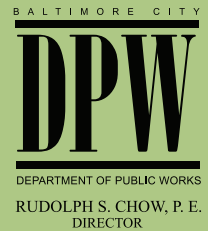




Catherine E. Pugh
Mayor

City of Baltimore Department of Public Works Annual Water Quality Report



Reporting Period: January 1, 2016 to December 31, 2016

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Important Health Information

Water systems that store finished drinking water in uncovered reservoirs are now required by the Safe Drinking Water Act to be protected from potential environmental contaminants. At present the City has three uncovered finished-water reservoirs: Guilford, Druid Lake and Lake Ashburton.

The Towson reservoir tanks are complete and Montebello Filtration Plant II reservoir tanks are in service. Guilford Reservoir is being converted to underground tanks and will be extensively landscaped by spring 2019. Druid and Ashburton will remain as lakes; however, they will no longer be used as drinking-water storage facilities. Buried tanks will serve that purpose.

Baltimore's drinking water meets or exceeds all federal drinking water standards. However, an uncovered reservoir, used to store treated drinking water, can be susceptible to contamination from animals, such as birds or insects. Inadequately treated water may contain disease-causing organisms including bacteria, viruses, and parasites that can result in such symptoms as nausea, cramps, diarrhea, and associated headaches.

These symptoms are also caused

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Keep Waterways Clean: Trash the Wipes, Can the Grease



Flushing wipes and pouring fats, oils, and grease (FOG) down the drain is a sure way to clog your pipes, and the City's sewer lines. Baltimore City Department of Public Works (DPW) crews routinely find grease balls and rags when they are called to clear clogged sewers that have overflowed or backed up into houses.

Despite claims to be "flushable," most of the popular wet wipes used for personal hygiene and household cleaning do not break down once they are flushed. They often get caught in sewer pipes, contributing to overflows and backups.

In addition, FOG poured down the drain hardens in the pipes. This can clog homeowners' plumbing and impact the sewer lines that serve entire neighborhoods. FOG-laden wastewater that enters the city's sanitary sewer system accumulates in the pipes and creates sewer backups, usually through kitchen and bathroom fixtures. It also creates blockages that can result in sanitary sewer overflows, which can harm area waterways and the public's health.

Simple steps that residents can take to prevent clogged sewer lines include placing wipes in the trash – not the toilet – and pouring grease into cans before placing them in the household trash.

"The City is spending billions of dollars to improve its aging sewer system so it is ready to serve future generations of Baltimore residents," said DPW Director Rudolph S. Chow, P.E. "When citizens take care to keep wipes out of the toilet and keep grease out of drains, these small steps add up big for our community."

Don't Flush This!

Keep products such as wipes (baby, disinfectant, makeup, wet, etc.), paper towels, and feminine hygiene products out of the toilet. These items should be placed in the trash, not flushed down toilets.

Other products that should not be flushed include:

- Plastic wrappers, or packaging
- Dental floss
- Toilet bowl scrub pads
- Diapers (cloth, disposable)
- Rags, wash cloths, towels

Can the Grease!

Used cooking fats, oils, and grease belong in the trash, not down the drain. To keep wastewater flowing away from your house, make sure your FOG goes "from the pan to the can." This means pouring grease into a can, letting it solidify, and then putting the container into the trash.

Before you wash pots, pans, and dishes, use a paper towel to wipe away the fats, oils, and grease, and dispose of the FOG-laden material in the garbage. And scrape left-over food and oil off plates into a storage container.

Dish soaps and hot water will cut grease, but only temporarily. The FOG solidifies again in your pipes when the water cools and the soap separates from the grease. For more on caring for your plumbing, please visit <http://publicworks.baltimorecity.gov>.

BALTIMORE CITY WATER QUALITY REPORT FOR 2016

In the year 2016, the City performed approximately 150,000 water quality analyses as part of a continuous effort to assure the water you drink meets or exceeds regulatory standards. The water is analyzed for more than 90 different drinking water contaminants. A summary of the finished water quality results is provided below. The data represents the most recent testing done in accordance with the requirements of EPA's Water Testing Regulations and were the only regulated substances found in your drinking water. Baltimore City's excellent drinking water meets or exceeds all these standards.

