

THE EAST LANSING—MERIDIAN WATER & SEWER AUTHORITY

2018 Drinking Water Quality Report for The City of East Lansing & Meridian Township

Why you should read this report!



This report presents important information on the quality of your drinking water. It also discusses where the water originates, and how it's made consistently plentiful, reliable and pleasant, and then provided to your tap every day.

While much of the content of this report is required by regulation, the East Lansing—Meridian Water and Sewer Authority ("Authority") has included other important information about this critical resource that may be of interest to you. The Authority supports and encourages your understanding about our water quality and, in this

report, is attempting to convey this information in a clear and useful format. We also want to enlist your help in protecting and preserving this resource, now and for the future.

From a regulatory standpoint, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and US Environmental Protection Agency (EPA) oversee the quality and availability of the drinking water that is produced by the Authority. In calendar year 2018, the drinking water produced by the Authority was in compliance with all State and Federal regulations. There were no violations of water quality standards.

To help ensure the water supply is reliable and adequate, the Authority employs operations and maintenance staff that maintain proficiency through continuous training and education programs and EGLE certification. Through this process, the staff stays current with the best practices and evolving regulations governing your tap water.

We encourage public interest and participation in decisions affecting your drinking water. Regular Authority Board meetings normally occur at 7:30 a.m. on the third Thursday of each month. These meetings are held at the Water Conditioning Plant at 2470 Burcham Drive, East Lansing, MI 48823. The public is welcome. For current information on meeting times and dates call (517) 337-7535.



Hidden Lakes ■ Meridian Township

WHERE DOES OUR WATER COME FROM?

The Authority was formed as a joint venture of the City and Township to address the water supply and quality needs for both communities. In 1972, the Water Conditioning Plant was placed in service and has provided softened water to both systems since then. Each community owns and operates its separate water distribution utility.

Groundwater is pumped to the conditioning plant from 28 wells that are approximately 400 feet deep. Lime is added to the water to remove the excess hardness, and Ferric Chloride is added to treat very fine particulates. The water then passes through sand filters to remove any cloudiness that was not taken out during the chemical treatment part of the process. Through this method, the excess hardness is removed and recycled for agricultural soil amend-

ment or other beneficial uses. It is not disposed of into the sewer or drain as is commonly done with in-home water softeners.

Although the source-water is very pure, we add Chloramine to ensure the water is thoroughly disinfected and stays fresh, as it is delivered to your home or business. We also add Fluoride for the prevention of tooth decay, especially for children.

In 2018, the Authority processed and pumped 2.1 billion gallons of treated water to the two communities. In the water production process, our operators run numerous routine chemical analyses to ensure the water stays fresh and pleasant tasting. Other more sophisticated testing is performed by us using outside labs, for a wide range of regulated and unregulated contaminants. Through this testing we verify that the water consistently meets state and federal drinking water standards.

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The tables on pages 3 and 4 list some parameters that were detected, and show what the regulatory limits are. No contaminant concentration exceeds regulatory limits.

Note: The Authority purchases water from the Lansing Board of Water and Light (LBWL) to supply the southern portion of Meridian Township. Water quality data for the LBWL is included in this report.

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Vulnerability of sub-populations:

Some people may be more vulnerable to contaminants in drinking water than the general population. 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, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. 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 EPA's Safe Drinking Water Hotline (800-426-4791).

Contaminants and their presence in water:

Drinking water, including bottled water, may 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 EPA's Safe Drinking Water Hotline (800-426-4791).

Sources of drinking water: 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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants 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 and wildlife.
- *Inorganic Contaminants*, such as salts and metals, which can be naturally occurring or result from urban storm 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 farming, storm water runoff, residential or business.
- *Organic Chemical Contaminants*, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.
- *Radioactive Contaminants*, which can be naturally-occurring, or may be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Information regarding lead in drinking water:

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 Authority 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 at 1-800-426-4791 or at www.epa.gov/safewater/lead.

Additional information about lead in the East Lansing—Meridian Water Systems can be found on our website: <https://www.cityofeastlansing.com/600/Annual-Water-Quality-Report>.

WATER QUALITY DATA

DEFINITIONS

As noted above, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The tables on pages 3 & 4 list all of the drinking water contaminants that we detected during the 2018 calendar year. Although many more contaminants were tested, only those substances listed were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels.

Unless otherwise noted, the data presented in these tables is from testing done January 1 - December 31, 2018. The EPA or the State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old.

