Acton Water District

Water Words Notice

lanning and predicting in the world of water supply is challenging, to say the least. There are many things that impact water quality and quantity, and it is a moving target; hence, every five years, we update our Master Plan. The plan typically encompasses at least a 10 year period, however we update it every five years, as pricing of materials, goods and services beyond that timeframe is too unpredictable. Furthermore, it is impossible to predict what impact emerging regulations will have on our sources, both existing and future. The Master Plan covers all the topics that encompass our main mission, supplying the District ratepayers with potable and palatable water in adequate quantity for sustenance of human health and fire protection. The plan is broken down into individual chapters covering source adequacy, regulations, storage facilities, distribution system, growth projection, and priority capital improvements, to name a few. In summary, it is a comprehensive plan for the operation and administration of the District. For the first time since we have been compiling this document, we plan on publishing it on our website for the public to view.

With over a century under our belts, the District has been focused on the topics related to supplying water; protecting water resources and the environment; and sustaining growth in a thriving Massachusetts community. We stringently review new construction and change of use project applications related to the water conservation standards that we believe will best support our sustainability. We take conservation of our most precious resource very seriously! However, conservation requirements should not be perceived as an indication of a water shortage. While we firmly believe that there is adequate water for now and near future growth, we never rest on our laurels, and are planning for that future. The current version of our Master Plan addresses future sources in Assabet #3 (Formerly WRG-3), the Flannery-O'Toole site in West Acton off Massachusetts Avenue, and potential bedrock wells in areas identified in a study completed in 2000 and in recent applied science efforts that we've undertaken.

Due to the seriousness of public health and safety, the staff of the District performs each and every day at an extremely high level. Serving over 20,000 people, as a customer service based public entity with a relatively small staff of 15 employees, diversity and cross-training are our strongest traits. With 135-miles of pipe buried in the streets beneath Acton, five pump stations, including two full-scale Membrane filtration plants, 22 groundwater wells, four water storage tanks totaling over 8-million gallons,

and 1,350 fire hydrants there is little room for lapses in concentration or effort. Maintenance of the overall system is the responsibility of our staff. We will contract with engineering firms and service providers as needed to assess, design and construct capital improvements to sustain or enhance our operation, comply with regulations or abate environmental threats or system breakdowns and vulnerabilities.

With areas of expertise covering all things related to public water supply, District staff is the first line for customer interactions. This can be to answer questions, address concerns and complaints, educate individuals or groups on our operation and system, or to discuss environmental protection and the drinking water industry in general. Do not hesitate to call, email, fill out a form on our website, stop by for a visit, or send a message through WaterSmart. You can even Tweet @Actonwater, we look forward to hearing from you! Additionally, there is an emergency operator on-call and available to respond to off-hour emergencies. I would like to thank the District staff for their commitment to maintaining our operation, impeccable reputation and for providing customers the best service possible.

Respectfully submitted,

Chris Allen, District Manager



The current Commissioners (L to R: Stephen Stuntz, Ron Parenti, Erika Amir-Lin) thanked Len Phillips for his dedicated years of service to the community. Len (foreground) was presented with an engraved chair at a small gathering held in May.

For more information, additional copies, or to comment on this report, please contact:

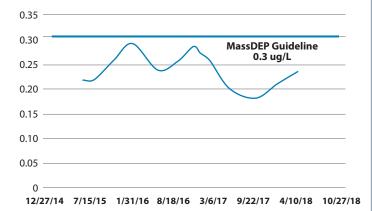
Update on 1,4-Dioxane

Pollowing the change in the drinking water guideline value for 1,4-dioxane by the Massachusetts Department of Environmental Protection (MassDEP) in 2011, we began our quest to understand what the guideline would mean for us. This was important, as MassDEP has applied guidance values to various other compounds in different ways. More information on how contaminants are evaluated for drinking water suitability can be found at https://www.mass.gov/service-details/dwps-use-of-mcls-office-of-research-and-standards-drinking-water-guidelines-for.

The first step was to determine against which data point(s) the guideline would be measured. It was determined that compliance with the guideline would be based on the treated water concentrations from the South Acton Water Treatment Plant on a running annual average (four most recent quarterly samples). This data is presented in the graph below and demonstrates that each individual sample has been below the guidleine. Next, we wanted to know what would happen if we exceed that guideline. Working with our team of advisors, MassDEP informed us that a site specific risk characterization would be completed. At our urging, this assessment was completed proactively, as we felt it was prudent in our planning and resource allocation to understand the longer term impacts of what the guideline would mean. The good news is unacceptable health risks for 1,4-dioxane are associated with much higher levels than those we have historically seen in our treated water.