TERMS AND ABBREVIATIONS — What They Mean in Plain English

Term / Abbreviation	Definition	What it Means
PPM	Parts per million	1 ppm is the same as one drop in 10 gallons of water.
PPB	Parts per billion	1 ppb is the same as one drop in 10,000 gallons of water.
HLD	Highest Level Detected	Same as defined.
MCL	Maximum Contaminant Level	The highest level of a contaminant allowed by health regulations established by the Environmental Protection Agency.
MCLG	Maximum Contaminant Level Goal	Health related goals. The MCL is set as close to this "goal" as possible but with consideration to achievability and cost.
NTU	Nephelometric Turbidity Units	Units of measurement used to report the level of turbidity or "cloudiness" in the water.
AL	Action Level	If the "Action Level" for a particular contaminant is exceeded, a response that may include additional treatment steps and/or public education may have to be initiated by the water system.
TT	Treatment Technique	A "Treatment Technique" is a required process that is intended to reduce the amount of a specific contaminant in drinking water.
pCi/L	picoCuries per Liter	A measure of the level of radioactivity in the water.
TURBIDITY	Relates to a condition where suspended particles are present in the water.	Turbidity measurements are a way to describe the level of "cloudiness" of the water.
TOTAL/FECAL COLIFORMS	Indicator Bacteria	Type of bacteriological tests routinely used to determine if contamination has occurred in a drinking water system.
MRDL	Maximum Residual Disinfectant Level	Disinfectant level beyond which some people may experience irritating effects. Based on running annual average of monthly averages of distribution system samples computed quarterly.

MICROBIOLOGICAL CONTAMINANTS

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT	MONTEBELLO PLANTS	MAJOR SOURCES
TOTAL COLIFORMS	0	The presence of coliform bacteria in more than 5% of monthly samples will exceed the MCL.	Highest monthly percentage of positive samples: 3.35%* *Not a violation. All repeat samples were negative.	Highest monthly percentage of positive samples: 3.35%* *Not a violation. All repeat samples were negative.	Naturally present in the environment.
FECAL COLIFORMS and E. COLI	0	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or E. Coli positive.	Highest monthly percentage of positive samples: 0%	Highest monthly percentage of positive samples: 0%	Human and animal fecal waste.

TURBIDITY

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT		MONTEBELLO PLANTS		MAJOR SOURCES
TURBIDITY ¹	None	Treatment Technique (TT)	HLD	LOWEST %	HLD	LOWEST %	Soil run-off.
		Filtration	0.11 NTU	100	0.36 NTU	100	

1. Turbidity cannot exceed 1 NTU and must be less than or equal to 0.3 NTU in at least 95% of measurements taken each month. Lowest % is the lowest percentage of monthly filtered water turbidity samples less than 0.3 NTU.

ARSENIC RESULTS

SUBSTANCE	MCL	ASHBURTON PLANT	MONTEBELLO PLANTS	MAJOR SOURCES
ARSENIC	0.010 ppm	<0.003 ppm	<0.003ppm	Erosion of natural deposits.

LEAD AND COPPER TESTING

Lead and copper testing was last required by regulatory standards in 2015. During that year, the testing involved 52 "tier 1" or high-risks homes. To determine compliance, the 52 test results were arranged from the lowest value to the highest. The 90th percentile value is identified by: $52 \times 0.9 = 46.8$. Therefore, the 47th value, arranged from lowest to highest, must be below the "action level" for lead and copper. Our system met this compliance standard. Testing will be required again in 2018.

LEAD AND COPPER TESTING RESULTS (2015)

SUBSTANCE	ACTION LEVEL	90TH PERCENTILE	SAMPLE RESULTS GREATER THAN ACTION LEVEL
LEAD	15 ppb	5 ppb	2
COPPER	1,300 ppb	343 ppb	0

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 City of Baltimore 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 drinking 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 EPA Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

INORGANIC CONTAMINANTS

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT		MONTEBELLO PLANTS		MAJOR SOURCES
			HLD	RANGE	HLD	RANGE	
BARIUM	2 ppm	2 ppm	0.02 ppm	0.02 ppm	0.036 ppm	0.03-0.036 ppm	Discharge of drilling wastes & metal refineries; erosion of natural deposits.
NITRATE (AS NITROGEN)	10 ppm	10 ppm	1.91 ppm	1.10 - 1.91 ppm	1.94 ppm	0.85 - 1.94 ppm	Run-off from fertilizer use; leaching from septic tanks; erosion of natural deposits.

FLUORIDE

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT			MONTEBELLO PLANTS			MAJOR SOURCES
			HLD	RANGE	AVERAGE	HLD	RANGE	AVERAGE	
FLUORIDE	4 ppm	4 ppm	0.91ppm	0.31 - 0.91 ppm	0.72 ppm	1.08 ppm	0.26 - 1.08 ppm	0.71 ppm	Water additive that promotes strong teeth.