In these tables you will find terms and abbreviations that might not be familiar to you. To help you better understand the information, please refer to the following definitions of terms used in the table.

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

Level 1 Assessment: A study of the water supply to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A very detailed study of the water supply to identify potential problems and determine (if possible) why an E-coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Maximum Contaminant Level (MCL): 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.

Maximum Contaminant Level Goal (MCLG): 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.

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

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

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

Note: There is a Key to terms or units used in the Table, located on Page 4 of this report.

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Water Quality Data and Test Results

Contaminants	Last Tested	Unit	MCL, TT or MRDL	MCLG or MRDLG	Detected In Your Water	Range (2018)	Violation No/Yes	Typical Source of Contamination	
Disinfectants and Disinfection By-Products									
Chloramines (as Cl₂) -Plant tap	12/31/18	ppm	MRDL = 4	MRDLG = 4	HRAA = 1.32	1.04 - 1.90	No	Water additive used to control microbes	
Chloramines (as Cl₂) -Distribution	12/19/18	ppm	MRDL = 4	MRDLG = 4	HRAA = 0.51	0.01 - 1.87	No		
Chloramine was calculated using the highest quarterly running annual average (RAA), which includes data from 2017. The Range represents individual measurements taken during 2018. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.									
Haloacetic Acids (HAA5)	10/11/18	ppb	60	NA	Highest LRAA = 5.9	ND - 5.0	No	By-product of drinking water disinfection	
TTHMs [Total Trihalomethanes]	10/11/18	ppb	80	NA	Highest LRAA = 15.5	11.9–17.6	No	By-product of drinking water disinfection	
Inorganic Contaminants									
Barium	ELMWSA	9/10/15	ppm	2	2	0.07	0.07	No	Erosion of natural deposits
	LBWL	7/25/12	ppm	2	2	0.022	0.015 - 0.022	No	
Fluoride	ELMWSA	12/31/18	ppm	4.0	4.0	0.38	0.18 - 0.61	No	Erosion of natural deposits, water additive that promotes strong teeth
	LBWL	7/24/18	ppm	4.0	4.0	0.72	0.0 - 0.72	No	
The Authority strives to maintain an optimum Fluoride level of 0.6 - 0.7 ppm in the distribution system. The Authority did not feed supplemental Fluoride in 2018 as the Fluoride feed equipment was being replaced. During 2018, the Fluoride level averaged 0.38 ppm. Fluoride addition resumed on 3/20/19.									
Radiological Contaminants									
Radium 226 & 228	ELMWSA	9/2/14	pCi/L	5	0	3.13	3.13 ± 0.77	No	Erosion of natural deposits
	LBWL	7/7/16	pCi/L	5	0	1.95±0.44	0.84±0.51 to 1.95±0.44	No	

Turbidity	Sample Date	MCL	MCLG	Detected In Your Water	Range	Violation No/Yes	Typical Source of Contaminant
Turbidity	12/31/18	TT = 1.0 NTU	N/A	0.05 NTU	0.04–0.27	No	Soil runoff, water softening process
	12/31/18	TT = < 95% of samples below 0.3 NTU	0	100%	NA	No	
At least 95% of combined filter effluent turbidity samples taken each month must be below the Treatment Technique (TT) limit of 0.3 NTU. Also, any measurement in excess of 1.0 NTU would be a Treatment Technique violation. In 2018, 100% of the samples were below the Treatment Technique (TT) limit of 0.3 NTU.							

Microbial Contaminants	Last Tested	MCL or TT	MCLG	Highest % Detected	Violation: No/Yes	Typical Source of Contaminant
Total Coliform Bacteria	12/19/18	TT	N/A	9.91% *	No	Naturally present in the environment
E. coli in the distribution system (positive samples)	12/19/18	See Footnote **	0	0	No	Human and animal fecal waste
* Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments. During 2018, we were required to conduct one (1) Level 1 assessment. One (1) Level 1 assessment was completed. The effected portion of the system was flushed, and no additional corrective actions were required. No Level 2 assessments were required for our water system.						
** An E. coli violation occurs if: (1) routine or repeat samples are total coliform-positive and either is E. coli-positive, or (2) the system fails to take all required repeat samples following an E. coli-positive routine sample, or (3) the system fails to analyze total coliform-positive repeat sample for E.coli. During 2018, no E coli violation occurred on our system.						

