City of Baltimore
Annual Water Quality Report
Baltimore City Department of Public Works

Catherine E. Pugh
Mayor

BALTIMORE CITY DPW
DEPARTMENT OF PUBLIC WORKS
RUDOLPH S. CHOW, P. E.
DIRECTOR

Reporting Period: January 1, 2017 to December 31, 2017

Important Health Information

The Baltimore City Department of Public Works (DPW) has started work to cover a considerable portion of the iconic Druid Lake Reservoir and install two huge underground water tanks. The $140 million project will be completed in early 2022.

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. In addition to the Druid Lake finished-water reservoirs, the City's water system also includes Guilford Reservoir and Lake Ashburton.

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

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.

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What Happens When a Water Main Breaks?

When a water main breaks, the Baltimore City Department of Public Works' (DPW) key priority is to restore water to homes and businesses experiencing service outages. Although water main breaks happen throughout the year, the winter months can be especially hard on infrastructure. During this past winter's "Big Freeze" (Dec. 24, 2017, to Jan. 23, 2018), DPW responded to 559 confirmed water main breaks. That is roughly half the number of all water main breaks in 2017.

Baltimore City, along with neighboring Baltimore County, has taken proactive steps to upgrade its water infrastructure, replacing and rehabilitating 15 miles of mains annually. This accelerated program will rehabilitate all of the 1,500 miles of water mains in the City on a 100-year schedule.

What Causes Water Main Breaks?

Water mains break due to a variety of factors, especially freezing and thawing conditions that can cause the ground to shift and put stress on the pipes. In addition, a history of previous breaks, pipe corrosion, soil conditions, and age contribute to water main breaks.

What does the Water Main Repair Process Involve?

1. Report water main breaks and other water emergencies to 311 (phone, mobile app, online). Baltimore County customers call (410) 396-5352.
2. A DPW inspector will be dispatched to confirm the break.
3. The water main valve will be located and turned off to cut off the flow of water.
4. Utility lines are identified and marked.
5. Broken pipe section is located, dug up and repaired or replaced.
6. Excavation site is filled in and roads are repaved.

To keep the public informed, DPW recently launched an Interactive Map that shows up-to-date information on water main repair activity.

The interactive map is available on the DPW website: https://publicworks.baltimorecity.gov.

What Should I Do if I am Affected by a Water Main Break?

Once service is restored, customers who have lost water service should allow water to run through a sink or tub faucet, until it is clear. DPW will also open fire hydrants to clear the water lines.

BALTIMORE CITY WATER QUALITY REPORT FOR 2017

In the year 2017, 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 over 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.
LRAA	Locational Running Annual Average	An averaging of analytical results for samples taken at a particular location for the four most recent calendar quarters.

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: 1.17%* *Not a violation. All repeat samples were negative.	Highest monthly percentage of positive samples: 1.17%* *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	0.09 NTU	100	0.22 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 x 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	5.00 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	0.023 ppm	0.02 – 0.023 ppm	0.039 ppm	0.03-0.039 ppm	Discharge of drilling wastes & metal refineries; erosion of natural deposits.
NITRATE (AS NITROGEN)	10 ppm	10 ppm	1.44 ppm	1.05-1.44 ppm	1.67 ppm	0.76-1.67 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	0.85 ppm	0.27 - 0.85 ppm	0.68 ppm	1.11 ppm	0.06 - 1.11 ppm	0.73 ppm	Water additive that promotes strong teeth.

CHLORINE

SUBSTANCE	MRDLG	MRDL	RUNNING ANNUAL AVG. OF MONTHLY SAMPLES COMPUTED QUARTERLY	MAJOR SOURCES
CHLORINE	4 ppm	4 ppm	0.59 ppm (Based on 4899 distribution system samples collected in 2017)	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.

