STEPHANIE RAWLINGS-BLAKE
MAYOR

City of Baltimore
Department of Public Works
Annual Water Quality Report

BALTIMORE CITY DPW
DEPARTMENT OF PUBLIC WORKS
ALFRED H. FOXX
DIRECTOR

Reporting Period: January 1, 2012 to December 31, 2012

INSIDE THIS ISSUE:

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 and Montebello Filtration Plant II reservoir tanks are under construction. Guilford Reservoir will be converted to underground tanks and be extensively landscaped by the end of 2016. 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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Moving Forward: New Water Mains

Baltimore City has a remarkable water system whose forward-looking design dates back to the 19th century. Its age is a principal reason why there are, on average, more than 1,000 water main breaks annually in the Baltimore region.

The distribution system provides high-quality drinking water to 1.8 million people daily and consists of over 4,000 miles of pipes, connecting finished water storage facilities to residences, businesses and institutions. These water mains range from 120 - inch diameter concrete conduits to 3 - inch diameter iron pipes.

In 2013, The Department of Public Works (DPW), Bureau of Water and Wastewater, began a program to accelerate the replacement of these mains. At present, the replacement rate is below five miles annually. That is not enough to ensure reliable water service for future generations of customers.

To address this issue, DPW plans to increase its replacement of water mains to approximately 20 miles of water mains this year. The plan then calls for adding an additional five miles each year with an ultimate goal of 40 miles after five years. Replacement will remain at 40 miles each year after that.

This is not a simple process of dig and install. Professional DPW engineers must specially design each line. The process is moving forward with 100 miles of design set to be complete by the end of December 2014.

The department's asset management program determines water system replacement dates and locations. Age, history of breaks, pipe material and system redundancy are among the variables considered when prioritizing upgrades. DPW is committed to this program. Taking action today will reduce disruptions, prevent property damage and reduce revenue losses.

In an effort to increase public awareness and provide information about the department's rehabilitation projects, DPW created **Clean Water Baltimore**, a site devoted to "all things water" in the region. Visit www.cleanwaterbaltimore.org to review up-to-date information about Baltimore's water systems and to track initiatives in your area.

For additional information visit, http://publicworks.baltimorecity.gov, on Facebook at https://www.facebook.com/BaltimoreCityDepartmentofPublicWorks and Twitter at http://twitter.BaltimoreDPW or call 410-795-6151.

In order to provide accurate billing, water meters must be accessible.

Please do not obstruct your meter with vehicles, plantings or other items.

Do not pave over your meter. Call 410-396-5398 for help in locating your meter.

Thank you for your cooperation.

BALTIMORE CITY WATER QUALITY REPORT FOR 2012

In the year 2012, 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.

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: 0%	Highest monthly percentage of positive samples: 0.53%*	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: 0.53%* *Not a violation. All repeat samples were negative.	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	0.19 NTU	100	0.17 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	<0.002 ppm	<0.002ppm	Erosion of natural deposits.

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LEAD AND COPPER TESTING

Lead and copper testing was last required by regulatory standards in 2012. 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 2015.

LEAD AND COPPER TESTING RESULTS (2009)

SUBSTANCE	ACTION LEVEL	90TH PERCENTILE	SAMPLE RESULTS GREATER THAN ACTION LEVEL
LEAD	15 ppb	5.38 ppb	0
COPPER	1,300 ppb	256 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	0.04ppm	0.02- 0.04 ppm	0.04ppm	0.03-0.04 ppm	Discharge of drilling wastes & metal refineries; erosion of natural deposits.
NITRATE (AS NITROGEN)	10 ppm	10 ppm	2.42 ppm	1.66- 2.42 ppm	2.99 ppm	1.24-2.99 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	0.74ppm	0.63 - 0.74 ppm	0.70 ppm	1.16 ppm	<0.20 - 1.16ppm	0.68 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	0.52 ppm (Based on 4,654 distribution system samples collected in 2012)	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	3+/-2 pCi/L	Erosion of natural deposits.
ALPHA EMITTERS	0 pCi/L	15 pCi/L	<1 pCi/L	1+/-1 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	RANGE	*AVERAGE	HLD	RANGE	*AVERAGE	
TOTAL THM'S	N/A[1]	80 ppb	114 ppb	17 - 114 ppb	56 ppb	97 ppb	17-97 ppb	52 ppb	By-product of drinking water chlorination.
HAA(5)	N/A[1]	60 ppb	102 ppb	19-102 ppb	58 ppb	103 ppb	1-103 ppb	54 ppb	By-product of drinking water chlorination.