Subject to Action Level	Last Tested	Unit	AL	MCLG	90th Percentile (90% of Samples below this value)	# Samples Above AL	Violation No/Yes	Typical Source of Contamination
Lead (at consumer's tap)	9/14/18	ppb	15	0	ND	1	No	Corrosion of household plumbing
Copper (at consumer's tap)	9/14/18	ppb	1300	1300	30	0	No	Corrosion of household plumbing

Infants and children who drink lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water over many years could develop kidney problems or high blood pressure.

Monitoring and Reporting Requirements: The State and EPA require us to test our water on a regular basis to ensure its safety. We met all monitoring and reporting requirements for 2018. We will update this report annually and will keep you informed of any problems that may occur throughout the year, as they happen. This Drinking Water Quality Report (also referred to as a "Consumer Confidence Report") will not be sent to you unless you contact us and request one. Copies are available at the Water Conditioning Plant, or by calling (517) 337-7535, or at <https://www.cityofeastlansing.com/600/Annual-Water-Quality-Report>.

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Special Monitoring and Unregulated Contaminant Monitoring

As part of an on-going evaluation program the EPA has required us to monitor some additional contaminants/chemicals. Information collected through the monitoring of these contaminants/chemicals will help to ensure that future decisions on drinking water standards are based on sound science.

Unregulated Contaminant	Last Tested	Unit	Reported Level	Range	
				Low	High
The following unregulated contaminants were detected by ELMWSA					
Sodium (typical source is erosion of natural deposits)	9/5/18	ppm	22	22	22
Chlorate	9/2/15	ppb	93	34	180
Chromium (total chromium)	9/2/15	ppb	0.5	0.4	0.5
Chromium—6 (hexavalent chromium)	9/2/15	ppb	0.33	0.24	0.38
Molybdenum	9/2/15	ppb	5.3	4.6	5.8
Strontium	9/2/15	ppb	436	190	513
The following unregulated contaminants were detected by LBWL					
Sodium (typical source is erosion of natural deposits)	7/26/18	ppm	120	110	120
Chlorate	8/2015	ppb	174	32	330
Chromium (total chromium)	8/2015	ppb	0.2	0.2	0.3
Chromium—6 (hexavalent chromium)	8/2015	ppb	0.2	0.14	0.24
Molybdenum	8/2015	ppb	1.1	0	1.2
Strontium	8/2015	ppb	166	120	210
Vanadium	8/2015	ppb	0.3	0.2	0.4
1,4-Dioxane	8/2015	ppb	0.14	0.14	0.14

KEY to Water Quality Table

AL	= Action Level
ELMWSA	= East Lansing-Meridian Water & Sewer Authority
HRAA	= Highest Running Annual Average (Includes data from prior year)
LBWL	= Lansing Board of Water and Light
LRAA	= Locational Running Annual Average (Includes data from prior year)
MCL	= Maximum Contaminant Level
MCLG	= Maximum Contaminant Level Goal
MRDL	= Maximum Residual Disinfectant Level
MRDLG	= Maximum Residual Disinfectant Level Goal
NA	= Not Applicable
ND	= Not Detected
NR	= Not Regulated
NTU	= Nephelometric Turbidity Unit
pCi/L	= Picocuries per Liter
ppb	= parts per billion, or micrograms per liter (µg/L)
ppm	= parts per million, or milligrams per liter (mg/L)
ppt	= parts per trillion, or nanograms per liter (ng/L)
RAA	= Running Annual Average (Includes data from prior year)
TT	= Treatment Technique

INFORMATION ON PFAS IN DRINKING WATER

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has begun a statewide initiative to test drinking water from all schools that use well water and community water supplies. The test is looking for a group of manmade chemicals called per-and polyfluoroalkyl substances (PFAS). EGLE is taking this precautionary step of testing these drinking water sources to determine if public health actions are needed.

It is not uncommon to find low levels of PFAS in drinking water supplies, as PFAS can be found in fire-fighting foams, stain repellants, nonstick cookware, waterproof clothing, food wrappers, and many other household products. They do not break down in the environment and move easily into water.

The EPA set a Lifetime Health Advisory (LHA) level for two PFAS in drinking water, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). The LHA level is 70 parts per trillion (ppt, equal to 70 ng/L) for PFOA and PFOS combined, or individually if only one is present. The EPA has not set health advisory levels for other PFAS compounds. The State of Michigan is using 70 ppt for decision making purposes.

The Authority's tap water was tested by AECOM, EGLE's contractor, on July 12, 2018. The test results can be found on the Michigan PFAS Action Response Team website, https://www.michigan.gov/pfasresponse/0,9038,7-365-86510_88061_92549_92526-495899--00.html, search on Ingham County and look for East Lansing Meridian Water Authority. The results show that of the PFOA and PFOS tested, no detectable levels were found in the water. This result is below the LHA level.