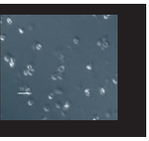
VOLATILE ORGANIC CHEMICALS (Table Revised 4/11/18)

SUBSTANCE	MCLG	MCL	City of Baltimore Distribution System		MAJOR SOURCES
			HIGHEST LOCATIONAL RUNNING ANNUAL AVERAGE (LRAA)	RANGE (individual locations)	
TOTAL THM'S	N/A	80 ppb	69 ppb	20 - 107 ppb	By-product of drinking water chlorination.
HAA(5)	N/A	60 ppb	49 ppb	5 - 60 ppb	By-product of drinking water chlorination.

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.

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

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 2017, the average sodium concentrations measured in the finished water from the Ashburton and Montebello Water Treatment Plants were 18.7 ppm and 20.1 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 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.

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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 should seek advice about drinking water from their healthcare 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 reservoirs: Liberty, Loch Raven and Prettyboy.

These watersheds 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, and maintenance personnel.

Twentieth Edition of Annual Water Quality Report, First Time for Electronic Distribution

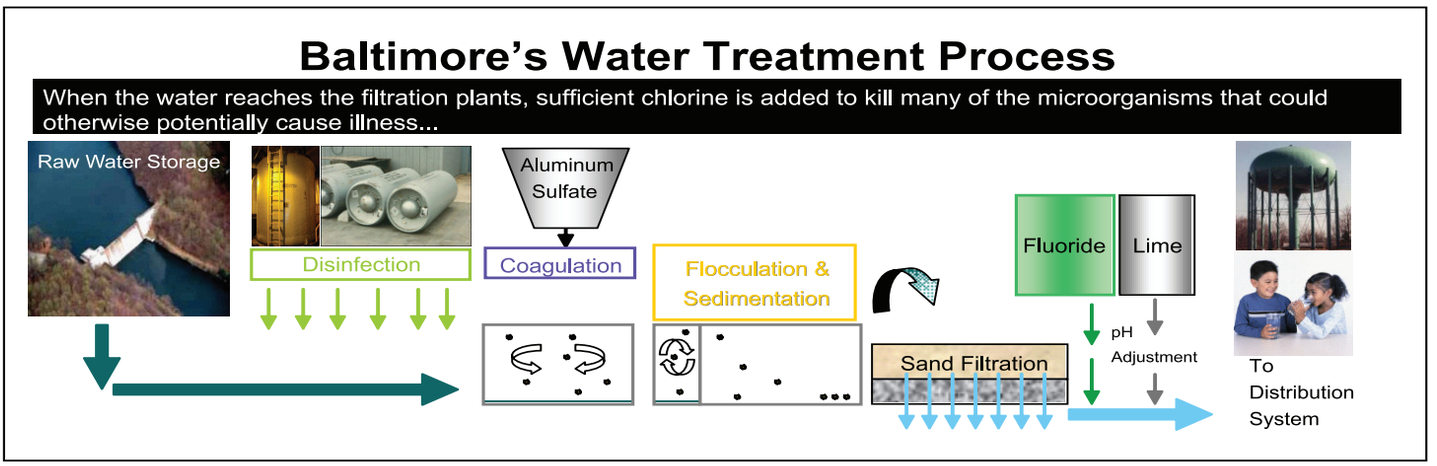
The Baltimore City Department of Public Works (DPW) is pleased to make available the 20th edition of our annual Water Quality Report. This report is the first edition that DPW is distributing electronically. Previously, the four-page report was mailed to each customer along with a springtime water bill.

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 2017, is being provided to you in addition to other notices that may be required by law.

Questions about this report, 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 can be accessed through the DPW website at: publicworks.baltimorecity.gov/waterreport. Customers who want printed copies of the report can call 311 or (410) 396-5352. Previous years' reports are also available online at publicworks.baltimorecity.gov/water-quality-reports.



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, livestock, and wildlife
- Salts and metals that can be naturally-occurring or result from storm water runoff, wastewater discharges, and farming
- Organic chemicals that are by-products of industrial processes and petroleum production, agriculture, gas stations, storm water 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.