The difference between the guideline and the level at which unacceptable risk occurs is due to the risk assessment process itself. The guideline, in effect, is a screening value to determine what, if any, additional steps need to be taken to understand the safety of the water. Many of the steps we have been taking

1,4-dioxane Concentrations in Parts per Billion (ug/L)



The concentration of 1,4-dioxane in our treated water has stayed just below the Massachusetts drinking water guideline.

would be considered next steps should our concentration of 1,4-dioxane exceed the guideline.

Please visit our website for additional information and updates at www.actonwater.com/water-quality/14-dioxane. This site is updated with the results of our quarterly monitoring data and contains other helpful background information, including additional details on defining and understanding health risks. You may also speak with our Environmental Manager if you have questions or concerns regarding our efforts or the status of the Superfund cleanups. He can be reached at 978-263-9107.

Goodbye and Welcome Aboard



n the 106 year history of the District, only 22 men have served as Commissioner. During the 2018 election, we had one of the few contested races in recent history and when all the ballots were counted, we not only had a new Commissioner, but our first woman as well. Len Phillips, the outgoing chair, was defeated by new Commissioner Erika Amir-Lin.

We would like to thank Len for his many years of service to the Acton community and welcome Erika to the team!

Erika and her husband Stuart have lived in Acton for five years and through her professional life took an interest in local water resource issues. She is a licensed professional geologist with 14 years of experience in the earth sciences and serves as president of the board of the wastewater treatment facility for Nagog Woods. Erika works as a hydrogeologist at AECOM in Chelmsford, MA, assisting municipal clients in Massachusetts and New Hampshire in finding and developing new sustainable drinking water sources. She has also worked for the US Geological Survey as a seismic hazards educator and has done extensive volunteering with science outreach programs in Massachusetts and in California, where she previously lived.

As a Commissioner, she looks forward to find ways for the Acton Water District to continue to proactively address the water challenges and opportunities brought on by climate change and continued development in our region. Although she brings a scientific perspective to her role as commissioner, she is equally invested in the human aspect of water. As such, she looks forward to facilitating increased communication between the District and the town of Acton.

In her free time Erika enjoys hiking, mentoring undergraduate geoscience students, finding excuses to visit her parents on Cape Cod, and reading science fiction novels.

Do You Want to Become More Involved?

he Board of Water Commissioners meetings are typically scheduled on the second and fourth Mondays of each month at 7:30pm; all citizens of Acton are welcome to attend. The beginning of each meeting is set aside for citizen comments that may not be on the agenda for discussion. If you wish to attend, please call us to confirm the next meeting date. The Acton Water District Annual Meeting is held on the third Wednesday of March. All interested persons are welcome to attend.

Here to Help Our Customers

and procedures, especially those that improve our customer service and outreach efforts. We are heading into our third year of using the Water Smart program as a tool for enhanced customer interaction. So far, Water Smart has been very well received by ratepayers, and continues to grow in popularity. If you have not registered, you may do so by visiting www.actonwater.com/watersmart and having your full account number and zip code ready. Registering enables you to receive your water bill electronically and view information about your water use and account history. It also enables you to be alerted when leaks or abnormal water use is observed during monthly meter reads. If you have questions or need assistance registering, please email us at watersmart@actonwater.com.

Another way we help some of our customers is by offering a Senior Citizen water bill discount that entitles seniors having low-to-moderate incomes to a reduction in their water bills. This discount is available to water users aged 65 and over who own their own residence and have an individually metered water service.

To apply for this discount, customers must first receive approval for the Senior Citizen Property Tax Exemption offered by the Town of Acton. Applicants for this exemption must satisfy income and asset requirements specified by the Town, and requests for an exemption can be submitted to the Town's Assessor's Office. Information about this program is available by calling 978-929-6621 or through the following link: www.acton-ma.gov/134/Assessor.

Following the approval of an exemption by the Town Assessor, customers can then submit a copy of their Certificate of Exemption from the Town of Acton and a copy of their tax bill to the Acton Water District. The District will then authorize a water bill abatement in the same percentage as the real estate tax exemption, utilizing the winter reading cycle for the calculation. The abatement will be applied to the next water bill. Abatements will expire after one year,

but can be renewed annually. For more information, please contact our Treasurer/Collector at 978-263-9107, or *maryjo@actonwater.com*.