CHLORINE

SUBSTANCE	MRDLG	MRDL	RUNNING ANNUAL AVG. OF MONTHLY SAMPLES COMPUTED QUARTERLY	MAJOR SOURCE
CHLORINE	4 ppm	4 ppm	0.59 ppm (Based on 5023 distribution system samples collected in 2016)	Water treatment additive to disinfect supply.

RADIOACTIVE CONTAMINANTS

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT	MONTEBELLO PLANTS	MAJOR SOURCES
BETA PHOTON EMITTERS	0 mrem/yr	50 pCi/L*	<1.5 pCi/L	<4 pCi/L	Erosion of natural deposits.
ALPHA EMITTERS	0 pCi/L	15 pCi/L	<1 pCi/L	<2 pCi/L	Erosion of natural deposits.

*The MCL for Beta Photon Emitters is 4 millirems per year (a measure of radiation absorbed by the body). The EPA considers 50 pCi/l to be a level of concern for this contaminant.

VOLATILE ORGANIC CHEMICALS

SUBSTANCE	MCLG	MCL	ASHBURTON PLANT			MONTEBELLO PLANTS			MAJOR SOURCES
			HLD (LRAA)	RANGE (LRAA)	*AVERAGE (LRAA)	HLD (LRAA)	RANGE (LRAA)	*AVERAGE (LRAA)	
TOTAL THMs	N/A	80 ppb	69 ppb	29-69 ppb	41 ppb	67 ppb	29-67 ppb	44 ppb	By-product of drinking water chlorination.
HAA(5)	N/A	60 ppb	56 ppb	8-56 ppb	35 ppb	**63 ppb	2-63 ppb	32 ppb	By-product of drinking water chlorination.

**The Wise and Bear sample site exceeded the HAA (5) MCL in January. The locational running annual average (LRAA) was 63 ppb.

Violation

Testing results from calendar year 2016 indicate that our system exceeded the (MCL) maximum contamination level for Haloacetic acids (HAA5) at one sampling location. The HAA(5) MCL is 60 ppb. The Wise and Bear site LRAA for the period from February 2015 - Jan 2016 was 63 ppb. HAAs are a type of disinfection by-product that is formed when chlorine reacts with natural organic matter in the water. We are working to minimize the formation of HAA(5) while ensuring an adequate level of disinfection to protect consumers from exposure to bacteria. We have since taken samples at this location and throughout the system. They currently show that we meet required standards.

CRYPTOSPORIDIUM RESULTS RANGE

Liberty: 0.0 Oocyst/Liter
 Loch Raven: 0.0 Oocyst/Liter
 Susquehanna River: 0.0 Oocyst/Liter

*Microscopic view of
 Cryptosporidium oocysts*

Cryptosporidium (crip-toe-spor-ID-ee-um) is a protozoan, a single-celled parasite that can invade and reside in the intestines of animals and people. This organism is found in some surface water (lakes, reservoirs, rivers, etc.), and also groundwater under the influence of surface water. Infection of healthy individuals by this organism can cause a gastrointestinal illness referred to as cryptosporidiosis (crip-toe-spor-id-ee-o-sis), which may produce symptoms including diarrhea, headache, abdominal cramps, nausea, vomiting and low-grade fever. The symptoms usually last one to two weeks. For immunocompromised people, however, the infection can continue and last for several months. Because there are no effective medical treatments, prolonged infection can be fatal for severely immunocompromised individuals. Human transmission routes include ingestion of contaminated food or drinking water or through direct contact with fecal matter.

The City monitors its raw water sources for the presence of Cryptosporidium using the services of environmental laboratories employing the latest available and approved analytical methods.

SECONDARY CONTAMINANTS

Sodium levels in the water supply are often of concern to consumers who contact our facilities. Sodium naturally occurs in raw waters but the concentration can be increased due to the influence of run-off from road surfaces treated with rock salt during snow and ice removal efforts. During the year 2016, the average sodium concentrations measured in the finished water from the Ashburton and Montebello Water Treatment Plants were 19.1 ppm and 20.9 ppm respectively and are considered low.

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 healthcare providers. EPA/CDC guideline on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the [Safe Drinking Water Hotline](http://www.epa.gov/safewater/hotline) at 1 (800) 426-4791. If you have specific health concerns, consult your doctor.

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by other factors. Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised people, such as persons with cancer having 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 may seek advice about drinking water from their health care providers.

The United States Environmental Protection Agency and 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 1-800-426-4791. If you have specific health concerns, consult your doctor.