1. Not applicable because there are individual MCLG's for individual THM's and HAA(5)'s. *The averages listed are running annual averages. Compliance is based on these values

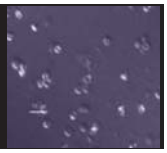
Cryptosporidium (crip-toe-spor-ID-ee-um) is a protozoan, a single-celled parasite that can invade and reside in the intestines of animals and people. This organism is found in some surface water (lakes, reservoirs, rivers, etc.) And also groundwater under the influence of surface water. Infection of 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 - <0.093 Oocyst/Liter
Loch Raven: 0.0 - 0.091 Oocyst/Liter
Susquehanna River: 0.0 - 0.089 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 2012, the average sodium concentrations measured in the finished water from the Ashburton and Montebello Water Treatment Plants were 13.3 ppm and 13.2 ppm respectively and are considered low.

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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 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 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 and maintenance personnel.

Fifteenth Annual Water Quality Report

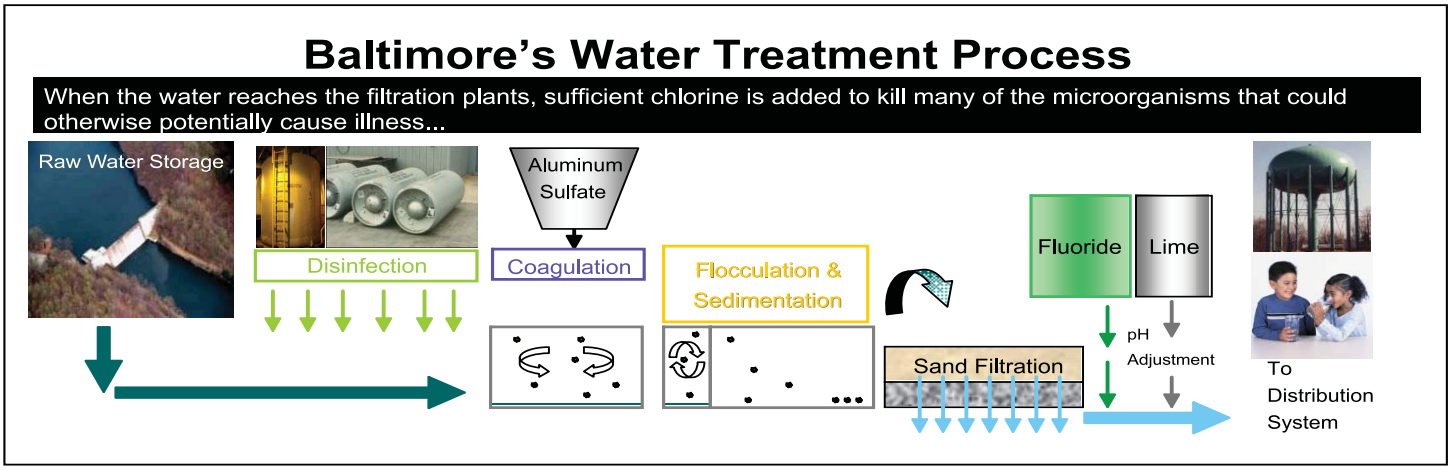
This is the Fifteenth edition of Baltimore City's Annual Water Quality Report that the Department of Public Works is pleased to make available to Baltimore's customers. This report for our Water System (PWSID#:0300002) contains information regarding the quality of the water you drink, as well as educational and important public health notices and contacts. The information in this Drinking Water Quality Report, covering the year 2012, 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' Web Site at: www.baltimorecity.gov

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



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 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 410-396-6762.