Rain Barrel Giveaway

very few years we have the pleasure of working with a local Boy Scout on an Eagle project. Over the past two months we have been the Community Beneficiary for Eagle Scout candidate Krish Midha of Troop 32. His project was to construct rain barrels for distribution within the Acton community. Recognizing that prudent water



Eagle Scout candidate Krish Midha is leak testing the rain barrels constructed as part of his project.

resource management is an important issue in Acton, he reached out to our Environmental Manager to better understand our rain barrel program. We assisted in reviewing his prototype and now are facilitating distribution of these rain barrels to homeowners. If you are interested in receiving one of these rain barrels, please contact matt@actonwater.com indicating your interest, property address, and best contact information. Distribution should occur from late June to early July and will require pick up at our offices located at 693 Massachusetts Avenue.

Do you know about Cross Connections?

cross connection is any actual or potential connection between a distribution pipe of potable water supplied by the public water system and any waste pipe, soil pipe, sewer, drain or other unapproved source. If not properly protected or eliminated, a cross connection can cause health problems and spread disease.

There are two methods by which contamination can enter the drinking water, backpressure and backsiphonage. Backpressure occurs when the pressure in the property exceeds the drinking water pressure. This can be caused by air conditioning units, boiler systems, and other pressure-building devices connected to the drinking water system. Backsiphonage occurs when the drinking water pressure drops off and the resulting vacuum sucks the water from





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the building. This can be caused routinely by a fire department's use of water due to a fire, water main breaks, and other heavy water demand.

Most cross connections are prevented by installing backflow devices. A hose bibb vacuum breaker, sold at any hardware store, prevents the typical garden hose cross connection. Backflow devices come in all different types to protect even the most dangerous liquids from being able to contaminate the drinking water. To our knowledge, there has never been a cross connection incident in Acton, but there have been several in the state of Massachusetts and even more nationally.

Everyone should be aware of, and do their part to prevent drinking water from becoming contaminated by cross connections. By surveying all industrial, commercial, and institutional facilities for cross connections, the Acton Water District ensures that the water supplied—down to the last free-flowing tap in every home and office—is of the highest quality. All residential homes with irrigation systems are required to have backflow protection. Learn more about cross connections by contacting Charlie Rouleau, AWD Cross Connection Coordinator, at 978-263-9107.

Water Use Restrictions

ur seasonal water use restrictions are in effect from May 1 to October 1 of each year. These restrictions allow customers with even-numbered addresses to use water outdoors on Tuesday, Thursday, and Saturday. Odd-numbered addresses may use water outdoors on Wednesday, Friday, and Sunday. No lawn watering is allowed between the hours of 7am and 7pm, and no outdoor water use of any kind is allowed on Mondays. These restrictions apply to both new and established lawns. We encourage homeowners to plant new grass either early in the spring or in October. The outdoor water use restriction applies not only to automatic and manual irrigation, but also, to any outdoor water use. Examples include filling or topping off pools, car washing, power washing, and recreation.

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. Customers with a correct answer, as determined by AWD staff, may receive a prize—in addition to the fame of having your name published in this space!



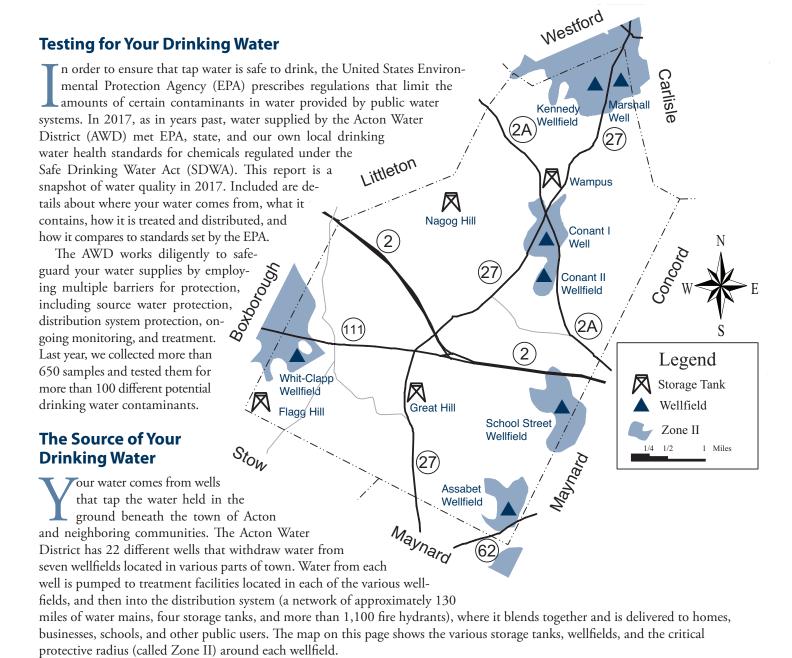
What was it?

