes washer using less than half the amount of water and energy of a standard washer.

To encourage our customers to replace old, inefficient appliances, the Acton Water District launched its first program to provide rebates for water efficient clothes washers and toilets. The eligible toilets and washers have been evaluated through the EPA WaterSense Program and the Consortium for Energy Efficiency, and have proven to be effective, efficient and reliable. Between January and May of 2009, customers purchasing qualifying high efficiency clothes washers and toilets could apply for a rebate of \$100. (washers) and \$50. (toilets). A total of more than 32 washers and 30 toilets were replaced during that short time frame. We know these customers are pleased by receiving their rebates—but wait until they see all the water they save!

Horizontal axis clothes washers save about fifty percent of the water and energy used by conventional clothes washers.



Fall flushing

The past spring, the Acton Water District flushed out most of our water mains in North Acton, in preparation for the Kennedy/Marshall Treatment Plant startup in July. There were additional portions of town that we flushed to clear out mains where sediment may have accumulated. We realize this created temporarily discolored water to residents in these areas, and we thank you for your patience and cooperation!

Rain Barrels Day

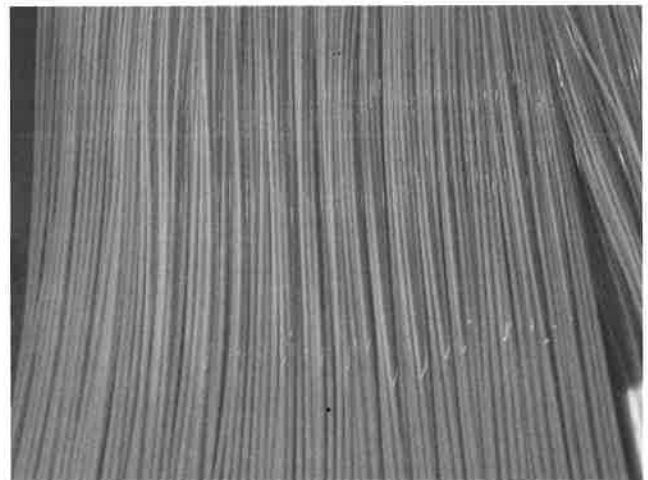
The Acton Water District celebrated Drinking Water Week on May 5th with a water conservation and rain barrel event. Over 75 customers visited the Water District headquarters to pick up their rain barrels, which were offered at a discount by the Acton Water District through the New England Rain Barrel Company. The New England Rain Barrel Company collects used barrels (generally used as juice containers) and turns them into rain barrels by adding a top grate for inflow, spouts, and hoses.

Each rain barrel collects and stores up to 55 gallons of water from roof runoff and allows residents to make use of "free" water, even during watering bans. It is surprising how much water you can collect every time it rains. Just a half inch of rain falling on a 1,000-square-foot roof will yield 300 gallons of water!

This is the sixth year that the water district has offered the rain barrels, and now almost 700 rain barrels are located throughout town, collecting water from resident's roofs to be used later in their gardens and yards. The program has been very popular, so we hope to offer discounted barrels again next spring. Water District customers should check their spring water bills for a coupon announcing the program. The first 100 barrels are offered at the greatest discount, so call early because they go quickly!



There are now about seven hundred rain barrels located throughout Acton, quietly and efficiently collecting runoff from roofs, to be used later on landscapes and gardens, even during watering bans.



What is it?

Please email your answers to webgeek@actonwater.com. Winners (and the correct answer) will be posted in the next *Water Words Notice*.

Acton Water



District

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What was it?

Three readers (Joy and Paul Madden and Gloria Jacobs) thought that the mystery photo in our Winter 2009 *WaterWords* photo was some portion of a treatment system, and they were correct. More specifically, the answer is that the last mystery photo showed the top portion of the new aeration tower, lying on its side prior to being erected at the new Kennedy/ Marshall Treatment Plant.

The Acton Water District has aeration towers installed at each of its major wellfields, and they serve to remove most volatile (easily vaporized) substances in the water. The most common and perhaps troublesome contaminants that can enter groundwater are volatile organic chemicals (VOCs).

There are hundreds of volatile organic chemicals in use for various modern industrial processes, and Acton has had a history of VOC contamination in its groundwater (VOCs were the main chemical of concern in the historical Acton/ WR Grace case). The aeration tower works by blowing a strong current of air from the bottom of the tower while the water trickles down from the top of the tower through a series of small plastic "wiffle balls" that break the water apart, creating more surface area from which any volatile substances can vaporize. As the air current passes by the water, VOCs and other volatile substances are transferred from the water into the air stream. In addition to removing VOCs, we have found that our aeration towers do an excellent job of removing any naturally occurring radon from the water.