Protecting and Preserving Our Watersheds

Baltimore uses surface water from rainfall and snowmelt as the source of its water. This water, approximately 75-billion gallons of storage volume at maximum capacity, is collected and stored in the City-owned and operated watersheds: Liberty, Loch Raven, and Prettyboy.

These reservoir lands were established for the sole purpose of protecting our drinking water supply. The forests and other vegetation remove nutrients and prevent erosion and runoff. Protecting these lands is a full-time job for our team of Environmental Police Officers, biologists, maintenance personnel and the public.

Nineteenth Annual Water Quality Report

This is the 19th edition of Baltimore City's Annual Water Quality Report that the Department of Public Works is pleased to make available to Baltimore's customers. This report for our Water System (PWSID#: MD0300002) contains information regarding the quality of the water you drink, as well as educational and important public health notices and contacts. The information in this Drinking Water Quality Report, covering the year 2016, is being provided to you in addition to other notices that may be required by law.

Questions about this report, questions about drinking water quality, or information on source water assessments and requests for additional copies should be directed to one of the City's Water Quality Laboratories (Ashburton - 410-396-0150 or Montebello - 410-396-6040).

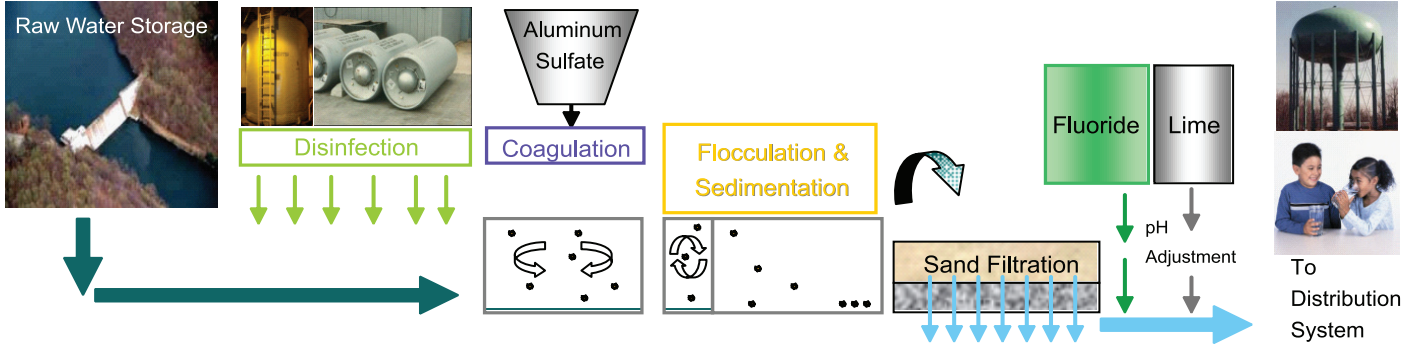
We are pleased to inform you that tours of the treatment plants are being offered; however, some restrictions may need to be observed based on ongoing facility security requirements.

This report, along with more information about water quality, system history and common water quality concerns, can be accessed through the Baltimore City Department of Public Works' website at: publicworks.baltimorecity.gov.

For questions or Customer Service call 311 in Baltimore City or 410-396-5352 outside Baltimore City.

Baltimore's Water Treatment Process

When the water reaches the filtration plants, sufficient chlorine is added to kill many of the microorganisms that could otherwise potentially cause illness...



Consumers should be aware that drinking water, including bottled water, might reasonably be expected to contain at least small amounts of some contaminants.

How Can Impurities Get In the Water Supply?

As water travels over the surface of the land, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or from human activity. Contaminants may include:

- Viruses and bacteria that may come from sewage treatment plants, septic systems, live stock, and wildlife;
- Salts and metals that can be naturally occurring or result from stormwater runoff, wastewater discharges, and farming;
- Organic chemicals that are by-products of industrial processes and petroleum production, agriculture, gas stations, stormwater runoff, and septic systems;

• Radioactive contaminants, which can be naturally occurring.

In order to assure that tap water is safe to drink, the Environmental Protection Agency (EPA) sets regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations set limits for contaminants in bottled water that must provide the same protection for public health. Consumers should be aware that drinking water, including bottled water, might reasonably be expected to contain at least small amounts of some contaminants.

The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects

can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

You Can Help with Water System Security

Water system security continues to be an enormously important issue. If you notice suspicious activities in or around local water utilities, such as persons cutting, or climbing facility fencing, loitering, tampering with equipment or other similar activities, please contact your local law enforcement agency immediately by dialing 911. For other suspicious activities that may appear non-threatening such as persons videotaping or photographing facilities, equipment or structures, please call 410-517-3600.