Our last photo was correctly identified by James McDonough of Squirrel Hill Road. He responded that the object was a pressurized pipe fitting that developed a pinhole leak which managed to erode the brass fitting. The fitting itself is a curb stop, the shut off valve located approximately at the property line, which shuts off water flow from the street to a customer's home. This leak was identified during our annual leak detection survey and demonstrates the awesome power of water!



Report on Water Quality

Acton Water District



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 fire suppression system or to an outside irrigation system.

Water Quality Data Table

The data presented in the table below are from calendar year 2017 unless otherwise noted. Only compounds that were detected in the water delivered to customers 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) | llowed (MCL) Goal (MCLG) Typical Source | | Exceeds MCL? | | | | | |
|---|--|-------------------------------|--|---|----------------------------------|--|--|--|--|--|
| Regulated Substances (MCI | L has been established) | | <u>'</u> | | | | | | | |
| Arsenic (ppb) | 0-7 | 10 | 0 Erosion of natural deposits | | No | | | | | |
| Chlorine (ppm) | 0.0–1.2, 0.13:highest running annual average | 4 (MRDL) | 4 (MRDLG) | Water additive used to control microbes | No | | | | | |
| Fluoride (ppm) | 0-1.0 | 4 | 4 | Water additive which promotes strong teeth | No | | | | | |
| Gross Alpha Emitters (pCi/L) | 0-1.3 | 15 | 0 | Erosion of natural deposits | No | | | | | |
| Haloacetic Acid (ppb) | 0-11.5 LRAA 0.33-6.8 | 60 | No MCLG | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | No | | | | | |
| Nitrate (ppm) | 0.18-1.5 | 10 | 10 | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits | No | | | | | |
| Perchlorate (ppb) | 0-0.27 | 2 | No MCLG | Rocket propellants, fireworks, munitions, flares, blasting agents | No | | | | | |
| Radium 226/228 (pCi/L) | 0.0-0.6 | 5 | 0 | Erosion of natrual deposits | No | | | | | |
| Trihalomethanes (ppb) | 11.4–90.9 LRAA 15–64 | 80 | No MCLG | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | No | | | | | |
| Turbidity (Nephelometric Turbidity Unit) | 0.01–0.22 Lowest Monthly % Samples: 100 | Maximum Day 1 NTU (TT) | 95% of samples <0.3 NTU Monthly (TT) | A measure of the cloudiness of water. It is a good indicator of the effectiveness of our treatment processes. | No | | | | | |
| Unregulated Substances (M | ACL has not been established) | | <u>'</u> | | | | | | | |
| Iron (ppm) | 0-0.64 | No MCL | No MCLG | Erosion of natural deposits | | | | | | |
| Manganese (ppb) | 0–191 | No MCL | No MCLG | Erosion of natural deposits | Unregulated contaminants have no | | | | | |
| Sodium (ppm) | 36.7–85.0 | No MCL | No MCLG | Erosion of natural deposits, road salting | | | | | | |
| 1,4-dioxane (ppb) | 0.182-0.257 | No MCL | No MCLG | Chemical solvent, lab reagent, stabilizer, adhesive, may be found in cosmetics, detergents, and shampoo. | | | | | | |
| Chloroform (ppb) | 0-2.7 | No MCL | No MCLG | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | | | | | | |
| Chlorodibromomethane (ppb) | 0-4.1 | -4 I NOMII I NOMIII- I | | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | established MCL | | | | | |
| Bromodichloromethane (ppb) | 0-4.2 | No MCL | No MCLG | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | | | | | | |
| Bromoform (ppb) | 0.61–1.04 | No MCL | No MCLG | Formed when natural organic material present in the water reacts with chlorine added as a disinfectant | | | | | | |
| Lead and Copper (30 sites sampled during August/September 2016. Next sampling during Summer 2019) | | | | | | | | | | |
| Substance (units) | 90th percentile | # sites above Action Level | Action Level | Typical Source | Exceeds AL? | | | | | |
| Lead (ppb) | 0.01 | 2 | 15 | Corrosion of household plumbing systems; Erosion of natural deposits | No | | | | | |
| Copper (ppm) | 0.5 | 0 | 1.3 | Erosion of natural deposits; Leaching; Corrosion of household plumbing systems; from wood preservatives | No | | | | | |

For terms and abbreviations, see page 7.

