

*Annual*  
**WATER**  
**QUALITY**  
**REPORT**

*Reporting Year 2012*



*Presented By* \_\_\_\_\_  
City of Cambridge  
Municipal Utilities Commission

PWS ID#: 0090002

## There When You Need Us

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2012. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet the fourth Thursday of each month beginning at 6:30 p.m. at the City Council Chambers, 305 Gay Street, Cambridge, MD.

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

## Lead in Home Plumbing

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. We are 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 [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Where Does My Water Come From?

The City of Cambridge Municipal Utilities Commission customers are fortunate because we enjoy an abundant water supply from ten wells withdrawing from three different aquifers. We have six wells pumping from the Piney Point aquifer, two wells in the Magothy aquifer, and two wells withdrawing from the Patapsco (Raritan) aquifer.

### **Piney Point Formation**

The Piney Point aquifer is used by eight of the nine community water systems in the area. The thickness of the Piney Point Formation is variable, ranging from a few feet to about 160 feet. The formation consists of medium- to coarse-grained, olive-green to black, slightly glauconitic sand with interbedded clayey layers. The top of the Piney Point Formation ranges about 340 feet below sea level at Cambridge. Transmissivity values in Cambridge range from 25,000 to 45,000 gallons per day (gpd) per foot. The Piney Point aquifer is overlain by the Chesapeake Group Formations that function as multiple confining and leaky confining beds to this aquifer. The Piney Point aquifer does not outcrop at the ground surface, and therefore is not directly recharged by precipitation. Recharge is derived from lateral and vertical leakage through adjacent beds.

### **Magothy Formation**

This formation consists of medium- to coarse-grained white, yellow, and gray sands with irregular lenses of dark clay containing lignite. The thickness ranges from 30 to 139 feet. The top of the Magothy Formation is at about 900 feet below sea level in Cambridge. Transmissivity values at Cambridge are between 8,000 and 15,000 gpd per foot. The formation is overlain unconformably by the Matawan Formation that functions as a confining unit in Dorchester County.

### **Patapsco (Raritan) Formation**

The Patapsco Formation consists of fine- to medium-grained, greenish gray sand, with layers of mottled, tough clay. The sands occur in four beds ranging in thickness from 15 to 40 feet. The top of the Patapsco Formation ranges from about 1,000 to 1,500 feet below sea level in Dorchester County. Cambridge's wells have a transmissivity of over 16,000 gpd per foot. The Patapsco aquifer is overlain by multiple, younger aquifers and confining units of variable thickness. The outcrop area extends from Washington, D.C., to Elkton, Maryland, in a band of varying width. Between Washington and Baltimore, the outcrop area is between 10 and 20 miles wide.

To meet our daily demand, we are currently operating three or four of the wells, with the others in reserve. The wells pump water into ground storage tanks located at our four pumping stations. The stations are located on Stone Boundary Road, Nathans Avenue, Glasgow Street, and Brohawn Avenue. Water is pumped from our pumping stations into the distribution system, which consists of approximately 80 miles of pipe supported by our two elevated storage tanks with a capacity of 1.5 million gallons. We provide our customers with roughly 1.5 million gallons of good, safe drinking water every day.

## Water Treatment Process

Due to the high-quality well water utilized, the treatment process consists of just two steps. First, raw water is drawn from our wells and sent to an aeration tray, which allows for oxidation of the low iron levels that are present in the water. The water then goes to a holding tank, where chlorine is added for disinfection. (We carefully monitor the amount of chlorine, adding the lowest quantity necessary to protect the safety of your water without compromising taste.) Finally, the water is pumped from the pumpage facilities to sanitized water towers and into your home or business. Our certified water production operators monitor samples 365 days a year at different points in the system to ensure the quality of the water.

## QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Jane Dorman, Assistant Manager, or Kevin Johnson Sr., Superintendent, at (410) 228-5440.



Lighthouse on the Choptank

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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

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

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.



## What is the typical per-day water usage?

While usage varies from community to community and person to person, on average, Americans use 183 gallons of water a day for cooking, washing, flushing, and watering purposes. The average family turns on the tap between 70 and 100 times daily. About 74% of home water usage occurs in the bathroom, about 21% in the laundry room, and about 5% in the kitchen.

## Why do water pipes tend to break in winter?

Liquids generally contract when frozen and become more dense; however, the unique qualities of water cause it to expand by up to 9% when it freezes. That is why water pipes burst when temperatures reach the freezing mark.

## How much water is used to create the food we eat each year?

The average American consumes 1,500 pounds of food each year; 1,000 gallons of water are required to grow and process each pound of that food. Thus, 1.5 million gallons of water is invested in the food eaten annually by just one person! This 200,000-plus cubic feet of water per person is enough to cover a football field four feet deep.

## Is it okay to use hot water from the tap for cooking and drinking?

No, ALWAYS use cold water. Hot water is more likely to contain rust, copper, and lead from household plumbing and water heaters. These harmful substances can dissolve into hot water faster than they do into cold water, especially when the faucet has not been used for an extended period of time.

## What type of container is best for storing water?

Consumer Reports has consistently advised that glass or BPA-free plastics such as polyethylene are the safest choices. To be on the safe side, do not use any container with markings on the recycle symbol showing 7 PC (which is the code for BPA). You could also consider using stainless steel or aluminum containers that have BPA-free liners.

## How much water is used in the shower?

A 10-minute shower can take 25 to 50 gallons of water. High-flow shower heads allow a flow of 6 to 10 gallons a minute. Low-flow shower heads can cut the rate in half without reducing pressure.

## Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below indicate contaminants that were detected in the water. The state requires us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

### REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Arsenic (ppb)	2012	10	0	NA	<0.0015–<0.001	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
<i>E. coli</i> [at the groundwater source] (# positive samples)	2012	NA	0	0	NA	No	Human and animal fecal waste in untreated groundwater
Fecal coliform and <i>E. coli</i> (# positive samples)	2012	0	0	0	NA	No	Human and animal fecal waste
Fluoride (ppm)	2012	4	4	0.87	0.76–0.98	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate (ppm)	2012	10	10	<1	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Tap water samples were collected for lead and copper analyses from sample sites throughout the community<sup>1</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2011	1.3	1.3	0.09	0/33	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2011	15	0	0	0/33	No	Corrosion of household plumbing systems; Erosion of natural deposits

### INITIAL DISTRIBUTION SYSTEM EVALUATION (IDSE)<sup>2</sup>

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Haloacetic Acids [HAAs]–IDSE Results (ppb)	2012	60	NA	NA	1–3.5	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes]–IDSE Results (ppb)	2012	80	NA	NA	2.6–14.8	No	By-product of drinking water disinfection

### UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2012	115	82–147	Naturally occurring

<sup>1</sup> Next scheduled testing for lead and copper testing is in 2014.

<sup>2</sup> We were required by the U.S. EPA to conduct an evaluation of our distribution system. This is known as an Initial Distribution System Evaluation (IDSE) and is intended to identify locations in our distribution system that have elevated disinfection by-product concentrations. Disinfection by-products (e.g., HAAs and TTHMs) result from continuous disinfection of drinking water and form when disinfectants combine with organic matter that naturally occurs in the source water.

## Definitions

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

**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.

**NA:** Not applicable

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).