The Authority is committed to providing our customers with quality drinking water. As your water supplier, we are working closely with EGLE to maintain the quality of your water. For health related questions, contact the Michigan Department of Health and Human Services (MDHHS) at 1-800-648-6942 or visit one of the websites below.

FOR INFORMATION ON PFAS INCLUDING POSSIBLE HEALTH OUTCOMES, VISIT THESE WEBSITES

State of Michigan PFAS Action Response Team (MPART) website, serving as the main resource for public information on PFAS contamination in Michigan:

www.michigan.gov/pfasresponse

Agency for Toxic Substances and Disease Registry (ASTDR) website, including health information, exposure, and links to additional resources:

www.atsdr.cdc.gov/pfas

United States Environmental Protection Agency (U.S. EPA) website, including basic information, U.S. EPA actions, and links to informational resources:

www.epa.gov/pfas

You Can Help Protect the Water Supply for Our Communities!

Ultimately, the responsibility for protecting this vital resource of clean fresh water rests with all of us!

? So, what can "I" do, that will actually make a difference:

The water source for our communities is groundwater, and it is drawn from deep wells drilled several hundred feet into the Saginaw Sandstone Aquifer. This aquifer is a porous water bearing geologic formation that underlies central Michigan and is capable of yielding an abundant supply of fresh water. Water drawn from the aquifer is replenished or recharged from local surface sources like streams, lakes, wetlands or permeable soils.

In 2003, the Authority participated in a source water assessment performed by the EGLE (formerly MDEQ), to determine the aquifer's susceptibility to contamination. The susceptibility rating is on a seven-tiered scale from "very low" to "very high" based primarily on geologic sensitivity, well construction, water chemistry and contamination sources. The susceptibility rating of our source is "high" which means **"substances may easily pass through the soil in groundwater recharge areas and contaminate our drinking water source"**.

For our part, the Authority, the City of East Lansing and Meridian Township are participating in Michigan's Wellhead Protection Program. Wellhead protection is a set of activi-

ties and management practices to identify recharge areas and protect the public groundwater supplies from contamination.

The City of East Lansing and Meridian Township have had an active State of Michigan approved wellhead protection plan since 2000, most recently updated in August of 2018. The two communities have also been involved in undertaking a program to protect the groundwater in the area by identifying and properly sealing abandoned or unused private wells. If you would like to know more about the wellhead protection plan or protective methods for well abandonment, contact Clyde Dugan at (517) 337-7535.



Lake Lansing Park North

- ◆ Properly recycle or dispose of wastes and don't let them get into the water, especially pharmaceuticals or liquids like solvents, oils or fuels.
- ◆ Treat all land, lawns and flower beds as if they were your garden. Use only treatments that are essential, using them prudently and sparingly. Otherwise, they may enter your food or water supply.
- ◆ Report all spills so they can be properly cleaned up before they enter lakes, streams or the groundwater.
- ◆ Identify any abandoned wells so they can be removed and properly sealed.
- ◆ Support community efforts in proper urban planning and development controls, so groundwater recharge areas are preserved and protected.

For additional information, or for a paper copy of this Drinking Water Quality Report, contact Clyde Dugan or Mike Mulder at (517) 337-7535.

In response to customer inquiries, here is a general analysis of the water in the East Lansing and Meridian Township water distribution systems:

Total Hardness.....	120 - 125 ppm (ppm= parts per million, mg/L)
Total Alkalinity	60 - 70 ppm
Calcium Hardness.....	65 - 80 ppm
Magnesium Hardness	50 - 60 ppm
Total Chlorine Residual	1.0 - 1.4 ppm*
Sodium	25 - 50 ppm
Fluoride.....	0.6 - 0.8 ppm
Nitrate	Not Detected
pH.....	8.9 - 9.1
Chloride.....	50 - 70 ppm
Iron.....	0.02 - 0.10 ppm
Total Dissolved Solids	250 - 300 ppm
Total Coliform	Not Detected

* Levels of Chlorine will vary in the distribution system depending on proximity to the Water Treatment Plant. Homes closer to the Water Treatment Plant would normally receive a higher concentration of chlorine in the tap water than a home that is located farther from the Treatment Plant. The maximum chlorine level in the distribution system is typically below 1.2 ppm.

All hardness and alkalinity values are expressed as Calcium Carbonate equivalent.