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) that may be naturally occurring or result from stormwater runoff, wastewater discharge, mining, or farming
- pesticides and herbicides, which may come from a variety of sources, such as agriculture, stormwater runoff, and residential uses
- **organic chemical** contaminants, which are byproducts of industrial processes, and can also come from gas stations, urban stormwater runoff, and septic systems
- radioactive contaminants, which can occur naturally or be the result of oil and gas production or 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 its 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 customers. The table below shows the treatment provided at each wellfield.

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

TERMS AND ABBREVIATIONS

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

LRAA (Locational Running Annual Average): The highest level of contaminant as determined by a running annual average of all the samples taken from a sampling point.

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.

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.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

pCi/L: picoCuries per liter

ppm: part per million by volume

ppb: part per billion by volume

TT (Treatment Technique): A required process intended to reduce the level of contaminant in drinking water.

Discussion of Data Table Detections

ARSENIC: Water systems, such as ours, with arsenic above 5 ppb (50 percent of the MCL), but at or below 10 ppb (the MCL) must include the following statement. While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

FLUORIDE: The Acton Board of Health voted in 1970 to adjust the fluoride level in drinking water to prevent tooth decay/ cavities. On June 8, 2015, the Acton BOH voted to adopt the Centers for Disease Control's recommended adjusted fluoride dose to 0.7 mg/L. AWD implemented the new adjusted dose at all of its treatment plants in 2015.

SODIUM: Although sodium does not have a Maximum Contaminant Level, the MassDEP does have a guideline of 20 parts per million (ppm) for sensitive individuals, such as those on very salt-restricted diets. The AWD notifies the Acton Board of Health of sodium results, and results of the most recent sodium tests are posted at various locations in town. 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.

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 AWD 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 (800-426-4791) or at http://www.epa.gov/safewater/lead.

MANGANESE: Manganese is a nutrient that is part of a healthful diet. Drinking water may naturally have manganese and, when concentrations are greater than 50 parts per billion (ppb), the water may be discolored and taste bad. Over a lifetime, EPA recommends that people drink water with manganese levels of less than 300 ppb; over the short term, EPA recommends that people limit their consumption of water with levels of more than 1,000 ppb, primarily due to concerns about possible neurological effects. Children up to one year of age should not be given water with manganese concentrations greater than

300 ppb, nor should formula for infants be made with that water for longer than 10 days.

1,4-DIOXANE: During 2017 the AWD collected samples for this compound in the raw and treated waters of the Assabet and School Street wells. This sampling was conducted due to the presence of this compound at the WR Grace and Nuclear Metals, Inc. Superfund sites near our South Acton wells. 1,4-dioxane is not a regulated contaminant, and the MassDEP has not established an MCL and only recently approved a laboratory process for analyzing this compound. The AWD is following the potential regulation of this contaminant and the effect it may have on our water system (see article in this newsletter). Some people who drink water containing 1,4-dioxane at high concentrations for many years could experience chronic kidney and liver effects and liver cancer.

VOLUNTARY MONITORING: In addition to the monitoring required by the Safe Drinking Water Act, the AWD voluntarily conducts hundreds 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, and some elderly people and infants can be particularly at risk for 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).

Source Water Assessment and Protection Report Available

he Source Water Assessment and Protection (SWAP) program requires states to assess the susceptibility of public water supplies to potential contamination. The Massachusetts Department of Environmental Protection (MassDEP) has completed its assessment on each of the Zone II areas for the Acton Water District's wells. A susceptibility ranking of "high" was assigned to each Zone II using the information compiled by MassDEP. Copies of the SWAP report are available at the Acton Water District office or on the website: www.ActonWater.com.

The AWD 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. For more information, please call Matthew Mostoller, AWD Environmental Manager, at 978-263-9107.